# DVEOM 202

# Introduction to E-Office Management- II

## School of Vocational Studies


# उत्तराखण्ड मुक्त विश्वविद्यालय

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## FORMATTING

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Edition- 2020, Pre-Publication copy for Limited Circulation, **ISBN**:
Publication- Uttarakhand Open University, Haldwani, Nainital.
E- Mail: studies@uou.ac.in
Printer:

# D. Voc. (Soft Skill & E- Office Management)

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# INDEX

# UNIT- 1

# E-FILE MANAGEMENT



## *1.1 INTRODUCTION*

E-File management or electronic file management is the term which describes the process of importing, storing and managing the documents and images in form of computer files. It also includes scanning and capturing of the documents which leads to the process of digitization and removal of hard copies. This system involves the usage of computers for the management of personal/official registers. It also maintains the details about the file(s)/letter(s) send or received to and from the office. Here we need the respective software(s) which are developed to perform office specific tasks.

This is a workflow based process which incorporates all the existing features (as in manual file handling) efficiently in an electronic system. The E-File management system comprises of all the stages like creation of file, archiving of previous data etc. This electronic system of

file management allows the high level of transparency in an office management. It makes efficient decision making, which is quite easy to do from the records managed electronically. By using the system of electronic file management an organization can achieve high level of efficiency, transparency and accountability. This system makes the revolutionary change in the existing manual system of an organization. It implements for gaining some more objectives like paperless system etc. The government of India has also defined some standard guidelines and procedures for the designing of paperless office through its Department of Administrative Reforms & Public Grievances (DARPG).

## *1.2 OBJECTIVES*

After the successful completion of this unit, you will be able to-

- Understand the role of electronic file
- Know about the needs of electronic file
- Know about the types and merits of electronic file
- Know about reports and its role

## *1.3 NEED OF ELECTRONIC FILE*

As we are already aware that ICT (Information Communication and Technology) has changed the working culture or style of the peoples over the time. Also, technology plays a vital role in our society which leads to the development of E-File system for the management of the day to day activities at office level. While, following manual system (as earlier we are doing) for keeping paper based records we needs a lots of time, efforts and high cost of maintenance which inturn effects the productivity and efficiency of an organization on day to day basis. Therefore, due to various hindrances the organizations are planning for a solution that allows them to capture and keep the documents in digital formats which makes there accessing fast and easy. Including to this, the digital data also allows us to manage related documents in a single folder, as well as easy noting on the files can be done easily. While sending records from one location to another location the digital format of data is very easily transferrable in comparison to manual format of the data.

Due to the inefficient behaviour of manual file system a need of computerized and centralized file system has been raised by various departments. While talking about manual system of office management one of the toughest jobs is to track files and letters and as a result the computerized system of office management may ensure the tracking of files and letters with in no more time. While taking about Indian context, NIC i.e. National Informatics Center has developed electronic office management software known as File Tracking System. This software was used most of the government organization in India for management of official tasks.

While talking about the contents, electronic files are same as of physical files. As per the reports received from various agencies, nowadays about 93 percent documents are created in electronic form. Also, about 70 percent files are never migrated/ converted to paper. Therefore here we are discussing some issues that lead to the challenges while discovering an effective electronic file management system.

**The enormity of electronic files is more than paper enabled documents-**

In today's world due to enormity of electronic documents the disks size grows constantly. Also most of the , the organizations are using tablets, laptops and desktops for making their company related tasks like accounting, personal information etc in digital mode.

Due to the gigantic growth in the data density of electronic files is much greater than paper enabled files or documents. A survey have been conducted to know about the enormity behaviour of electronic files, as per this a middle size organizations have about 2 two million files. In general, a hard drive can contain about 1-2 million of files. Thus, it shows the high magnitude of data in electronic form.

**Assortment of electronic archives is bigger than paper reports-**

Paper archives can be records, staff documents, notes, updates, letters, articles, papers, pictures, and so forth this range of files exists likewise in electronic structure. Yet, at that point bookkeeping pages are far more mind boggling than record, for instance. They contain equations, may contain graphs, they can fill in as information bases, and so on Notwithstanding the extra data, for example diagrams, the electronic accounting page underpins experimentation with imagine a scenario in which form the pioneer might need to examine. To show the range conceivable in electronic records it is adequate to consider the most universal of them. An electronic file may consist of the following:

- A Spreadsheet- Especially used to perform calculative tasks such as all mathematical functions etc.
- Charts- They are used to represent the data graphically.
- Pictures- Use to represent images in our electronic file.
- Audio/Video components- These components are used to design audio/video enabled electronic files.
- Links to Web address- The electronic files are also used to associate our content with some web-enabled data; therefore to do this link facility is used.

**Electronic files consist of attributes which are lacking in physical form of files-**

An electronic file consists of data about our records, also termed as "metadata, for example, an electronic file may contain name of the originator, date of creation, date of last access etc. But at the same time it is very tough to mention all the constraints with a physical form of a

file. Also, the electronic files allowed us to choose various font names, sizes, and shades etc for our electronic files. This is quite very difficult while using physical form of files.

- Efficiency of electronic file is more than files in physical forms. File Efficiency can be measured through various factors like:
- Reduced Space- Files in electronic form needs less space in comparison to physical form of files.
- Easier to change- One can modify, update or merge the electronic files conveniently in comparison to physical files.
- Less Cost- Management of electronic files is quite convenient and less expensive due to easy maintenance.
- Fast Searching- Searching is one of the key measures which promotes the usage of electronic file system. Finding of data in required time duration is one of the key benefits of electronic file system.

## *1.4 BENEFITS OF EFILE MANAGEMENT SYSTEM*

Some key points which show the benefits of E-File management system have been discussed below:

- **Reduced Time-** While using e-file management system one can access the files in very less time in comparison to a manual file system. By using this system one can indexed his/her content which makes its accessing and retrieval very fast.
- **Reduced Cost-** Using of paper based system needs a lot of papers, printing machines, cartridges, folders, pins etc for the implementation of manual system. This needs a huge amount of recurring expenses while usage of this system. Therefore, digitization of the system makes this cost reduced up to an extent level. Once a file or paper gets digitized it can be used multiple times, this makes our system very cost efficient.
- **Easy Accessing of File(s)-** Once the system/data get digitized, it makes our data easy to search and retrieve. According to the study by Price water house Cooper reveals that the average organization loses 1 out of 20 documents. It takes $120 in labour searching for each lost document and wastes 25 hours in labour recreating each lost document.
- **Achieving High Level of Security-** While using electronic file management once can achieve high level of security. There are various steps through which we can attain the security; some of them are discussed below:
  - ✓ By using password protection- We can assign the password to our files through which only authorized person can access the file(s).
  - ✓ By using Read only/Write only mechanism- We can use the file on read/write mode by using electronic office management system.

- ✓ By using this system we can assign file(s) to specific department or person.
- ✓ Auditing of data can be done reliably due to enhanced security features.

- **Consumption of Less Space/Area-** While using traditional file system we need a huge physical area for storing file(s)/data and it need to be increase on day to day basis.
- **Disaster Recovery-** While using a manual system, what happens if the locations (where we are storing our files) get destroyed, so we need to be very much careful while making the selection of location for storing the files/ folders while using a manual system. This selection of location is sometime very critical due to various geographical or catastrophic challenges like flood, fire etc. As a solution electronic file management system can resolve this issue up to a great extent. Here, we can save multiple copies of our data in digital format, which is very much helpful in making the recovery of our data while our original files get destroyed. We can also use a local backup facility at regular intervals which is one more solution in making a disaster recovery of our files.
- **Regulatory Solutions-** While using electronic file management system implementation of various regulatory standards can be done easily as in compare of manual office management system.
- **Easy Sharing-** While using electronic file management system it is easy to share the files between various departments located at distant locations, which saves time and money.

## *1.5 TYPES OF EFILE MANAGEMENT SYSTEM*

An electronic file management system provides a technique for storing a large volume of digital data centrally. Most of these file management systems includes the features for retrieval of documents efficiently. Some of those file management systems are discussed below:

- **CMS (Content Management System)**

  CMS (Content Management Systems) are use to organize and deliver a wider range of data and media content in web enabled infrastructure to its users. Some common CMS are Joomla, Word Press etc. CMS is use to manage or share the file(s) or data through web pages. One can deliver the information kept in form of file(s) through this system.

- **Record Management System**

  In this system maintenance, creation and destruction of the records is done through a efficient and systematic process. This kind of system is mostly used by organizations i.e. government or at company level. There are some common activities performed under this system are as follows- (i) Identification of suitable content and capture it as a

record. (ii) Implementation of policies and regulations (of an organization) while record creation. (iii) Coordination of record accessing by making confidentiality and privacy of the content.

- **Document Imaging System**

  This is one of the important components of electronic file management system. This component is used to capture the files/information in the form of images i.e. by using the scanning facility. This system is incorporated with some devices like OCR (optical character recognition), scanner, image compression tools/devices, mass storage devices (i.e. external disks) etc. This component is also useful to convert our files or records in image form or vice versa.

- **Enterprise Content Management System**

  This is a solution which is designed for the management of a respective organization's documents or records. It can manage the unstructured content which can be made available right in form of MS-Word, MS-Excel, PDFs documents and scanned content that can be made available to the authentic users at the right time and correct location.

- **Work Flow Management System**

  A workflow management system (WFMS) is a system which provides an infrastructure to set-up the performance and monitoring system for a predefined sequence of tasks or processes.

## *1.6 SOME COMMONLY USED EFILE MANAGEMENT SYSTEM*

Here, we will review some commonly used electronic file system and their features. These are the systems having their global acceptance with various characteristics.

- **pCloud**

  This is an electronic file system having the functionalities for the file management, sharing of the data, securing the data, file versioning, file backup, and digital asset management services. This system also maintains the log of activities performed in the system.

- **Hub Spot**

  This is an electronic file system which is especially designed for tracking the sales and other utilities related to sales and accounts. This system can also be merged with Gmail and Outlook services offered by the companies. Some common features supported by the system are email tracking, email scheduling and sales automation.

- **Knowledge Tree**

This is an open source system used by organizations. This system supports common interface file system (CIFS) which allows its usage with UNIX operating system also. Some common features like web content management, record & image management etc. Sometimes this system also provides the back-end support for managing the files.

- **Seed DMS**
  This is an open source electronic office management system. This system is particularly based on PHP/ MySQL and SQL lite. This system is especially designed for accessing/retrieving or storing of files. One important feature about this system is it availability for HTML files.
- **Worldox**
  Worldox is an electronic file management system which is use for managing documents and emails. It is a commercial and comprehensive system which is use to integrate the applications with various operating systems like Windows, Android, Mac, IOS, and Cloud.
- **CaseBox**
  This is a system especially designed for HRM (**H**uman **R**esource **M**anagement) of an organization. It allows the conditional logic for making the record management. It also provides an effective level of encryption based on SSL technique.
- **Dokmee**
  It is a cloud based electronic file management tool which provides an efficiency and security of our files or documents. This system provides a user-friendly environment for its users. In addition, it provides document-imaging and various tracking tools for the users to track their operations.
- **Feng Office**
  It is an open-source file management system incorporated with various web-based tools. It has some additional features like Gantt chart and various task management tools which are quite helpful in day to day operations of e-file management. Through this system tracking of emails of multiple users can be done in an effective way.
- **Logical Doc**
  It is a Java enabled open-source system which is accessible through a web-browser. This helps in improving productivity and collaboration of various files. It also allows itself to integrate with various third party applications through an API.
- **Nuxeo**
  It is an open source system which reduces the time consumption required for searching and retrieving the contents. But due to its complex implementation and typical customization process it is not user-friendly for beginners. Audit logging is another feature with this system.

## 1.7 MIGRATING TO EFILE SYSTEM

In the time of electronic era, it's stunning that 75 percent of users actually depend upon the collection of information manually. While it might also be very tough to physically regulate quality and wellbeing contents on the paper, also it isn't productive and leaves a lot of space for blunder. At the time when information collection isn't done appropriately, records can be change or lost, which also makes it hard to recover the data. Therefore, migrating from an existing system to electronic system is done under certain steps. So, while making the migration the following steps need to be followed by the users.

- **Standard Naming Conventions to be followed**

  Naming conventions are need to be followed strictly while migrating the manual system to digital system. We need to follow various testing protocols, specifications and naming concerns which need to be strictly followed in manual system so that while migration, the system can accomplish the task easily.

  This helps us in easy recovery and searching of records while using digital systems. While going through the naming concerns we have found some ideas that need to be followed by the users.

  - Keep name of file short and meaningfull.
  - Strictly avoid repetition of names in files and path.
  - Never use –(dash) or any special characters in files names.
- **Selection of Deployment Model**

  Selection of data collection software is another crutial step while migrating the manual system to digital system. Preferably, if we are digitizing the system spreaded in multiple location, cloud can be a favourable technology whereas incase of single location some on-premises solution could be finded out. In addition to above, the cost and maintenance are some other factors that also needed to be focused while selection of deployment model.
- **Digitization of Record**

  Changing over the current paper structures to electronic, organizations can be seen as an overwhelming assignments, yet working intimately with the product supplier's architects can significantly diminish the exertion. Depending on their experience to productively actualize a best-practice, arrangement will give your most obvious opportunity to extreme achievements.
- **Instill Change Management**

  While migrating the system, agile concept of software development can be used. This allows to complete our task in timely manner.

## 1.8 E- REPORTS

Electronic reports are use to configure the electronic files (e-file) as per the norms of various countries and regions. These are use to design the standards as per the norms. Various regulatory issues can be resolve by using this format. Reports in electronic form can be implemented with some common formats like text, word etc. This feature of reporting can be use to develop our own archive of reports that can be saved for future usage.

## *1.9 POINTS TO REMEMBER*

- E-File management or electronic file management is the term which describes the documents and images in form of computer files.
- The E-File management system comprises of all the stages like creation of file, archiving of previous data etc.
- NIC i.e. National Informatics Center has developed electronic office management software known as File Tracking System.
- About 70 percent files are never migrated/ converted to paper.
- In the time of electronic era, it's stunning that 75 percent of users actually depend upon the collection of information manually.
- Common Interface File System (CIFS) allows its usage with UNIX operating system.
- CMS (Content Management Systems) are use to organize and deliver a wider range of data and media content in web enabled infrastructure to its users.

## *1.10 GLOSSARY*

- NIC- National Informatics Center is an government department, which provides IT and various other online supports.
- CMS- Content Management System: Use to design various web applications in easiest mode for e.g. word press, Joomla etc.
- EFile- Electronic File: File(s)/content in digital format.
- CIFS-Common Interface File System: an Unix based file system.
- WFMS- Workflow Management System
- DARPG-Department of Administrative Reforms & Public Grievances
- OCR-Optical Character recognition

## *1.11 CHECK YOUR PROGRESS*

**Descriptive type questions-**

**a)** What is Electronic File?Define Electronic File management System?
**b)** Discuss the need of Electronic File System? Explain in detail
**c)** Define the merits and dmerits of Electronic File System.
**d)** Explain any Five Electronis management system?
**e)** Define Migration.Explain the process of migration from manual to electronic system?
**f)** Define Reports and its types.

### Objective type questions-

**a)** Electronic File System increases the time to search the file/data. [T/F]

**b)** OCR is a Software. [T/F]

**c)** We cannot migrate from manual system to online system. [T/F]

**d)** CaseBox is a hardware for E-File management. [T/F]

**e)** CISF is an … … … based system.

**f)** Joomal is an … … … based software.

### Answer (Objective Type Question)-

[a] False [b] False [c] False

[d] False [e] Unix [f] CMS

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# UNIT- 2
# E-GOVERNANCE



## *2.1 INTRODUCTION*

E-governance because of its scope and aims is highly relevant in today's era. In simple terms, it is the use of information communication technologies (ICTs) to carry out public services, that is to say, the use of the internet to ensure that services are delivered in a much more convenient, customer-oriented, and cost-effective manner. In other words, the e-governance is the application of Information Technology to the processes of government functioning in order to achieve a Simple, Moral, Accountable, Responsive, and Transparent (SMART) Governance.

In the overall perspective, the e-governance is simply the use of ICTs in the operations of government businesses, put in another way, it is the shift from the traditional method of carrying out government activities which is mainly hierarchical, linear, and one-way to the use of internet which enables the public to seek information at their own convenience and not really having to visit the office in person or when government office is open.

The major objectives of e-governance are to improve government processes (e-administration), connect citizens (e-citizens and e-services), and build external interactions (e-society). Despite these objectives, making and implementing decisions, proper leadership, putting in place organizational arrangements, ensuring resources and funding, establishing accountability and measuring success, telecommunications network, internal agency systems, cross-government systems, service delivery network access points, internet access, and skilled staff, better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, and more efficient government management are the factors that must be taken into consideration for the success of e-governance implementation.

## *2.2 OBJECTIVES*

After the successful completion of this unit, you will be able to-

- Understand the role of e-governance for smart administration.
- Define the importance of e-governance.
- Explore e-governance projects in India.
- Define the types and applications of e-governance.
- Know the challenges of e-governance in India.

## *2.3 E-GOVERNANCE: AN OVERVIEW*

The ‘e’ in e-Governance stands for ‘electronic’. Thus, e-Governance is basically associated with carrying out the functions and achieving the results of governance through the utilization of Information and Communications Technology (ICT). Why countries around the world are increasingly opting for ‘e-Governance’? In the last few decades, the expectations of citizens from the government have increased manifold. ICT facilitates efficient storing and retrieval of information, instantaneous transmission of information, processing information & data faster than the earlier manual systems, speeding up governmental processes, taking decisions expeditiously & judiciously, increasing transparency, and enforcing accountability.

The primary purpose of governance is the welfare of citizens. While one aspect of governance relates to safeguarding the legal rights of all citizens, an equally important aspect is concerned with ensuring equitable access to public services and the benefits of economic growth to all. It is expected that e-governance would enable the government to discharge its functions more effectively and can be able to work with more transparency.

In India, during the initial stage of introduction of ICT in governance there was some resistance. There were also serious doubts about whether government employees at all levels

would be able to handle computers. As time passes, all goes beyond and fortunately all these misgivings have proved wrong.

Today, new technology makes the machine-human interface very user-friendly. The Information Technology (IT) and Information Technology Enabled Services (ITES) sectors have created millions of jobs besides improving vastly on the services provided by government undertakings like Banks, Airlines, Railways, etc.

As a country like India, with 1.3 billion population, more than 600,000 villages, growing economy coupled with increasing aspirations of the citizens for a better quality of life – use of Information Technology in improving government processes is not just become vital but essential and without which it would be extremely difficult, if not impossible, to serve its citizens efficiently and transparently and ensure participation of a larger number of people in decision making at all levels of government– Centre, State and local.

The National e-Governance Division (NeGD) is providing strategic direction in terms of framing policies and implementation strategy for the Digital India Programme in different domains of e-Governance. And also provides, proactive support to Central and State Governments for Mission Mode Projects (MMPs) and other e-Governance projects acting as a facilitator and catalyst for the implementation of the Digital India Program by various Ministries and State Governments.

The NeGD also ensures effective citizen engagement and communication with all stakeholders using offline and Social Media channels. The role of NeGD in training and development initiatives, including- development of competency frameworks, training guidelines, case studies, etc. and developing online and web-based training and setting up of Learning Management System, knowledge management and sharing through workshops, development of case studies, sharing best practises, creation of knowledge repositories, etc.

The e-governance is, in essence, the application of Information and Communications Technology to government functioning to create ‘Simple, Moral, Accountable, Responsive, and Transparent (SMART) governance. The e-governance involves the use of ICTs by government agencies for any or all of the following reasons, as-

- Exchange of information with citizens, businesses, or other government departments.
- Speedier and more efficient delivery of public services.
- Improving internal efficiency.
- Reducing costs/increasing revenue.
- Re-structuring of administrative processes and improving the quality of services.

The e-governance aims to make the interaction between government and citizens (G2C), government and business enterprises (G2B), and inter-agency relationships (G2G) more friendly, convenient, transparent, and inexpensive. The goals of e-Governance are-

- Better service delivery to citizens.
- Ushering in transparency and accountability.
- Empowering people through information.
- Improved efficiency within Governments.
- Improve interface with business and industry.

## *2.4 IMPORTANCE AND BENEFITS OF E-GOVERNANCE*

E-governance is about reforms in governance, facilitated by the creative use of Information and Communications Technology (ICT). The importance and benefits of e-governance are not limited in respect to good governance, and citizen empowerment, few of them are as follows-

- E-Governance brings governments closer to the citizens.
- Provide simplicity, efficiency, and accountability in the government- Applications of ICT to governance combined with detailed business process re-engineering would lead to simplification of complicated processes, weeding out of redundant processes, simplification in structures & changes in statutes, and regulations. The end result would be the simplification of the functioning of government, enhanced decision-making abilities, and increased efficiency across government– all contributing to an overall environment of more accountable government machinery. This, in turn, would result in enhanced productivity and efficiency in all sectors of government functioning.
- E-governance empowers people to gather information regarding any department of government and get involved in the process of government decision making.
- E-Governance strengthens democracy by ensuring greater citizen participation at all levels of governance.
- E-Governance leads to automation of services, ensuring that information regarding every work of public welfare is easily available to all citizens.
- E-Governance revolutionizes the way governments function, ensuring much more transparency in the functioning, thereby eliminating corruption.
- If the information regarding every activity of government is easily available, it would make every government department responsible as they know that every action of theirs is closely monitored.

- Expanded reach of governance- Rapid growth of communications technology and its adoption in governance would help in bringing government machinery to the doorsteps of the citizens. Expansion of telephone network, rapid strides in mobile telephony, the spread of internet, and strengthening of other communications infrastructure would facilitate the delivery of a large number of services provided by the government.
- Proper implementation of e-Governance practices makes it possible for people to get their work done online thereby sparing themselves of unnecessary hassles of travelling to the respective offices.
- Successful implementation of e-Governance practices offers better delivery of services to citizens, improved interactions with businesses, and industries.
- E-governance helps citizen empowerment through access to information, better management, greater convenience, revenue growth, cost reductions, etc.
- Enabling Environment for Promoting Economic development- Technology enables governments to create positive business climates by simplifying relationships with businesses and reducing the administrative steps needed to comply with regulatory obligations. There is a direct impact on the economy, as e-procurement creates wider competition and more participants in the public sector marketplace.

## *2.5 TYPES OF INTERACTIONS IN E-GOVERNANCE*

The e-governance facilitates interaction between different stakeholders in governance using ICT, such types of interactions are grouped into the following, as-

### Government to Government Model (G2G)-

The G2G refers to the online communications between government organizations, departments, and agencies based on a super-government database. Moreover, it refers to the relationship between governments. G2G model of e-governance aims to enhance and improve inter-government organizational processes by streamlining cooperation and coordination among various government departments/organizations. The efficiency and efficacy of processes are enhanced by the use of online communication and cooperation which allows for the sharing of databases and resources and the fusion of skills and capabilities.

### Government-to-Business (G2B)-

Government to business is another type of e-governance model which enables significant efficiencies to both governments and businesses. G2B includes various services exchanged between government and the business sector services. The business services offered include obtaining current business information, new regulations, downloading application forms, lodging taxes, renewing licenses, registering businesses, obtaining permits, and many more.

Nowadays, the government-to-business (G2B) model has been receiving a significant amount of attention.

### Government-to-Citizens (G2C)-

Government-to-Citizens (G2C) model of governance has been designed to facilitate citizen interaction with the government. It allows citizens to access government information and services instantly, conveniently, from everywhere. The government-to-citizen model of governance focuses on customer-centric and integrated electronic services where public services can be provided based on a 'one-stop solution' concept. This implies that every citizen can get single window access to government services. G2C model of governance facilitates several services to the citizens, e.g. certifications, paying governmental fees, and applying for benefits schemes of government, etc.

### Government-to-Employees (G2E)-

Government is by far the biggest employer and like any organization, it has to interact with its employees on a regular basis. This interaction is a two-way process between the organization and the employee. Use of ICT tools helps in making these interactions fast and efficient on the one hand and increase satisfaction levels of employees on the other so that the G2E model of governance is a valuable model of smart administration.

## *2.6 E-GOVERNANCE PROJECTS IN INDIA*

The Government of India (GoI) established the Department of Electronics in 1970. The subsequent establishment of the National Informatics Centre (NIC) in the year 1977 was the first major step towards e-Governance in India. In the early 1980s, the use of computers was confined to very few organizations. The advent of personal computers brought the storage, retrieval, and processing capacities of computers to Government offices. By the late 1980s gradually, with the introduction of common use software such as word processing and other kinds of software, the computers were put to other uses like managing databases and processing information, etc.

Advances in communications technology further improved the versatility and reach of computers, and many government departments started using ICT for a number of applications like tracking movement of papers and files, monitoring of development programmes, processing of employees payrolls, generation of reports, etc.

The main thrust for e-governance was provided by the launching of the National Informatics Centre Network (NICNET) in 1987, the national satellite-based computer network. This was followed by the launch of the District Information System of the National Informatics Centre (DISNIC) programme to computerize all district offices in the country for which free hardware and software was offered to the State Governments.

A National Task Force on Information Technology and Software Development was constituted in May 1998, while recognizing Information Technology as a frontier area of knowledge per se, it focused on utilizing it as an enabling tool for assimilating and processing all other spheres of knowledge. It recommended the launching of an 'Operation Knowledge' aimed at universalizing computer literacy and spreading the use of computers and IT in education.

In the year 1999, the Union Ministry of Information Technology was created. By the year 2000, a 12-point minimum agenda for e-Governance was identified by the Government of India for implementation in all the Union Government Ministries/Departments. Some glimpse of the agenda-

- Each Ministry/Department must provide Personal Computers (PCs) with necessary software up to the Section Officer level. Besides, Local Area Network (LAN) must also be set up.
- It should be ensured that all staff with access and need to use computer for their office work are provided with adequate training. To facilitate this, inter alia, Ministries/Departments should set up their own or share other's Learning Centres for decentralized training in computers as per the guidelines issued by the ministry.
- Each Ministry/Department should start using the Office Procedure Automation software developed by NIC to keep a record of receipt of 'dak', issue of letters, as well as the movement of files in the department.
- Payroll accounting and other house-keeping software should be put to use in day-to-day operations.

## Emergence of the National e-Governance Plan (NeGP)-

About the future of e-governance, the lighting words by the great visionary Dr. APJ Abdul Kalam, former President of India, in his inaugural address at IIT Delhi (India) during 2003 at International Conference on 'e-governance' can be summarized as- "E-governance has to be citizen-friendly. Delivery of services to citizens is considered a primary function of the government. In a democratic nation of over one billion people like India, e-governance should enable seamless access to information and seamless flow of information across the state and central government in the federal set up. No country has so far implemented an e-governance system for one billion people. It is a big challenge before us."

## About National e-Governance Division (NeGD)-

In the year 2009, National e-Governance Division was established by the Ministry of Electronics & Information Technology (MeitY) as an Independent Business Division under the Digital India Corporation. NeGD has played a pivotal role in executing e-governance

Projects and initiatives undertaken by Ministries/ Departments, both at Central and State levels. The roles and responsibilities of NeGD are-

**a)** Providing strategic direction in terms of framing policies and implementation strategy for the Digital India Programme in different domains of e-Governance.

**b)** Proactive support to Central and State Governments for Mission Mode Projects (MMPs) and other e-governance projects.

**c)** Acting as a facilitator and catalyst for the implementation of the Digital India Program by various Ministries and State Governments.

**d)** Providing technical assistance to Central Ministries/ State Line Departments in their e-governance projects either directly or in collaboration with professional consultants.

**e)** Undertaking technical appraisal of e-governance projects for examining issues like overall technology, architecture, framework standards, security policy, service delivery mechanism, sharing of common infrastructure, etc.

**f)** Developing generic / model Expression of Interest (EoI), Request for Proposal (RFP), Standard Contracts, PPP Models, and other related documents for various stages and requirements of projects for the use of States.

**g)** Ensuring effective citizen engagement and communication with all stakeholders using offline and Social Media channels

**h)** Impact assessment and e-Readiness measurement of e-Governance projects of all States / UTs.

**i)** Recruitment, deployment and HR management of specialised resources in the State e-Governance Mission Teams (SeMTs) in all States and UTs

**j)** Training and development initiatives, including- (i) Development of competency frameworks, training guidelines, case studies, etc. (ii) Developing Online and Web-based Training and set up Learning Management System (iii) Knowledge management and sharing through workshops, development of case studies, sharing best practises and creation of knowledge repositories, etc

## Implementation Strategy for E-governance-

The approach and methodology adopted for NeGP contains the following elements-

- Common Support Infrastructure.
- Governance- Suitable arrangements for monitoring and coordinating the implementation of NeGP under the direction of the competent authorities have been set up.

- Centralized Initiative, Decentralized Implementation.
- Public-Private Partnerships (PPP) model is to be adopted wherever feasible to enlarge the resource pool without compromising on the security aspects.
- Programme Approach at the National and State levels.
- Ownership of Ministries- Under the NeGP, various Mission Mode Projects (MMPs) are owned and spearheaded by the concerned line ministries.

## Some Mission Mode Projects implemented by NeGD-

### [1] Unified Mobile Application for New-age Governance (UMANG)-

UMANG is envisaged to make e-governance. It provides a single platform for all Indian citizens to access pan India e-Gov services ranging from central to local government bodies and other citizen-centric services. UMANG intends to provide major services offered by central and state government departments, local bodies, and other utility services from private organizations. It provides a unified approach where citizens can install one application to avail multiple government services. UMANG service has been made available on multiple channels like mobile application, web, IVR, and SMS which can be accessed through smartphones, feature phones, tablets, and desktops.

**Note-** Download UMANG App by giving us missed call on 97183-97183 or Visit- https://web.umang.gov.in/web/#/

### [2] DigiLocker-

DigiLocker system is a flagship initiative of the Ministry of Electronics & IT under the Digital India Programme. Targeted at the idea of paperless governance, DigiLocker aims to provide a digital wallet to every citizen of the country so that all lifelong documents/certificates can be electronically held under a single secure digital wallet. DigiLocker is a platform for issuance and verification of documents & certificates digitally, eliminating the use of physical documents. Indian citizens who sign up for a DigiLocker account get a dedicated cloud storage space that is linked to their Aadhaar(UIDAI) number.

**Note**- To access Digilocker visit at- https://digilocker.gov.in

### [3] National Centre of Geo-informatics (NCoG)-

NCoG is a single source Geographic Information System (GIS) platform for sharing, collaboration, location-based analytics, and decision support system, catering to central and state ministries/departments/agencies across the country. Under this project, location-based datasets such as data related to central government land banks, mining, forests, industrial parks, water resources, etc. are collated with attribute related data to bring out insights that are useful to support decision making. User departments can now pinpoint their operations,

assets on a map, and plan better. NCoG has provided mobile applications for geo-tagging and creating evidence of completed operations under the Government schemes.

**Note**- To access NCoG visit at- https://ncog.gov.in/

## [4]- Rapid Assessment System (RAS)

RAS is an online instant feedback for e-services (online as well as offline through counters) delivered by the Government of India and State Governments. The main objective of RAS is to continuously assess the quality of e-Services, through feedback, under each e-governance project and realign processes to achieve targeted benefits. RAS interface prompts the citizens to provide feedback about the quality of service immediately after the citizen avails an e-service of the Government. The analytic features of RAS help integrated departments in system improvement and better delivery of services.

**Note**- To access RAS visit at- https://ras.gov.in/

## [5]- Program Management Information System (PMIS)-

PMIS build using open source technologies is used to track and monitor project initiation, planning, execution, and management. It can be utilized for Central/State/Integrated MMPs, Departmental and Adhoc projects under the Digital India programme.

**Note**- To access PMIS visit at- https://pmis.negd.gov.in/

## [6]- OpenForge platform-

The objective of the OpenForge platform is to promote sharing and reuse of e-governance application source code. In 2015, the Ministry of Electronics & IT, Government of India rolled out the 'Policy on Collaborative Application Development by Opening the Source Code of Government Applications', which provides a framework for archiving government custom-developed source code in repositories and opening these repositories for promoting reuse, sharing and remixing. By opening the source code, the Government wants to encourage collaborative development between Government departments/agencies and private organizations, citizens, and developers to spur the creation of innovative e-governance applications and services.

The scope of the project includes the development of a Collaboration Platform under the 'Source Open Policy'. Further, it includes the creation of a project team, development and maintenance of the platform, on-boarding of departments, promotion of the platform, and community management. The community to be created and managed through the platform will be a key driver in bringing agility and quality to the application development process. It will also lead to further reuse and value addition to the e-governance software landscape.

**Note**- To access OpenForge visit at- https://openforge.gov.in/

### [7]- Learning Management System (LMS)-

LMS is a software application that automates the administration, tracking, and reporting of training events. LMS is a pioneer project under e-Kranti (an e-governance plan initiated by the Government of India). It is widely recognised that there is a tremendous need to enhance the skill sets and to develop an adequate number of appropriately trained resources for handling a variety of tasks including those who are expected to design and deliver Government services to the citizens.

**Note**- To access LMS visit at- https://lms.gov.in/

### [8]- Miscellaneous e-governance Projects in India-

- Passport Seva Project.
- Immigration, Visa and Foreigners Registration & Tracking (IVFRT).
- Insurance (Department of Banking)
- Income Tax (Ministry of Finance/Central Board of Direct Taxes)
- National Citizen Database/UID (Ministry of Home Affairs/Registrar General of India (RGI)/ Planning Commission, Now NITI Aayog).
- Central Excise (Department of Revenue/Central Board of Excise & Customs)
- Pensions (Department of Pensions & Pensioners Welfare and Department of Expenditure)
- Banking (Department of Banking)
- Land Records (Ministry of Rural Development)
- Road Transport (Ministry of Road Transport & Highways)
- Treasuries (Ministry of Finance)
- E-District (Department of Information Technology)
- Common Services Centres (Department of Information Technology)
- e-Courts (Department of Justice, Ministry of Home Affairs)
- e-Procurement (Ministry of Commerce & Industry/ DGS&D)
- And many more.

## *2.7 CHALLENGES OF E-GOVERNANCE IN INDIA*

- Lack of motivation and awareness towards the role and importance of e-governance.
- Lack of citizen-centric nature of applications and poor cooperation among bureaucrats and people at the local level of governance.
- Lack of trust, poor technical designs which leads to lack of interoperability among distinct e-governance applications, and underutilization of ICT infrastructure resources.

- One of the challenges to attain the ability of high level of data abstraction is to maintain the privacy of data in designing e-governance applications.
- Authentication is very important to know the right user of the services or it may be misused by private competitors. Meanwhile, the digital signature plays a major role in providing authenticity. In fact, it is expensive and causes for frequent maintenance.
- Maintenance should be given due importance because IT ministry has been continuously developing new software to fill the current needs of citizens.
- Digital divide- Even in the era of science and technology, a huge gap exists between users and non-users of e-governance services. In India, majority of the masses, living below poverty line are deprived of government services. This gap needs to be made narrow, and then only the benefits of e-governance would be utilized equally.
- Infrastructure is essentially required for the implementation of e-governance as much as possible in India. Electricity, Internet, and poor adaptability of technology will retard the progress of e-governance. In the context of developing countries, there should be enough basic facilities to give an impetus to e-governance.

## *2.8 POINTS TO REMEMBER*

- E-governance is simply the use of information communication technologies (ICTs) to carry out public services, that is to say, the use of the internet to ensure that services are delivered in a much more convenient, customer-oriented, and cost-effective manner.
- E-governance is the application of Information Technology to the process of government functioning to achieve a Simple, Moral, Accountable, Responsive, and Transparent (SMART) Governance.
- The major objectives of e-governance are to improve government processes (e-administration), connect citizens (e-citizens and e-services), and build external interactions (e-society).
- It is expected that e-governance would enable government to discharge its functions more effectively and can be able to work with more transparency.
- The National e-Governance Division (NeGD) is providing strategic direction in terms of framing policies and implementation strategy for the Digital India Programme in different domains of e-Governance.
- E-governance strengthens the democracy by ensuring greater citizen participation at all levels of governance.
- E-governance revolutionizes the way governments function, ensuring much more transparency in the functioning thereby eliminating corruption.

- The rapid growth of communications technology and its adoption in governance would help in bringing government machinery to the doorsteps of the citizens.
- E-governance helps citizen empowerment through access to information, better management, greater convenience, revenue growth, cost reductions, etc.

## *2.9 GLOSSARY*

- CSC- Common Service Center.
- ERP- Enterprise Resource Planning.
- G2B- Government to Business.
- G2C- Government to Citizen.
- G2E- Government to Employee.
- G2G- Government to Government.
- GPS- Global Positioning System.
- ITeS- Information Technology enabled Services.
- MCA- Ministry of Corporate Affairs.
- NeGD- National e-Governance Division.
- NeGP- National e-Governance Plan.
- NISG- National Institute for Smart Government.
- PPP- Public Private Partnership.
- SMART- Simple, Moral, Accountable, Responsive, Transparent.
- SWAN- State Wide Area Network.

## *2.10 CHECK YOUR PROGRESS*

**Descriptive type questions-**

**g)** What are the benefits of e-governance?

**h)** Explain the summarized view of e-governance in India.

**i)** List five major challenges of implementing e-governance in India.

**j)** Define in short, the various e-governance models.

**k)** Define briefly the role and responsibilities of the National e-Governance Division (NeGD).

**l)** List the name of ten miscellaneous e-governance projects in India.

### Objective type questions-

**g)** Infrastructure is essentially required for the implementation of successful e-governance projects. (True/False)

**h)** One of the major challenges in implementing successful e-governance projects is a lack of motivation and awareness. (True/False)

**i)** The National e-Governance Division (NeGD) is providing strategic direction in terms of framing policies and implementation strategy for the Digital India Programme in different domains of e-Governance. (True/False)

**j)** PMIS stands for Prime Minister Information System. (True/False)

**k)** DigiLocker aims to provide a digital wallet to every citizen of the country where we can deposit the money. (True/False)

**l)** National e-Governance Division was established by the Ministry of .....

**m)** Government-to-Citizens (G2C) model of governance has been designed to facilitate citizen interaction with .....

### Answer (objective type question)-

[a] True [b] True [c] True [d] False [e] False

[f] Electronics & Information Technology [g] Government

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# UNIT- 3

# DATABASE CONCEPTS



## *3.1 INTRODUCTION*

A database is a collection of information that is organized so that it can be easily accessed, managed and updated. Computer databases typically contain aggregations of data records or files, containing information about sales transactions or interactions with specific customers. The DBMS is the software which is used to manage database is called Database Management System (DBMS). For Example, MySQL, Oracle etc. are popular commercial DBMS used in different applications. DBMS allows users to perform the following tasks:

- Data Definition: It allows us the creation, modification and removal of definitions or structures that defines the organization of data in the database.
- Data Updation: It allows us the insertion, modification and deletion of the information/data in the database.

- Data Retrieval: It allows us in retrieving/accessing of data from the database which can be used by applications to achieve various objectives.
- User Administration: It allows us in registering and monitoring database users, it promotes the enforcement of security of database, monitoring performance is another achievement, maintainance of data integrity, dealing with concurrency control and recovering of data corrupted due to various unexpected failures.

Database Design is a collection of various processes which facilitate the designing, development, implementation and maintenance of database management systems i.e. DBMS. Databse designed by using certain rules are quite easy to maintain, it also improves a consistency of the data and are also cost effective in terms of a storage cost. As the user of the database a database designer will suggests us that how the data elements are correlated and what kind of the data is to be be stored in the database. The main concerns behind the database designing is to produce the logical and physical design models of the proposed database system.

A logical model of the database focuses on the data requirements and a stored data is always independent of its physical considerations. This model of database makes us not to concern about where and how to store the database physically. Whereas, A physical data design model involves translation of a logical design of the database onto a physical media by using various hardware resources and software systems like as database management systems (DBMS).

## *3.2 OBJECTIVES*

After the successful completion of this unit, you will be able to-

- Understand the role of Database.
- Know about the needs of Database and DBMS system.
- Know about the types and merits of Database and DBMS.
- Know about the process of Normalization.
- Know about ER diagram and its need.
- Know about SQL and its classification.

## *3.3 ROLE OF DATABASE*

Database concepts can also be used in marketing of various formats. It promotes the collection of customer's data like name of customer, addresses details, emails addresses, contact numbers, various transaction histories, customer support tickets, and so on. The information collected is then analyzed and used for creating a personalized experience for each customer, or to attract potential customers.

**Who needs Database for Digital Marketing?**

In today's world multiple businesses are using various database techniques for refining their direct marketing strategies, it also includes finance companies, various retailers, companies having technology expertise, internet service companies, insurance companies, and different Bussiness to Bussiness companies.

Usage of Database in marketing is particularly useful for outsized companies, which already have huge customer base, it also generates huge amounts of transactional data. The larger the initially collected data set, the more opportunities are generated for finding groups of customers and/or prospects which can be achieved by making customized communication.

Many of those well-built companies are attending the conferences or exibitions organized by Direct Marketing Association's annual National Center for Database Marketing, where various companies are making the discussion on how to improve database marketing. In 2011 various Exhibitors like American Express, Experian Marketing, Pitney Bowes, and the SAS Institutes have organized the conferences on database marketting. Some more companies like Microsoft, Farmers Insurance, General Motors, IBM, and the Whirlpool Corporation are recognized for their excellent performance with database marketing.

**Benefits of Database in Marketing**

In today's world consumers are expecting a personalized experience with the brand. To deliver this, a marketing company needs a specified view of each customer across every touchpoint. By making the analysis of the collected data the marketing companies can only understand the customer's journey and keep them in a meaningful way. Using of Database for various marketing strategies makes that easier.

Database designed for Customer can allow us the following:

- Finding the customer groups – from your most dedicated, highly-valued customers to first-time customers and occasional buyers.
- Making of detailed view of customer segments which was based on demographics, behaviors, or even personal interests of the customers.
- Creating of highly personalized messages for both current and forthcoming customers
- Determine the best channel and time for engaging customers.
- Improving our marketing efficiency by not wasting much time and money in making campaigns to those who are unlikely to respond as per our requirements.
- Creating and Building effective loyalty programs which provides the suitable incentives schemes for repeated sales.
- Improving of customer support service by providing support staff with a 24x7 view of the customer's satisfaction with our brand.

## *3.4 DATA MODEL(S)*

Data models defines how the logical structure of a database is created or developed. Data Models are the basic-blocks which introduce the abstraction in a DBMS. Data model defines how the data is connected to each other and how they are processed and stored inside the system. While creating the database, intially the data model could be flat data-models, where all the data are to be kept in the same area. Previously, data models were not so logical, hence they are prone to introduce lots of redundancy and various anomalies.

**Type(s) of Data Model**

While talking about data model there are three different kind of data models: i.e. conceptual data models, logical data models, and physical data models, and each one of them have a specific concern. The data models are used to represent the data and how it is stored in the database for setting the relationship between data items.

- **Conceptual Data Model:** This data Model is use to define what the system contains. This model is mostly created and used by Business stakeholders and Data Architects. The function of this model is to organize, scale and define business concepts and rules.
- **Logical Data Model:** This defines how the system should be implemented which is independent of the DBMS(Database Management System). This approach of database is typically created and developed by data architects and business analysts. The objective of this technique is to developed the technical mapping of regulations and data structures associated with database design.
- **Physical Data Model:** This part of data model decribes the database, it specifies that how the system would be implemented by using a specific DBMS (Database Management System). This approach is typically developed by database administrator (DBA) and developers. The main objective of this approach is to devlop an actual implementation of the database.

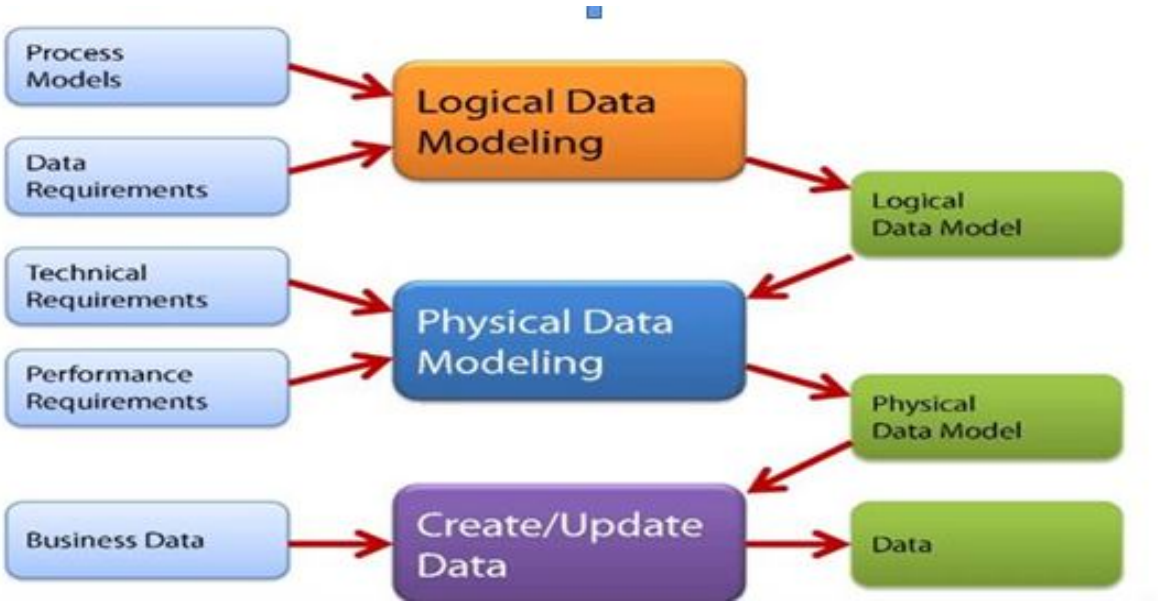



Figure 1- Data Model

## 3.5 DATABASE DESING AND RULES

Normalization is the process of database design which reduces the data repetition and eliminates the unwanted characteristics like Insertion, Update and Deletion Anomalies. The rule of normalization makes the division of larger tables into smaller tables and associate them by using relationships. Normalization is used mostly for the following two purposes:

- Eliminating repeated(useless) data.
- Ensuring the role of data dependencies i.e data is logically stored.

While we are not using the noramlization/design rules anomalies are the main concerns that needs to be resolved with the assistance of different rule(s). Some of the major anomalies we face are discussed below:

| Roll_Num | Name | Branch | Head | Contact |
|---|---|---|---|---|
| 1 | Anil Kumar | CSE | Dr Ajay Tyagi | 676767676 |
| 2 | Ravi Kumar | CSE | Dr Ajay Tyagi | 676767676 |
| 3 | Neha Sharma | CSE | Dr Ajay Tyagi | 676767676 |
| 4 | Rakesh Saxena | ME | Dr Amrita | 767676767 |
| 5 | Abhinav Kumar | ME | Dr Amrita | 767676767 |

While going through the above table we have identified the following anomalies:

**Insert Anomaly**

Suppose, If we want to insert the record for a new admission, until and unless a student opts for a branch, the student data cannot be inserted in a table, or else we need to enter NULL as the branch information.

**Update Anomaly**

This anomalies deals "if Mr. Ravi Kumar (as per the table) leaves the college? or is no longer associated as the HOD of department of computer science ? In this situation all the student records named with Mr Ravi Kumar needs to be updated, and if incase if we miss any record of Mr Ravi Kumar, it will lead to a term called data inconsistency". This is known as Updation anomaly.

**Delete Anomaly**

As per the above **Student** table, we have stored two different kind of informations i.e. Information realted to Student and Branch information of the student. Therefore, while ending of the academic year, if records of student are deleted, we will also lose the information related with there branch. This is known as delete anomaly.

Therefore for managing the above mentioned anomalies we need to follow the various rules associated with the database design, which is also known as Normalization.

**Normalization is the process which divided into the following heads or Normal Form(s):**

**First Normal Form (1NF)-** If we need a table to be in 1NF then we need to follow the below mentioned guideline(s).

- A field must be Atomic i.e. It should only have single value.
- Columns are from same domain.
- All columns must be of unique names.
- Order and sorting of data does not matter.

**Second Normal Form (2NF)-** If we need a table to be in 2NF then one need to follow the below guideline(s).

- Table should be in the 1NF i.e. First Normal form.
- It also need to be in Partial Dependency.

**Third Normal Form (3NF)-** A table is said to be in 3NF Third Normal Form then we need to follow the guideline(s).

- It must be in 2NF i.e. Second Normal form.
- Removal of Transitive Dependency.

**BCNF (Boyce Codd Normal Form)-** Boyce and Codd Normal Form is also known as strict form of 3NF. This form deals with the certain type of anomalies which cannot be handled by 3NF. A table is in BCNF, if it does not allow the overlapping of candidate keys then it is said to be in BCNF. For a table to be in BCNF, following rule(s) must be there

- Table or relation must be in 3rd Normal Form
- For each (FD)functional dependency ( X → Y ), X should be a super Key.

**Fourth Normal Form-** For a table to be in 4NF i.e. Fourth Normal Form then,

- It is in the BCNF(Boyce-Codd Normal Form).
- It doesn't have Multi-Valued Dependency (MVD).

**Fifth Normal Form-** Fifth Normal Form (5NF), also known as Project-Join Normal Form (PJNF),it is a level of normalizing the database designed which is use to reduce repetition in relational databases (RDBMS) by isolating semantically related multiple relationships.

## *3.6 ENTITY RELATIONSHIP DIAGRAM (ER-DIAGRAM)*

Entity-Relationship (ERD) Diagram is based on the notation of real-world entities and relationships between them. While describing the real-world scenario into the database model, the ER Diagram creates entity set, relationship set, general attributes and constraints. ER Model is mostly recommended to be used for the conceptual design of the database. ER Model is based on-

- Entities and their attributes.
- Relationships among various Entities.

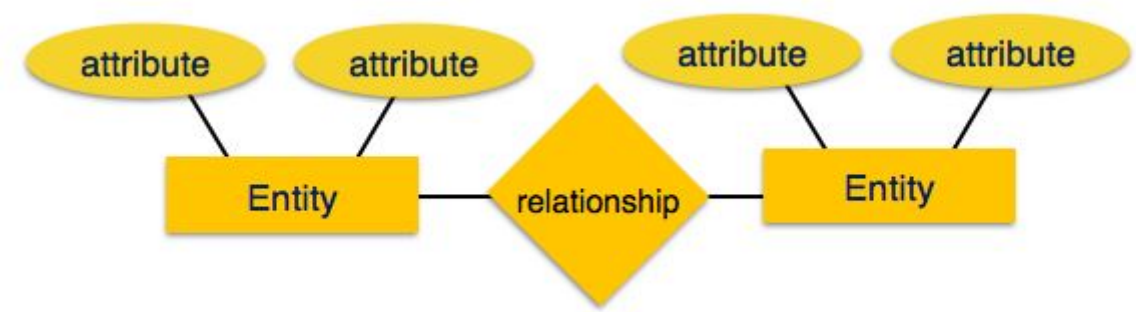



Figure 2- ER Model

**Entity-** An entity is an real-world object having properties known as an attributes. Every attribute is defined by a set of values known as domain. For example, in a college database, a student is considered as an entity. Whereas the student has various attributes like name, age, class, etc.

**Relationship-** The logical association between entities is known as relationship. Relationships are mapped with entities through various techniques. Mapping of cardinalities is defined as the number of association between two entities.

**Relationship is divided into the following type(s)-**

- **One to One-** When we are having relationship between two entities only then it is also known as one to one relationship.
- **One to Many-** When a single entity is connected with many entities then it is also known as One to Many relationship.
- **Many to One-** When an more than one entity is associated with a single entity then it is known as many to one.
- **Many to Many-** When more than one entities are associated with many entities then it is know as many to many.

## *3.7 INTRODUCTION TO SQL*

SQL stands for Structured Query Language. It is designed for the management of data in a relational database management system (RDBMS). It is pronounced as S-Q-L or sometime known as See-Qwell. SQL is a language of database, which is used for creating the database, deleting the database, fetching the records, and modifying the records etc.

The chapter will give you a quick start to SQL (Structured Query Language). It covers most of the contents required for a understanding the basics Structured Query Language and to get a experience of how it works. SQL is used with all the Relational Database Management Systems (RDMS) like MySQL, MS Access, Oracle, Sybase, Informix, Postgres and SQL Server use SQL as their standard database language. Some of the commonly used RDBMS/DBMs are mentioned below-

- MS SQL Server using T-SQL,
- Oracle using PL/SQL
- MS Access version of SQL is called JET SQL (native format) etc.

## *3.8 TYPES OF SQL*

The basic SQL commands which is use to interact with relational databases are CREATE, SELECT, INSERT, UPDATE, DELETE and DROP. These commands are classified into the following groups-

### [1] Data Definition Language (DDL)

DDL or Data Definition Language consists of the commands that can be used to describe the schema of the database. It simply deals with descriptions of the database schema and is specifically used to create and modify the structure of database objects in the database.

**CREATE-** Command is use to create the structure of the table/database.

Syntax [For creating the database]

Create database college;

Syntax [For creating the table]

```
CREATE TABLE table_name(
        column1 datatype,
        column2 datatype,
        column3 datatype,
        .....
        columnN datatype,
        PRIMARY KEY( one or more columns ));
```

Example:

```
create table student(roll int,name char(20),address char(20))
```

**ALTER-** The ALTER TABLE command is used to add, remove, or modify the columns in an existing table.It can also be used to add and drop various constraints (rules) on an existing table.

Syntax:

```
Use to add column in a table
ALTER TABLE table_name
ADD column_name datatype;
```

Example:

```
Alter table student add state char(20);
Use to drop the Column
ALTER TABLE table_name
DROP COLUMN column_name;
```

Example:

```
Alter table student drop column state
Use to modify the column
ALTER TABLE table_name
ALTER COLUMN column_name datatype;
```

Example:

```
 Alter table student
Alter column address char(10)
```

**DROP-** The DROP TABLE command is used to drop an existing table including data in a database.

Syntax:

```
Drop table table_name
```

Example:

```
Drop table student
```

## [2] Data ManipulationLanguage (DML)

The SQL commands that deals with the manipulation of data present in the database belong to DML or Data Manipulation Language and this includes most of the SQL statements.

**SELECT-** The SELECT command is used to select data from the table.

Syntax:

```
SELECT column1, column2, ...
FROM table_name;
```

Example:

```
Select * From Student;
        OR
Select Roll,Name From Student;
```

**INSERT-** The INSERT command is used to insert the new records in a table.

Syntax:

```
INSERT INTO table_name (column1, column2, column3, ...)
VALUES (value1, value2, value3, ...);
```

Example:

```
INSERT INTO student(roll,name,address) values(1,'ak','hld');
```

**UPDATE-** The UPDATE command is used to modify the existing records/data in a table.

Syntax:

```
UPDATE table_name
SET column1 = value1, column2 = value2, ...
WHERE condition;
```

Example:

```
UPDATE student
SET name="jk"
WHERE name="ak";
```

**DELETE-** The DELETE command is used to delete the existing data/record from the table.

Syntax:

```
DELETE FROM table_name
WHERE condition;
```

Example:

```
DELETE FROM student
WHERE name="ak";
```

## [3] Data Control Language (DCL)

DCL includes commands such as GRANT and REVOKE which mainly deals with the rights, permissions and other controls of the database system. Examples of DCL commands: GRANT-gives user's access privileges to database.

**GRANT-** SQL Grant command is specifically used to provide privileges to database objects for an user. This command also allows users to grant permissions for other users too.

Syntax:

```
GRANT privilege_name
ON object_name
TO {user_name |PUBLIC |role_name}
[WITH GRANT OPTION];
```

Example:

```
Grant create table to SCOTT;
```

**REVOKE-** The REVOKE command removes the user access rights or privileges to the database objects.

Syntax:

```
REVOKE privilege_name
ON object_name
FROM {user_name |PUBLIC |role_name}.
```

Example:

```
REVOKE CREATE table from scott;
```

## *3.9 POINTS TO REMEMBER*

- Database is use to store the contents.
- DBMS is a software which is use to manage the data in a database.
- SQL is a command use to work with a database.
- SQL is further classified as DDL, DML, and DCL.
- Create,alter and drop commands belong to DDL category.
- Select, Insert, Update and Delete commands belong to DML category.
- Grant and Revoke command Belongs to DCL category.
- ORACLE, MSQL and MS-Acess are some common RDBMS.
- ERD- (Entity Relationship Diagram)
- ER Diagram is use to represent our database logically.
- Normalization is a process use to reduce the redundancy.
- Data Models are use to show the physical representation of our database.

## *3.10 GLOSSARY*

- DBMS: Database Management System
- RDBMS: Relational Database Management System
- ER: Entity Relationship Diagram
- DDL: Data Definition Language
- DML: Data Manipulation Language

- DCL: Data Control Language
- SQL: Strucutred Query Language
- PL: Procedural Language
- NF: Normal Form
- BCNF: Boyce Codd Normal Form.

## *3.11 CHECK YOUR PROGRESS*

**Descriptive Type Questions-**

a) Define Database.
b) Illustrate all the available RDBMS.
c) Compare traditional system with DBMS.
d) Discuss SQL and its classification.
e) Design a table college with following attributes: College_Id, College_Name, College_Address.
f) Define Normalization and its types.

**Objective Type Questions-**

a) RDBMS allows relationship between tables [T/F]
b) Normalization is a progressive process [T/F]
c) BCNF is also knownas 3.5 Normal Form [T/F]
d) One cannot remove repetition through Normalization [T/F]
e) -------- NF is use to remove transitive dependency.
f) --------- is an open source RDBMS.

**Answer (Objective Type Question)-**

| | | |
|---|---|---|
| [a] True | [b] True | [c] True |
| [d] False | [e] 3NF | [f] MySQL |

## *3.12 BIBLIOGRAPHY/ REFERENCES*


- https://www.w3schools.com/sql/sql_update.asp
- https://beginner-sql-tutorial.com/sql-grant-revoke-privileges-roles.htm
- https://www.guru99.com
- https://www.javatpoint.com/dbms-tutorial


## *3.13 SUGGESTED READINGS*


- https://examupdates.in/database-management-system/#Database-Management-System-Pdf-Notes
- https://www.tutorialspoint.com/
- https://docs.oracle.com/cd/E11882_01/server.112/e40540/intro.htm

# UNIT- 4

# INTRODUCTION TO TEXT EDITOR (MS WORD)- II



## *4.1 INTRODUCTION*

Word processing means creating or manipulating text documents using some word processing computer applications in presentable and effective manner. Manual documentation has so many constraints like once a document is created it cannot be modified. We cannot apply different text formats to make an attractive document. Such documents cannot be saved for later use and multiple original copies cannot be created. But all these problems and lot more can be easily handled in computer using a word processor. Using these, we not just only create the attractive and presentable documents, but also modify them with the required change and can print the hardcopy when needed. They provide various other tools like spell checker, mail merge, tables, etc., to handle many other typical

documentation problems. Commonly used word processors are Microsoft Word, Google Docs, WordPad, Apache OpenOffice writer, etc.

## *4.2 OBJECTIVES*

After going through this unit, you will be able to:

- Explore the new features of Word 2010
- Use Bullet and Numbering in MS Word 2010
- Describe how to create Table
- Describe ways of adding and editing text in MS Word 2010

## *4.3 INTRODUCTION TO MICROSOFT WORD 2010*

Microsoft Word 2010 is one of the word processing component of Microsoft Office 2010 Suite used for creating, editing, formatting or printing the text document. Using this you can create high quality text documents like letters, reports, books, etc. The powerful features of Microsoft Word 2010 makes it one of the most widely used word processing software.

**Starting Microsoft Word 2010**

To start Microsoft Word 2010

Step 1: Click on Start button
Step 2: Choose All Programs
Step 3: Click on Microsoft Office option
Step 4: Click Microsoft Word 2010 option in the expanded list.

## *4.4 BULLET AND NUMBERING*

Information in a Word document is stored in the form of pages. So before you start typing anything in your document, it is necessary to set the page format like its size, margins, orientation, etc. so that we can get the document output in the desired manner. Although these settings can be modified anytime even after typing your document, but that will lead to the change in adjustment of document contents.

### Creating Lists-

Bullets on numbers make a list look attractive and legible. A Bulleted list has a dot, circle or any other symbol to identify the items in the list. A numbered list has a number or a letter to identify the items in the list. Word 2010 offers another powerful features which is used to automatically create the ordered or unordered list of items in the document. An ordered or number list is the one in which the items get automatically numbered when they are entered and in unordered list, items get marked with a specific symbol every time when a new item is added.

**Creating A Bulleted List**

Step 1: Type the items of the list and select them.

Step 2: On the Home tab, click on the drop-down arrow of bullets option in the paragraph group.

Step 3: Click a bullet style from the list that appears.

**Creating A Numbered List**

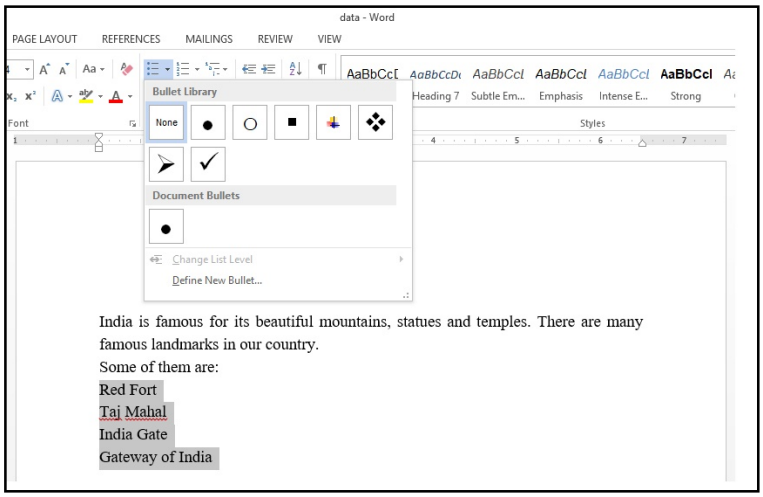
Step 1: Type the items of the list and select them.

Step 2: On the Home tab, click on the drop-down arrow of numbering option in the paragraph group.

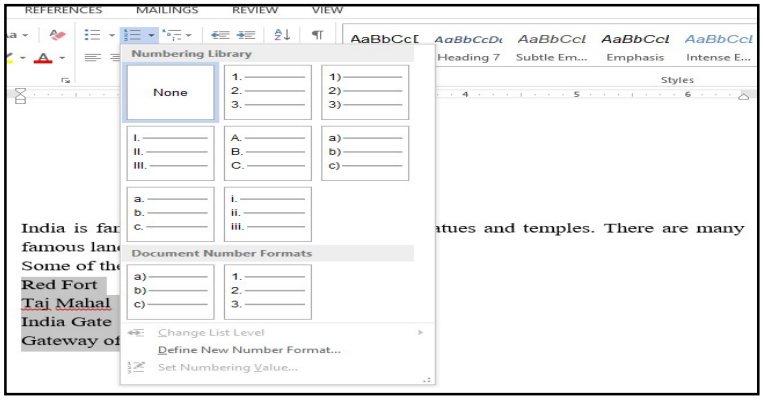
Step 3: Click a number style from the list that appears.

## *4.5 UNDO AND REDO*

Correcting a typo in Microsoft Word is one of the easiest and most useful functions to access.




There are two ways to do so- Via Keyboard shortcut, and Via menu control




**Via Keyboard shortcut**

Undo Keyboard Shortcut- The Undo command undoes anything you do in Word, which includes formatting text, moving blocks, typing and deleting text. Undo a mistake you have made, simply press Ctrl + Z on your keyboard. The last thing you edited will be undone.

Redo Keyboard Shortcut- Use the Redo command to set things back to the way they were. If you have undone three edits and you press Ctrl + Y, word will redo the earliest undone action.

**Via Menu Control**

The other option to use the undo and redo functions in word is via the top menu bar. You will see two arrows- a back one and a forward one.

## *4.6 WORKING WITH FONTS*

Formatting means making the document attractive and presentable. It helps to enhance the appearance of your document to make it more effective and easily readable. The tools available in Font group are:

- Font is used to change the style and shape of the characters.
- Font Size is used to change the size of the characters.
- Font Color is used to change the text color.
- Bold is used make text darker.
- Italic is used to make text slanted towards right.
- Underline is used to put a line under text.
- Text Highlight Color is used to highlight text in our document.
- Change Case is used to change the case of the selected text without typing again.
- Various text properties that can be set using Font group.

**Changing Font**- Font is the style and shape of the letters of the text. Some of the fonts in Word 2010 are: Calibri, Arial, Times New Roman, Comic Sans MS, Monotype Corsiva, Bradley Hand ITC, etc.

**To change font-**

Step 1: Select the text to change the font.
Step 2: On the Home tab, click on the drop-down arrow of the Font option in the Font group.
Step 3: Click a font style from the list to apply it.

**Changing Font Size-** Font size is the size of the characters of text.

Step 1: Select the text to change the font size.
Step 2: On the Home tab, click on the drop-down arrow of the Font Size option in the Font group.
Step 3: Click a font size from the list to apply it.

**Changing Font Color-**

Step 1: Select the text to change the color.

Step 2: On the Home tab, click on the drop-down arrow of the Font Color option in the Font group.
Step 3: Click a color from the list to apply it.

**Typing Superscript and Subscript-**

The text that appears above the normal text level is called superscript text. The text that appears below the normal text level is called subscript text.

For example, in $O^2$ and $O_2$, 2 is the superscript and subscript, respectively.
Step 1: Select the text to change it to superscript or subscript.
Step 2: From the Home tab, click on superscript or subscript in the Clipboard group.

**Making text Bold, Italic, Underline-**

Bold means darker text. Italic means text slanted towards the right. Underline means a line under the text.

***Making text Bold***
Step 1: Select the text you want to make bold.
Step 2: On the Home tab, click on Bold option in the Font group.
***Making text Italic***
Step 1: Select the text you want to make italic.
Step 2: On the Home tab, click on Italic option in the Font group.
***Underlining text***
Step 1: Select the text you want to make underline.
Step 2: On the Home tab, click on Underline option in the Font group.
***Highlighting Text:*** We can highlight the text in our document just like we highlight with a marker pen.
Step 1: Select the text to highlight.
Step 2: On the Home tab, click on the drop down arrow of the Text Highlight Color option in the Font group. A color palette appears.
Step 3: Click the color you want to apply.

**Changing Case-**

The Change Case command is used to change the case of the selected text without typing again. There are five change case options in Word.

- ✓ Sentence Case: This changes all the selected letters of the sentence to lowercase except the first letter. The first letter remains capital.
- ✓ Lowercase: This changes all the selected letters to small case.
- ✓ Capitalize Each Word: This changes the first letter of each word to capital.
- ✓ Uppercase: This changes all the selected letters to capital.

- ✓ tOGGLE cASE: This reverse the case of every letter. The letters in small are converted to capital and the letters in capital are converted to small.

To change the case of text:

Step 1: Select the text.
Step 2: On the Home tab, click on the Change Case option in the Font group.
Step 3: Click an option from the list of options.

## *4.7 PAGE BREAK*

Word automatically inserts a page break when you reach the end of a page. If you want the page to break in a different place, you can insert a manual page break. Or you can setup rules for Word to follow so that the automatic page breaks are placed where you want them. This is especially helpful if you are working in a long document. As adding breaks to your document can make it appear more organized and can improve the flow of text.

**Breaks in Word**

To insert a blank line between two existing lines, we place the cursor at the end of the line after which we want to insert a blank line and press the Enter key.

**Page Break**

Page break allows us to move text to the next page before reaching the end of a page. Word 2010 automatically inserts a page break when you reach the end of the document. However, we can choose to add manual page break as per our requirements. Words offers three page break options- Page Break, Text Wrapping and Column Break.

**Page**

To insert a page break:
Step 1: Click where you want to start a new page.
Step 2: Click on Breaks and choose Page Option in the Page setup group in Page Layout tab.
The page break will be applied to the document, and the text will move to the next page.

**Column**

Column break is used when you wish to divide your document into multiple columns. It splits the text into columns. By using column breaks, you can move to the next column. This command works only when we have formatted the text in columns using the Column option in the Page Layout tab. A column break can be applied to balance the appearance of the columns.

Step 1: Click the location where you want to start a column break.
Step 2: Click on Page layout tab.
Step 3: Click on Breaks and choose Column option. The content gets shifted to the next column.

**Text Wrapping**

When text has been wrapped around an image or object, you can use a text wrapping break to end the wrapping and begin typing on the line below the image.
Step 1: Click the location where you want to start a column break.
Step 2: Click on Page layout tab.
Step 3: Click on Breaks and choose Text wrapping option. The content gets shifted to the next column.

## *4.8 HEADER AND FOOTER*

A Header or footer is text or graphics that is usually printed at the top or bottom of every page in a document. A header is printed in the top margin and footer is printed in the bottom margin. The area where the header and footer content are placed is called the Header and Footer workspace.

The workspace uses a layer of the document that is separate from the main body and behaves differently than the documents main content. After the header or footer is inserted the areas become active and can be edited. They are tagged with Header or Footer and are marked with a dashed line. Any content in the header or footer area will appear and print on every page.

**Inserting Header or Footer**

Header and footer display information, such as page number, author's names and date.
To insert header/footer:
Step 1: Click on Insert tab
Step 2: From the header and footer group, click on header or footer. A Gallery appears.
Step 3: Choose a header style or footer style. Now, type the text you want at the top or bottom of each page respectively
Step 4: Click on the close header and footer from the closed group in the design tab
Or
Double click in the document area

**Editing Header or Footer**

To edit header/ footer
Step 1: Click on insert tab
Step 2: Click header from the header and footer group. A Drop menu appears.
Step 3: Select edit header option. The header area will get activated.
Step 4: Now, modify and edit the header using the design tab. Following are some useful special items you can insert into a header.

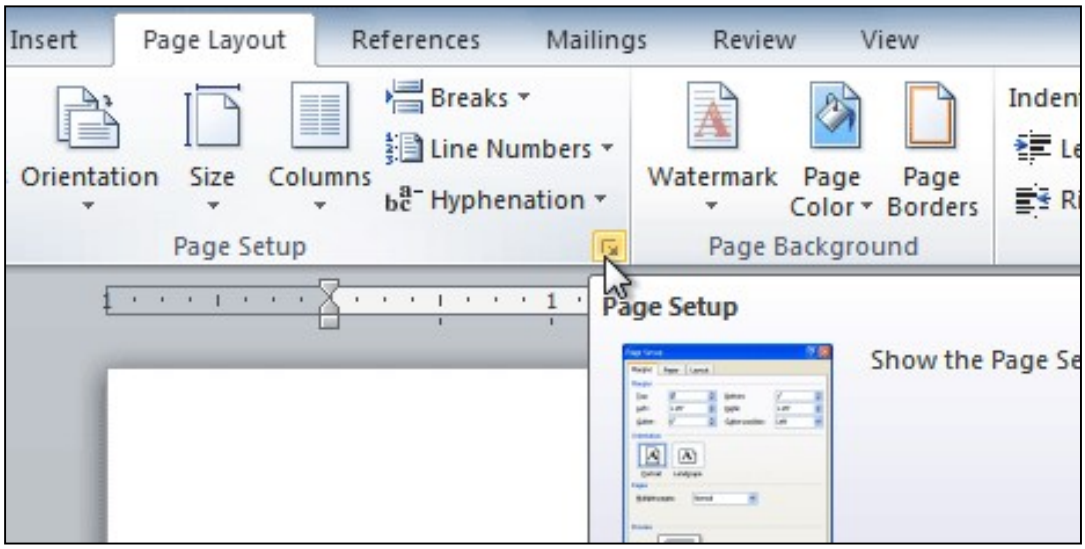
- ✓ Page Number: Click page number from the header and footer group and select the location for the page number.
- ✓ Date & Time: Click date and time from the Insert group. The date and time dialogue box appears. Select date format of your choice and click ok button.

- ✓ Graphic: Click Picture /Clip Art from the insert group to insert graphics in the header.

## *4.9 PAGE SETUP*

The page setup are the parameters defined by the user that help determine how a printed page appears. Those parameters can include everything from the size, margins, page orientation, and quality of print. More plainly, it's a menu that allows users to customize the size and layout of a page.

1. Click the Page Layout tab.
2. Click the small arrow in the bottom-right corner of the Page Setup group.
   The Page Setup dialog box will appear.




## *4.10 HANDLING TABLES IN MS WORD*

### Creating Table-

Tables are used to organise the information in the form of rows and columns. Rows and columns intersect each other to form rectangular blocks called cells.

**Creating Tables**

Word 2010 offers different methods to create tables in your document. Let us learn three of them.

**Method 1**

Step 1: Click on Insert tab

Step 2: Click on table from the tables group. A grid of cells will appear.

Step 3: Move the pointer across the grid to select rows and columns. Click in the last cell of the selected grid of cells to get the table.

**Method 2**

Step 1: Click on insert tab

Step 2: Click on table from the tables group

Step 3: Select insert table option. The Insert table dialogue box will appear on the screen.
Step 4: Enter the number of rows and columns required in the table.
Step 5: Click on Ok button to get your table at the insertion point.

**Method 3**

Another way to create table is by drawing it manually as need it used in draw table tool:
Step 1: Use Draw Table option in the Table expanded list as the mouse pointer will turn to a pen shape.
Step 2: Drag the pointer diagonally on the document to draw the outer border of the table.
Step3: Now using the same tool draw horizontal and vertical lines in the box to divide it in the required number of rows and columns.

## Deleting Table-

There is a very quick way to delete a table in Word 2010, that doesn't even involve selecting the table first. Place the cursor in a cell in the table and notice that the Table Tools contextual tab appears in ribbon.
Click Layout > Rows & Columns > Delete > Delete Table.
Doing this removes the table from your document.

## *Moving Across The Table Cells-*

You can use Mouse or keyboard keys to move across the table cells for data entry.

- ✓ Press Tab key or use Right Arrow key to move forward in the next cell.
- ✓ To move in the backward direction along the row press Shift + Tab or Left Arrow key.
- ✓ Use Up or Down arrow key to move upward or downward in a Column.
- ✓ You can also click directly in a cell to enter or edit cell value

## Selecting Table Cell, Row And Column-

**Selecting cells**

You can select multiple cells, rows and columns in a table to edit or format them together.

**Selecting a single cell**

Triple click inside the cell to select the cell.

**Selecting all the cells in a row**

Keep the mouse pointer in front of the row towards the left edge and click the left mouse button. The entire row will be selected.

**Selecting all the cells in a column**

Keep the mouse pointer at the top of the column. The pointer turns to a downward arrow. Click the left mouse button to select the entire column.

## Entering And Deleting Data-

**Entering data:**

After creating your table, to enter data values in the table cells:

- Click in the cell where you want to enter the data. A blinking cursor will appear in it.

- Type the cell information.
- Use arrow keys to move into the next cell.

Or

- Click in the cell where information is to be inserted.
- Continue like this till all the data values are entered in the table.

**Deleting Data:**

- Select the data you want to delete
- Press the delete key from the keyboard.
- Cell data will be removed from the table.

Or

- Move the cursor at end of data that you want to delete the data
- Press the Backspace key from the keyboard.
- Cell data will be removed from the table.

## Inserting And Deleting Columns And Rows-

**Inserting Rows or Columns**

Sometimes, you need to add more columns and rows in a table.

**Inserting a new column**

Step 1: Select cell where you want to insert a new column and click on Layout tab.

Step 2: Click on Insert Left or Insert Right in the Rows and Column group.

**Inserting a new Row**

Step 1: Select cell where you want to insert a new row and click on Layout Tab.

Step 2: Click on insert above or insert below as needed in the rows and columns group to get a new blank row in the table.

**Deleting Rows or Columns**

You can also remove the rows or columns that are no more needed in a table.

Step 1: Select the cell whose row or column is to be deleted.

Step 2: Click on the Layout Tab.

Step 3: Click on delete option in the rows and columns group.

Step 4: Select an option- Delete Rows or Delete columns. The entire row or column get deleted.

## Merging And Spilitting Cells-

**Merging table cells**

If you want to show some data value in a table which is spread across two or more cells, you can merge them to form a single cell. The cells can be merged horizontally across the row or vertical across the column.

Step 1: Select the adjacent cells which are to be merged.

Step 2: Choose the Layout Tab and click on Merge Cells option on the Merge group.

The selected cells will merge to form a single large cell

**Splitting table cells**

Just as you can merge two or more cells to form a single large cell, you can also split a cell into two or more cells to store multiple values in them.

Step 1: Select the cell that has to be split

Step 2: Choose the Layout Tab and click on Split Cells option in it. The Split cells dialog box will appear

Step 3: Enter the number of rows and columns in which the cells is to be splitted.

Step 4: Click on Ok button

## *4.11 POINTS TO REMEMBER*

- Microsoft Word 2010 is a word processing program, designed to help you create professional quality documents.
- With the finest document formatting tools, word helps you organise and write your document more efficiently. Word also includes powerful editing and revising tools so that you can collaborate with others easily.
- We have learnt how to create our own documents, open existing documents and finally save them before closing. The standard toolbar and the formatting toolbar offer a variety of buttons which offer a quick service to the user.
- Text can also be justified between the margins. Proper line spacing can be given in between the printed lines. Text entries separated by commas can be put in the bulleted or numbered form. This makes the major heads clearly readable and long remembered.
- Word document generally contain paragraphs with different formatting. Even a very simple document with a centered heading and a justified body contains paragraph with two different types of formatting.

## *4.12 GLOSSARY*

- Word processing means creating or manipulating text documents using some word processing computer applications in presentable and effective manner.
- A Bulleted list has a dot, circle or any other symbol to identify the items in the list.
- A numbered list has a number or a letter to identify the items in the list.
- The Undo command undoes anything you do in Word, which includes formatting text, moving blocks, typing and deleting text.
- Use the Redo command to set things back to the way they were.
- Formatting means making the document attractive and presentable. It helps to enhance the appearance of your document to make it more effective and easily readable.

- Page break allows us to move text to the next page before reaching the end of a page.
- A Header or footer is text or graphics that is usually printed at the top or bottom of every page in a document.
- The page setup are the parameters defined by the user that help determine how a printed page appears.
- Tables are used to organise the information in the form of rows and columns. Rows and columns intersect each other to form rectangular blocks called cells.

## *4.13 CHECK YOUR PROGRESS*

### Descriptive type questions-

**a)** What is Word Processor?
**b)** Write a short note on Header and Footer in Word.
**c)** Write a short note on Page Break?
**d)** What is font? How can you change the font size?
**e)** Write the steps involved in creating a Bulleted list.
**f)** How will you create a Numbered List?
**g)** Define a Table? What are the steps to create and delete a table?
**h)** Write to steps to insert a table in MS Word.
**i)** Write to steps to merging and splitting cells.
**j)** Difference between superscript and subscript.

### Objective type questions-

**a)** Font is used to change the style and shape of the characters. (True/False)
**b)** Italic is used to make text slanted towards right. (True/False)
**c)** Change Case is used to change the case of the selected text typing again and again. (True/False)
**d)** Rows and columns intersect each other to form rectangular blocks called table. (True/False)
**e)** A header is printed in the top margin and footer is printed in the bottom margin. (True/False)
**f)** Column break is used when you wish to divide your document into single columns. (True/False)
**g)** …… on numbers make a list look attractive and legible.
**h)** …… display information, such as page number, author's names and date.
**i)** You can use a ……..break to end the wrapping and begin typing on the line below the image.
**j)** …….. allows us to move text to the next page before reaching the end of a page.

**Answer (Objective Type Question)-**

| | | | |
|---|---|---|---|
| [a] True | [b] True | [c] False | [d] False |
| [e] True | [f] False | [g] Bullets | [h] Header and footer |
| [i] text wrapping | [j] Page break | | |

## *4.14 BIBLIOGRAPHY/ REFERENCES*


- J.K. Shahjahan, MS Office2010, Excel Books
- Sanjeev Gupta and Shameena Gupta, Computer Aided Management (Using MS-Office 2010 Tools), Excel Books
- Information Technology Vocational, Educational Publishers


## *4.15 SUGGESTED READINGS*


- Word for Beginners by M.L. Humphrey
- The art of invisibility by Kevin Mitnick
- Microsoft Office 2016 Rapid Edition, Word, Excel, PowerPoint, Access Rapid Editors

# UNIT- 5

# INTRODUCTION TO SPREADSHEET (MS EXCEL)- II



## *5.1 INTRODUCTION*

Data analysis, calculations, decision making are some of the important jobs in today's competitive world of business. Organised representations of data, Complex calculations, statistical analysis, comparisons, graphical representation of data are the jobs which are frequently performed in the large organisations and Institutions to manage their operations. But carrying out all such jobs manually is not only tedious and time consuming but also error-prone.

Electronics spreadsheet are the computerized solutions of all such problems. In these spreadsheets, data can be stored easily in the tabular form and all type of calculations, analysis, etc. can easily be performed very quickly and accurately. Various electronic spreadsheet programs are available to choose from like Apache Google Sheets, OpenOffice calc, Quattro Pro, Lotus 123, Microsoft Excel, etc.

## 5.2 OBJECTIVES

After the successful completion of this unit, you will be able to-

- Define the importance of spreadsheet
- Explore Formula and functions
- Explore the Analysing data

## 5.3 INTRODUCTION TO MICROSOFT EXCEL 2010

Excel 2010 is an electronic spreadsheet program. It is the spreadsheet component of Microsoft Office 2010 suite, which is one of the most widely used application software for data analysis. Microsoft Excel allows to store data in the form of rows and columns. Both number or text type of data values can be used in the worksheet on which you can perform different type of operations using built in functions or with the help of user defined formulas.

**Starting Excel 2010**

To start Excel 2010, follow the steps given below

Step 1: Click on the Start button.
Step 2: Click on All Programs.
Step 3: Click on Microsoft Office
Step 4: Click on Microsoft Excel 2010

## 5.4 COMPONENTS OF SPREADSHEET PROGRAM

**Workbook:** An Excel document is known as workbook which is basic excel file saved with .xlsx extension. It is a collection of multiple worksheets. There are 3 worksheets by default in a workbook, but you can always add or Delete worksheets as per your need.

**Worksheet:** Worksheet is like an individual page of the workbook having grid of cells formed by the intersection of rows and columns. The 3 worksheets are named as sheet 1, sheet 2, sheet 3 by default which can be changed if needed.

**Rows**: Rows forms the horizontal sections of the worksheet which are arranged vertically from top to bottom. There are 1,048,576 rows in a single excel worksheet. Excel worksheet and are identified by the numbers 1 to 1,048,576.

**Columns**: Columns forms the vertical section of the worksheet which runs horizontally from left to right. There are 16,384 columns in a worksheet represented with the labels A, B, C…….... upto XFD.

**Cell:** A small rectangular box formed by the intersection of a row and a column is called cell.

**Formula Bar:** It displays the contents of the current cell. It also used to create and view formulas.

## 5.5 WORKING WITH FUNCTIONS AND FORMULAS

**Basic Calculations in Excel**

Excel has a powerful feature to perform calculations on the data. We can perform addition, subtraction, multiplication and decision of numbers either using formulas or using functions.

**Formulas**

A formula in Excel is an expression made up of data value or the cell references of the cells containing data values along with the mathematical operations. These operators are used along with the operands that can be the constant or cell references of the values to be used for calculations. Every formula in Excel begins with "=" sign. Various arithmetical operators that are used in the formula are:

=A1 + B1 - C1

Where A1, B1, C1 are Operands (Cell Addresses)

**Creating Formulas using Fixed Values**

We can use the numbers directly in the formula as fixed values. For example, if you want to add two numbers say 100 and 200.

Step 1: Select the cell where result is to be displayed and click in it.

Step 2: Enter the formula =100+200 and press enter key or click button on the Formula Bar. The result 300 will appear in the selected cell.

**Creating Formulas using Cell Address**

Look at the cells.

| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | **Product** | **Rate** | **Qty** | **Amount** | | | | |
| 2 | T.V | 25000 | 2 | | | | | |
| 3 | Toaster | 8000 | 4 | | | | | |
| 4 | Mobile Phone | 32000 | 7 | | | | | |
| 5 | AC | 18000 | 1 | | | | | |
| 6 | | | | | | | | |

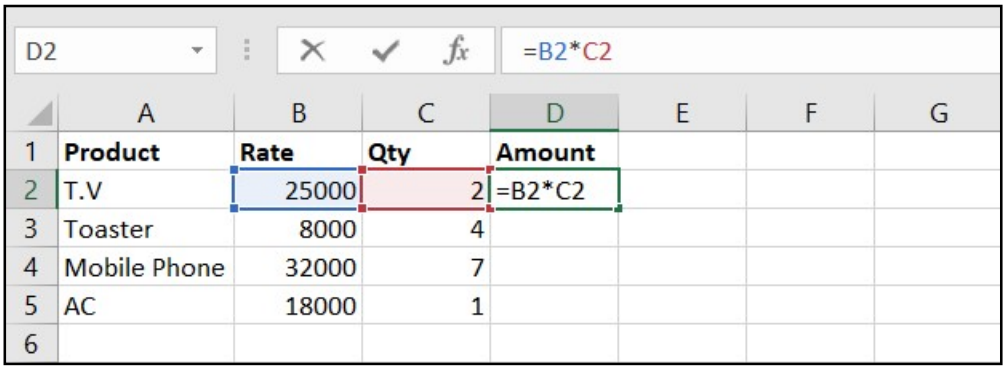
To find amount of a product:

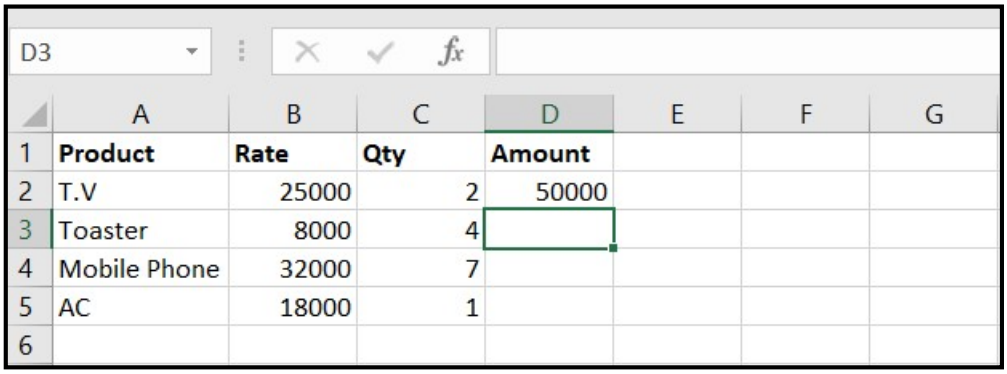
Step 1: Click in the cell D5 and type = (equal to) sign

Step 2: Click in the cell B2.

Step 3: Now type and then click on the cell D2

Step 4: Click on Enter button on the formula bar. The result will appear in cell E2.





D3

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | **Product** | **Rate** | **Qty** | **Amount** | | | |
| 2 | T.V | 25000 | 2 | 50000 | | | |
| 3 | Toaster | 8000 | 4 | | | | |
| 4 | Mobile Phone | 32000 | 7 | | | | |
| 5 | AC | 18000 | 1 | | | | |
| 6 | | | | | | | |

**Types of Formulas**

Let us learn some simple ways of using a formula.

In Excel each cell can contain a calculation. In Excel terminology, it is called formula. Each cell can contain one formula. When you enter a formula in a cell, Excel calculates the result of that formula and displays the result of that calculation to you. Excel uses standard operators of formula, such as plus sign for addition (+), a minus sign for subtraction (-), an asterisk for multiplication (*), forward slash for division (/) and a caret (^) for exponents.

All formulas in Excel must begin with an equal sign (=). This is because the cell contains or is equal to the formula and the value it calculates. There are two types of formulas- Simple and Compound formulas.

**Simple Formulas**

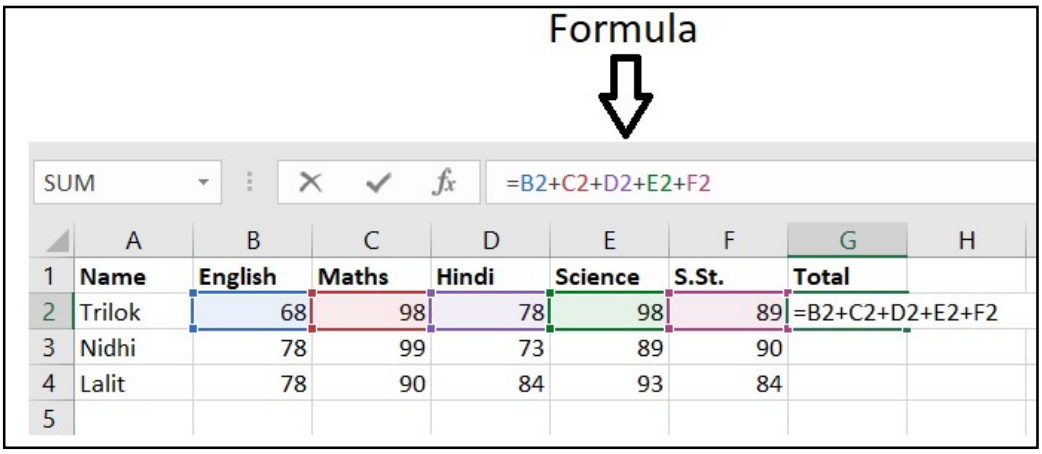
Basic formulas involve only one operator in a formula. Here is an example to understand this well. To calculate the sum of two numbers, follow these steps:

Suppose you want to calculate the total marks of student. To enter formula, use the given steps:

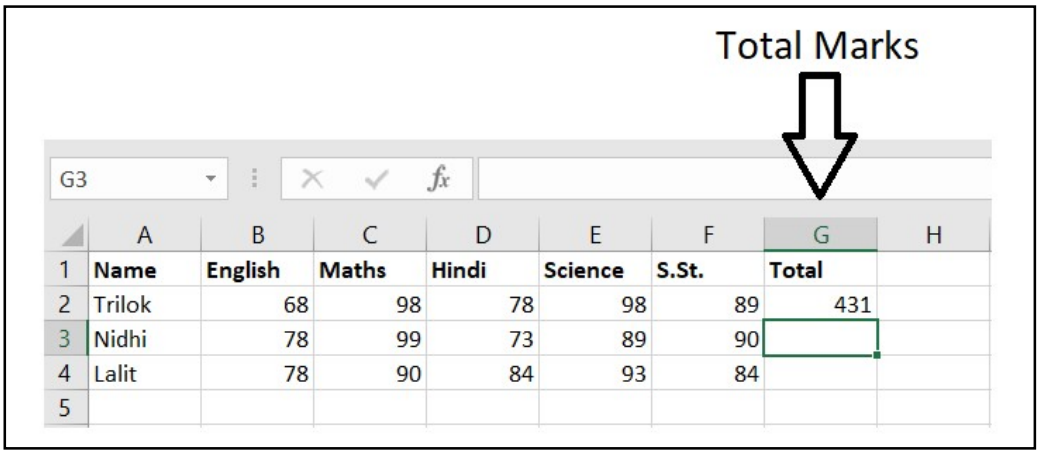
Step 1: Click in the cell where you want to display the total. For example, G2.

Step 2: Type the formula=B2 + C2 + D2 + E2 + F2

Step 3: Press Enter Key. The total gets displayed in the cell.




| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | **Name** | **English** | **Maths** | **Hindi** | **Science** | **S.St.** | **Total** | |
| 2 | Trilok | 68 | 98 | 78 | 98 | 89 | =B2+C2+D2+E2+F2 | |
| 3 | Nidhi | 78 | 99 | 73 | 89 | 90 | | |
| 4 | Lalit | 78 | 90 | 84 | 93 | 84 | | |
| 5 | | | | | | | | |




## Compound Formulas

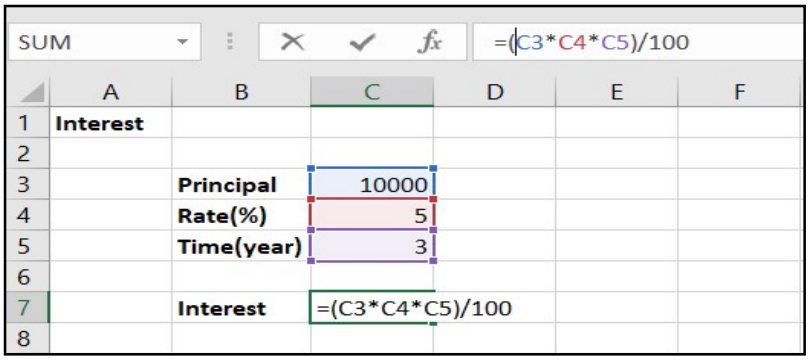
Compound formulas are used when you need more than one operator.

To calculate the Simple Interest (Principal x Rate x Time) / 100), follow these steps:

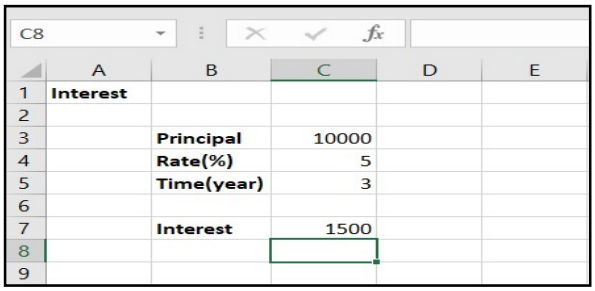
Step 1: Type the content in the worksheet.

Step 2: Click on C6 (Where the result of the formula is to be displayed)

Step 3: Here, type= (C3*C4*C5)/100




Step 4: Press Enter Key and the result will be displayed.




## Functions in Excel 2010

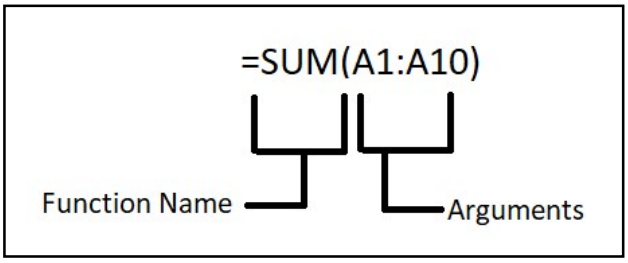
Functions are the predefined formulas used to perform complex calculations and analysis. These functions can be used in excel worksheet with the help of their name along with the arguments in the form of cell references, ranges or values, which appear between parenthesis next to the function name. for example, a simple mathematical function to calculate the sum of multiple cell values can be used as:

The above function will show the sum of values stored in cell range A1 to a10.

Some of the commonly used function in Excel are:

## 1) SUM ()

SUM function is used for summing up the values in a given cell range. The syntax of using




this function is:

=SUM (Argument1, Argument2 …….)

Where SUM is the name of function and arguments can be the cell reference, cell range or fixed values. Multiple arguments can be used by separated by comma (,) operator.

For example, =SUM (A1, A2, A3) [use of multiple cell address]

Or =SUM (A1:A10, B1:B10) [use of cell range]

Or =SUM (10,5,4) [use of constant values]

## 2) AVERAGE ()

This function is used to calculate the average or mean of the series of numbers in a cell range. The syntax of using this function is:

=AVERAGE (Argument1, Argument2 …….)

Where AVERAGE is the name of function and arguments can be the cell reference, cell range or constants.

For example, =AVERAGE (A1: A10)

Or = AVERAGE (A1, A5, A10)

Or = AVERAGE (10,15,60,80)

## 3) MAX ()

This function is used to find the largest values in a series of numbers. The syntax of using this function is:

=MAX (Argument1, Argument2 …….)

Where MAX is the name of function and arguments can be the cell reference, cell range or constants.

For example, = MAX (A1: A10) will return the largest number value among the number stored in the range of A1 to A10.

= MAX (10,15,60,80) will return 80 being the largest among these four numbers.

## 4) MIN ()

This function is used to find the smallest values in a series of numbers. The syntax of using this function is:

=MIN (Argument1, Argument2 …….)

Where MIN is the name of function and arguments can be the cell reference, cell range or constants.

For example, = MIN (A1: A10) will return the smallest number value among the number stored in the range of A1 to A10.

= MIN (10,15,60,80) will return 10 being the smallest among these four numbers.

### 5) IF ()

This is a logical function which evaluates a logical expression for its truthness and returns a value among the two options. The syntax of using this function is:

=IF (Condition test, True_value, False_value)

In this, IF is the name of function and conditional test is the logical expression to be tested for its truthiness. True_value is the value returned in case expression evaluates to TRUE and False_value is the value returned if the condition stands False in the expression.

For example, = IF (A10>10, 1, 2)

In this statement, if the value in cell A10 will be less than or equal to 10 it will return 2 as a result where as if the value will be more than 10 the value returned will be 1.

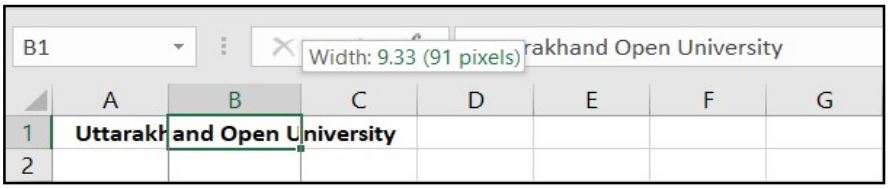
## *5.6 MODIFYING WORKSHEETS WITH COLOR*

**Working with columns, rows, and cells**

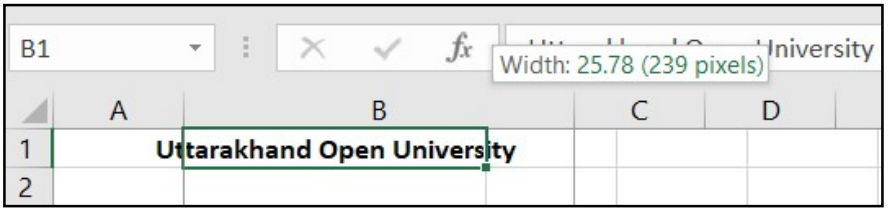
By default, every row and column of a new workbook is set to the same **height** and **width**. Excel allows you to modify column width and row height in different ways.

**To modify column width:**

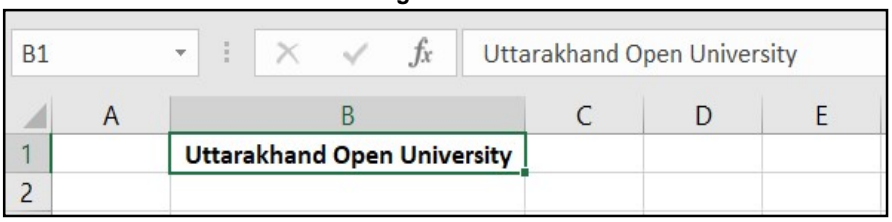
1. Position your mouse over the **column line** in the **column heading** so the **white cross** becomes a **double arrow**   .




**Click and drag the column** to the right to increase column width or to the left to decrease column width.



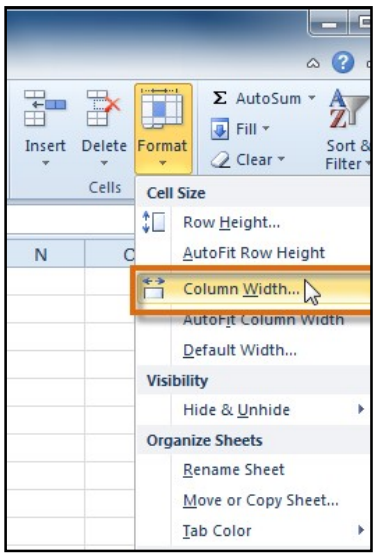

2. Release the mouse. The column width will be changed in your spreadsheet.




If you see **pound signs** (#######) in a cell, it means the column is not wide enough to display the cell content. Simply **increase the column width** to show the cell content.

**To set column width with a specific measurement:**

1. Select the columns you want to modify.
2. Click the **Format** command on the **Home** tab. The format drop-down menu appears.
3. Select **Column Width**.
4. The **Column Width** dialog box appears. Enter a specific measurement.



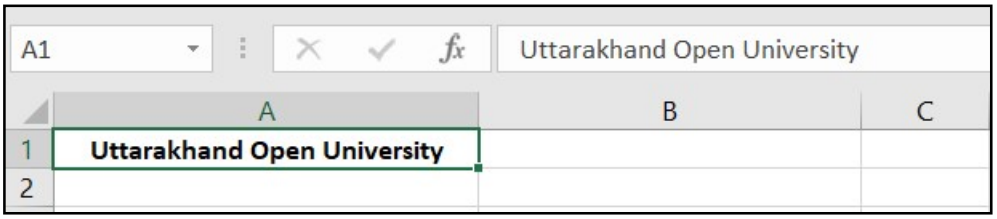

Click **OK**. The width of each selected column will be changed in your worksheet.

Select **AutoFit Column Width** from the format drop-down menu, and Excel will automatically adjust each selected column so all of the text will fit.

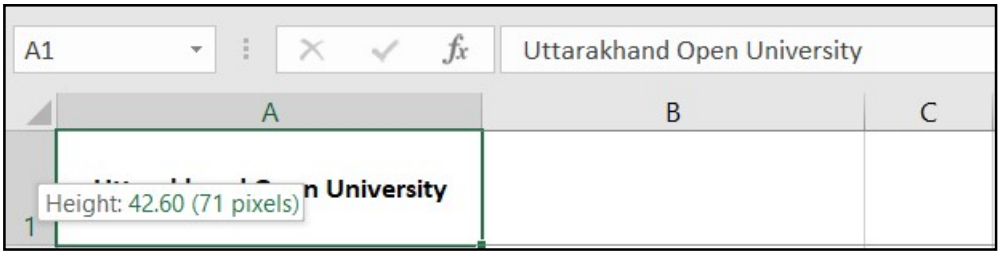
**To modify row height:**

Position your mouse over the **row line** so the **white cross** becomes a **double arrow** .


**Click and drag the row** downward to increase row height or upward to decrease height.



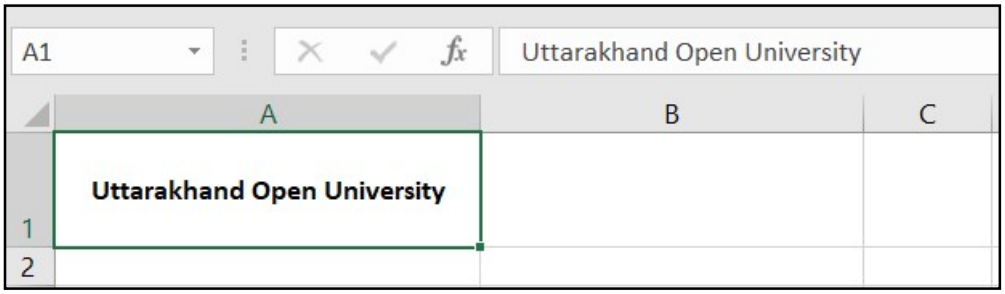

Release the mouse. The height of each selected row will be changed in your worksheet.



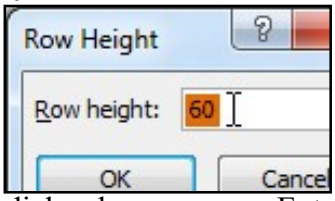

**To set row height with a specific measurement:**

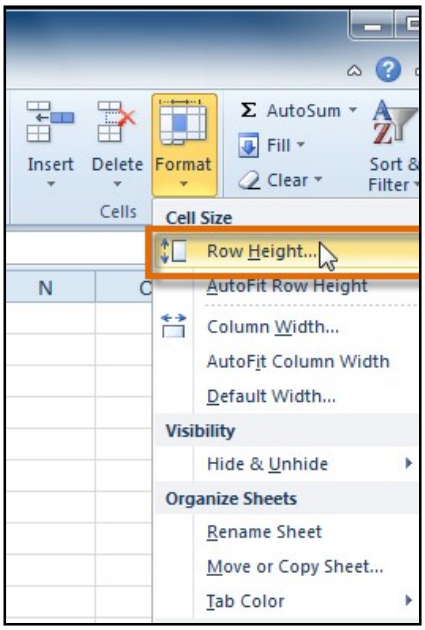
1. Select the rows you want to modify.

2. Click the **Format** command on the **Home** tab. The format drop-down menu appears.




3. Select **Row Height**.



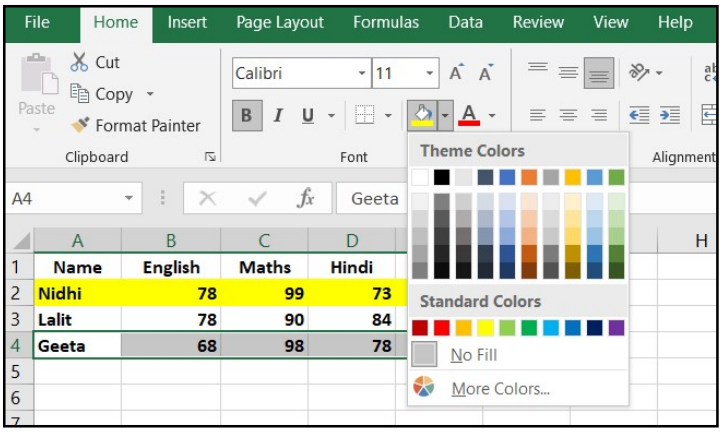

4. The **Row Height** dialog box appears. Enter a specific measurement.

5. Click **OK**. The selected rows heights will be changed in your spreadsheet.

Select **AutoFit Row Height** from the format drop-down menu, and Excel will automatically adjust each selected row so all of the text will fit.

**MODIFYING WORKSHEETS WITH COLOR**

Step 1: Select the row or column you want to change the color.




Step 2: Click on the fill color option

Step 3: Select the Theme color, you want to fill in the row or column.

## 5.7 ANALYZING DATA

This section illustrates the powerful features Excel has to offer to analyze data.

1) Sort: You can sort your Excel data on one column or multiple columns. You can sort in ascending or descending order.
2) Filter: Filter your Excel data if you only want to display records that meet certain criteria.
3) Conditional Formatting: Conditional formatting in Excel enables you to highlight cells with a certain color, depending on the cell's value.
4) Charts: A simple Excel chart can say more than a sheet full of numbers. As you'll see, creating charts is very easy.
5) Pivot Tables: Pivot tables are one of Excel's most powerful features. A pivot table allows you to extract the significance from a large, detailed data set.
6) Tables: Tables allow you to analyze your data in Excel quickly and easily.
7) What-If Analysis: What-If Analysis in Excel allows you to try out different values (scenarios) for formulas.
8) Solver: Excel includes a tool called solver that uses techniques from the operations research to find optimal solutions for all kind of decision problems.
9) Analysis ToolPak: The Analysis ToolPak is an Excel add-in program that provides data analysis tools for financial, statistical and engineering data analysis.

## 5.8 SORT AND FILTER DATA

Excel offers a variety of built-in tools for data management among which sorting and filtering features are the best one. The filter tool allows you to filter a column of data within a table to isolate the required key components. The sorting tools allow you to arrange data in ascending or descending order.

### Sorting Data

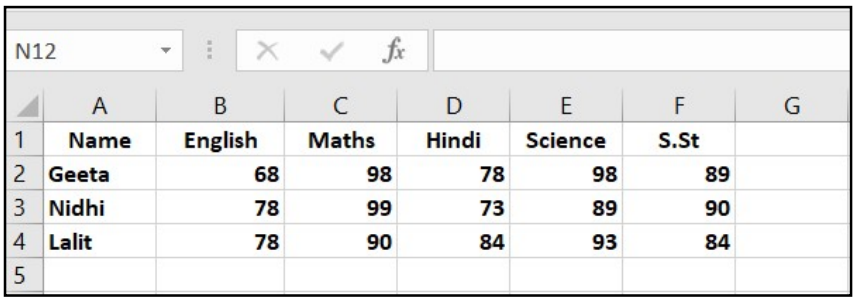
Sorting means to arrange data either in ascending or descending order.

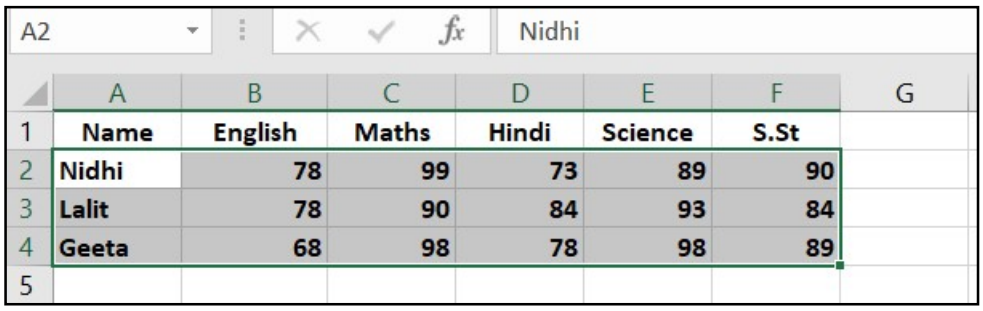
To sort the data:

Step 1: Select the cells. For example, A2:F4

Step 2: Click on Data Tab on the ribbon

Step 3: From the Sort & Filter group, Click on Sort A to Z option to sort in ascending order





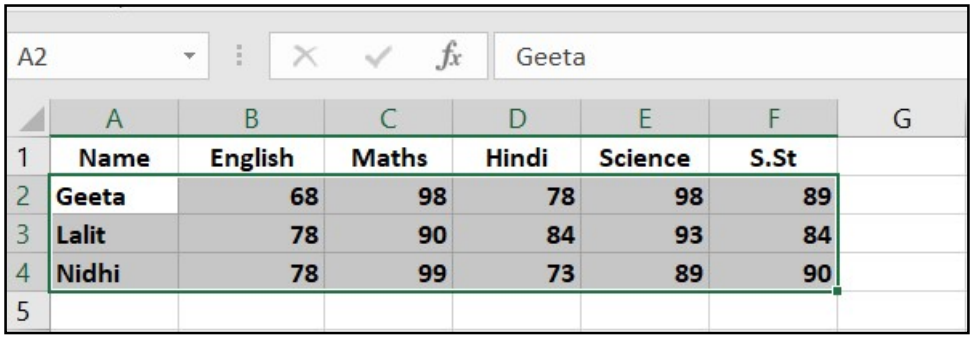

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | Name | English | Maths | Hindi | Science | S.St | |
| 2 | Nidhi | 78 | 99 | 73 | 89 | 90 | |
| 3 | Lalit | 78 | 90 | 84 | 93 | 84 | |
| 4 | Geeta | 68 | 98 | 78 | 98 | 89 | |
| 5 | | | | | | | |

or Sort Z to A option to sort in descending order.

**To sort data on basis of multiple columns:**

Step 1: Select the range of cells that contains the data to be selected.

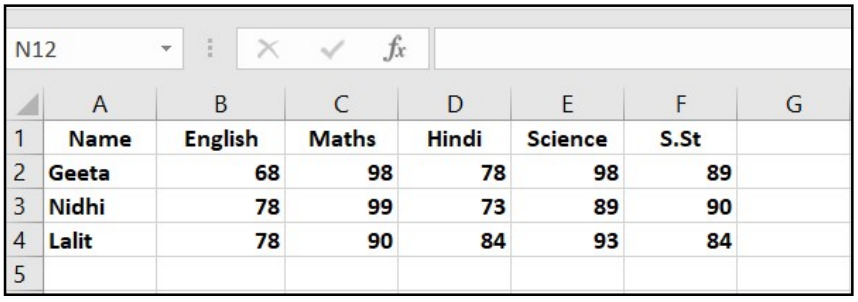
Step 2: On the Data Tab, in the Sort & Filter group, Click on Sort option. The sort dialog box appears.



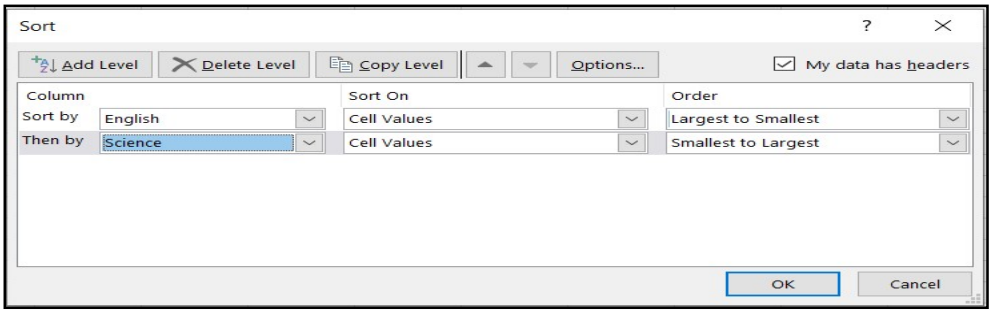

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | Name | English | Maths | Hindi | Science | S.St | |
| 2 | Geeta | 68 | 98 | 78 | 98 | 89 | |
| 3 | Lalit | 78 | 90 | 84 | 93 | 84 | |
| 4 | Nidhi | 78 | 99 | 73 | 89 | 90 | |
| 5 | | | | | | | |

Step 3: Under Column, Click the Sort by down arrow and select a column from the list on which you want to sort the data.

Step 4: Under Order, Click the down arrow and select an option to specify the sort order-A to Z or Z to A, Smallest to Largest or Largest to Smallest, from the list.




| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | Name | English | Maths | Hindi | Science | S.St | |
| 2 | Geeta | 68 | 98 | 78 | 98 | 89 | |
| 3 | Nidhi | 78 | 99 | 73 | 89 | 90 | |
| 4 | Lalit | 78 | 90 | 84 | 93 | 84 | |
| 5 | | | | | | | |



Step 5: Click on Add Level button and repeat step 3 and 4 to add another column to sort the data on.

Step 6: Click on the OK button.

| | Name | English | Maths | Hindi | Science | S.St |
|---|---|---|---|---|---|---|
| 2 | Nidhi | 78 | 99 | 73 | 89 | 90 |
| 3 | Lalit | 78 | 90 | 84 | 93 | 84 |
| 4 | Geeta | 68 | 98 | 78 | 98 | 89 |
| 5 | | | | | | |

Excel sorts the data on the basis of the first column and where the data values in the first column are same, on the basis of the second column.

## Filtering Data

Filtering is a process to extract the records from the worksheet that fulfil certain conditions. It temporarily hides the rows that you do want to see. Excel provides AutoFilter and Custom Filter to filter the data in a worksheet.

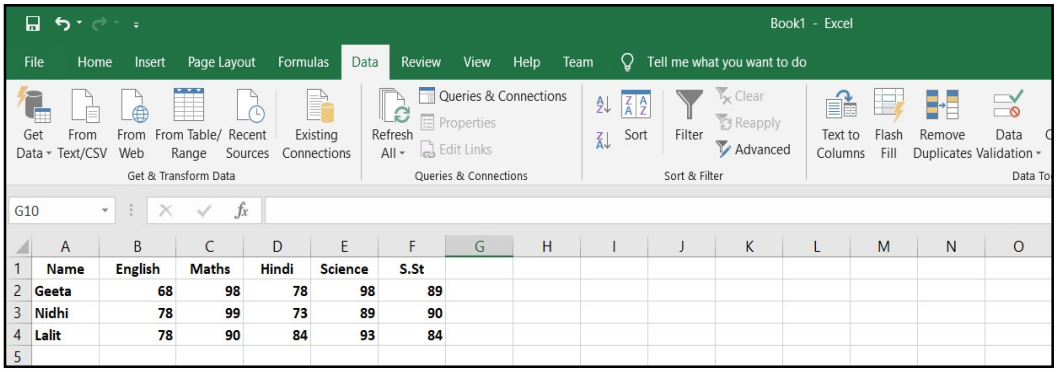
## AutoFilter

The AutoFilter is used to filter data on basis the specific values present in a column.

To filter the records:

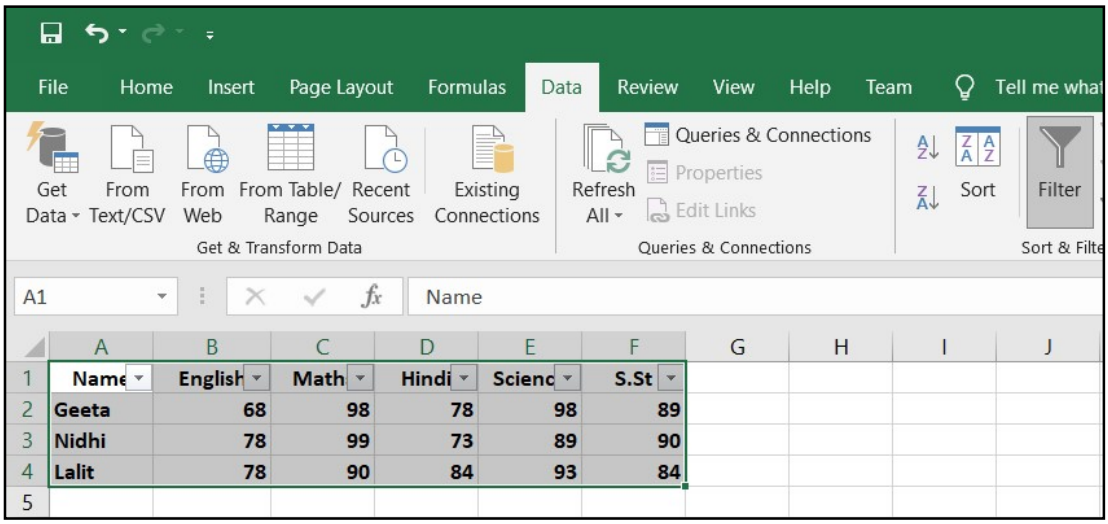
Step 1: Select any cell in the range or select range of cells.

Step 2: Click Filter option in the Sort & Filter group on the Data tab




Filter drop button will appear to the right side of each field name in the column headers row.

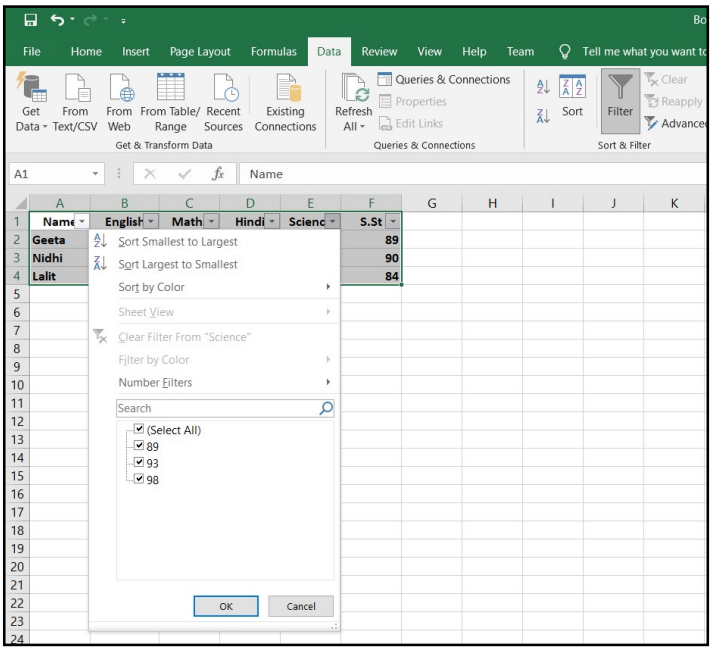
Step 3: Now, to filter the records with same data values in a particular field, click on the Filter drop button of that field name

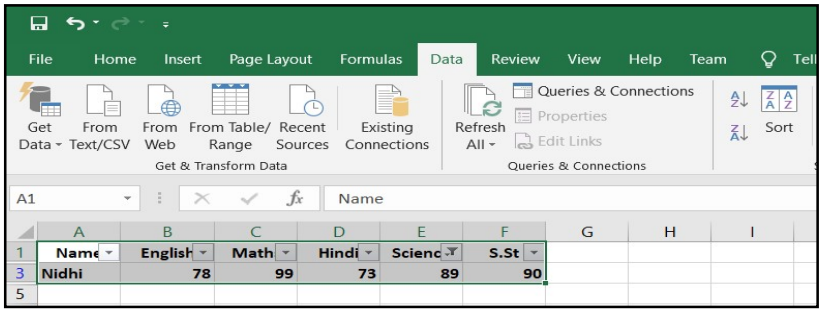



A list appears showing the values of that column. The option Select All is checked by default.

Step 4: Uncheck the Select All option and check only those values whose related records you want to see. For Example, choose value 89 in the science field to see the record of students who scored 89 marks in science.

Step 5: Click on OK button to filter and see the selective records.



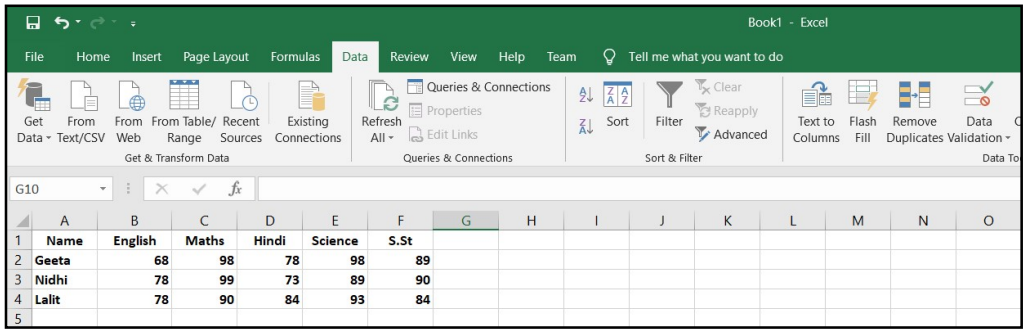



## Custom Filter

You can also use Custom Filter to extract the records that meet a specific condition. For example, to display the records where the marks in Maths are less than 91.

Step 1: Select the range of data.

Step 2: Click on Filter option in the Sort & Filter group on the Data tab

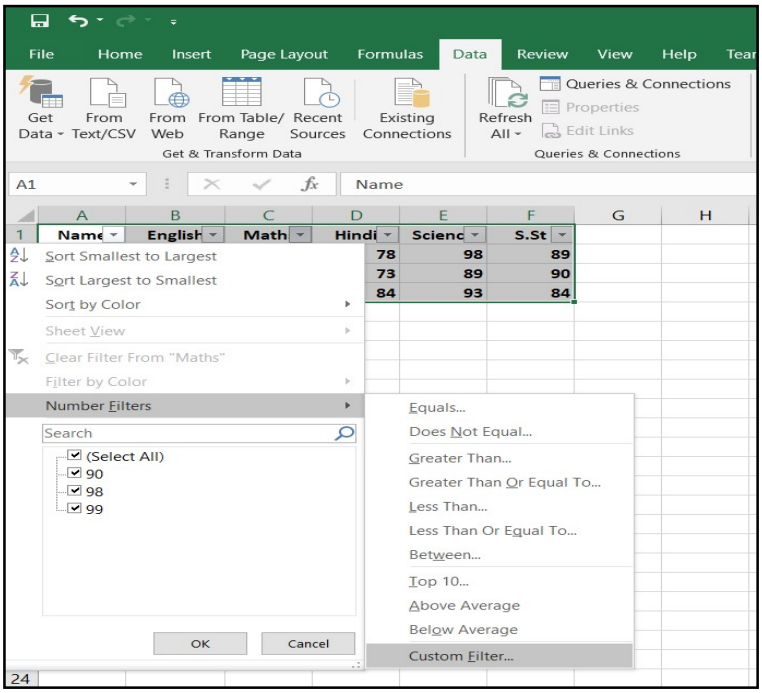



Step 3: Click on Filter drop button next to the column on which you want to apply the condition.

Step 4: From the drop list, select Number/Text Filters and click Custom Filter option from the submenu. The Custom AutoFilter dialog box will appear.

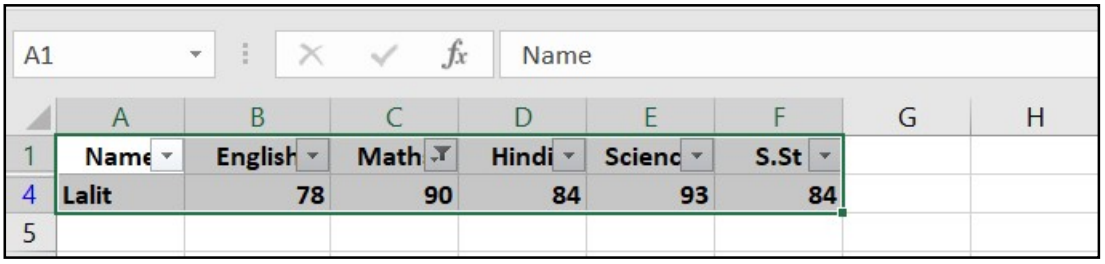
Step 5: Click on the condition drop button to choose required condition like equals, does not equal, is greater than, is less than, etc.

Step 6: Enter the value with which the condition is to be tested in the box next to it. You can




add another condition, if needed, by joining it with And or Or option.

Step 7: Click on OK button to get the filtered records


## Removing Filter

You can remove the filter and see all the records again.

Step 1: Select any cell in the worksheet.

Step 2: Click on Filter option in the Sort & Filter group on the Data tab

The filter drop buttons will disappear from the worksheet and the hidden records will be displayed again in the worksheet.

# *5.9 POINTS TO REMEMBER*

- Excel 2010 is an electronic spreadsheet program. It is the spreadsheet component of Microsoft Office 2010 suite, which is one of the most widely used application software for data analysis
- Spreadsheet were originally developed for book keeping. They are also useful for scientific calculations, data manipulation and for producing graphs.
- Microsoft Excel include some statistical functions, but for serious research work a specialized package should be used.
- Excel can also sort and select data, however for large amounts of data or more complex task, a database program should be used instead.

# *5.10 GLOSSARY*

- A cell is a box at the intersection of a row and column in a worksheet where data is stored.
- Columns are combination of all the vertical cells joined together in a single vertical line.
- Rows are combination of all the horizontal cells joined together in a single horizontal line.
- Workbook is a group of worksheets, which can be stored as a unit. A workbook is stored on the disk in the form of a file with extension .xls.
- Worksheet is the working area of MS-Excel. Each worksheet of a single workbook has its own identity and is separate from other worksheets.
- Workspace is the working area of MS-Excel where workbooks, worksheets and other related objects may be opened and manipulated.

## *5.11 CHECK YOUR PROGRESS*

### Descriptive type questions-

a) What are the components of Spreadsheet program?
b) Define a Formula in Excel and also define types of formulas.
c) Define all functions used in Excel?
d) How can number be subtracted, multiplied, and divided in excel cells?
e) Explain the SUM () function.
f) What is sorting? How will you apply sorting to a range of cells?
g) What is filter?
h) How can we enter numerical value or formula as a label?
i) What is the role of Auto filter option?
j) Explain the use of IF () function with the help of an example.
k) Differentiate between Formula and Function.

### Objective type questions-

a) Formula should always start with = sign. (True/False)
b) Formula and Function give the same result. (True/False)
c) Ranges cannot be used in formulas. (True/False)
d) A function must be followed by opening and closing parenthesis. (True/False)
e) The AutoFilter is used to filter data on basis the specific values present in a row. (True/False)
f) Using sort function data can be stored either in … … … and … …. … order.
g) Sort A to Z option is used to sort the data in … … … order.
h) A formula always contains … … … and … … …

i) The cell address in a formula is known as … … …

j) … … … function is used to calculate the sum.

**Answer (Objective Type Question)-**

[a] True [b] True [c] False [d] True [e] False

[f] Ascending, Descending [g] Ascending [h]create, edit [i] cell reference [j]sum

## *5.12 BIBLIOGRAPHY/ REFERENCES*


- J.K. Shahjahan, MS Office2010, Excel Books
- Sanjeev Gupta and Shameena Gupta, Computer Aided Management (Using MS-Office 2010 Tools), Excel Books
- Information Technology Vocational, Educational Publishers


## *5.13 SUGGESTED READINGS*


- Excel for Beginners by M.L. Humphrey
- The art of invisibility by Kevin Mitnick
- Microsoft Office 2016 Rapid Edition, Word, Excel, PowerPoint, Access Rapid Editors

# UNIT- 6

# INTRODUCTION TO MS POWER POINT



## *6.1 INTRODUCTION*

Presentation is a way of communication between the speaker and the audience. It helps to communicate the ideas for information on any topic to the masses. An effective presentation always leaves an everlasting effect in the minds of people, so it is very important to understand before creating any presentations that who are the target audience of that presentation? What should be the contents? How these are to be organised? And finally, what should be mode of presentation? A presentation can be in a written, oral or visual form. But a successful presentation is one which can bind the audience till the end by effectively communicating the core idea behind the presentation. Graphical components in a presentation like pictures, charts, motion clips, figures, diagram, etc, prove to be an excellent tool to convey the idea in an effective and interesting manner.

Earlier, there were limited tools available to deliver the presentation. The traditional tools like notes, drawn figures, images, still slides, etc., were used for this purpose. But now with the development of multimedia technology in the field of computers, the trends are totally changed. Today's presentations are supported by multiple modes of communication like text images, graphics, videos, audios, etc. Animation and sound effects not only just make the presentation effective and interesting, but also help the presenter to quickly design the presentations. Some popular presentation software are. Microsoft PowerPoint, Google Slides, Prezi, Corel presentations, Open office impress and Harvard graphics. We are going to learn the use of one such application for designing a computer-based multimedia presentation. The name of this application is Microsoft PowerPoint 2010.

## 6.2 OBJECTIVES

After the successful completion of this unit, you will be able to-

- Define MS PowerPoint Working
- Explore Table
- Define Charts and Graphs

## 6.3 WHAT IS POWERPOINT 2010

Microsoft PowerPoint 2010 is a presentation component of Microsoft Office 2010 suite which is used to design computer-based multimedia presentations. Presentation in PowerPoint is a collection of electronic slides containing information in the form of text, graphics, movie clips, sounds, etc. These slides are displayed in a sequential order one after the other at the time of presentations on the monitor or projection screen with all multimedia and animation effect in the form of a slide show.

PowerPoint is not just used for creating electronic presentations, but is also used for making handouts, speaker notes, etc. which are effective tools for any kind of presentations.

### *Starting PowerPoint 2010*

To start PowerPoint 2010:

Step 1: Click start button on the Taskbar.

Step 2: Select all programs

Step 3: Choose Microsoft Office option in the submenu

Step 4: Click Microsoft PowerPoint 2010 option

## 6.4 COMPONENTS OF THE POWERPOINT WINDOW

The various components of PowerPoint 2010 Windows are as follows.

**File tab:** It opens the backstage view to manage the files and settings. You can save, open and create a new presentation based on a blank or predefine templates.

**Quick access toolbar:** It is a customizable toolbar present on the left side of the titlebar used to quickly perform some of the commonly used functions like saving a file, undo, redo etc.

**Title bar:** It appears at the top of PowerPoint window which shows the name of presentations you are working with and has three control buttons on its right side to minimize, maximize and close the window.

**Ribbon:** This component is present just below the title bar. It has eight tabs in it wherein each tab is divided into the groups. The groups are the logical collection of PowerPoint command to perform various presentations related functions.

**Group:** Logical collection of commands together are referred as group. It changes with every tab. File tab show following groups: clipboard, slides, font, paragraph, drawing and editing.

**Slide Pane:** It is the actual work area where individual slides are created or modified.

**Notes Pane:** It is a small rectangular area under the slide pane which is used for making the speaker notes for the individual slides.

**Slide Tab:** It is present on the left side which shows miniature of each slide. Functions related to slide can be performed such as addition, deletion and rearranging slides from the slide tab.

**Outline Tab**: It is present on the left side which show the existing text present in the slide.

**Status Bar:** It is present at the bottom of the PowerPoint window. It displays the information about the current slide such a slide number, name of the theme, slide view and zoom percentage.

**Slide View:** It is present on the status bar at the bottom of the PowerPoint window having four views: Normal view, slide sorter view, slideshow view and reading view

## *6.5 CREATING PRESENTATIONS IN POWERPOINT*

Microsoft PowerPoint 2010 offers different ways to create new presentation. You may choose any of these method as per your needs which are available under Available Templates and Themes. These are:

**Blank Presentation:** You can use this method to create customise presentations wherein you can add contents, format slide, apply effects of your own. This is the default way for creating presentations in PowerPoint.

**Recent Templates:** The templates which you have used recently are shown in this category.

**Sample Templates:** This is an easiest way to create presentations on some general topics. PowerPoint offers a set of readymade templates suggesting the contents and designyou're your presentation.

**Themes:** This option is useful when you want to use predesigned format for your presentation as the present background font style, etc are provided by PowerPoint

**My Templates:** In this, templates customised by you are saved and shown here which can be used later on

**New from Existing:** It allows you to use create or modify the new template using existing templates as a base

**Common Terms Used in PowerPoint**

- slide a single page in a presentation which may contain text image stars video etc
- presentation a group sequentially arrange
- slides slide deck a group of related slides

## *6.6 EDIT TEXT, FONT STYLE AND COLORS IN SLIDES*

Communication is a vital part of our daily life. We can communicate our ideas in verbal or written form. Communication through text is effective in Presentation having graphics adds for clarity.

### *Inserting Text in a Slide*

Textbox command is used to create additional text placeholder on a slide, if needed

To insert a text box:

Step 1: Click on the insert tab

Step 2: Click on text box from the Text group.

Step 3: Drag the mouse pointer on the slide where you want to add the text. A text box will appear with a blinking cursor.

Enter the text as needed. The Text box expands automatically to the next line, if the enter text is more than the size of the text box.

### *Editing Text in a Slide*

The Text entered in a placeholder or text box can be modified easily.

Step 1: Click on the text placeholder to be modified. The cursor appears.

Step 2: Make changes as required and then click outside the placeholder.

### *Changing the Text Box Background Colour*

Step 1: Select the text box. When you insert a text box, a new Format tab appears.

Step 2: Click Shape Fill from the Drawing group and select the color of your choice. The select color will appear in the background of the text box.

### *Changing the Text Box Outline*

Step 1: Select the text box. When you insert a text box, a new Format tab appears.

Step 2: Click Shape Outline from the Drawing group and select the line color of your choice. You can use Weight option in it to change the line thickness. The select color will appear in the background of the text box.

## *Copying the Text in a Slide*

Step 1: Select the text to be copied.

Step 2: Click copy option in the Clipboard group on the Home tab.

Or

Press Ctrl + C keyboard Shortcut.

Step 3: Bring the cursor to the new location where text is to be pasted.

Step 4: Click paste option in the Clipboard group.

Or

Press Ctrl + V keyboard Shortcut.

The selected text will appear at the destination.

## *Moving the Text in a Slide*

Step 1: Select the text to be moved.

Step 2: Click Cut option in the Clipboard group on the Home tab.

Or

Press Ctrl + X keyboard Shortcut.

Step 3: Click to select the destination where text is to be moved.

Step 4: Click paste option in the Clipboard group.

Or

Press Ctrl + V keyboard Shortcut.

The selected text will move to at the new position.

## *Formatting the Text in a Slide*

Text entered in the slide using various placeholders appears as per the format set for these. PowerPoint offers wide variety of formatting features that can help you to change the default text formats as per the need of your presentation.

Using Font Group

Step 1: Select the placeholder that contains the text to be formatted.

Step 2: Use the commands in the Font Group to format the text on the slide.

Using Font Dialog Box

You can also use Font Dialog box to collectively modify the text formatting.

Step 1: Select the text to be formatted.

Step 2: Click launcher button available in the lower right corner of Font Group. A Font Dialog box will appear.

Step 3: Use the various text formatting and special effects option to change the default format.

## *Aligning Text*

Alignment refers to the placement of text within the placeholder. Text inside the placeholder can be aligned to left, right, center or justified like this:

Align Left: Aligns the text towards the left edge of the placeholder.

Align Right: Aligns the text towards the right edge of the placeholder.

Center: Aligns the text between left and right edge of the placeholder.

Justify: Aligns the text evenly between left and right edge of the placeholder.

Using Paragraph Group

Step 1: Select the text or the placeholder whose text has to be aligned.

Step 2: Click the required alignment option from the four options available on the paragraph group under the Home Tab.

Using Paragraph Dialog Box

Step 1: Select the text or the placeholder whose text has to be aligned.

Step 2: Click launcher button available in the lower right corner of Font Group.

Step 3: A paragraph dialog box will appear and select the alignment under the General section.

### *Text Direction*

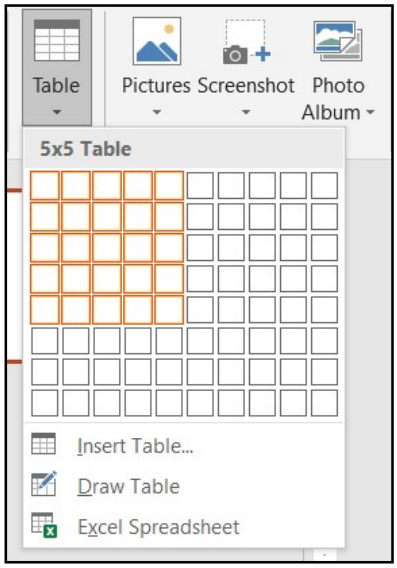
This command is used to change the orientation of text in a placeholder. It has four options: Horizontal, Rotate all text $90^0$, Rotate all text $270^0$, and Stacked. The default text direction is Horizontal.

### *Align text*

This command is used to align the text between the top and bottom edge of a placeholder. The options are: Top, Middle, and Bottom.

## *6.7 WORKING WITH TABLES IN A PRESENTATION*

In PowerPoint 2010, tables are useful tool for presenting and organising the data in tabular form. A table is information arranged in horizontal rows and vertical columns. Tables are generally used to organised text on numerical data. When you first insert a table into a document, it appears as a simple grid with black gridlines defining the rows and columns. In PowerPoint, you can modify the appearance of table as per your choice. A well-designed table conveys information in more meaningful way.




### *Inserting Table*

Let us learn how to insert a table in PowerPoint.

### *Using Insert Tab*

To insert a table:

Step 1: Click on the insert tab

Step 2: Click the table option from the table group. A drop-down menu will appear.

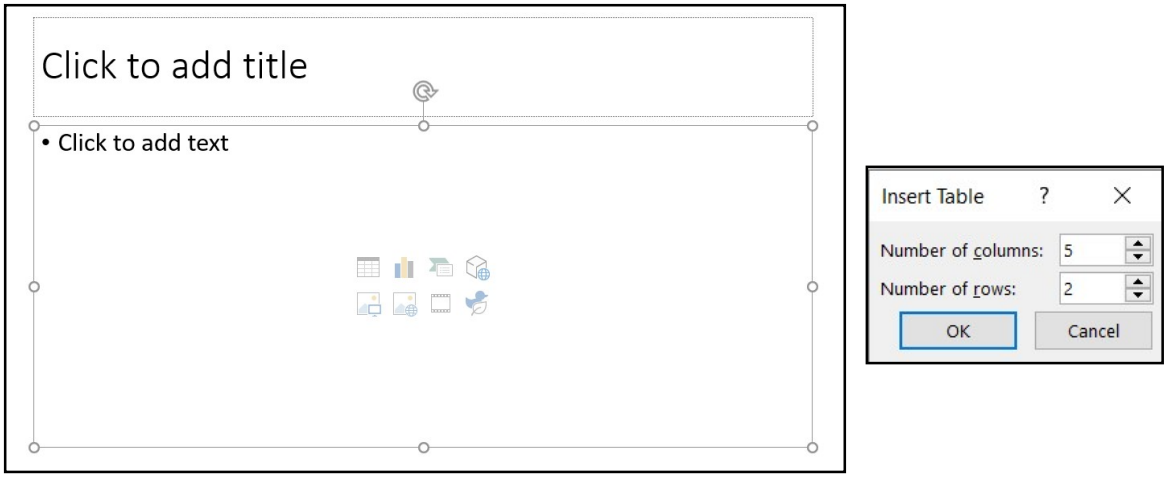
Step 3: Drag the mouse over the required number of boxes. A table with the selected number of rows and columns will be inserted.

## *Using Layout*

To insert a table

Step 1: Click on the new slide dropdown Arrow under the home tab. Select the title and content Layout from the drop-down list

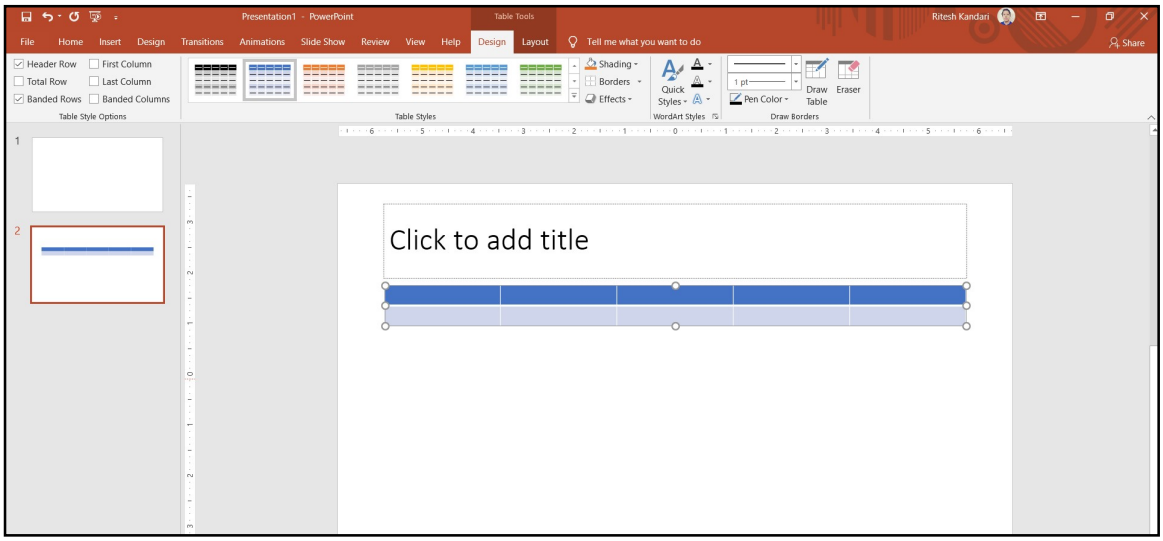
Step 2: Click on the insert table icon present on the slide. The insert table dialog box will appear.




Step 3: You can define the number of rows and columns as per your requirements.

Step 4: Click on Ok button

A table will be displayed with defined number of rows and columns.



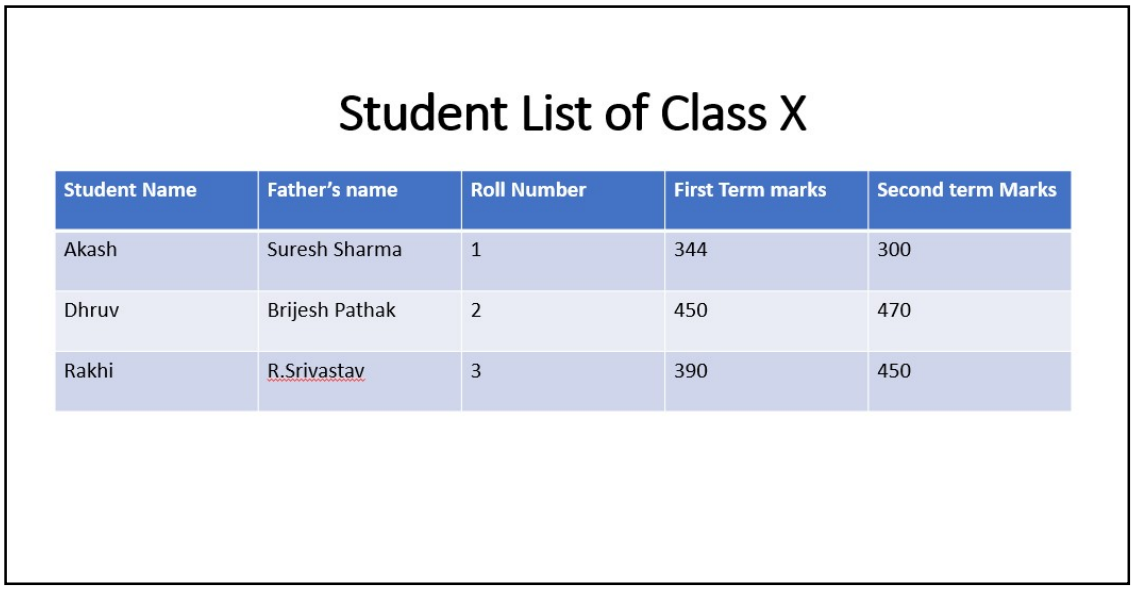
## *Entering data in a table*

To enter data in a table:

Step 1: Position the mouse pointer in the first cell of the table and typing whatever you want. If the data takes up more than one line in the cell, the text will automatically wrap to the next line. This increases the height of that cell and all the other cells available in that row.

Step 2: To move to the next insertion point, you can press the tab key on the keyboard or simply click on the desired cell.

Step 3: Type whatever you want in the next cell. Thus, we can enter data in the table using the tab key or Arrow key or Mouse

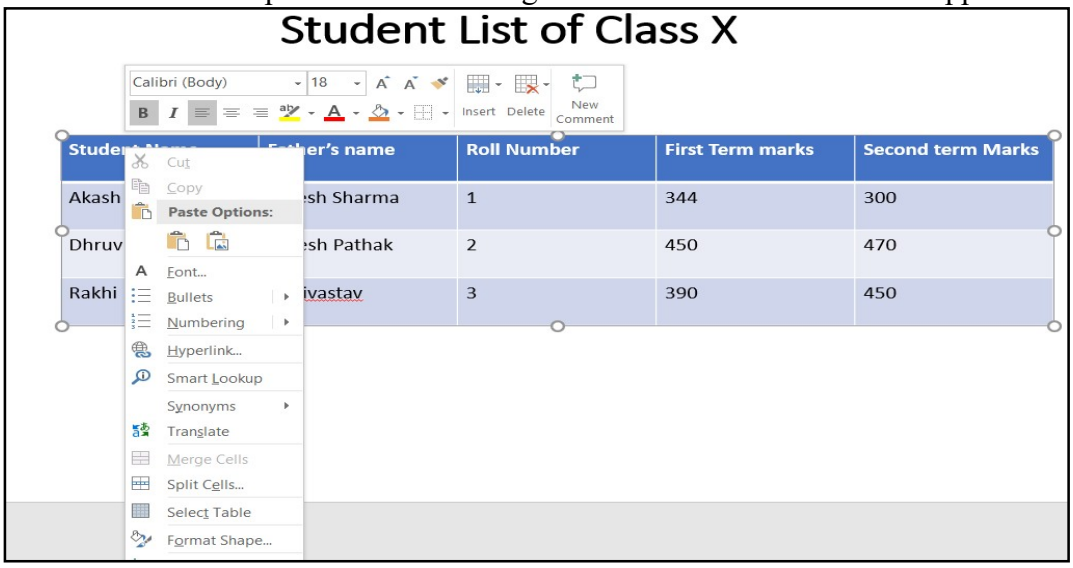



Step 4: Click anywhere outside the table when you have finished

## *Inserting Rows and Columns in a Table*

To insert new rows in a table:

Step 1: Locate the insertion point in a cell and right-click. A shortcut menu will appear.



Step 2: Select the insert option and click either on the insert row above or insert row below sub option. After selection, you will see a new blank row is inserted.

## *Deleting Rows and Columns in a Table*

Before you delete a row or a column, you should know that whatever you want to delete the content of the row or the contents and the structure of the row.
To delete a row or column from a Table:
Step 1: select the row column you wish to delete
step 2: under the layout tab, click on the delete option in the Rows and Column group.
Step 3: Select the required option from the submenu.

## *Formatting a Table*

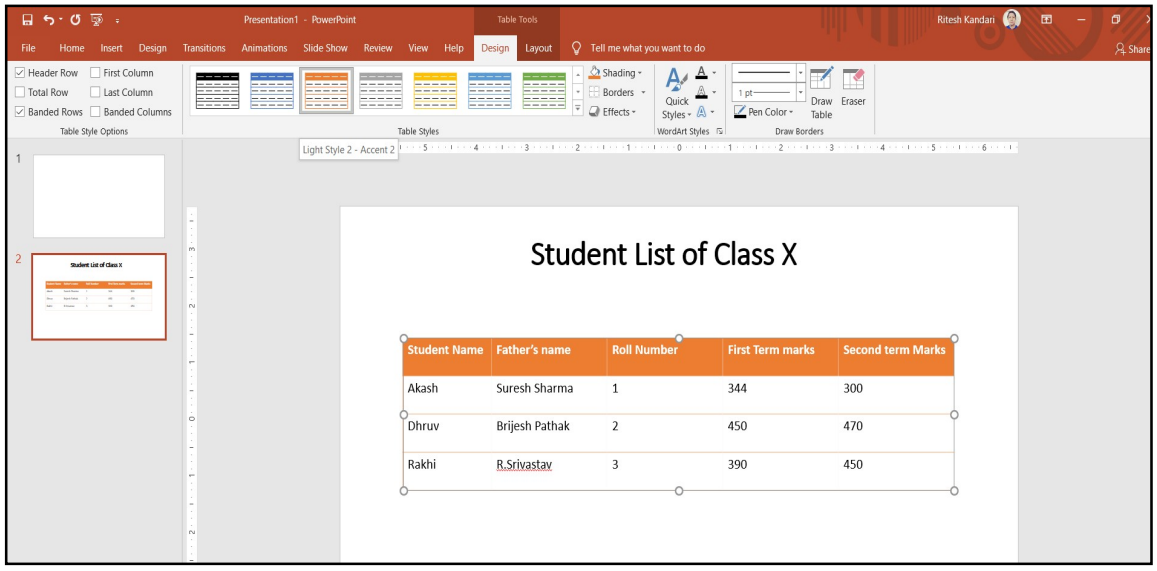
PowerPoint offers numerous predefined table styles that you can use to quickly format a table. If the predefined tables styles do not meet your requirements, you can create and apply a custom table style.

When you insert a table in a slide, a new tab appears known as Table Tools. This tab is divided into two sections such as Design and Layout tabs. You will find various tools and commands for formatting present on these tabs such as Borders, Shading, Table style, Border Color, Merge cells, Split cells, etc.

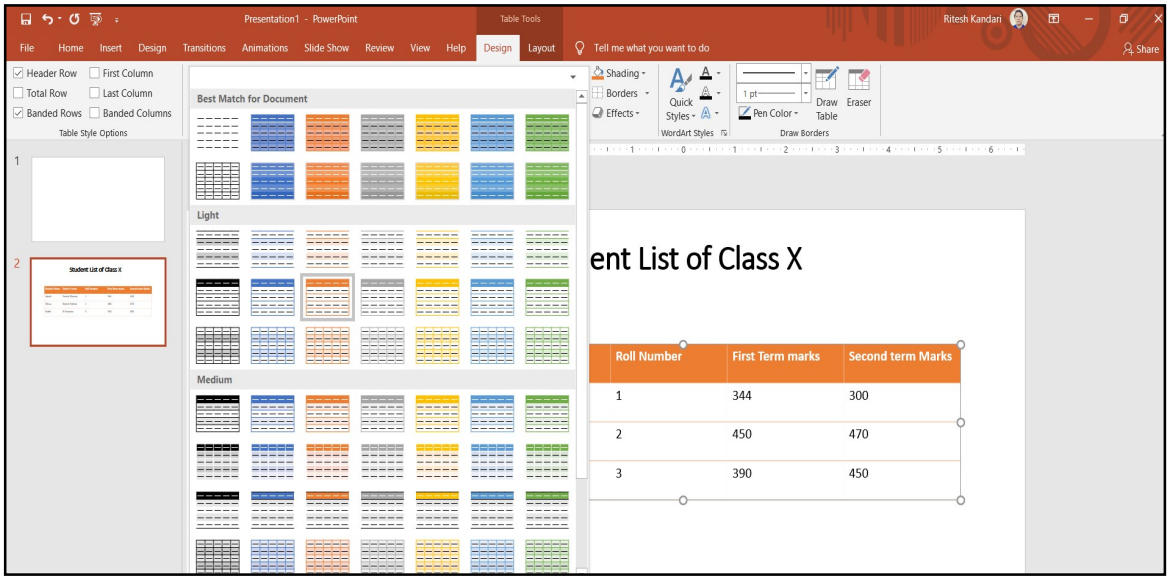
## *Applying Table Styles*

When you insert a table in a slide, a table style will be applied automatically. PowerPoint 2010 offers various predefined styles in the Table Style group on the Design tab under the Table Tools tab.

To apply a table style:
Step 1: Select the table.
Step 2: Click on the design tab to access all the table styles and other options of this tab.



Step 3: Hover the mouse over any table style to see its live preview on the slide.



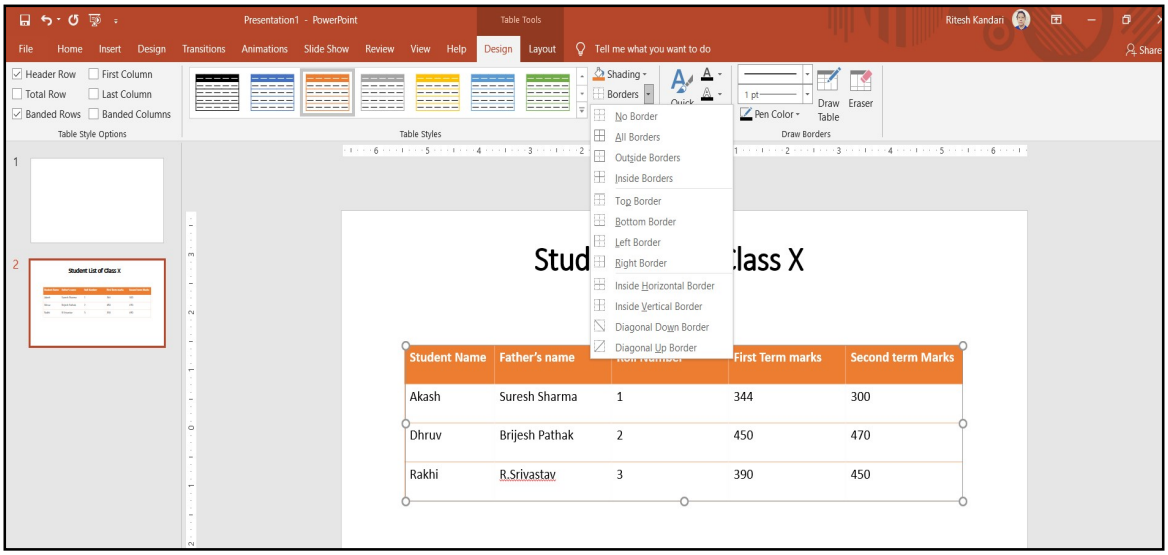

Step 4: Click on the more dropdown Arrow of the table styles group to view all the options.

Step 5: Click on the desired style to select it.

## *Applying Borders*

To apply a border:

Step 1: Select the cells on which you want to add a border.



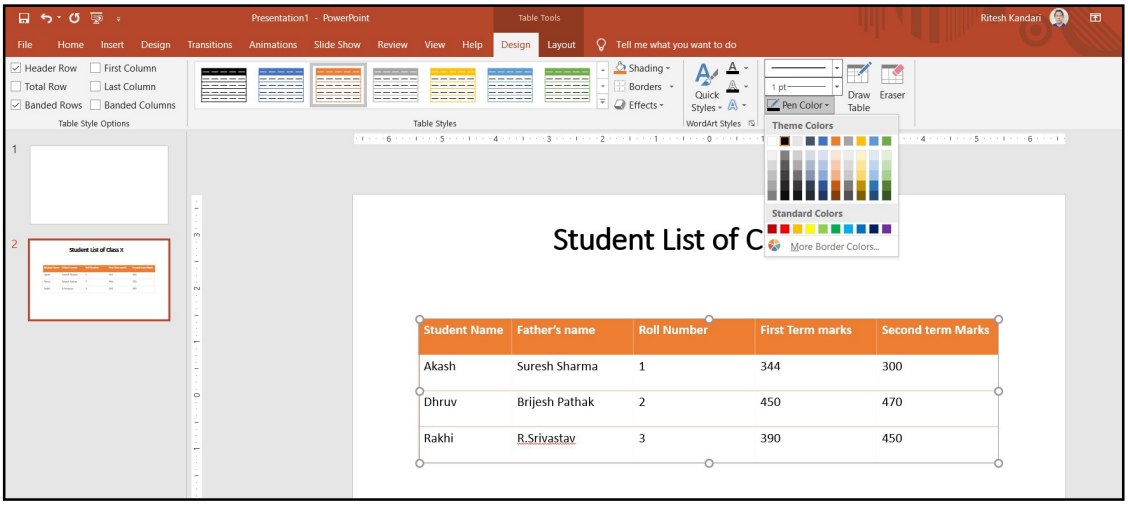

Step 2: Click on the Borders dropdown arrow in the table styles group on the design tab. Select the desired border type from the drop-down menu.

Step 3: Selected border will be applied to the selected cells.

## *Applying Border Color*

To change border color of a table:

Step 1: Select the table. Click on the Pen Color option from the Draw Borders group in the design tab.




Step 2: Choose the required color from the color palette. You will see that mouse pointer changes to a pencil shape.

Step 3: Click on the left mouse button on the border whose color you want to change or simply drag the mouse into the cell border and release the button. The line color will be changed.

## *Applying Border Style*

A tool named as Pen style is used to change the line style of a table.

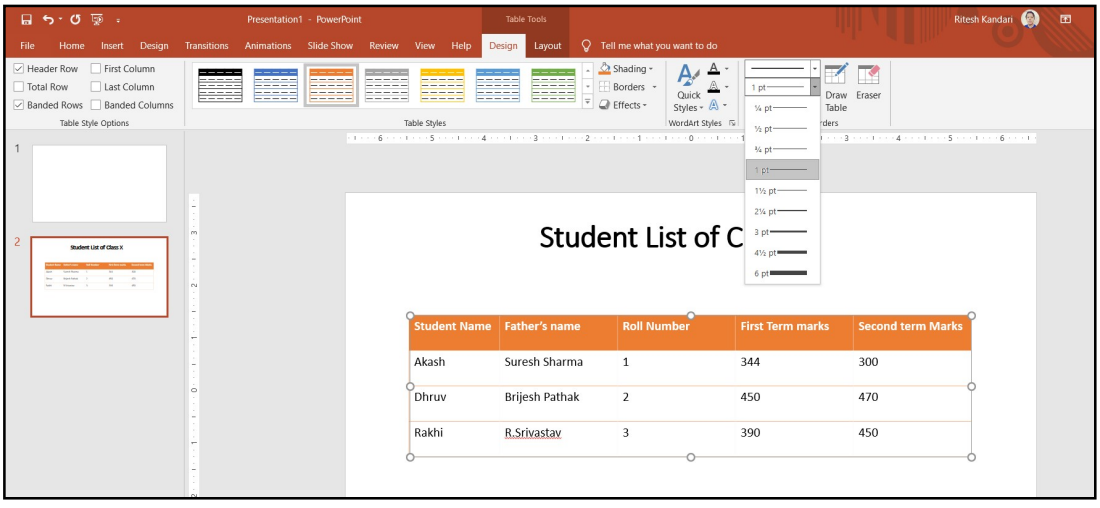
To changing the line style of a table:

Step 1: Select the table.

Step 2: Under the table tool tab, click on the pen style list box which is present on the design tab.

Step 3: A drop down mouse appears. Select the required style from the drop-down menu.

Step 4: Position the mouse pointer on any border of the table and click on it.



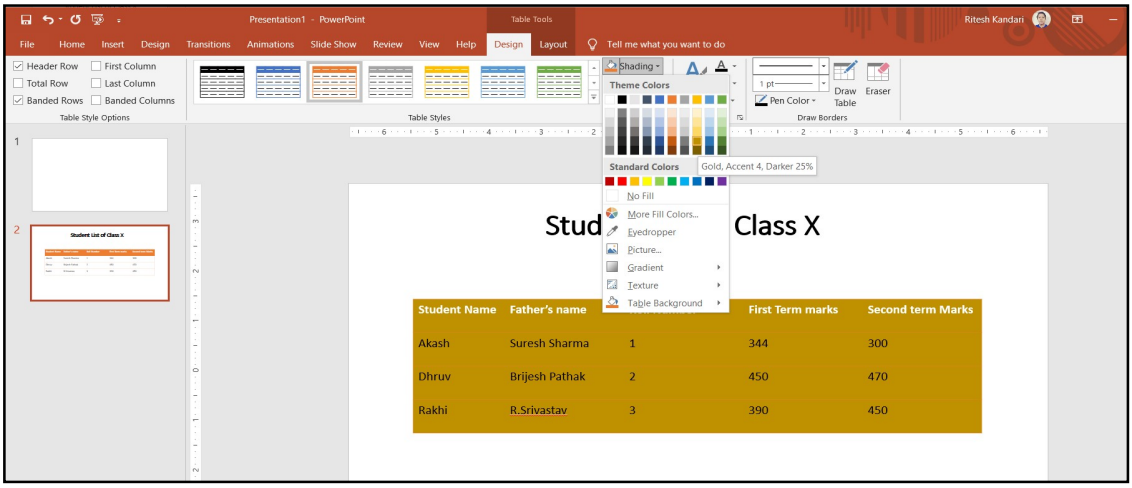
### *Applying Shading*

You can change the appearance of a table by adding shades. for example, if a table contains many rows and columns, you might shade alternate rows to help readers distinguish them from one another. To change table shading follow the given steps:

Step 1: Select the table and click on the design tab

Step 2: Select the rows and columns that you want to modify.

Step 3: In the table style group, click on the shading option and select any color of your choice.




## 6.8 INSERTING CHARTS IN A PRESENTATION

A chart is the graphical representation of data in which data is represented by symbols such as bars, lines, etc. It is an effective way of visualize data to the audience. In general, charts are widely used for, understanding large quantities of data and the relationships between parts of the data. There are many types of chart in PowerPoint 2010. Each chart has its own advantage. for example, a pie chart is used to show the percentage value data and line chart is used to show the trend of data over a period of time in effective way.

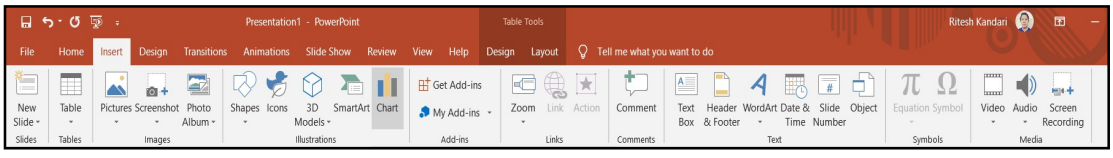
### *Inserting Chart*

There are two main ways to insert chart in a presentation.

### *Using Insert Tab*

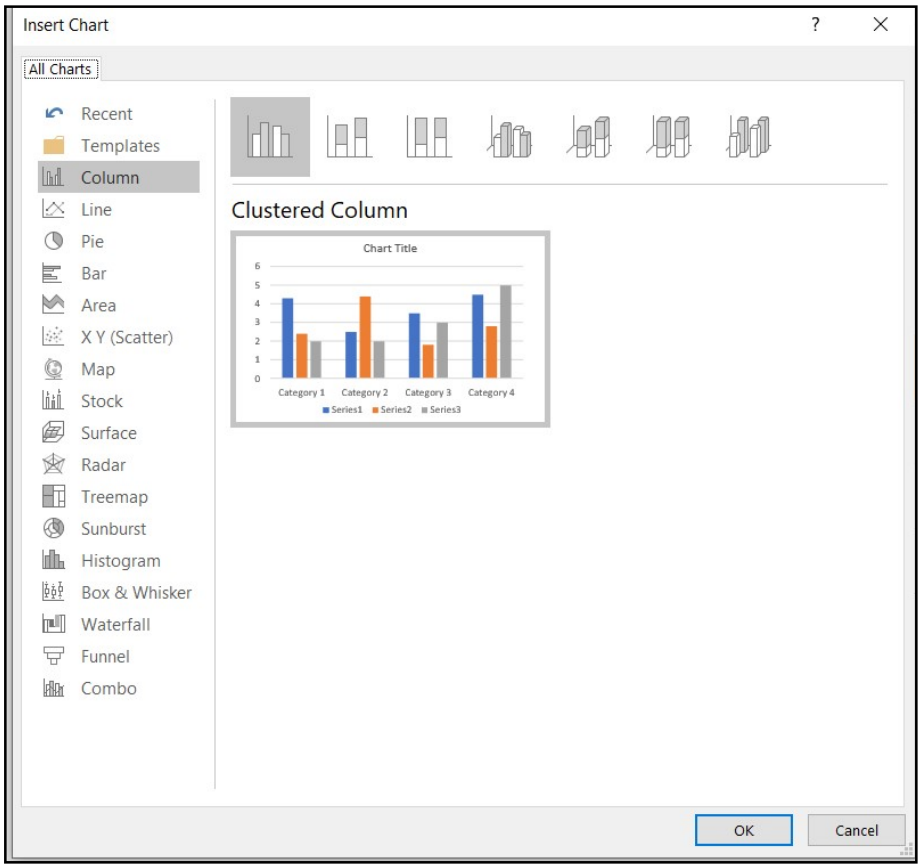
To create a simple chart

Step 1: Click on the insert tab.




Step 2: In the illustration group, click on the chart option

Step 3: The insert chart dialog box appears. Select the desired chart type from the left pane and the wide range of selected chart type will be appeared in the right pane.




Step 4: After selection, click on Ok button.

The chart will be displayed in a slide.

## *Using Layout*

To insert a chart:

Step 1: Open a new file in the PowerPoint

Step 2: Click on Home tab

Step 3: Click on the Layout option from the slides group and change the layout of the file.

Step 4: Select the title and content

Step 5: Click on the insert chart icon in the content placeholder.

Step 6: The insert chart dialog box appears. Select the chart type from the left pane and the wide range of the selected chart type will be appeased in the right pane.

Step 7: Click on Ok button.

An Excel window will open with the placeholder for your data.

## *Modifying a Chart*

In PowerPoint 2010, there are many ways for customising and organising chart. You can change the appearance of chart by changing the text, line, font color, background, chart style etc. On inserting a chart, a new tab appears named as Chart Tools. This tab is divided into

three sections. Design, Layout and format which contains various option that allows you to modify and format the chart as desired.

## *Changing the Chart Type*

You can change the chart type as needed

To change the chart type:

Step 1: Select the chart. Click on the design tab under the chart tools.

Step 2: Click on the change data type option in the type group. The change chart type dialog box will appear.

Step 3: Select any chart type and click on Ok button. The chart will change accordingly.

Or

Step 1: Select the chart where you want to change layout.

Step 2: In the chart layout group under the design tab, click on the more dropdown arrow to see all the available chart layout options.

Step 3: Select desired chart layout.

## *Changing Chart Style*

You can quickly modify the appearance of the chart by changing its style. Quick style for lines includes line styles, gradients, various effects and Shadow.

To change the chart style:

Step 1: Select the chart whose layout you want to change.

Step 2: Click the more dropdown arrow in the chart styles group under the design tab

Step 3: Select any style from the list that appears.

The chart will be displayed as per your selection.

## *Changing Background*

You can modify a chart by changing its background.

To change the background:

Step 1: Select the chart whose background you want to change.

Step 2: Click on the plot area and select the format plot area option from the shortcut menu

Step 3: The format plot area dialog box will appear. You can select border-style, border color, shadow effect as per your requirement.

Step 4: Click on the close button and observe the change.

### *Editing Data*

Apart from that, the chart you are obtain on the slide has some fixed data in it. If you want a chart with your own set of data, follow the given steps:

Step 1: A datasheet will open up.

Step 2: Right click on the chart and click on the edit data option from the shortcut menu. A datasheet will open up containing the default data for charts.

Step 3: Modify the data of this seat to any data you want.

Every time you press Enter key on the datasheet the chart get refreshed and the newly entered data takes effect.

## *6.9 TIPS TO CREATE PROFESSIONAL SLIDE FOR PRESENTATION*

- **Remember to avoid too much text.** You should keep your text brief and include talking points only. Detailed notes can be inserted into the notes section of PowerPoint, but only you should see those notes, unless a professor asks to see your notes to evaluate your PowerPoint as an assignment.
- **Be consistent and clear with your font choices.** Helvetica is a nice font for presentations. Make sure your font is large enough that an audience in a room would be able to see your text, even if audience members are sitting in the back of the room.
- **Be careful with your color choices for text and background.** You want to make sure your audience can read your text easily. Black on white text is easiest to read but is also boring for a presentation. Still, when you add color, just be sure you are adding color that works and doesn't distract.
- **Add images.** Text on slides for every slide is boring. Add appropriate images to your slides. Relevant charts and graphs are excellent, as are pictures that will connect to your content.
- **Make sure your main points are clear.** Remember to connect your ideas well and provide background information and transitions when necessary.
- **Keep your audience in mind.** Your audience will affect the overall tone and appearance of your presentation. Sometimes, humor can be appropriate. Other times, a more serious tone may be necessary. Just as you evaluate your situation any time you write a paper, you should evaluate your situation for creating a PowerPoint presentation.

## *6.10 POINTS TO REMEMBER*

- Microsoft PowerPoint is widely used for making professional quality presentations in a variety of formats, including tables, charts. You can also use it for notes and class presentations.
- PowerPoint can be used as a drawing package for preparing pictures, forms, posters, and leaflets. Presentation is a powerful managerial tool of communication through which you can compile and deliver your ideas, concepts, plans or products to the audience in a structured, effective and impressive manner.
- Slides and transparencies are used to be projected in front of the audience using overhead projector or otherwise. The operation of this equipment was mainly manual, semi-automated at the best. This approach had obvious limitations. Computer have now replaced the traditional method of presentation entirely.

## *6.11 GLOSSARY*

- Title bar is the top section of the window. It shows the name of the file followed by the name of the program which in this case is Microsoft PowerPoint.
- Slide area is the area where the actual side is created and edited. You can add, edit and delete text, images, shapes and multimedia in this section.
- The Quick Access Toolbar is located just under the ribbon. This toolbar offers a convenient place to group the most commonly used commands in PowerPoint.
- Blank Presentation is used to create customise presentations wherein you can add contents, format slide, apply effects of your own. This is the default way for creating presentations in PowerPoint.
- Themes is useful when you want to use predesigned format for your presentation as the present background font style, etc are provided by PowerPoint
- Ribbon component is present just below the title bar. It has eight tabs in it wherein each tab is divided into the groups. The groups are the logical collection of PowerPoint command to perform various presentations related functions.
- A table is information arranged in horizontal rows and vertical columns. Tables are generally used to organised text on numerical data.
- A chart is the graphical representation of data in which data is represented by symbols such as bars, lines, etc. It is an effective way of visualize data to the audience.

## *6.12 CHECK YOUR PROGRESS*

**Descriptive type questions-**

a) What is a slide? How many tabs are there in the Microsoft PowerPoint?

b) List the key points to be kept in mind while making a Microsoft PowerPoint.
c) How do we change font, size and its color?
d) What is alignment? What are the types of alignment?
e) What features are used to modify text?
f) What is Table? What are the advantages of table in a document?
g) How will you insert a table in a slide?
h) Write a short note on 'Formatting a Table'.
i) How will you change the chart type?
j) What are the steeps you should follow to change the background of a chart?

### Objective Type Questions-

a) Chart represent data in linear form. (True/False)
b) Chart tools tab is divided into one section. (True/False)
c) Textbox command is used to create additional text placeholder on a slide. (True/False)
d) Tables are generally used to organised text on numerical data. (True/False)
e) A pie chart is used to show the trend of data over a period of time in effective way. (True/False)
f) Clipart is a collection of presentation files. (True/False)
g) A table is information arranged in ……. rows and ……. columns.
h) Shading option is available in the ……. group.
i) ……. option is used to change the border color of rows or columns.
j) To change the background, click on ……. tab.
k) A ……... chart is used to show the percentage value data.
l) Picture option is in ……. option.

### Answer (Objective Type Question)-

| | | | | |
|---|---|---|---|---|
| [a] False | [b] False | [c] True | [d] True | [e] False |
| [f]False | [g] horizontal, vertical | | [h] Table Style | [i] Pen Color |
| [j] plot area | [k] pie | [l] insert | | |

## *6.13 BIBLIOGRAPHY/ REFERENCES*


- J.K. Shahjahan, MS Office 2010, Excel Books
- Sanjeev Gupta and Shameena Gupta, Computer Aided Management (Using MS-Office 2010 Tools), Excel Books
- Information Technology Vocational, Educational Publishers
- Joseph W. Habraken, MS Office 2010, All-In-One, Que Publishing
- https://owl.excelsior.edu/online-writing-and-presentations/presentations/presentations-powerpoints/

## *6.14 SUGGESTED READINGS*


- PowerPoint for Beginners by M.L. Humphrey
- The art of invisibility by Kevin Mitnick
- Microsoft Office 2016 Rapid Edition, Word, Excel, PowerPoint, Access Rapid Editors

# UNIT- 7

# FUNDAMENTALS OF INTERNET- II
# (Frequently Used e-office Applications)



## *7.1 INTRODUCTION*

E-Office Suite is the need of modern office automation which makes our task efficiently in terms of time, effort, cost and quality of service. It also helps to reduce the movement of hard copy papers within an organization and integrate various, seemingly unrelated, activities within an organization. The aspirants/user can access the office applications/services using Internet. Several benefits of e-office are envisioned due to the easy access of Internet, such as- Searching files, quick information flow, tracking files, enhance transparency, increase accountability, etc.

## 7.2 OBJECTIVES

After the successful completion of this unit, you will be able to-

- Understand the role of Google applications in e-Office.
- Know about advanced tools on Google like Docs, Sheets, and Slides etc.
- Best practices of using Google Drive tools and applications.

## 7.3 GOOGLE SHEETS- AN OVERVIEW

Google Sheets is a web-based spreadsheet application that allows you to store and organize different types of information, much like Microsoft (MS) Excel. Howerever Google Sheets does not offer all the advanced features of MS Excel. It is easy to create and edit spreadsheets online with a variety of tasks ranging from the simple to the complex. Basically, spreadsheets are used by to process complicated numbers and data, they can actually be used for a variety of everyday tasks, such as- data storage in tabular form, budget planning, creating an invoice or just about anything else you can think of. Spreadsheets are a great way to organize and process information.

Google Sheets is a web-based spreadsheet that you can use anywhere with Internet connection. It works from any device, with mobile apps for iOS and Android along with its web-based core app. Google Sheets is free, and it's bundled with Google Drive, Docs, and Slides to share files, documents, and presentations online anywhere. It includes almost all of the same spreadsheet functions. If you know how to use MS Excel, you will feel at home in Google Sheets. For advanced features you can download add-ons, create your own, and write custom code.

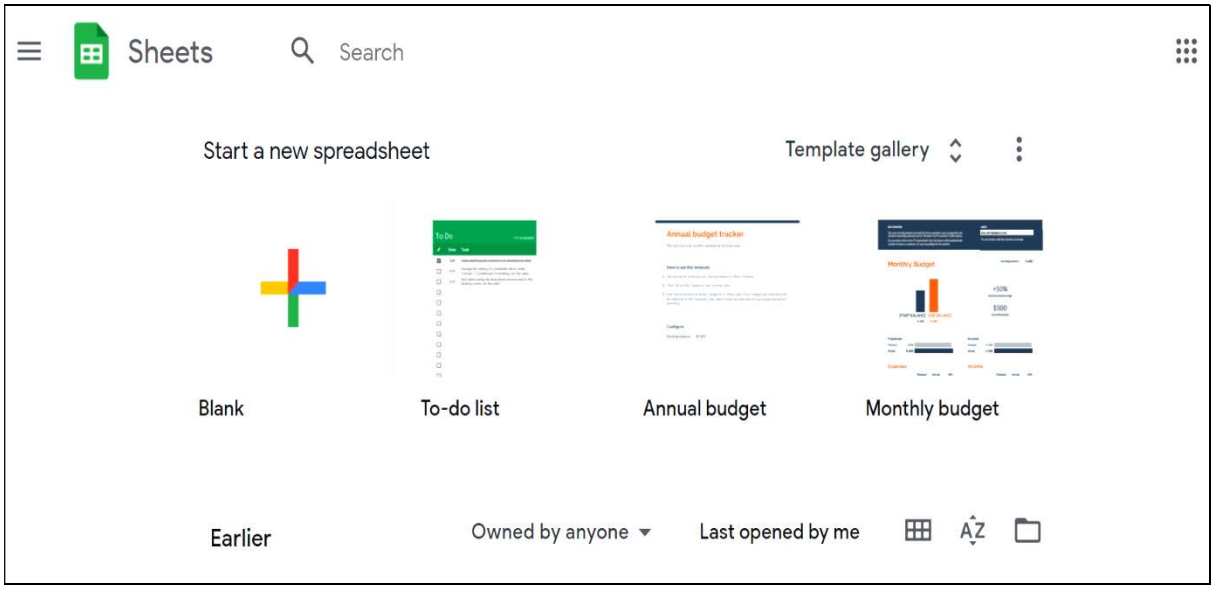



Figure 7.1 Google Sheet home

## 7.4 STEPS TO USE GOOGLE SHEETS

## Create or import files to Google Sheets-

Choose any option from the below to create a new file, as- (i) type "http://spreadsheet.google.com" into browser's address bar; (ii) either click on the spread sheet icon (refer to the figure 7.2)

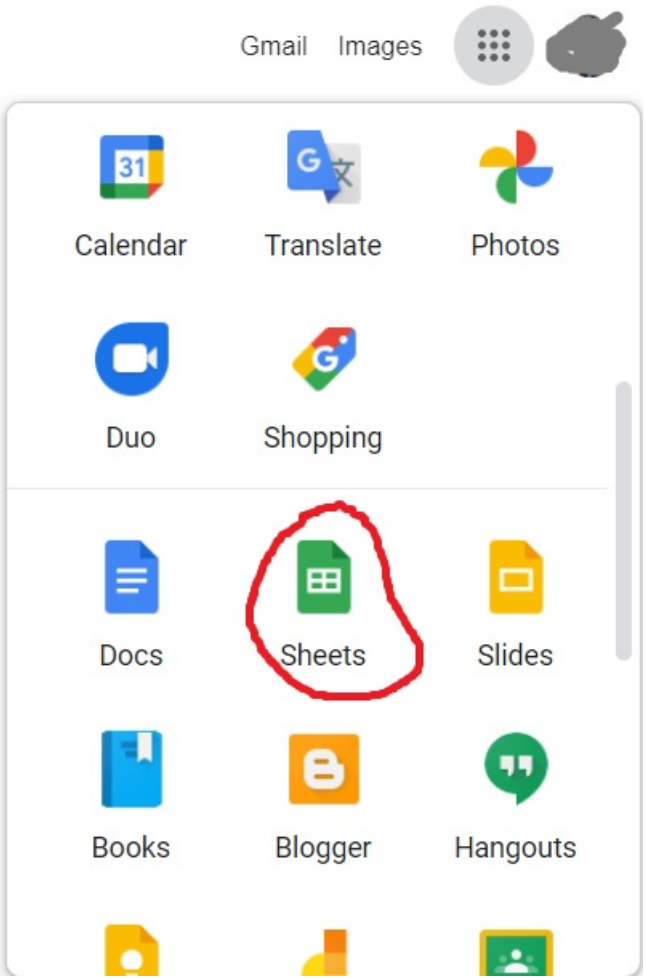



Figure 7.2 Open Google Spread Sheet Using Icon

### Create new file-

After opening Google sheet, you can create a new file; and also can select several templates, as- to-do-list, annual budget, and monthly budget (refer to figure 7.3).

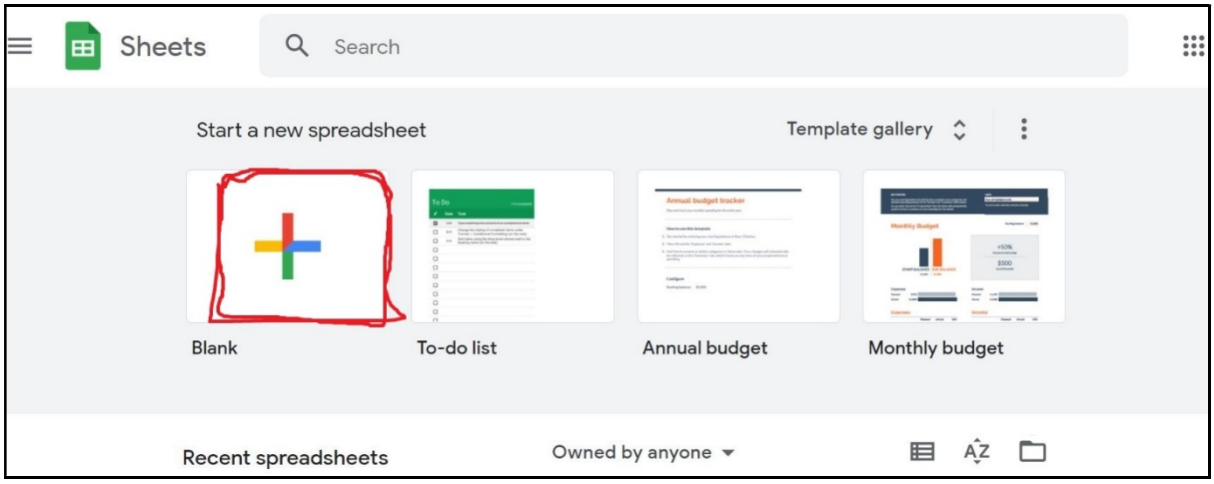



Figure 7.3 Create new file

**Import and convert existing files in to google sheet**

If you have existing files, you can import and convert them to google sheets. Following are the steps to import a file. as-

Step 1- Go to Google Drive.

Step 2- Click on new and then File Upload.

Step 3- Choose the file you want to import from your computer to add it to Google Drive.

Step 4- In the Upload complete window, click the show file location.

Step 5- Right-click the file and select Open with Google Docs (Sheets).

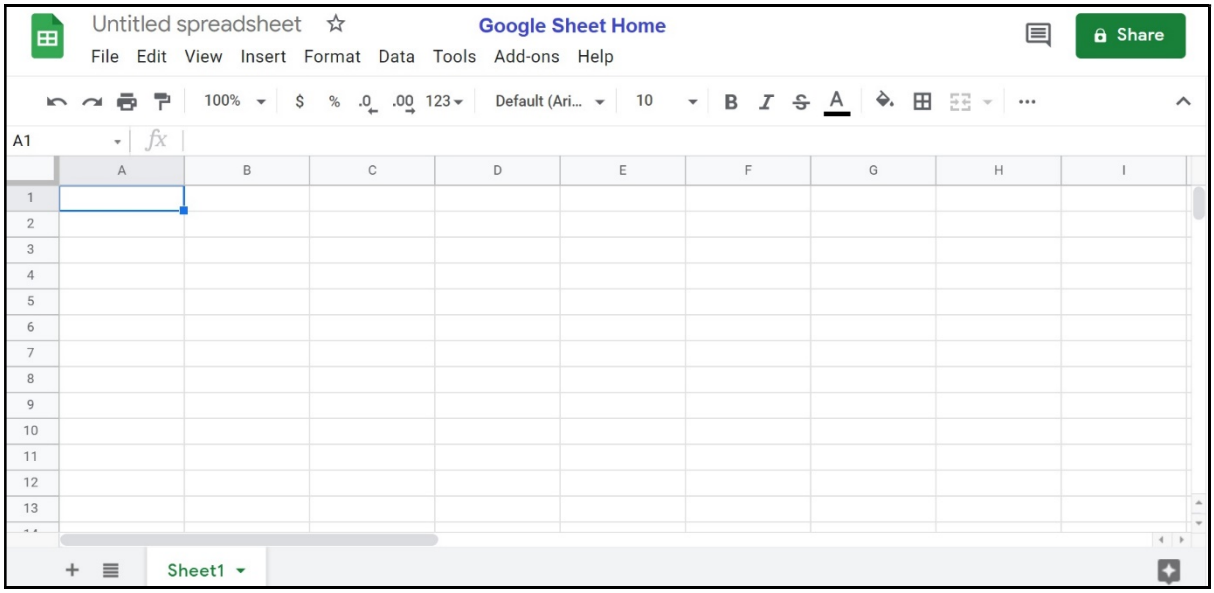



Figure 7.4 Google Sheet Interface (home)

You can do the following tasks on the google sheets (only few are listed here)-

- Access stored Google Drive files offline.
- Get instant insights into your data
- Insert and edit and summarize your data with charts.

- Filter your data in a spreadsheet.
- Protect content in a spreadsheet
- Share links of your file to others.
- Transfer ownership of a file.

## *7.5 GOOGLE DOCS- AN OVERVIEW*

Google Docs is a free Web-based application which offers word processing, spreadsheets, presentations, forms, and drawings. Google Docs facilitates to create, edit and store docements (files) online. Docements can be accessed from any computer with an Internet connection and a full-featured Web browser.

Users of Google Docs can import, create, edit and update documents and spreadsheets in various fonts and file formats, combining text with formulas, lists, tables and images. Google Docs is compatible with most presentation software and word processor applications. Work can be published as a Web page or as a print-ready manuscript. Users can control who sees their work.

Google Docs provides an easy-to-use, integrated way for teachers and students to work together on projects, reports, and more, and to collect and share information in a secure online environment. Some of the advantages of using Google Docs include: (i) Anytime, anywhere access (ii) Collaboration support (iii) Autosave and revision history; and many more.

## *7.6 STEPS TO USE GOOGLE DOCS*

**Step 1: Setting Google Account**

For using Google Docs you have to setup a Google account (if you does not have one). It is free to signup a Google Account, and with it you can access GMAIL, Maps, Youtube, as well as GDrive.

To create a Google Account you can use (http://docs.google.com) this link. You will get the screen as shown in Figure 7.5

Enter your information and follow the suggestion. After creating the Google Account login and get access to google Drive screen.

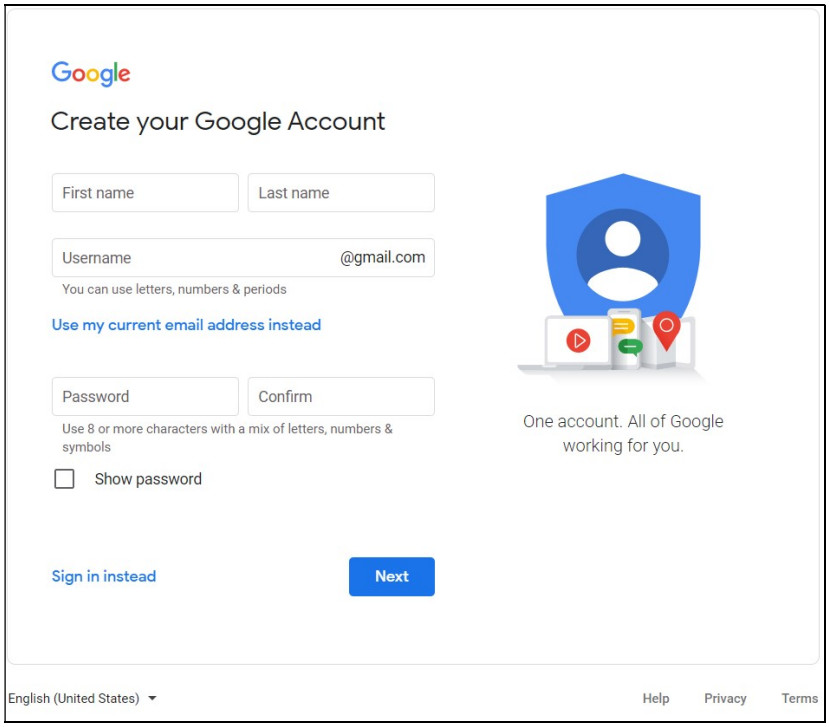



Figure 7.5 Google Account Interface (home)

### Step 2: Starting Google Docs

There are a different ways to get to Google Docs, contingent upon your gadget. You can download the application from the App Store or Google Play, or click on the Google Apps symbol in the upper-right corner of the Google landing page. You should then tap the Docs button — you might need to look down inside the menu that pops-up or click More From Google in that equivalent pop- up menu to see it.

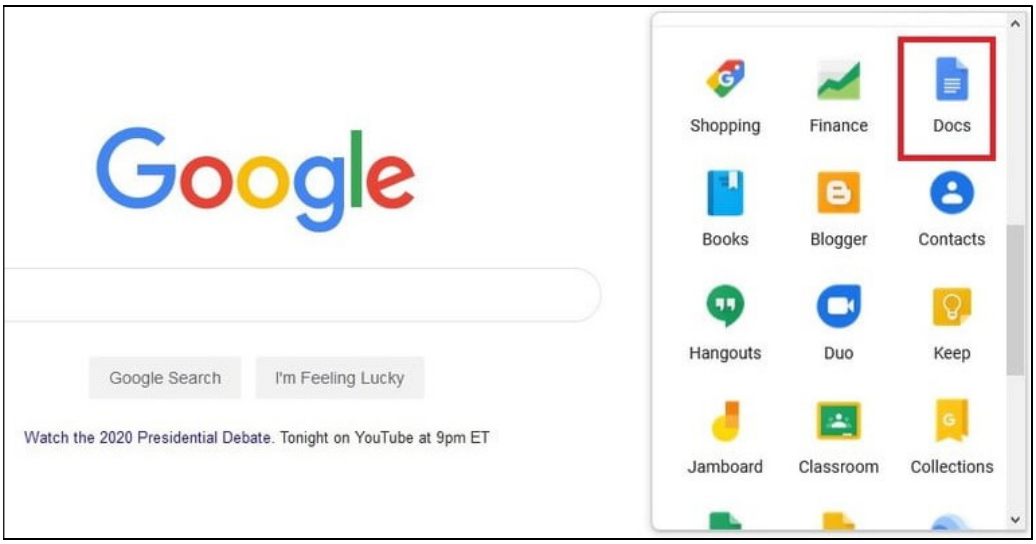



Figure 7.6 Google Docs Launching Dashboard

### Step 3: Creating a New Document

To make a new document,

- Click the blank page with the multicolored Addition sign inside it, which is located on the upper-left side of the main Google Docs page.
- After that a blank page icon with the multicolored addition sign will pop up again at the top of your screen. Click on that to open a new document.

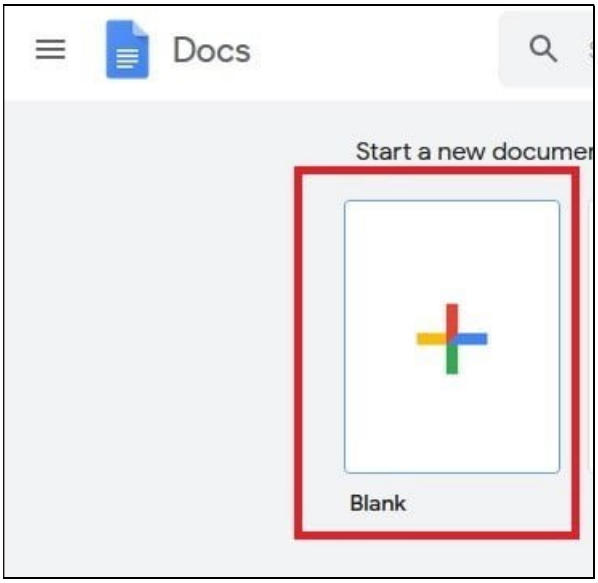



Figure 7.7 Creating a new document

### Step 4: Working on a new document

Once you've created a document, you can work on it.

- Click Untitled Document in the upper-left corner to add a title to your document.
- You can also adjust the font type, text size, and much more via the Toolbar at the top of the page. If those options are hidden, click the downward-facing Arrow in the upper-right corner to display them.
- Any changes made to your file will be saved automatically to the Google cloud platform. And you can access that file from any of your devices that has an internet connection.
- If you look to the right of your document's title at the top of the screen, you should either see Saving… or Saved to Drive. Wait for the second message to appear before exiting out to ensure all your work has been saved.
- You can also use shortcut keys to format your document
    - Bold — Ctrl+B
    - Italic — Ctrl+I

- Underline — Ctrl+U
- Strikethrough — Alt+Shift+5
- Subscript — Ctrl+,
- Superscript — Ctrl+.

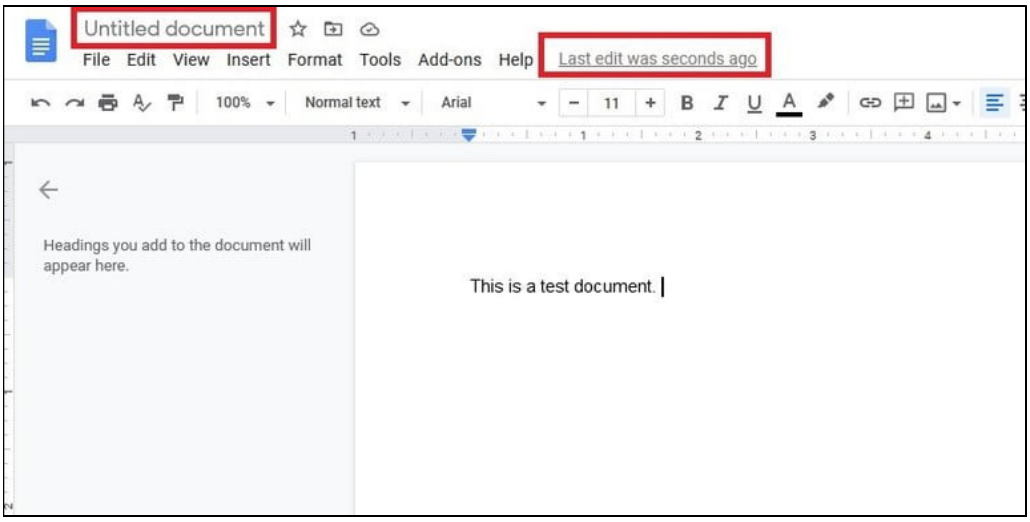



Figure 7.8 New document in Google Docs

## 7.7 GOOGLE SLIDES- AN OVERVIEW

Google Slides is a free program that is important for Google's set-up of electronic applications, including Google Docs (word preparing), Sheets (bookkeeping pages), Slides (introductions) and Forms (gathering and putting together data). What's especially amazing about Google Slides is that you can make, alter, work together and present consistently across working frameworks and without potential document similarity or debasement issues, overseeing streak drives or sorting out connector links. Utilizing an online program likewise takes out the danger of moving an infection.

It is likewise genuinely simple to move a show from PowerPoint to Google Slides and back once more, however you might lose some designing simultaneously. In the event that you do move a show, page through to ensure the slides actually look the manner in which you need them to. In case you are utilized to PowerPoint and end up expecting to utilize Google Slides (or the other way around), dread not! The orders and techniques are quite comparative among them, and in the event that you stall out, there are heaps of acceptable online assets to address your inquiries.

*To feature a couple of key components and advantages:*

- Widespread access, from your telephone, tablet or PC
- Backing for both Android and iPhone/iPad (Google Slides applications)
- Offer your show with choices for to limit/empower seeing, remarking and altering

- Auto-save

## 7.8 STEPS TO USE GOOGLE SLIDES

**Step 1 – Create a new presentation in Google Slides**

- Login into your Google Account, head to Google Drive.
- There, make a Google show by clicking **New > Google Slides > Blank Presentation**.
- You'll be diverted to another page with a blank page(presentation)

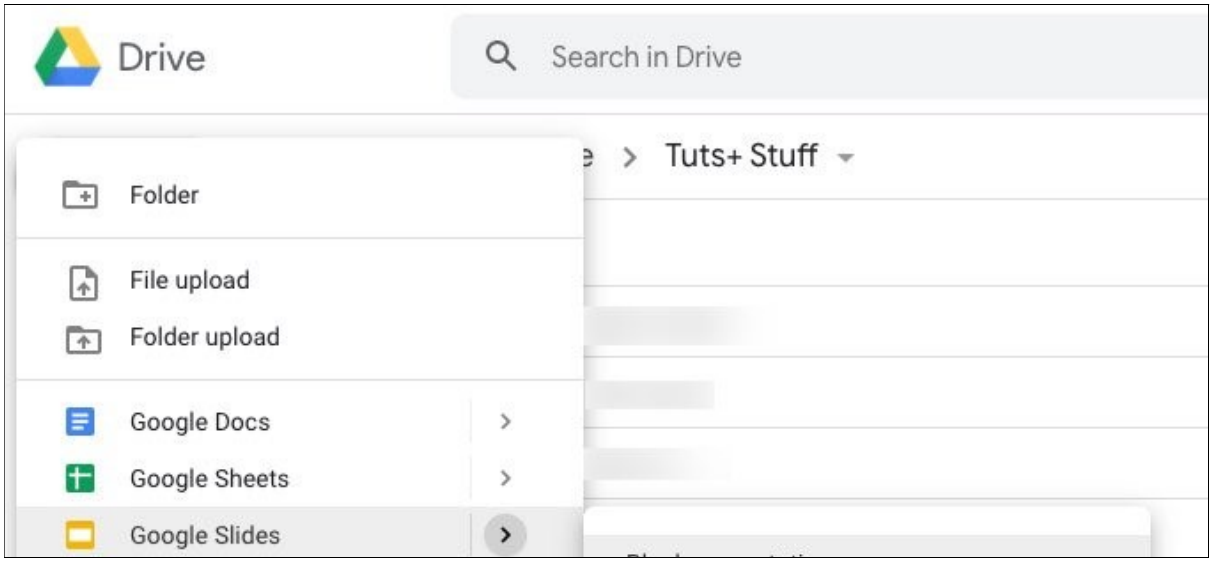



Figure 7.9 Creating new presentation in Google Slides

**Step 2 – Creating new Slide**

- If you are on the slides page, select an option from the top of the page to create a new slide.
- You can press the white square with a plus sign for a blank slide, or click one of the templates.
- Click on the Template Gallery option, where more templates will show up.

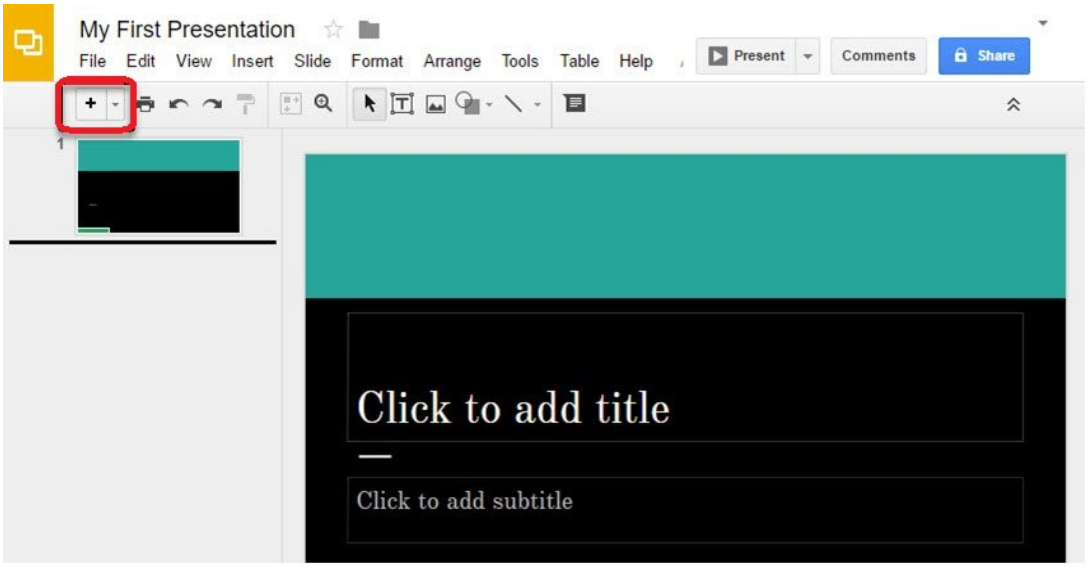



Figure 7.10 Adding new Slides

- Delete slides by selecting the slide and clicking ***Edit > Delete***.
- Or right-click on the slide thumbnail in the sidebar and clicking Delete slide.
- Or simply press the Delete key while the slide is selected.

**Step 3 – Formatting a Google Slides Presentation**

The initial phase in making presentation is arranging what it looks like. In this way, we should investigate the Themes sidebar that shows up after opening a new slide.

Google Slides comes preloaded with various themes for slides.

The Themes sidebar shows up on the right half of your new slide. Utilize that bar to travel through the different themes accessible.

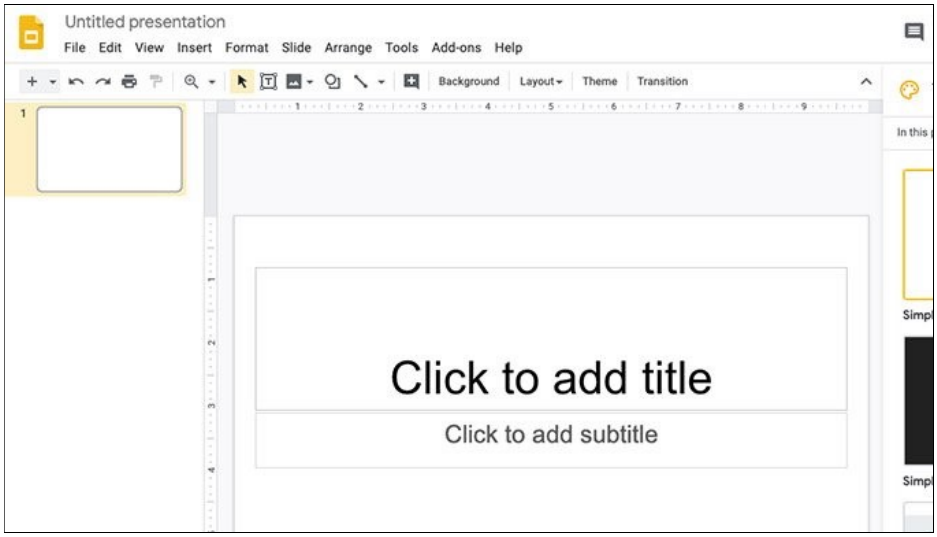



Figure 7.11 Formatting in Google Slides

**What are the things that we can do using Google Slides?**

- **Create and Present a Professional Presentation:** Google Slides is the most ideal decision for writing and putting across a presentation expertly. Alternatives accessible with the moderator incorporate speaker notes and the choice by which one can set up Q&A adjusts during the show.
- **Share a Presentation Online:** Google Slides can likewise be utilized to make a slideshow show that can run consequently on the web at whatever point somebody attempts to utilize it. Utilizing Google Slides, one can make a shareable connection to the show so it very well may be utilized in online media. One can likewise make codes that would permit one to insert their show into their own sites.
- **Create a Timeline:** One can make a timeline with Google Slides with the use of drawing tools. However, if one selects the correct Google Slides Template, making one's timeline presentation would be an easy task.
- **Work as a Team:** Google Slides very much like some other office usefulness apparatus that G Suite offers has distinctive sharing choices like can alter, can see, can remark access. This permits clients to adjust the substance of the presentation continuously cooperation differently or prevent them from doing as such if the show maker doesn't need others to affect the archive with a particular goal in mind.

## *7.9 GOOGLE DRIVE- AN OVERVIEW*

Google Drive is a cloud-based capacity arrangement that permits you to save records on the web and access them anyplace from any cell phone, tablet, or PC. You can utilize Drive on your PC or cell phone to safely transfer records and alter them on the web. Drive likewise makes it simple for others to alter and team up on records.

Google Drive also gives you access to free web-based applications for creating documents, spreadsheets, presentations, and more.

**Why use Google Drive?**

Google Drive is perhaps the most well known cloud storage administrations accessible today. On the off chance that you've never utilized a cloud-based capacity administration like Google Drive previously, pause for a minute to consider the upsides of keeping your documents on the web. Since records can be gotten to from any PC with an Internet association, Drive takes out the need to email or save a document to a USB drive. Furthermore, in light of the fact that Drive permits you to share records, working with others turns out to be a lot simpler.

## *7.10 STEPS TO USE GOOGLE DRIVE*

For using Google Drive you have to login to your Google Account. (Google Account setup has been discussed earlier in this UNIT).

Once you login to your google account you can use Google Drive option.

Google Drive doesn't simply store your records; it additionally permits you to make, share, and oversee reports with its own efficiency applications. In the event that you've at any point utilized a suite like Microsoft Office, a few things about Google Drive's applications may appear to be natural. For example, the sorts of documents you can work with are like records that can be made with different Microsoft Office programs.

**Below are the types of files you can create and share on Google Drive:**

- Documents: For composing letters, flyers, essays, and other text-based files (similar to Microsoft Word documents)
- Spreadsheets: For storing and organizing information (similar to Microsoft Excel workbooks)
- Presentations: For creating slideshows (similar to Microsoft PowerPoint presentations)
- Forms: For collecting and organizing data
- Drawings: For creating simple vector graphics or diagrams

**Accessing Google Drive**

1. Whenever you've set up your Google account, you can get to Google Drive by going to **http://drive.google.com** in your internet browser.
2. You can also navigate to Google Drive from any Google page (such as Gmail or Google search) by selecting the grid icon near the top-right corner, then clicking Drive.

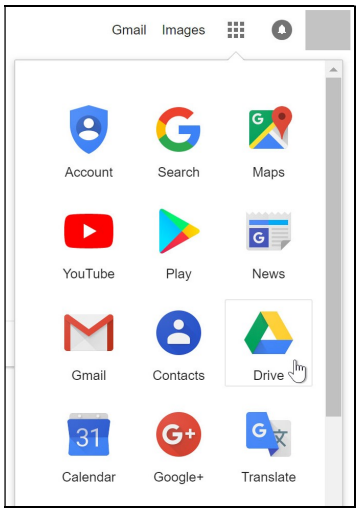



Figure 7.12 GDRIVE Link in Google Account

### Interface of Google Drive

Your Google Drive might be vacant at the present time, yet as you transfer and make records you'll have to realize how to see, oversee, and sort out them in the interface.

You can use different facilities under GDrive by using ***(+New)*** option under Drive logo in left side.

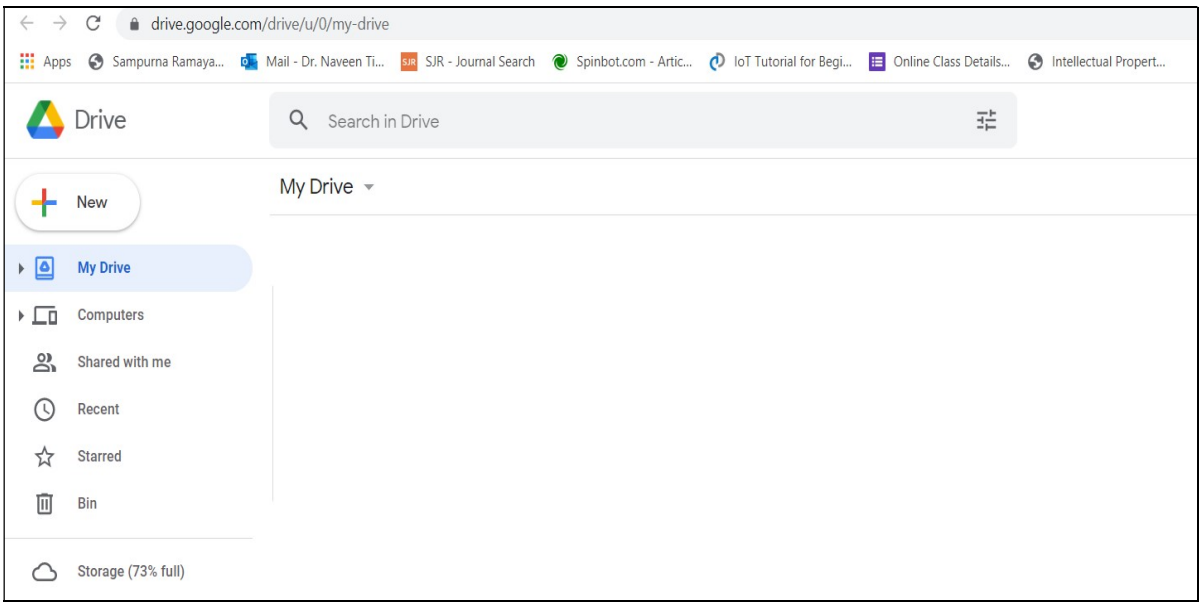



Figure 7.13 GDRIVE Interface

## 7.11 BRIEF INTRODUCTION TO DISCUSSION FORUM, BLOGS AND NEWSGROUPS

### Discussion Forum

A discussion forum is a website where people can gather to have discussions about a specific topic. Electronic message boards for asynchronous communication, also commonly referred to as Web forums, message boards, discussion boards, discussion groups and bulletin boards. A program which permits individuals to have conversations on the web. The conversation is begun by one part by posting a subject and different individuals answer. This permits individuals from similar gathering to share data and thoughts.

It's common for websites to add a discussion forum to their website for people to discuss the product, service, or organization and even help each other. It reduces customer support requests, is great for search engine optimization, and creates a sense of community.

Discussion Forums are maybe the most punctual type of web-based media stage. Early adopters of Internet innovation might review news gatherings or particular vested parties (SIGs) that were facilitated on the early sites and frameworks associated with the Internet. These people group were established in specialized points however in the long run extended to cover pretty much any classification that could draw in a group of people. These stages

developed and are currently facilitated on purchaser situated informal communication destinations.

*Some of them are –*

- Reddit
- Stack Overflow
- Quora
- Yahoo Groups
- Google Answers

**Blogs**

A blog is a sort of site that is refreshed routinely with new substance. Most sites contain short, casual articles called blog entries. These posts ordinarily contain a blend of text, photographs, recordings, and different media. At its center, a blog is only a space on the Web that you can make to record and state your viewpoints, encounters, and interests. A larger part of websites are composed by one individual. Thus, the normal blog is genuinely close to home, mirroring the interests and character of the individual who composes it. This is the sort of blog we'll zero in on in this instructional exercise.

Individuals who compose blogs are called bloggers. From what you hear on the news, you may think bloggers are each of the a particular kind of individuals—youthful, politically slanted, and educated. Or on the other hand possibly you've caught wind of bloggers who've expounded on stunning encounters or yearning projects, then, at that point transformed their web journals into smash hit books. While a few bloggers do fit these portrayals, a greater part of bloggers don't. Indeed, there's no "normal" blogger—web journals are composed by individuals, all things considered, and foundations and from varying backgrounds.

There are many reasons why people blog, like:

- To share your experiences and expertise
- To speak up about an issue you care about
- To become more involved with hobbies and passions
- To be part of a community
- To advance your career or start a career in writing
- To keep family and friends updated about your life

Another explanation a few group blog is to bring in money. Individuals bring in cash from their web journals by facilitating promotions, selling items, or distributing their blog entries as a book or printed articles.

Some of the common features that a typical blog will include:

- Header with the menu or navigation bar.
- Main content area with highlighted or latest blog posts.

- Sidebar with social profiles, favorite content, or call-to-action.
- Footer with relevant links like a disclaimer, privacy policy, contact page, etc.

**NewsGroups**

A newsgroup is a storehouse of electronic messages posted by clients and oversaw by the Usenet framework. This is an overall Internet conversation framework that is isolated from the World Wide Web. Usenet was set up in 1980, somewhat more than 10 years before the making of the World Wide Web. Newsgroups on Usenet were one of the main chances for general PC clients to share and post data on the arising Internet.

Members in a newsgroup read and post messages to at least one classes. Usenet was made in when the transfer speed of the Internet was exceptionally restricted, and newsgroups were intended to be text as it were. All the more as of late, clients had the option to join pictures and different records to postings, yet as a rule, newsgroups stay intensely text-based.

The protocol utilized by newsgroups is called Network News Transfer Protocol, or NNTP. This is one of the numerous correspondence conventions utilized on the Internet, which additionally incorporates the more notable HTTP convention utilized by the World Wide Web. The name of a newsgroup is dictated by the individuals who make it. A name normally comprises of a few words that portray the subject, isolated by a dot.

Some of the examples are-

- news.admin.net-abuse.email
- rec.arts.sf.tv.babylon5.moderated
- talk.origins

Newsgroups are dissimilar from other communication methods that use the World Wide Web in a number of ways:

- No registration with a particular newsgroup is required
- Stored information is distributed on a collection of computers instead of a central server
- Archives are always available
- Newsreader software is commonly used to read and post messages

## *7.12 POINTS TO REMEMBER*

- E-Office Suite is the need of modern office automation which makes our task efficiently in terms of time, effort, cost and quality of service.
- Google Docs facilitates to create, edit and store docements (files) online. Docements can be accessed from any computer with an Internet connection and a full-featured Web browser.

- Google Drive is a cloud-based capacity arrangement that permits you to save records on the web and access them anyplace from any cell phone, tablet, or PC
- Google Sheets is a web-based spreadsheet application that allows you to store and organize different types of information, much like Microsoft (MS) Excel.
- A newsgroup is a storehouse of electronic messages posted by clients and oversaw by the Usenet framework.
- A blog is a sort of site that is refreshed routinely with new substance. Most sites contain short, casual articles called blog entries.
- A discussion forum is a website where people can gather to have discussions about a specific topic.

## *7.13 GLOSSARY*

- Add Fonts - When you create a new document, Google Docs starts you off with nearly two dozen native fonts you can choose from using the dropdown list on your top editing toolbar.
- Templates - A template is a pre-created document that already has some formatting
- Create or Remove Header - Headers and footers are particularly useful when creating a Google Doc that has many pages. You can create a header that includes the document title, each page number, or both on every page all at once.
- Classroom - Classroom is where your child can find their assignments, grades and feedback, and communicate directly with their teacher
- Forms - Forms are often used by teachers for creating quizzes, parent feedback surveys, or even field trip forms.
- Drive - Drive is your child's virtual backpack, where they can hold all of their assignments, projects, and notes online

## *7.14 CHECK YOUR PROGRESS*

### Descriptive Type Questions-

1) How to get Google Account?
2) What are the different software tools available in Google Drive? Explain.
3) What is Google Docs?
4) What is a blogger? Explain.
5) Write the steps to use Google Slides?

### Objective Type Questions-

**a)** If you already have a Google account, you can use the same account to access Google Docs. (True/False)

**b)** You can insert automatic page numbers for your document in the header or footer. (True/False)

**c)** Google Docs do not allow you to insert or upload images. (True/False)

**d)** A Google doc is most similar to.....

**e)** Inserting a header at the top of a page will make it appear on.....

**Answer (Objective Type Question)-**

[a] True [b] True

[c] False [d] Microsoft Word [e] Every page

## *7.15 BIBLIOGRAPHY/ REFERENCES*


- https://support.google.com/a/users/answer/9282959?visit_id=637546643380456196-2961995063&hl=en&rd=1.
- https://zapier.com/learn/google-sheets/google-sheets-tutorial.
- https://docs.google.com/document/edit?id=1MZ7Vqub8LrD5kvRaU1fsf_i4DvVG2ea7VHebIGdQong
- https://edu.gcfglobal.org/en/googlespreadsheets/getting-started-with-google-sheets/1.


## *7.16 SUGGESTED READINGS*


- https://support.google.com/a/users/answer/9300311?ref_topic=9296423.
- https://zapier.com/learn/google-sheets/google-sheets-tutorial.
- https://edu.gcfglobal.org/en/googlespreadsheets/getting-started-with-google-sheets/1.

# UNIT- 8

# ONLINE OFFICE DOCUMENTS



## *8.1 INTRODUCTION*

In the current era of Internet, the demand of online office documents increased rapidly. Persons always prefers to save their data on an online storage or database, so that whenever they have Internet, there documents are always with them. In the present market, there are a lot of online, web-based office tools available. Some most famous examples of online office documents are Google Docs, Microsoft Office 365 and Zoho Office etc.

Online office tools provide a lot of facilities to its users. The first advantage is its availability across multiple devices and accessibility across the Internet. Until and unless you have internet, your documents are in your pocket always. With online office tools, it becomes very easy to collaborate with other team members. Online office tools also provide enhanced security to protect user's data and privacy. All the documents can be kept at one place when

we are using online documents. They can be accessed without downloading any other software. For accessing online documents, people just need a web browser to access online documents. They are portable and can be accessed on any device, any platform and anytime.

## *8.2 OBJECTIVES*

After the successful completion of this unit, you will be able to-

- Understand the advantages of Online Office Tools.
- Familiar with Google Forms.
- Explore various features that Google Forms provides.
- Able to Create quiz on Google Forms.
- Share your Google Forms to your Intended users.
- View and analyse received responses.

## *8.3 GOOGLE FORMS: AN OVERVIEW*

Google Forms is a free utility tool provided by Google, heavily used for survey. It is a web-based form creator and editor, included with other Google Docs products like Google Sheets, Google Docs, and Google Slides etc. Google Forms allows users to create web-based surveys, in collaboration with other users.

Google Forms lets its users to collect information from other persons via a large number of personalized tools, like quizzes and surveys.The quizzes and surveys that Google Forms provides, have a large number of response validation tools, various type of questions like Single Choice, Multiple Choice, Subjective, File Upload & Range Based questions. Google Forms can be used to collect RSVP's and also be used to take Online Examinations. It provides the facility to share the forms via email, social media or direct links.

Because of its web-based interface and online availability, it can be collaborated with multiple people on the same time. The main features of Google Forms are following:

- Online availability 24*7.
- Can be used for Surveys and custom forms.
- Drag and Drop facility available.
- Easy questions reordering.
- Addition of images, videos and custom logics in forms.
- Automatic response summaries.
- Real time response availability.
- Quick input validation & custom input validation

## *8.4 CREATE YOUR FIRST GOOGLE FORM OR QUIZ*

Before creating your first Google Form, it is required to have a google account and you must be signed on google. If you don't have a google account, you can create your own google account by visiting https://accounts.google.com. On the page, click on Create Account first then on For myself.

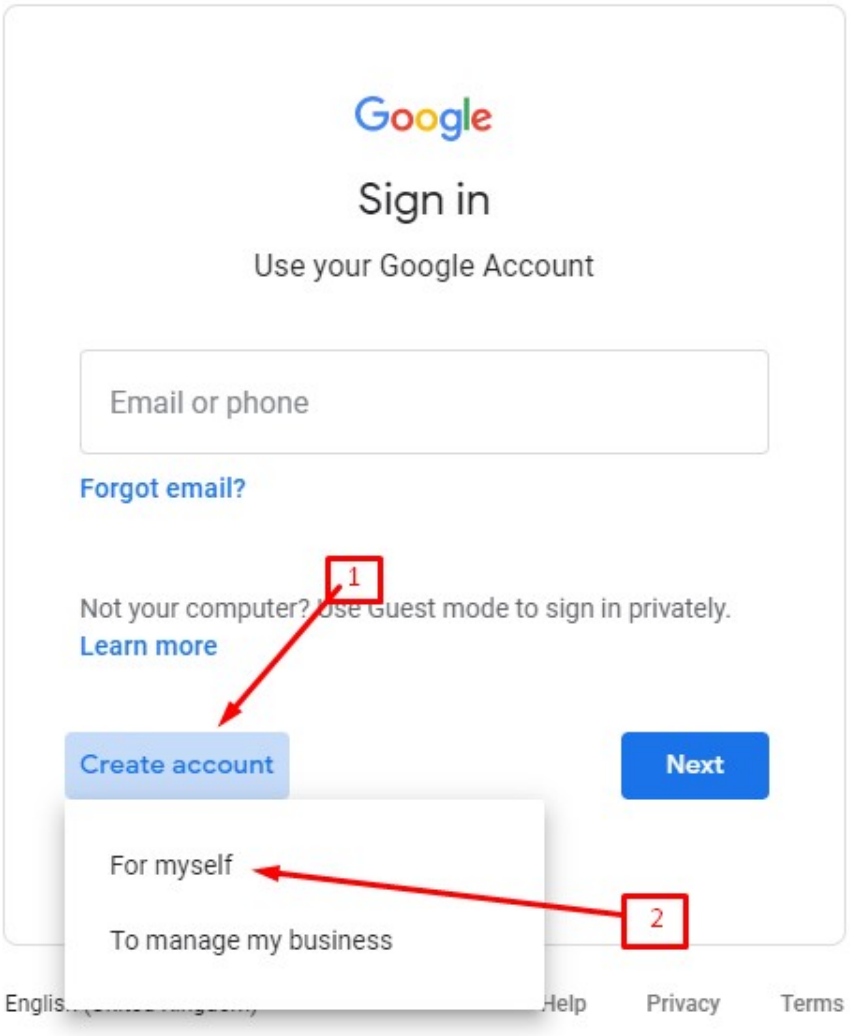



Figure 8.1 Google Account Page

On the next page, you need to provide some basic info about yourself like- first name, last name, username and password etc.

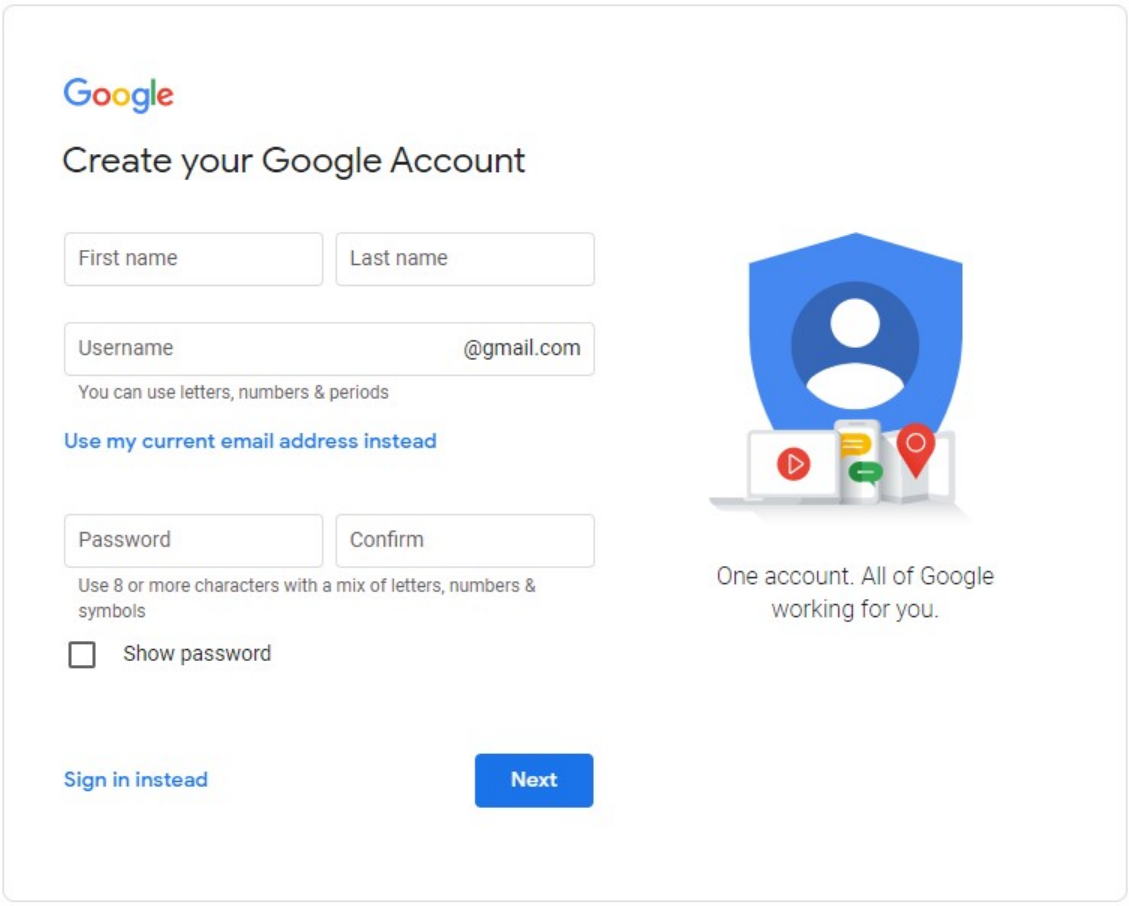



Figure 8.2 Google Account Signup Page

After successfully creating your account, you will need to visit https://docs.google.com/forms for creating your Google Form.

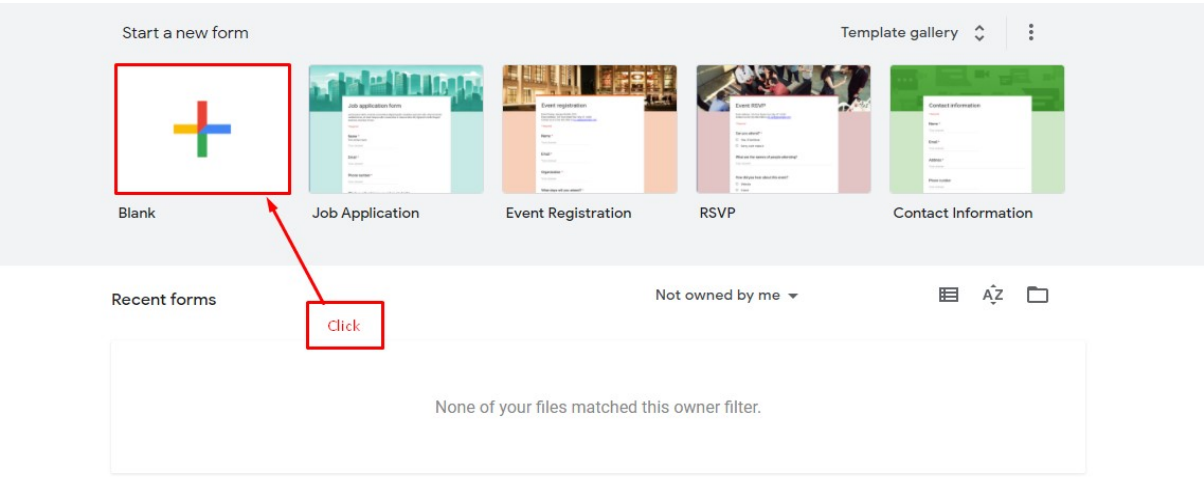



Figure 8.3 Create new Google Form

On visiting the above link, a web page will be opened like above. On that page, you will need to click on + icon to create a blank Google Form. After clicking on +, a blank form will be opened like below, which can be customized as per the requirement.

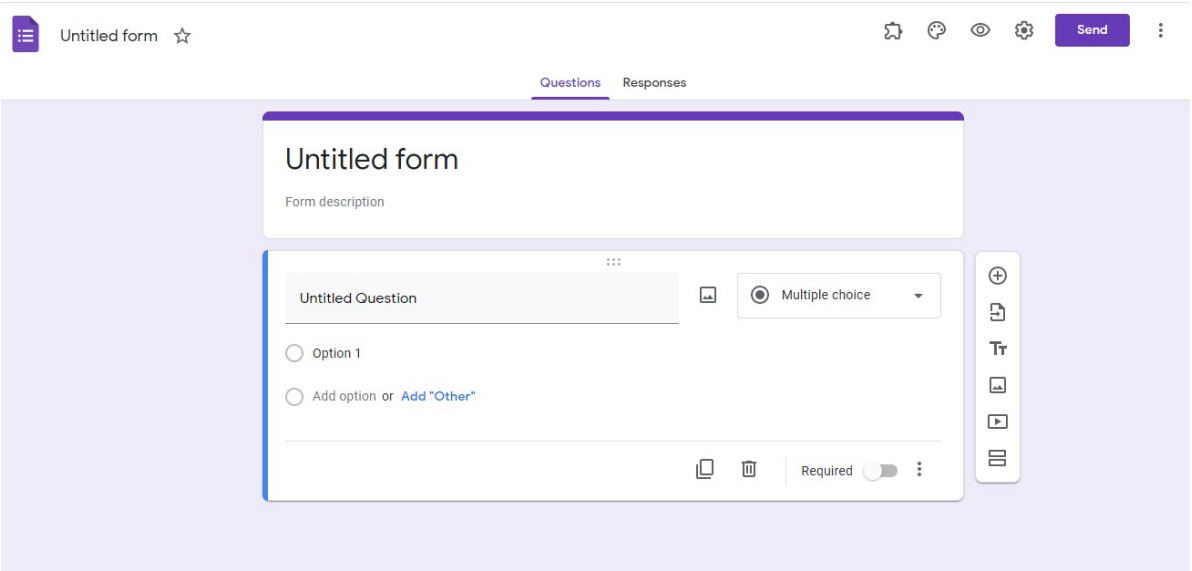



Figure 8.4 Blank Google Form

## 8.5 CHOOSE FORM SETTINGS AND PREVIEW

For changing the Google Form settings, we can click on Settings icon available at the top right corner of the screen.

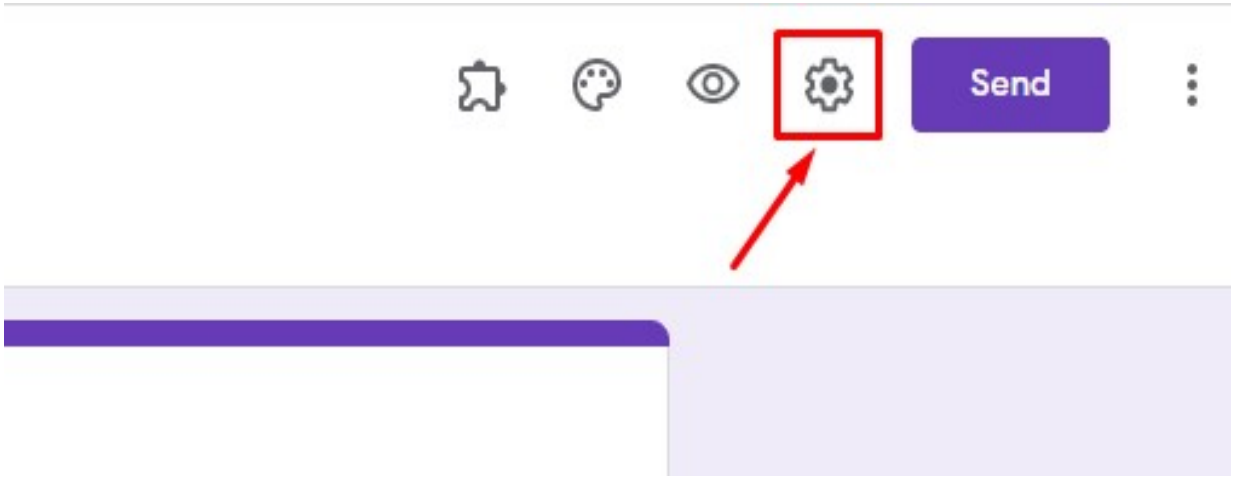



Figure 8.5 Google Account Settings

After clicking on the settings icon, a popup window will be available in front of you which will be used to change the settings of Google Form opened currently.

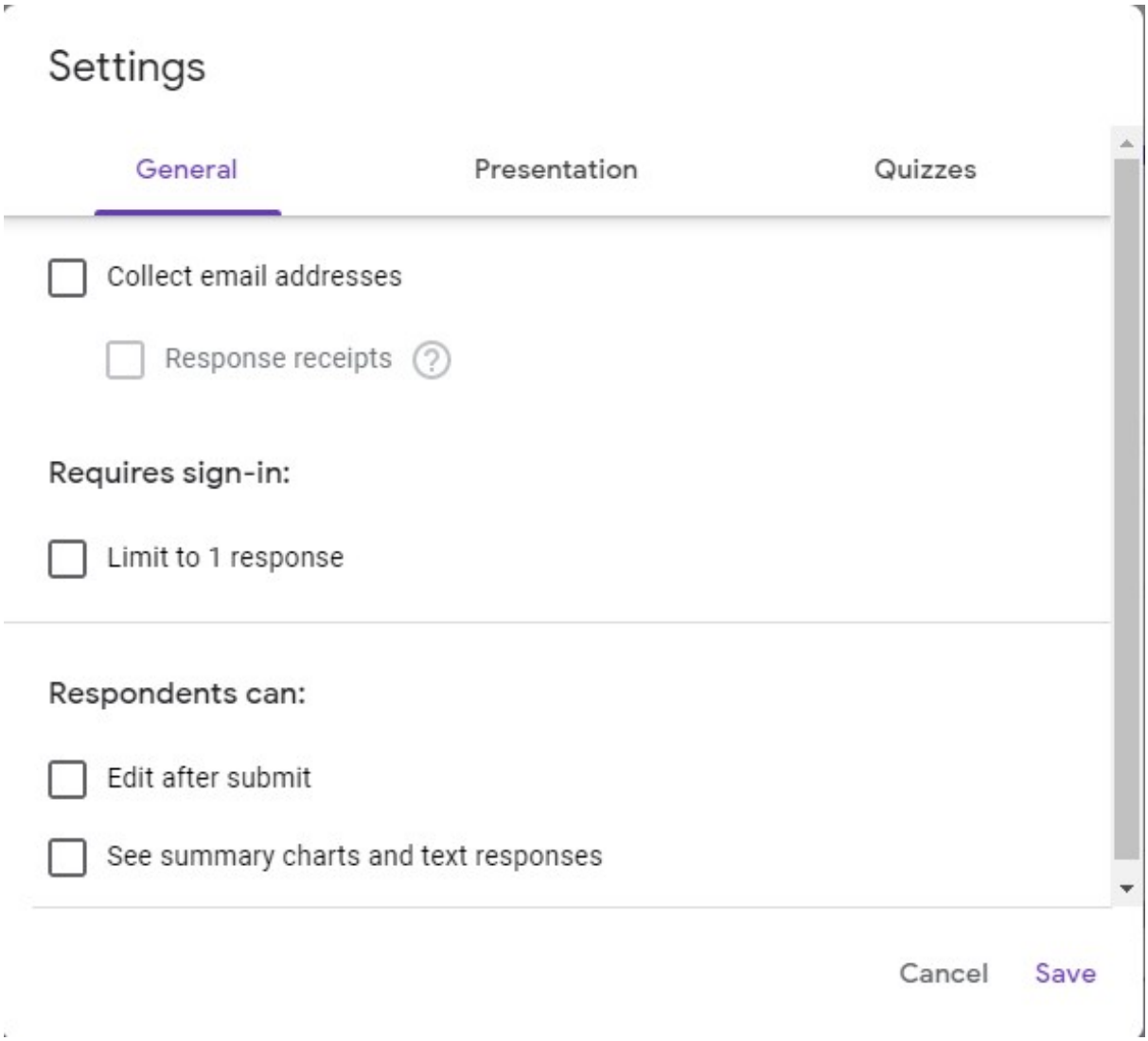



Figure 8.6 Google Forms General Settings

There are a lot of customization settings available like Email collection, limiting per user responses and editing form after submitting etc. Within these settings, on the third tab **Quizzes,** is available which will be used to convert a form as Quiz like below:

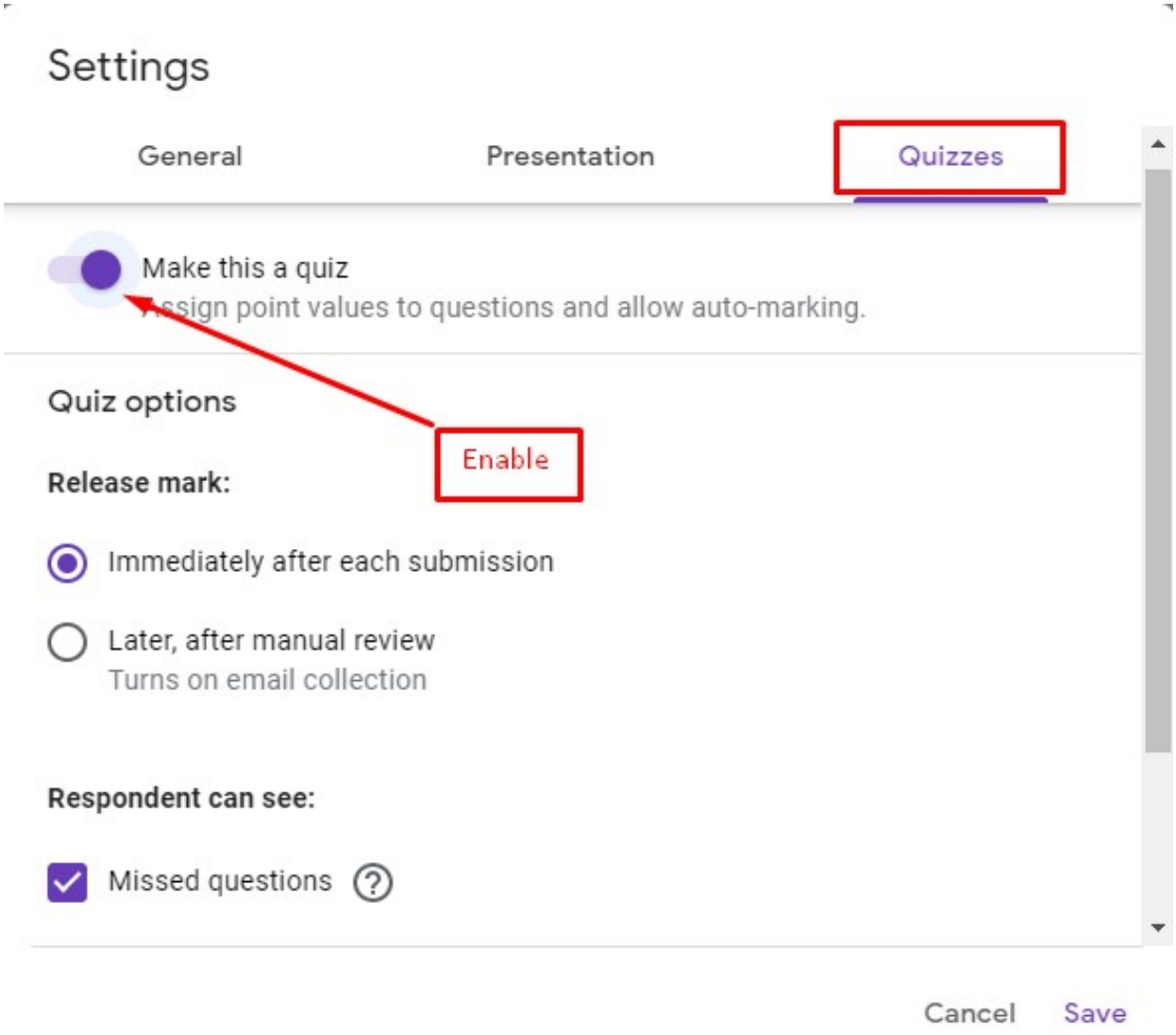



Figure 8.7 Google Account Quiz Settings

By enabling the Quiz option, Google Form will be converted to a Quiz, in which you can assign points or grades for each question. Also you can shuffle questions order with these settings.

To Preview the form as a responder, you need to click on the preview button available at the top right corner of the form like below:

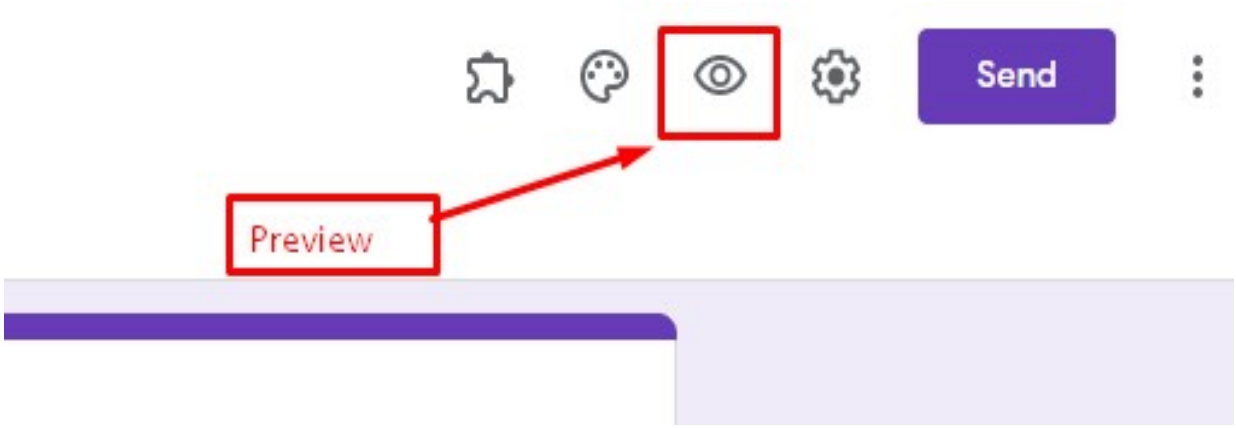



Figure 8.8 Google Forms Preview

After clicking on the preview button, the Google Form will be opened in a new tab or window of browser. Here the form will be shown same as will be visible to a respondent.

## 8.6 CUSTOMIZE YOUR GOOGLE FORM

Google form also provides the facility to customize the forms as per your choice. There are a lot of customization options available with google forms shown in the image below:

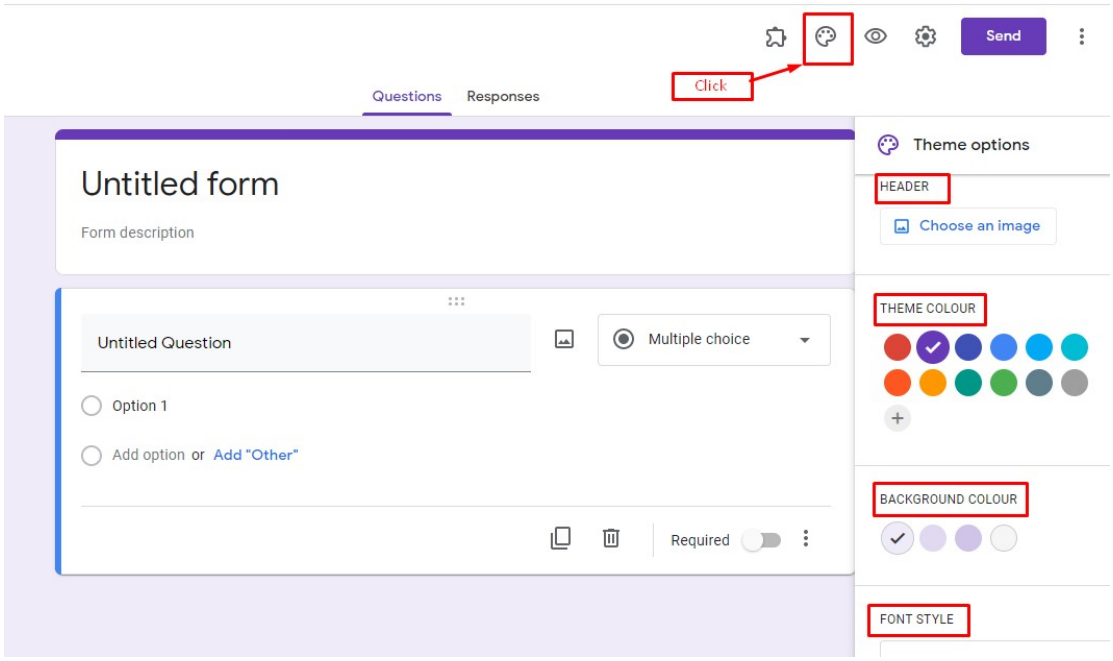



Figure 8.9 Google Forms Customization

With customization options, you can add header images to your google form, can choose colour theme, change font and also the background colour of the form which will be visible to your users.

## 8.7 ADDING MORE QUESTIONS TO GOOGLE FORM

If you are going to create a google form, you will need to add multiple questions in your google form. For adding new question, click on (+) sign as in the image below:

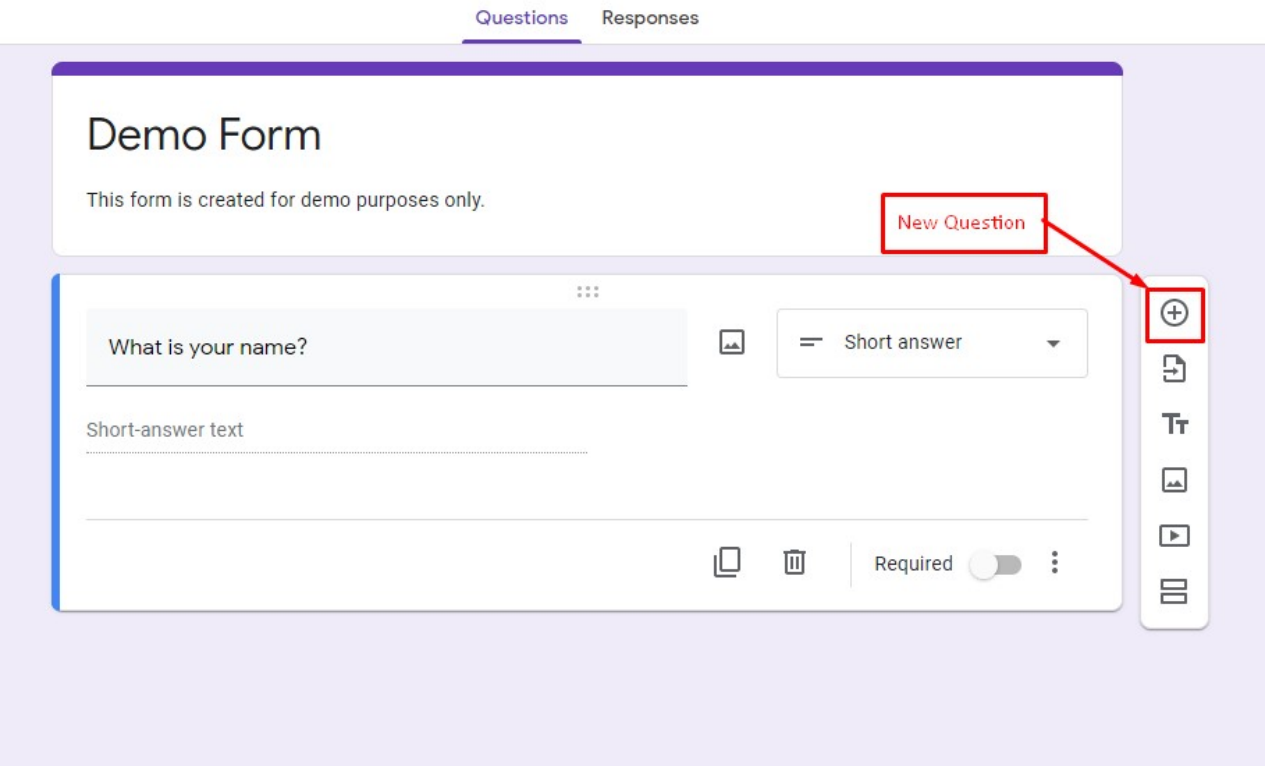



Figure 8.10 Google Forms, Create New Question

After clicking on (+), a new question will be available there, which can be edited easily.

Google Form also provides facility to add new section to the form, for adding new section, we have to click on the icon having two rectangles.

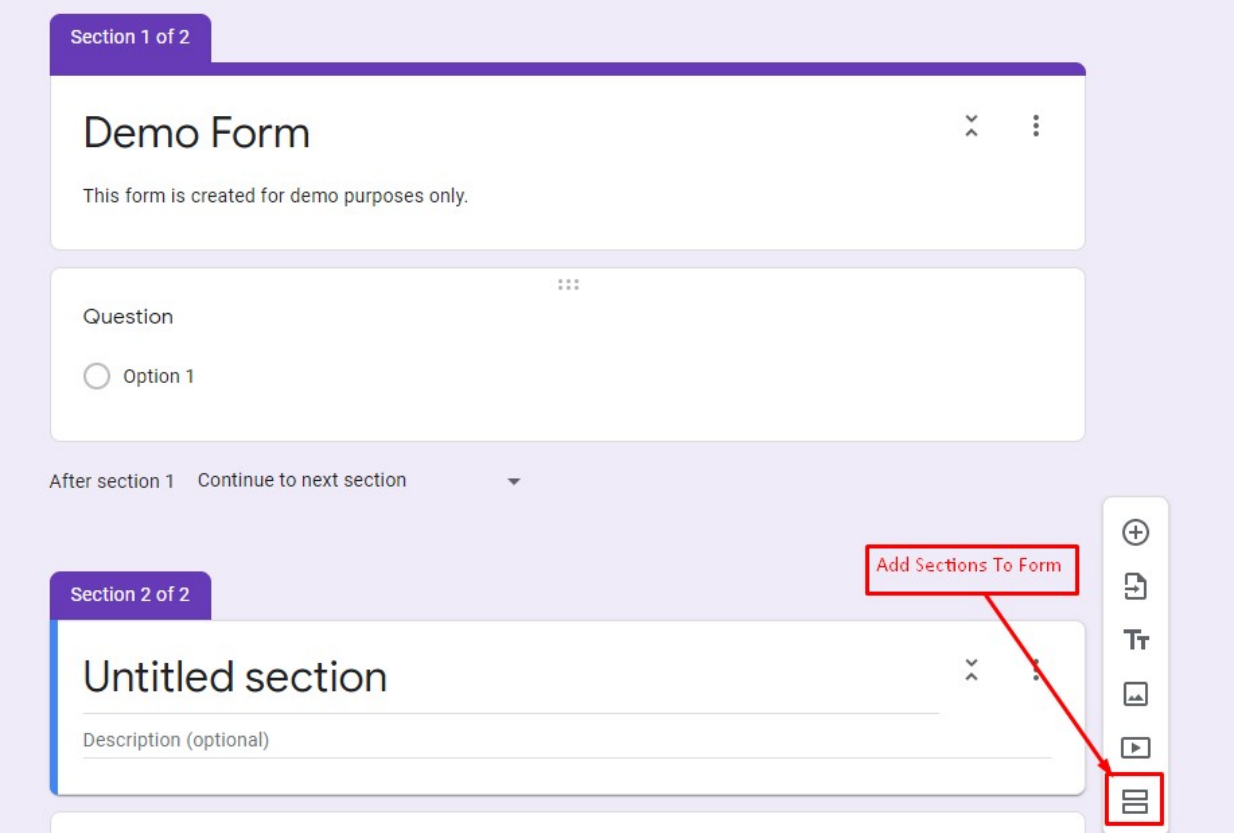



Figure 8.11 Google Forms, Add New Section

After clicking on section Icon, a new section of questions will be generated, which can be used to divide the form into multiple sections. Sections are mostly used whenever you have to group similar questions into one.

## 8.8 CHANGING QUESTION TYPES IN GOOGLE FORM

While creating a question, you can choose the question type from various options available there on Google form as shown in the image below:

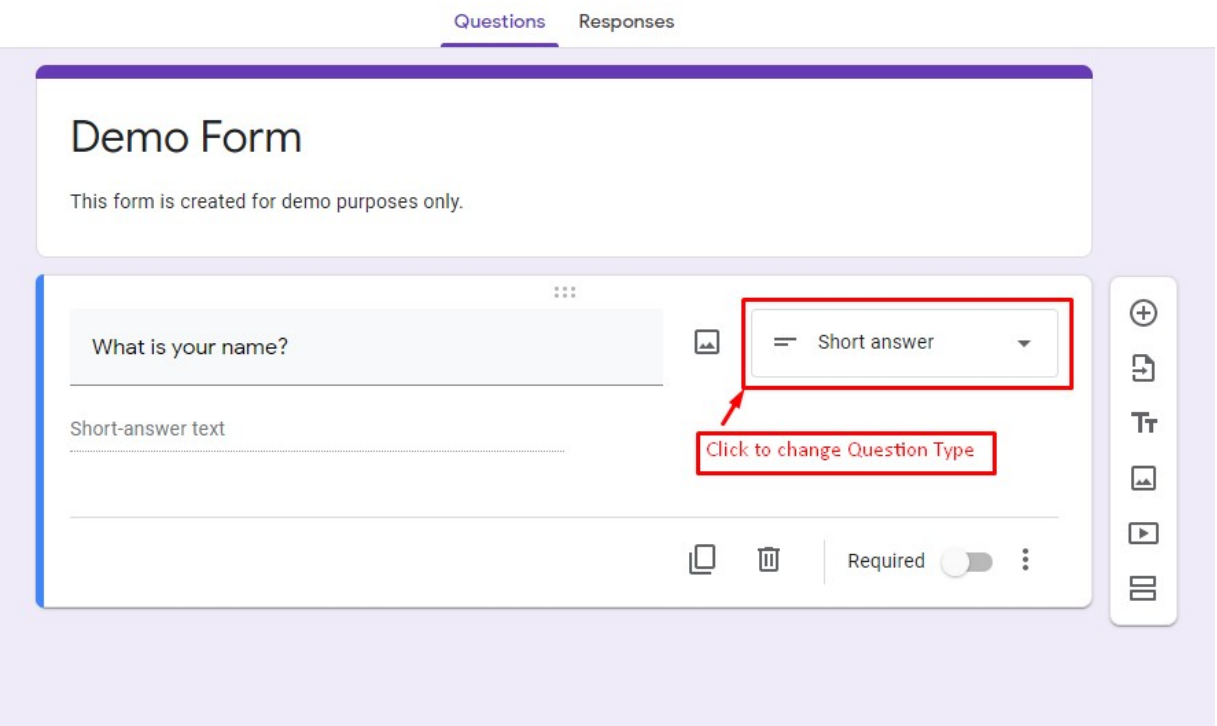



Figure 8.12 Change Question Type in Google Forms

After clicking on the dropdown above, a list of available question type will be opened. You are free to choose a question type from there.

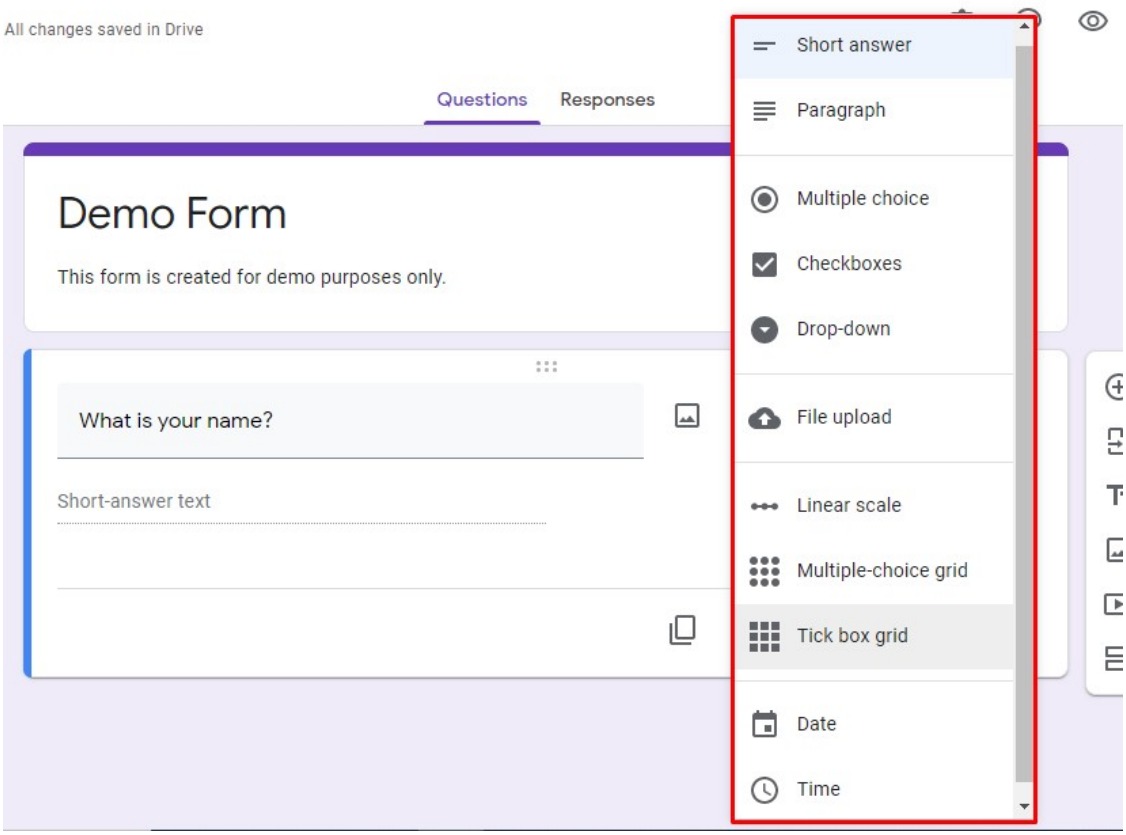



Figure 8.13 Question Types Available in Google Form

By selecting any of the above question type, the question will be automatically converted to that type. The choices for the question types are following:

**Short Answer:** Questions require only a few words. Good choice for email addresses or mobile numbers.

**Paragraph:** These types of responses require long-form answers of one or more paragraphs. Data input validation is available for this type of responses.

**Multiple Choice:** Respondents can choose between a set of options available there, but only one for a question. You can also include "Other" and an option so people can input a short answer.

**Checkboxes:** Responders can choose multiple options for a single, including the "Other" option for a short answer.

**Drop-down:** People can choose their answer from a set of options in a drop-down menu available, but only a single option for a question.

**File Upload:** It allows the user to upload a file in response to a question. Uploaded files are saved in Google Drive of the owner. You can specify the size and type of files people can upload like 5 MB, 10 MB etc.

**Linear Scale:** Responders can rate your question on a scale that starts at 0 or 1, and ends on a whole number from 2 to 10.

**Time:** Responder can choose the time of day or a duration of time.

**Date:** Responder can choose the date as an answer to the question. The default is day, month, and year. You can also include the time in answers.

**Multiple Choice Grid:** This option creates a grid from which you can select one answer per row. You can limit answers to one choice per column and can also shuffle the row order.

**Checkbox Grid:** This option creates a grid in which people can select one or more answer per row.

## *8.9 SHARE GOOGLE FORM OR QUIZ*

Google Form allows its users to collaborate with others. You can share your google form with others, so that they can edit the form or can respond to that form. This feature makes the task easier while working on a group. There is no limit on number of persons with the forms is to be shared.To share your google form with your collaborators, you can tap on the Three Dots, available at the top right corner of the screen.

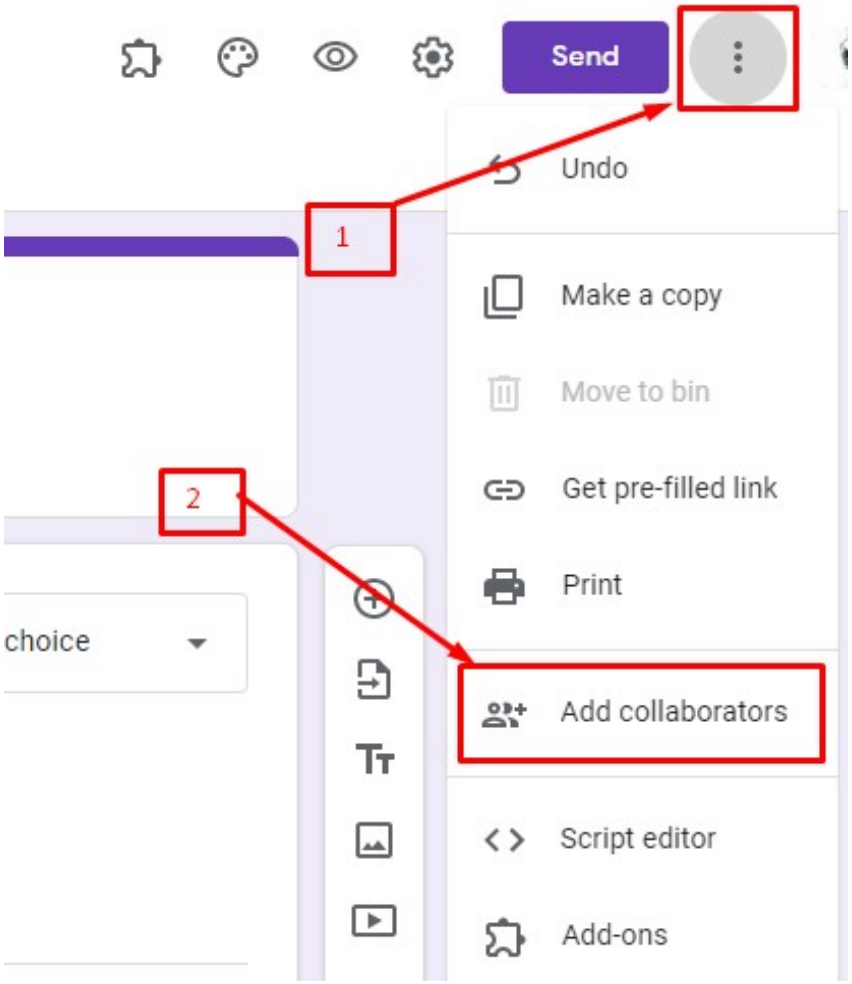



Figure 8.14 Google Forms, add collaborators

After clicking on Add Collaborators, a popup window will be opened like below:

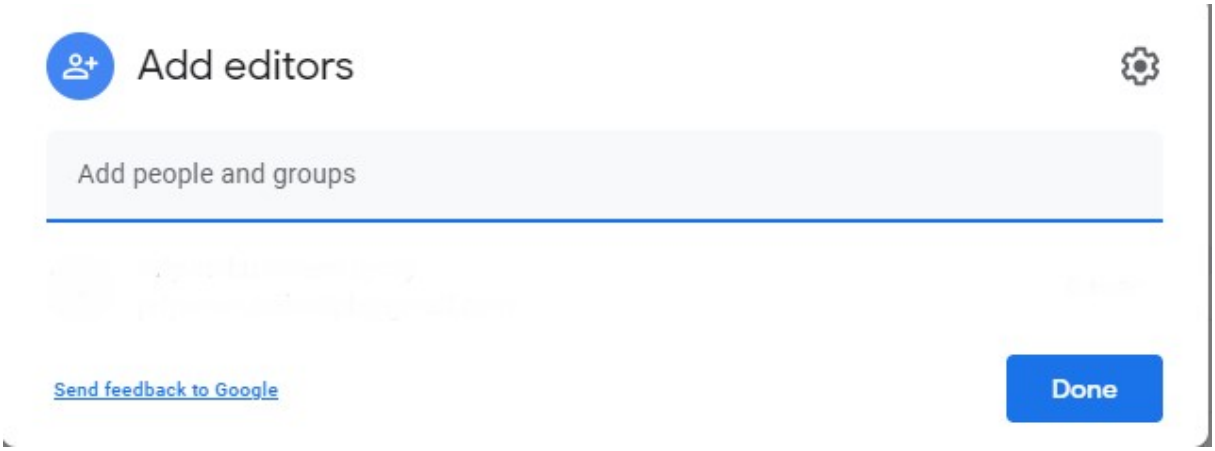



Figure 8.15 Google Forms, add collaborators using email

By the above window, you can easily add your collaborators on the same Google Form. To share google form with your respondents, you can use the **Send** button available at the top right corner. With this Send button, you can share the link of your form. You can also generate a short link for your google form here.

## 8.10 ANALYZE OR GRADE RESPONSES

With Google Forms, you can easily analyse responses in real time. To view responses of your Google Form, you need to click on **Response** tab, Response Tab also shows the count of the responses that have been received till now.

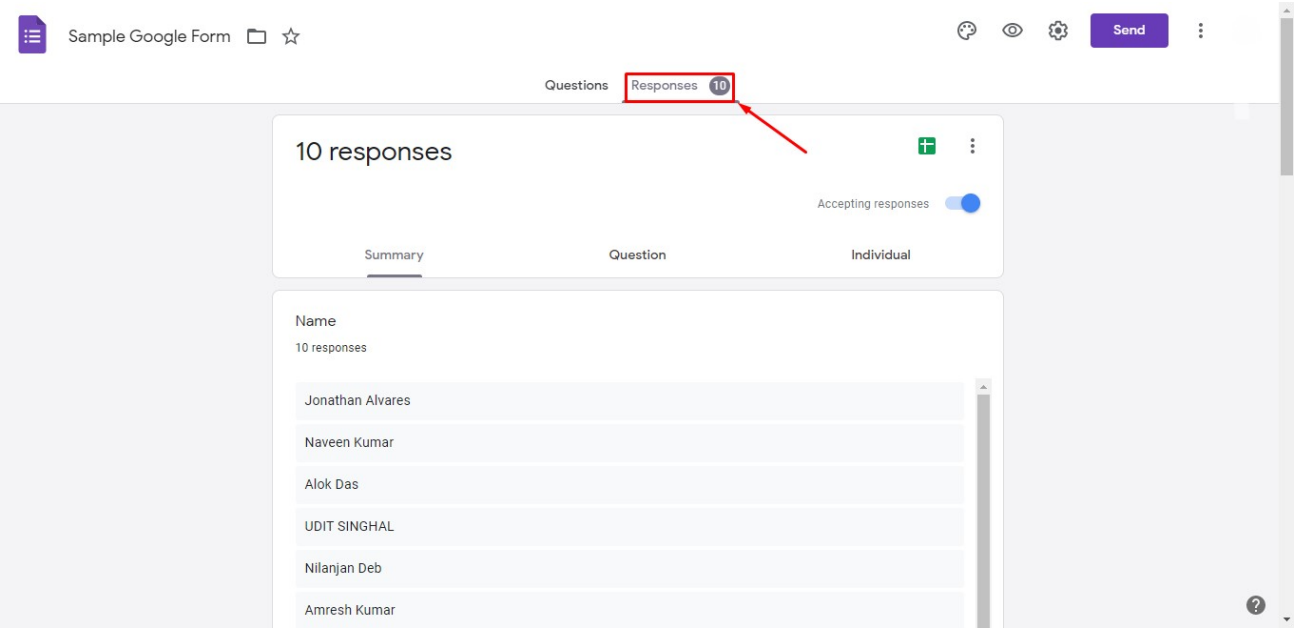



Figure 8.16 Google Forms, view responses

It also shows your data in the form of Pie Charts for Single Choice Type Questions as below:

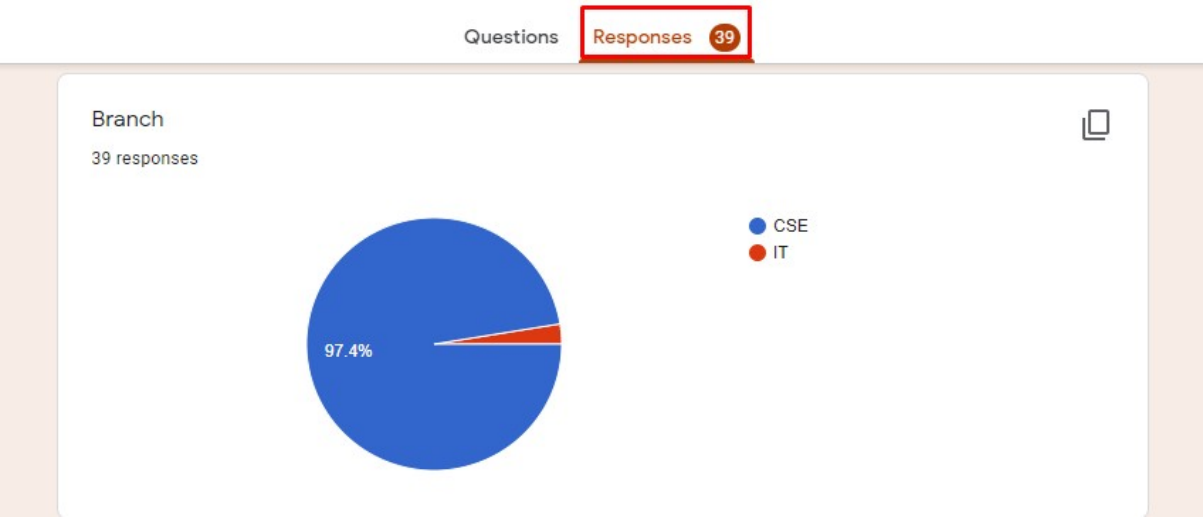



Figure 8.17 Google Forms, responses using graphs

Google Forms stores the responses in form automatically. We can also transfer form responses easily to a spreadsheet. To send your response to spreadsheet, select the "Responses" tab, and then click the green Sheets icon.


Figure 8.18 Google Forms, add spreadsheet

After clicking on Spreadsheet icon, you need to select the response destination. For storing responses, you can send responses to a new Spreadsheet or you can also select an existing spreadsheet.

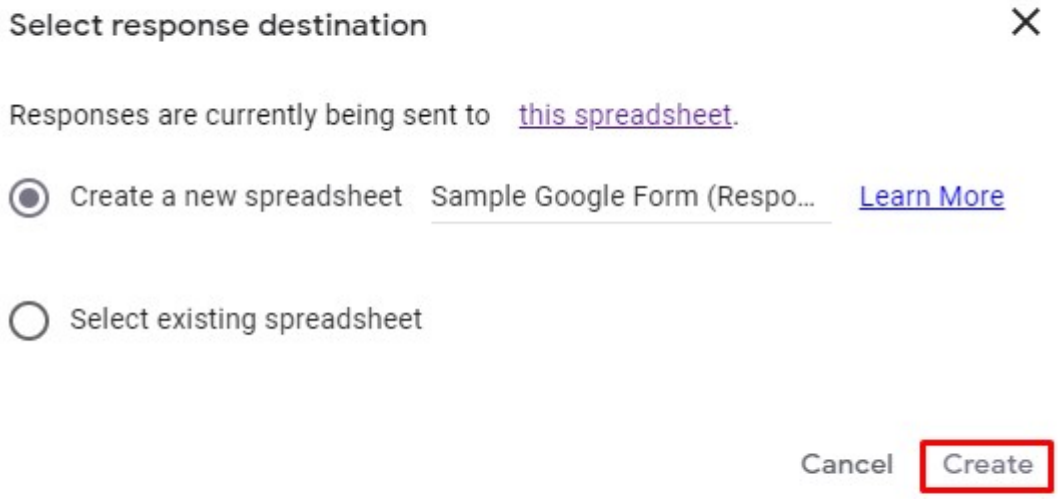



Figure 8.19 Google Forms, link spreadsheet

## 8.11 PRINT A FORM OR QUIZ

You can also print an individual response using Google Forms. To print a response, you need to view the responses individually.

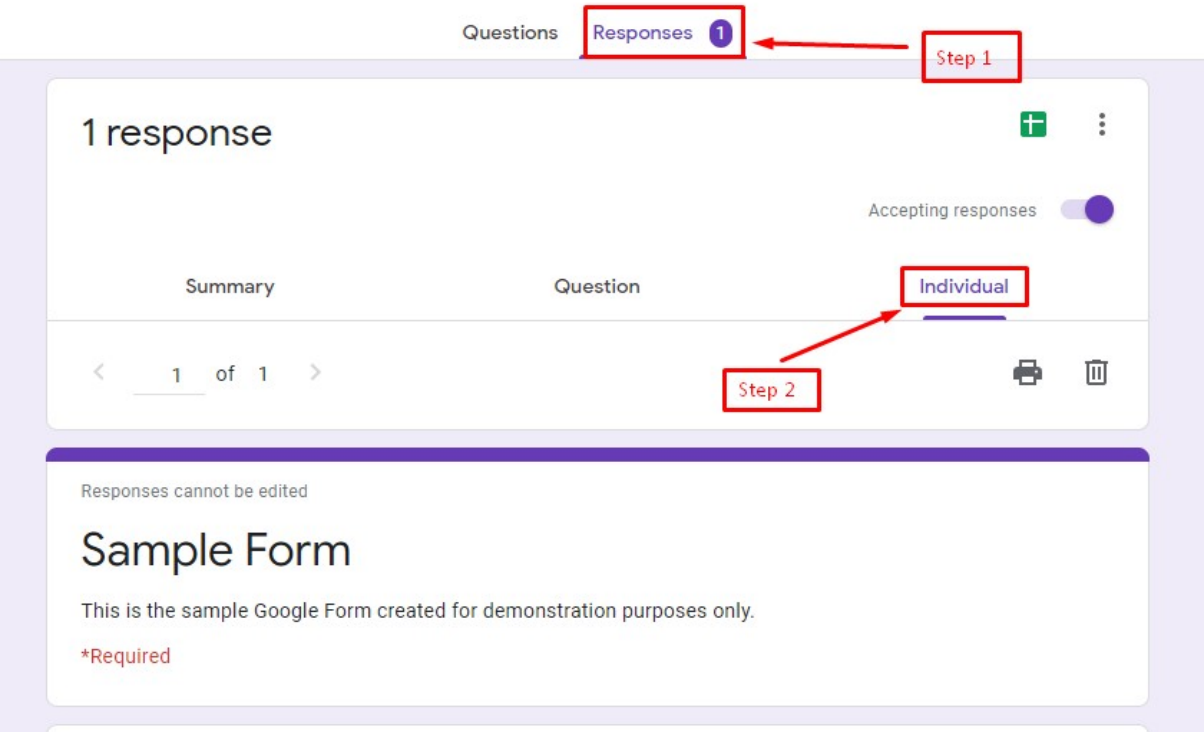



Figure 8.20 Google Forms, print a response

On the individual tab, an option to print the response will be available with **Printer** icon. By Clicking on the print button, the response will be printed and will be available in the PDF form to you.

## *8.12 SHARE PRE-FILLED LINK*

With Google Forms, you can also share pre-filled link with your responders, in which some of the fields that you have specified are already filled. To create a pre-filled, google form, you need to click on three dots at top right corner:

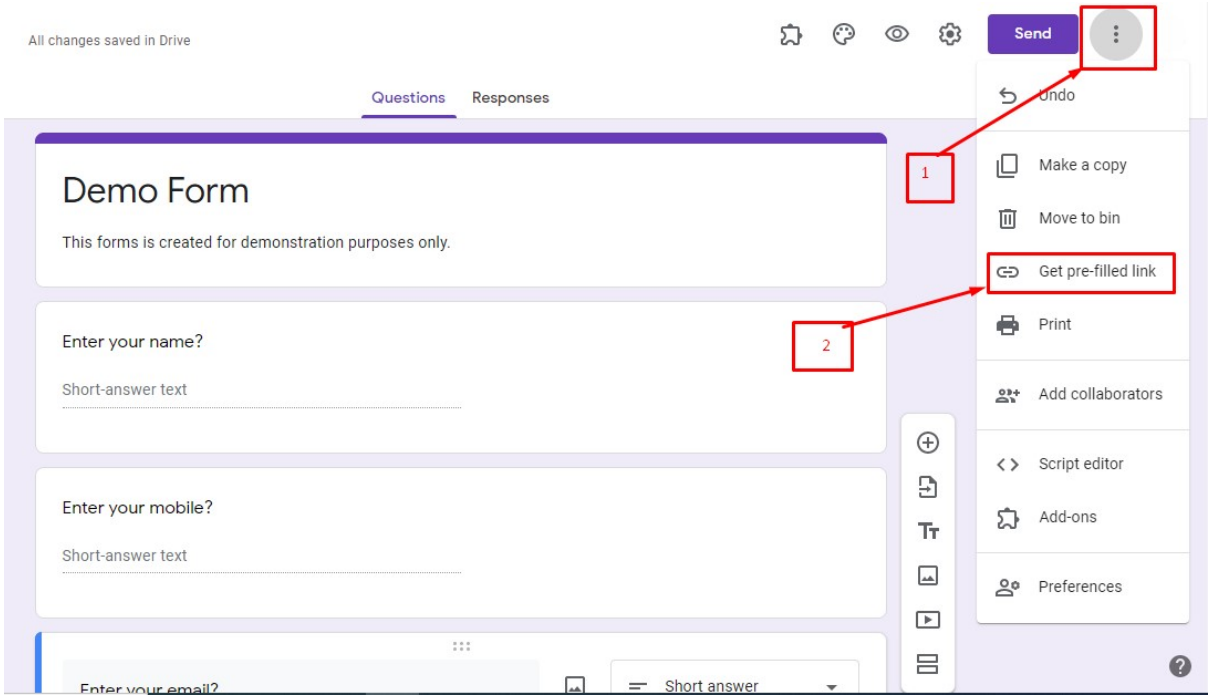



Figure 8.21 Google Forms, get pre-filled link

After clicking on **Get pre-filled link,** a page will be opened on next tab. You can fill the fields, which you want to pre-fill.

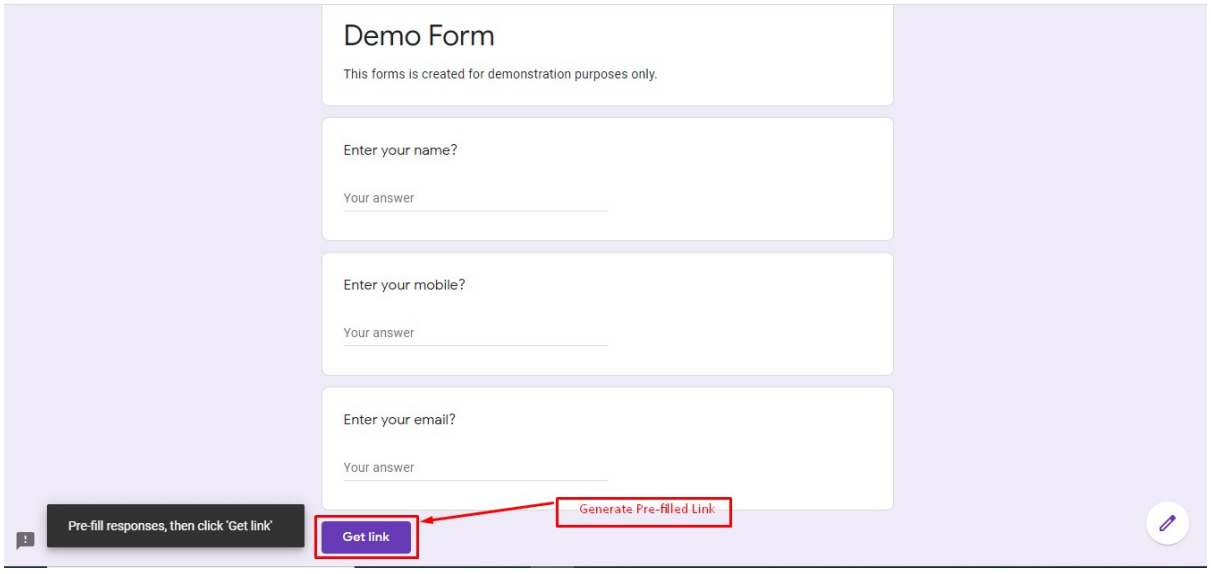



Figure 8.22 Google Forms, create pre-filled link

After filling the pre-specified fields, you can click on **Get Link** button to generate, pre-filled link of your google form.

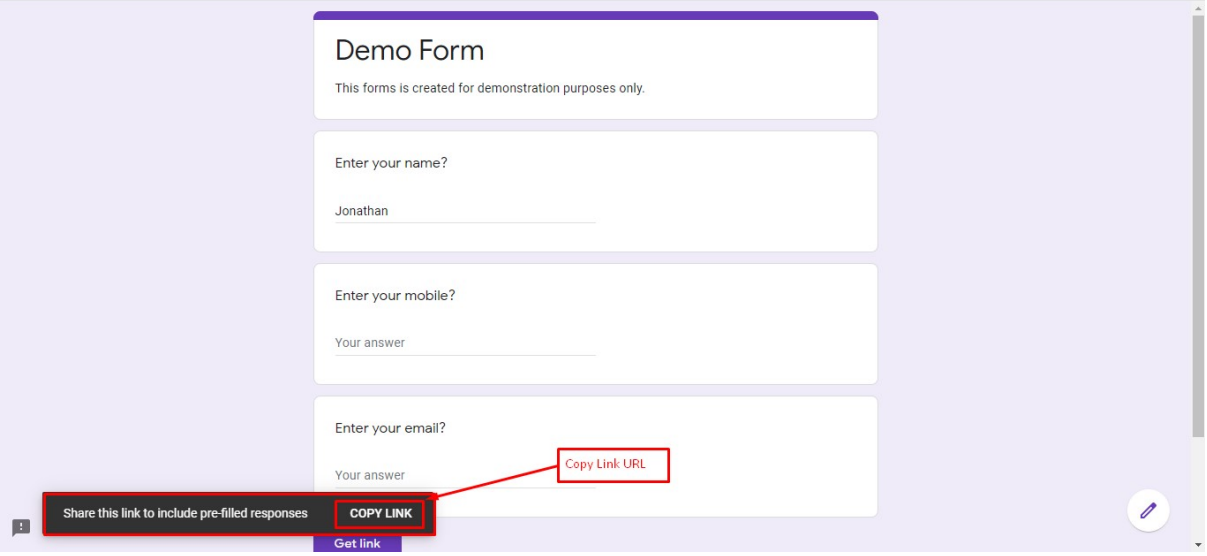



Figure 8.23 Google Forms, copy pre-filled link

After clicking on Copy Link, URL of pre-filled form will be copied to your clipboard. Any person having the pre-filled will found the fields be filled automatically.

## 8.13 POINTS TO REMEMBER

- Google Forms are used to create quizzes, surveys and for collecting information from people.
- Google Forms are web based forms. You can access it with your Internet anytime, anywhere.
- To create Google Forms, you need to have a google account compulsorily, however for responding, google account is not required until the form creator have specified to sign in before response submission.
- Google Forms can also be converted to quizzes easily by the settings. For each question, you can assign weightage for it.
- Google Forms supports Multiple Choice, Checkboxes, Drop Down, File Upload, Linear Scale, Date, Time, Linear Scale, and Grid based questions.
- To personalize look and feel of google form, theme icon is available at top right corner. It can be used to change header image, theme colour, background colour and font of the form.
- Responses of google forms are automatically saved to forms. To send them into an excel sheet, you need to create and excel sheet or link an existing excel sheet.

## 8.14 GLOSSARY

Google Forms

Google Forms are used to create quizzes, take feedbacks and also for surveys. They can also be used to create a poll and sending surveys in the class.

Google Drive

Google Drive is a file storage service, provided by Google LLC. It is used to store personal data like documents, forms, images etc.

Google Docs

Google Docs are used to create and manage office documents like word, spreadsheets and slides etc.

Google Sites

Using Google Sites, we can create sites for learning, announcements and postings.


Google Calendar

Google calendar is used to create and manage events. It is also used to view and create upcoming assignments.

Google Classroom

Google Classroom is used to simplify creating, distributing and grading assignments. The aim of Google Classroom is to connect teachers and students with each other.

## *8.15 CHECK YOUR PROGRESS*

**Descriptive Type Questions-**

a) What are the online office documents?
b) What is Google Form and why it is used?
c) List five advantages of using online documents editors instead of offline editors?
d) Define briefly how can you create a google form and share it with other users?
e) What are the supported questions types in Google Forms? Explain each one briefly?

**Objective Type Questions-**

a) Online office documents requires internet connectivity to run themselves. (True/False)
b) Google forms are used to send emails to other users. (True/False)
c) A google account is required to create a new google form. (True/False)
d) Google Forms only supports 5 collaborators at a particular time. (True/False)
e) Google Forms responses are automatically saved to a spreadsheet on your google account. (True/False)
f) Google Forms can grade the quizzes automatically. (True/False)
g) You can restrict your google form to limit ..... response per person.
h) The theme icon is available to personalize google form at … position

**Answer (Objective Type Question)-**

a) True b) False c) True d) False e) False

f) True g) 1 h) Right – Top

## *8.16 BIBLIOGRAPHY/ REFERENCES*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## *8.17 SUGGESTED READINGS*


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# UNIT- 9

# E-OFFICE MANAGEMENT TOOLS



## *9.1 INTRODUCTION*

The electronic office, or e-office, was a term coined to cover the increasing use of computer-based information technology for office work, especially in the 1980s. It was a popular marketing buzzword during that era, but is no longer so widely used since all modern offices are electronic offices. The term appeared much earlier in the name of the LEO computer (Lyons Electronic Office), that first ran a business application in 1951 in England.

The general objective of e-office adoption was the elimination of paper and converting most or all office communications to electronic form. The definition of electronic office is not precise, and it might be either:

The introduction of individual computers running office software applications, such as word processors, or the interconnection of office computers using a local area network (LAN), or

the centralization of office functions via collaborative software (i.e., groupware), which was later superseded in many contexts by web applications.

The introduction of e-office improved accuracy and efficiency of organizations and thereby improved their level of service, while theoretically lowering costs and drastically reducing the consumption of paper. Many documents are still being printed out and circulated on paper, however, especially those that require signatures or other legal formalities.

## *9.2 OBJECTIVES*

After the successful completion of this unit, you will be able to-

- Describe the concept of e-office.
- Define e-office management tools.
- Describe the basic concept of GOOGLE DOCS, PHOTOS.
- Identify the effectiveness of DIGILOCKER.

## *9.3 E-OFFICE MANAGEMENT TOOLS*

The e-office product aims to support governance by ushering in more effective and transparent inter and intra-government processes. The vision of e-office is to achieve a simplified, responsive, effective and transparent working of all government offices. The Open Architecture on which e-office has been built, makes it a reusable framework and a standard reusable product amenable to replication across the governments, at the central, state and district levels. The product brings together the independent functions and systems under a single framework.

- Enhance transparency- files can be tracked and their status is known to all at all times
- Increase accountability- the responsibility of quality and speed of decision making is easier to monitor.
- Assure data security and data integrity.
- Provide a platform for re-inventing and re-engineering the government.
- Promote innovation by releasing staff energy and time from unproductive procedures.
- Transform the government work culture and ethics.
- Promote greater collaboration in the work place and effective knowledge management.

## *9.4 INTRODUCTION TO GOOGLE DOCS, AND PHOTOS*

Google Docs is a word processor included as part of the free, web-based Google Docs Editors suite offered by Google Corporation. The service also includes Google Sheets, Google Slides, Google Drawings, Google Forms, Google Sites, and Google Keep. Google Docs is available as a web application, mobile app for Android, iOS, Windows, BlackBerry, and as a desktop application on Google's Chrome OS. The app is compatible with Microsoft Word file formats.

The app allows users to create and edit files online while collaborating with other users in real-time. Edits are tracked by user with a revision history presenting changes. An editor's position is highlighted with an editor-specific color and cursor and a permissions system regulates what users can do. Updates have introduced features using machine learning, including "Explore", offering search results based on the contents of a document, and "Action items", allowing users to assign tasks to other users.

Google Docs is available as a web application supported on Google Chrome, Mozilla Firefox, Internet Explorer, Microsoft Edge, and Apple Safari web browsers. Users can access all Docs, as well as other files, collectively through the Google Drive. In June 2014, Google rolled out a dedicated website homepage for Docs that contains only files created with the service. In 2014, Google launched a dedicated mobile app for Docs on the Android and iOS mobile operating systems. The mobile website for Docs was updated in 2015 with a "simpler and more uniform" interface, and while users can read files through the mobile websites, users trying to edit will be redirected towards the dedicated mobile app, thus preventing editing on the mobile web.

## Fetures-

Google Docs and the other apps in the Google Drive suite serve as a collaborative tool for cooperative editing of documents in real-time (online). Documents can be shared, opened, and edited by multiple users simultaneously and users are able to see character-by-character changes as other collaborators make edits. Changes are automatically saved to Google's servers, and a revision history is automatically kept so past edits may be viewed and reverted to. An editor's current position is represented with an editor-specific color/cursor, so if another editor happens to be viewing that part of the document they can see edits as they occur.

A sidebar chat functionality allows collaborators to discuss edits. The revision history allows users to see the additions made to a document, with each author distinguished by color. Only adjacent revisions can be compared, and users cannot control how frequently revisions are saved. Files can be exported to a user's local computer in a variety of formats (ODF, HTML, PDF, RTF, Text, Office Open XML). Files also can be tagged and archived for organizational purposes.

In March 2014 Google introduced add-ons, new tools from third-party developers that add more features for Google Docs. In order to view and edit documents offline on a computer, users need to be using the Google Chrome web browser. A Chrome extension Google Docs Offline', allows users to enable offline support for Docs files on the Google Drive website. The Android and iOS apps natively support offline editing.

In June 2014, Google introduced "Suggested edits" in Google Docs; as part of the "commenting access" permission, participants can come up with suggestions for edits that the author can accept or reject, in contrast to full editing ability. In October 2016, Google announced "Action items" for Docs. If a user writes phrases such as "Ryan to follow up on the keynote script", the service will intelligently assign that action to "Ryan". Google states this will make it easier for other collaborators to see which person is responsible for what task. When a user visits Google Drive, Docs, Sheets or Slides, any files with tasks assigned to them will be highlighted with a badge.

A basic research tool was introduced in 2012. This was expanded into "Explore" in September 2016, which has additional functionality through machine learning. In Google Docs, Explore shows relevant Google search results based on information in the document, simplifying information gathering. Users can also mark specific document text, press Explore and see search results based on the marked text only.

In December 2016, Google introduced a quick citations feature to Google Docs. The quick citation tool allows users to "insert citations as footnotes with the click of a button" on the web through the Explore feature introduced in September. The citation feature also marked the launch of the Explore functionalities in G Suite for Education accounts.

**Supported file formats-**

Files in the following formats can be viewed and converted to their Docs format, such as- .doc (if newer than Microsoft Office 95), .docx, .docm .dot, .dotx, .dotm, .html, plain text (.txt), .rtf, .odt File limits. Limits to insertable file sizes, overall document length and size are listed below:

Up to 1.02 million characters, regardless of the number of pages or font size. Document files converted to. gdoc Docs format cannot be larger than 50 MB. Images inserted cannot be larger than 50 MB, and must be in either .jpg, .png, or .gif formats.

Google Workspace- Google Docs and the Google Docs Editors suite are free of charge for use by individuals, but are also available as part of Google's business-centered Google Workspace, enabling additional business-focused functionality on payment of a monthly subscription.

**More functionalities on Google Docs-**

A simple find and replace tool is available. Google offers an extension for the Google Chrome web browser called Office editing for Docs, Sheets and Slides that enables users to view and edit Microsoft Word documents on Google Chrome via the Docs app. The extension can be used for opening Office files stored on the computer using Chrome, as well as for opening Office files encountered on the web (in the form of email attachments, web search results, etc.) without having to download them. The extension is installed on Chrome

OS by default. Google Cloud Connect was a plug-in for Microsoft Office 2003, 2007 and 2010 that could automatically store and synchronize any Word document to Google Docs (before the introduction of Drive) in Google Docs or Microsoft Office formats. The online copy was automatically updated each time the Microsoft Word document was saved. Microsoft Word documents could be edited offline and synchronized later when online. Google Cloud Connect maintained previous Microsoft Word document versions and allowed multiple users to collaborate by working on the same document at the same time. Google Cloud Connect was discontinued in April 2013 as, according to Google, Google Drive achieves all of the above tasks, "with better results"

### Google Photos-

Google Photos is a photo sharing and storage service developed by Google. It was announced in May 2015 and separated from Google+, the company's former social network. In its free tier, Google Photos stores unlimited photos and videos up to 16 megapixels and 1080p resolution respectively (anything larger gets down-scaled to these sizes). This free tier will end on June 1, 2021. Photos and videos uploaded after that date get counted towards the 15 GB free quota shared across the user's Google services. There are subscriptions offered for users wanting to store their photos and videos at their "original" quality and requiring more storage than the 15 GB offered free.

The service automatically analyzes photos, identifying various visual features and subjects. Users can search for anything in photos, with the service returning results from three major categories: People, Places, and Things. The computer vision of Google Photos recognizes faces (not only those of humans, but pets as well), grouping similar ones together (this feature is only available in certain countries due to privacy laws); geographic landmarks (such as the Eiffel Tower); and subject matter, including birthdays, buildings, animals, food, and more.

Different forms of machine learning in the Photos service allow recognition of photo contents, automatically generate albums, animate similar photos into quick videos, surface past memories at significant times, and improve the quality of photos and videos. In May 2017, Google announced several updates to Google Photos, including reminders for and suggested sharing of photos, shared photo libraries between two users, and physical albums. Photos automatically suggested collections based on face, location, trip, or other distinction.

Google Photos acts as a backup when photos are sent or in Google terms 'Shared'. This is just a common backup tool when photos are shared between social media or other platforms or apps.

## *9.5 APPLICATION OF DIGILOCKER*

DigiLocker is an Indian digitization online service provided by Ministry of Electronics and Information Technology (MeitY), Government of India under its Digital India initiative.

DigiLocker provides an account in cloud to every Aadhaar holder to access authentic documents/certificates such as driving license, vehicle registration, academic mark sheet in digital format from the original issuers of these certificates. It also provides 1GB storage space to each account to upload scanned copies of legacy documents. Users need to possess an Aadhaar number to use DigiLocker. For sign-up, the Aadhaar number and the one-time password sent to the Aadhaar-registered mobile number, need to be entered.

The beta version of the service was rolled out in February 2015, and launched by Prime Minister Narendra Modi on 1 July 2015. The storage space provided was 100 MB initially, and was later increased to 1 GB. The individual file size for upload cannot exceed 10 MB. In July 2016, DigiLocker recorded 20.13 lakh users with a repository of 24.13 lakh documents. The number of users saw a large jump of 7.53 lakh in April when the government had urged all municipal bodies to use DigiLocker to make their administration paperless.

From 2017, the facility was extended to allow students of ICSE board to store their class X and XII certificates in DigiLocker and share them with agencies as required. In February 2017, Kotak Mahindra Bank started providing access to documents in DigiLocker from within its net-banking application, allowing users to e-sign them and forward as needed. In May 2017, over 108 hospitals, including the Tata Memorial Hospital were planning to launch the use of DigiLocker for storing cancer patients' medical documents and test reports. According to a UIDAI architect, patients would be provided a number key, which they can share with another hospital to allow them to access their test reports.

As of December 2019, DigiLocker provides access to over 372+ crore authentic documents from 149 issuers. Over 3.3 crore users are registered on DigiLocker. 43 requester organisations are accepting documents from DigiLocker. There is also an associated facility for e-signing documents. The service is intended to minimise the use of physical documents, reduce administrative expenses, provide authenticity of the e-documents, and provide secure access to government-issued documents and to make it easy for the residents to receive services. Each user's digital locker has the following sections.

- My Certificates: This section has two subsections:
- Digital Documents: This contains the URI's of the documents issued to the user by government departments or other agencies.
- Uploaded Documents: This subsection lists all the documents which are uploaded by the user. Each file to be uploaded should not be more than 10MB in size. Only pdf, jpg, jpeg, png, bmp and gif file types can be uploaded.
- My Profile: This section displays the complete profile of the user as available in the UIDAI database.

- My Issuer: This section displays the issuers' names and the number of documents issued to the user by the issuer.
- My Requester: This section displays the requesters' names and the number of documents requested from the user by the requesters.
- Directories: This section displays the complete list of registered issuers and requesters along with their URLs.

## 9.6 HOW TO USE DIGILOCKER?

Digital Locker, one of the key initiatives under the Digital India initiative, is aimed at eliminating the usage of physical documents and enable sharing of e-documents across government agencies via a mechanism to verify "authenticity" of the documents online. Residents can also upload their own electronic documents and digitally sign them using the e-sign facility. These digitally signed documents can be shared with Government organizations or other entities.

[1] USER ID CREATION

**Step 1**: Access digital locker at https://digitallocker.gov.in/


Citizens with Aadhaar number can create Digital Locker accounts.

Kindly ensure that your current mobile number is registered with Aadhaar number.

You can update your mobile number in Aadhaar by visiting any UIDAI centre.

**Step 2**: Click on 'Sign Up'

**Step 3**: Enter your Aadhaar Number.

Enter your unique 12-digit Aadhaar number.

Two options are there to proceed further- Use OTP or Use Fingerprint.

**Step 4**: User ID Creation

The application will prompt the user to create 'Username' and 'Password'. Enter your desired User name and Password for 'Digital Locker' account.

Click on SignUp button. After successful account creation, the application will show the 'Dashboard' page.

## *9.7 SHARING DOCUMENTS OVER INTERNET*

Today's computers are capable of storing all types of files, including documents, songs, videos, and full applications. When you move one or more files from your local computer to another device or remote location, you are partaking in the activity of file sharing. In some scenarios, the recipient will have to accept the file, but typically the transfer will complete automatically.

**The Pros and Cons of sharing files over the Internet.**

There are a number of factors to keep in mind before you start actively file sharing. Let's walk through some of the key positives and negatives about the process.

**Pros-**

Allows you to transfer large files over a network connection.

Makes it easier to collaborate with other people across the globe.

Reduces the need to maintain a central file server that is always online.

**Cons-**

Amount of bandwidth required can be costly.

Hard to trace what happens to a file after it is shared publicly.

Higher risk of acquiring a virus or other type of malware from a remote file.

### Types of File Sharing-

Before you can start distributing files over the internet, you need to determine what method and protocol you want to use. Your decision should be based on what types of files you are moving and who will be receiving them. We'll dive into the main options and explain what scenarios they can help with the most.

**File Transfer Protocol (FTP)**

FTP was one of the first methods invented for moving data across networks and it remains very popular today thanks to its reliability and efficiency. FTP actions can be run through a command prompt window or a tool with a user interface. All it requires is for you to specify the source file you want to move and the destination where it should be placed. Tools used for FTP, Example- FileZilla, Telnet, WinSCP, etc.

**Peer to Peer (P2P)**

The purpose of a P2P file transfer is to remove the need for a central server that hosts the data. Instead, individual clients connect to a distributed network of peers and complete the

file transfers over their own network connections. P2P might eventually be used to create an unstoppable TOR. Whether or not The Onion Router (TOR) is a truly P2P environment depends on many factors, but its popularity in creating a more secure online connection is unquestioned. Example- Limewire, Gnutella, BearShare.

**Cloud Services**

With a cloud file sharing service, one user uploads their data to a central repository and then other users can download the files to their own devices. All data is hosted by a third party provider, although users can specify what types of permission levels to put on the files. Tools used for cloud services, as- Dropbox, Box, OneDrive, iCloud.

**Email Providers**

Some people don't realize that email can actually function as a file transfer system. Every time you attach a document to an outgoing message, you are initiating a transfer of that data over the open internet. Example- Gmail, Outlook, Yahoo! Mail.

**Removable Storage (offline)**

When no network-based option will fulfill your needs, you can always rely on a physical drive to serve as your file transfer operation. This means you are literally copying data to a USB flash drive or external hard drive and plugging that device into the destination computer. Example- USB thumb drives or external hard drives.

## *9.8 POINTS TO REMEMBER*

- The electronic office, or e-office, was a term coined to cover the increasing use of computer-based information technology for office work, especially in the 1980s.
- Google Docs is a word processor included as part of the free, web-based Google Docs Editors suite offered by Google.
- Google Photos is a photo sharing and storage service developed by Google. It was announced in May 2015 and separated from Google+, the company's former social network.
- DigiLocker is an Indian digitization online service provided by Ministry of Electronics and Information Technology (MeitY), Government of India under its Digital India initiative.

## *9.9 GLOSSARY*

- LEO- Lyons Electronic Office
- LAN- Local Area Network
- UIDAI- The Unique Identification Authority of India

## *9.10 CHECK YOUR PROGRESS*

**Descriptive Type Questions-**

a) What is e-office management?

b) Define various e-office management tools.

c) What are the applications of Google Docs and Photos?

d) Define the term DigiLocker.

**Objective Type Questions-**

a) The electronic office, or e-office, was a term coined to cover the increasing use of computer-based information technology for office work. (True/False)

b) Google Sheet is a word processor included as part of the free, web-based Google Docs Editors suite offered by Google.(True/False)

c) DigiLocker is an Indian digitization online service provided by Ministry of Electronics and Information Technology (MeitY). (True/False)

d) Google Calendar is the time management and scheduling tool created by Google. (True/False)

**Answer (Descriptive Type Questions)-**

[a] True [b] False [c] True [d] True

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## *9.12 SUGGESTED READINGS*


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# UNIT- 10
# COLLABORATION AND MESSAGING SERVICES



## *10.1 INTRODUCTION*

Recent technological developments and increasing use of computer, internet and mobile technologies has created a collaborative work environment of business world to a great extent. The evolution of various messaging and collaboration services is one of the changes experienced by corporate world during last few years. These online collaboration services have made it easy to manage the business even if its employees are located at different location within the country or across the world. These messaging and collaboration services help in reducing the cost of communication and travelling along with increasing employee satisfaction and accessibility to information.

## *10.2 OBJECTIVES*

After the successful completion of this unit, you will be able to-

- Explore Discussion Forum.

- Define online messaging services.
- Explore scheduler and to do list tools.

## *10.3 BRIEF OVERVIEW OF MESSAGING SERVICES*

Some of the popular messaging and collaboration services are briefly discussed here under to help you know them more closely to find the most suitable for your business.

### G Suite-

It is a good web communication tool that can be used for collaborating with the teams of professionals but also for messaging instantly. It is one of the communication apps introduced by Google for especially for corporate world. It can be used by anyone having an account with Google. The users of this collaboration service can enjoy the instant messaging and email facilities along with other provided by Google. While collaborating with your team in real-time it allows you to share everything you want from screen of your desktop to your whiteboard presentations documents and files etc. you can also enjoy your own domain Gmail address, better security options, live 24/7 customer support, management of mobile devices and strong administration control along with basic benefits just by creating a G Business account. You can also perfectly integrate the reliability and power of Google while using G Suite.

### ezTalks Meetings-

The increasing needs of communication in business have introduced various types of messaging and collaboration services for the corporate world. ezTalks Meetings is one of such services can help you to connect with your clients and employees by sending them messages along with collaborating with them online to solve same problem or work on same project, regardless of their location in this world. Some of the exclusive features of this service include scheduling meetings online, sharing screens, instant messaging, record and playback meeting proceedings along with making it easy for you to collaborate with your teams. You can get crystal clear quality of audio files and HD quality videos by using it with various types of devices including iPhone, iPad, Windows, Mac and Android phones.

### Workflow Max-

It is another web communication software that offers messaging and collaboration services to the business world to improve the collaboration between their teams. Basically it provides comprehensive communication solution to the businesses to allow them access anything from anywhere. In this way it is a good tool for the businesses having offices at different locations all over the world. Along with messaging and collaborating with your teams it also allows you to track the progress of your work, invoicing the work completed and monitor several other important things required to achieve the goal. It can also help in managing a project, tracking the time, managing accounts at back-end, status and financial reporting and

generating quotes etc. Initially you can use its free version but if you require more features then you can opt for its paid version also.

### Trello-

It can be very difficult for a person to organize various projects without being present there. But it cannot be possible unless you are using effective services for messaging and collaboration. You can use Trello on various operating systems including iOS, Android and web for effective organization of your projects. It can be used flexibly for managing various types of projects through its mobile and web versions. You can also use it for chatting with your friends along with organizing your projects. Its free version allows you to create boards and lists for your business but if you want to add more features to its services then you have to use its premium version.

### Slack-

It is one of the most popular collaboration tools used these days that also allow instant messaging to communicate instantly with your friends or the participants of your choice. It can be used on various platforms including Windows, Web, Android, Windows phone and iOS to provide you security, excellent interface and free services. Millions of people all over the world are growing their business fast after using Slack for instant messaging and collaboration with their remotely placed teams. It can be used to send files and messages directly to different groups of people or individuals regardless of their location in this world. Along with it this online service also allows calling through video conferencing which males it better than various other online collaboration tools. It is design to be compatible with Dropbox and Google Drive.

Thus, after going through the reviews of 5 top messaging and collaboration services it can be easier for you to choose the best one for your business. You should compare their features and needs of your business while choosing one for it.

## *10.4 ONLINE DISCUSSION FORUM*

Online forums can be used for many purposes, such as helping students to review material prior to an assignment or exam, engaging students in discussion of course material before coming to class, and reflecting on material that they have read or worked with outside of class.

Why and how did you use an online discussion forum?

I used a discussion forum to offer students a structured opportunity to interact with each other online around exam time. For the purpose of reviewing for the exam students posted questions they had about course material and other students answered them in the online forum. I also agreed to weigh in on student comments after each question had received at

least one response from another student. I had a few reasons for my decision to use the forum in this way. First, I knew that I would not have enough time to answer all of my students' questions around exam time as I was preparing for my own qualifying exams during the same semester. I was also fairly certain that my students could be effective in teaching each other and answering one another's questions; I wanted them to depend more on each other and less on me in the time leading up to the exam. By using an online discussion, I hoped to encourage collaboration and to give students a structured opportunity to work together to find the answers to questions that they were having difficulty with. This activity would also have another desired benefit; it would help students to practice writing and explaining concepts prior to doing so on the exam.

## Reddit-

Reddit is lovingly known as the front page of the internet. At its simplest Reddit is really just a good old-fashioned discussion forum. It's a place where millions of people go every day to discuss politics, post memes and share every odd thought that's ever occurred to them in the shower. The site is divided into subreddits, with each user choosing which subreddits they would like to subscribe to according to interest like this online casino discussion. This is a bustling community of entrepreneurs who are intent on helping each other find the best solutions. Topics are organized into threads that anyone can start. The essence of Reddit is the upvote system. Users can either upvote or downvote a post according to their opinion of it.

## Quora-

Even if you've been living under a rock, chances are you've heard of Quora. Founded in June 2009 by Adam D'Angelo and Charlie Cheever, Quora is a Q&A site where anyone can ask a question and get answers. Quora allows users to create personalized homepages that feature the things they want to learn more about by following topics, questions, people and boards. Also, rather than getting one answer the site allows all users to weigh in on what they think the best answers are. The genius behind Quora is that users can upvote answers that are the best.

## Stack Overflow-

Stack Overflow is a platform where students and professionals post queries and answer questions about programming. It is a platform to showcase their knowledge. It is a free community where programmers write quality answers that help other users. Based on the quality of answers, the people who have answered them gain popularity when other users have upvoted the said answers.

## XDA-Developers-

It is a community of several million Android and Windows Phone developers who use the XDA website and forums to discuss OS versions, specific devices and customization. At XDA you can find solutions for your problems and get the most out of your smartphone device, Android particularly. The best part is you don't need to be a programmer or specially-abled personnel to be a developer at XDA.

### GamesSpot-

GameSpot is a video gaming website that provides news, reviews, previews, downloads, and other information on video games. The site reviews game both popular and small on every platform. GameSpot is used by 26m gamers worldwide, who contribute content and network with other gamers through the website.

### Final Thoughts-

Forum and chat websites are probably one of the oldest forms of community on the internet. These forums are doing well in their respective niches, raking the owners millions of dollars in revenue on annual bases. Most importantly helping the end user by giving information which they seek.

## *10.5 SHARED CALENDAR/SCHEDULER/OPEN-SOURCE TOOLS OF TO-DO LIST*

It's hard to remember everything when there's too much to do at work or in everyday life. Some still prefer to put to-dos and ideas on paper, but technologies offer a better way to handle forgetfulness. Apps for mobile devices, PCs and the Web remind you when something needs to get done, help you share your ideas and collaborate with others to accomplish tasks sooner. Here's our list of the best to-do list apps that will prevent you from forgetting important things and add fun to your daily routine.

**Wunderlist**

One of the most popular to-do list apps, Wunderlist provides an easy daily planning for work tasks, household routine, and movies to watch – literally everything you might forget. Reminders and due dates will help you avoid missing deadlines and failing to get important tasks done. Hashtags and folders simplify organization of a work process. Share your to-dos with colleagues, friends or family; comment the items and add notes to capture your ideas. The app is available for the widest range of devices: iPhone, iPad, Mac, Android, Windows, Kindle Fire and the Web.

**Any.do**

Another simple tool that helps you remembers every task. Reminders, systematization and chats are available – like in many other similar apps. The specific feature is Any.do Assistant that automatically reviews your tasks and suggests the ones that it can do for you. The

authors declare that "smart robots and diligent humans will help you accomplish your tasks." In the paid version, collaboration, location-based reminders and unlimited attachments are offered additionally. The app can be accessed through iPhone, iPad, Android phones and tablets, Web, Chrome and Mac.

**Todoist**

Available for almost any platform, Todoist is considered one of the best to-do list apps for work and everyday life. It offers access to your task lists from anywhere. You can share your tasks with friends, family or colleagues to get more done. Breakdown into subtasks, reminders, comments and attachments are available, as in many other apps. The fun feature is Karma that allows you to track productivity and visualize the dynamics of your achievements.

**TickTick**

The app offers task lists with subtasks, deadlines, reminders and attachments. The free basic version has limited number of lists, tasks and users. Apart from unlimited tasks and bigger user count, the Pro version includes calendar view, task filters, Siri integration and some other advanced options. This tool might be one of the best to-do list apps for teams, as it allows sharing lists and assigning tasks to colleagues.

**Tasks.org**

Back then, there was an open-source to-do list app named Astrid, which was purchased and then shut down by Yahoo. The source code was still available, so user Alex decided to clone the old tool for those who were missing it, and built Tasks. The app has major Astrid features and more: task priorities, categories and tags, reminders of due and overdue tasks, synchronization with Google Tasks and customizable color schemes. Additional plugins and extensions are available as an in-app purchase.

**One List**

Those who hate the minimalistic (some would rather call it depressive) color schemes of most to-do lists probably remember the Clear iOS app. It had stunning colorful interfaces, but now it seems to be abandoned by the developer. One List for iOS is one of the possible replacements: it has bright task lists with customizable themes and allows color-coded prioritizing, setting due dates and configuring reminders. "One list to rule them all," as the developer promises.

**Suru**

For many of us, a to-do list has to be attractive or we'll never open it. Folks at Esoteric Development, the authors of Suru, definitely know that. The beautiful interface with seven color palettes is not the only advantage: this iOS app allows to break down tasks into

subtasks, prioritize, structure and share your projects, and to export task lists into PDF. You can add descriptions and photos to your to-dos so nothing slips out of your mind.

**Google Keep**

This note and to-do list tool for Android and iOS is a convenient way to capture tasks and ideas, collaborate with others, plan projects or events. The app is available from almost any device and offers task lists, tagging and reminders (including location-based ones). Add photos to your notes to avoid long verbal descriptions. What's more, instead of typing your notes, you can just record a voice memo and Google Keep will transcribe it.

**Google Tasks**

A simple Google Tasks manager, available for iOS and Android. It easily synchronizes with Google Calendar and Gmail, which helps you back up important tasks and access your to-do lists from anywhere. Break down tasks into subtasks, set up recurring tasks and create lists. Get reminded at the right time and place by setting up geo-reminders, like for example "remind me to take out the trash when I get home."

## *10.6 APPLICATIONS OF GOOGLE CALENDAR*

Google Calendar is the time management and scheduling tool created by Google. It allows you to make appointments, organize your daily tasks, and more. The time management tool works best for people who need to simplify and plan their busy schedule. You can schedule Google Hangout calls with a click of a button while scheduling a remote meeting. My personal calendar is currently being used to help me coordinate meetings with vendors and highlight payment schedules for my upcoming wedding. So, it can definitely be used to plan some non-work-related stuff, too.

You can type either "what's my Google calendar" or "what is google calendar" to have a full view of your upcoming events.

Looking to synchronize all your calendars in Google Calendar? Doing this will allow you to see all of your events in one calendar so you can get a clear picture of what your schedule is like. So if you have both a personal and work calendar, you can synchronize the two to view it all in one. Steps below (Open Google Calendar)-

a) Click the "Settings menu" gear, then "Settings"
b) Scroll to "Import & Export"
c) Export your calendar
d) Then head into your main calendar
e) Click the "Settings menu" gear, then "Settings
f) Scroll to "Import & Export"
g) And Import your calendar

Note- Get the official Google Calendar app for your Android phone and tablet to save time and make the most of every day.

## *10.7 APPLICATIONS OF GOOGLE MEET (HOW TO USE?)*

Google is making enterprise-grade video conferencing available to everyone. Now, anyone with a Google Account can create an online meeting with up to 100 participants and meet for up to 60 minutes per meeting. Businesses, schools, and other organizations can take advantage of advanced features, including meetings with up to 250 internal or external participants and live streaming to up to 100,000 viewers within a domain.

How to use Google Meet?

It's free!

To sign up for the free version of Google Meet, go to the Google Meet page. Enter your name, email, country and primary use for Google Meet (personal, business, education or government). Agree to Google's terms of service, and hit Submit. Once you sign up, here's how to use the free version of Google Meet:

a) Go to meet.google.com (or, open the app on iOS or Android, or start a meeting from Google Calendar).
b) Click Start new meeting, or enter your meeting code.
c) Choose the Google account you want to use.
d) Click Join meeting. You'll have the ability to add others to your meeting, too; And that's it! Happy video chatting.

## *10.8 POINTS TO REMEMBER*

- The evolution of various messaging and collaboration services is one of the changes experienced by corporate world during last few years.
- Online forums can be used for many purposes, such as helping students to review material prior to an assignment or exam, engaging students in discussion of course material before coming to class, and reflecting on material that they have read or worked with outside of class.
- Google Calendar is the time management and scheduling tool created by Google. It allows you to make appointments, organize your daily tasks, and more.
- Google is making enterprise-grade video conferencing available to everyone. Now, anyone with a Google Account can create an online meeting with up to 100 participants and meet for up to 60 minutes per meeting.

## *10.9 GLOSSARY*

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## *10.10 CHECK YOUR PROGRESS*

**Descriptive Type Questions-**

a) Explain various messaging and collaboration services.

b) What is the use of Online Discussion Forum? Explain.

c) How online meeting tools are useful? Explain.

d) Define the role of scheduler?

e) Why the to-do list tools are useful? Explain.

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# UNIT- 11
# DATA SECURITY



## *11.1 INTRODUCTION*

Computers and other digital devices have become essential to business and commerce; they have also increasingly become a target for attacks. In order for a company or an individual to use a computing device with confidence, they must first be assured that the device is not compromised in any way and that all communications will be secure. In this chapter, we will review the fundamental concepts of information systems security and discuss some of the measures that can be taken to mitigate security threats. We will begin with an overview focusing on how organizations can stay secure. Several different measures that a company can take to improve security will be discussed. We will then follow up by reviewing security precautions that individuals can take in order to secure their personal computing environment.

When protecting information, we want to be able to restrict access to those who are allowed to see it; everyone else should be disallowed from learning anything about its contents. This is the essence of confidentiality.

## 11.2 OBJECTIVES

After the successful completion of this unit, you will be able to-

- Define the importance of Data Security
- Explore Data Security in India.
- Types of data security.
- Know the challenges of data security in India.

## 11.3 DATA SECCURITY- AN OVERVIEW

Data security is both the practice and the technology of protecting valuable and sensitive company's and customer's data, such as personal or financial information. Think about the valuable data your company collects, stores, and manages. Information like financial or payment related data, intellectual property, and sensitive personal information about your employees and customers are a goldmines for the hackers. Data security, the processes and technologies you should be using to safeguard that data is a crucial element in protecting your company's reputation and fiscal health.

### Importance Of Data Security-

The data that your company creates collects, stores, and exchanges is a valuable asset. Safeguarding it from corruption and unauthorized access by internal or external people protects your company from financial loss, reputation damage, consumer confidence disintegration, and brand erosion. Furthermore, government and industry regulation around data security make it imperative that your company achieve and maintain compliance with these rules wherever you do business.

## 11.4 TYPES OF DATA SECURITY CONTROL

Understanding the importance of data security will help you formulate a plan to protect that data. There are many data security technologies and processes that can support your company's productivity while safeguarding data. Types of data security controls include:

### Authentication-

Authentication, along with authorization, is one of the recommended ways to boost data security and protect against data breaches. Authentication technology verifies if a user's credentials match those stored in your database. Today's standard authentication processes include using a combination of ways to identify an authorized user, such as passwords, PINS, security tokens, a swipe card, or biometrics. Authentication is made easier through single sign-on technology, which, with one security token, allows an authenticated user access to multiple systems, platforms, and applications. Authorization technology determines what an authenticated user are allowed to do or see on your website or server.

## Access control-

Authentication and authorization happen through the process called access control. Access control systems can include: (i) Discretionary access control (the least restrictive), which allows access to resources based on the identity of users or groups, (ii) Role-based access control, which assigns access based on organizational role and allows users access only to specific information, (iii) And mandatory access control, which allows a system administrator to strictly control access to all information.

## Backups and recovery-

Prioritizing data security also requires a plan for how to access your company's and client's data in the event of system failure, disaster, data corruption, or breach. Doing regular data backups is an important activity to help with that access. A data backup entails making a copy of your data and storing it on a separate system or medium such as a tape, disk, or in the cloud. You can then recover lost data by using your backup.

## Encryption-

Data encryption software effectively enhances data security by using an algorithm (called a cipher) and an encryption key to turn normal text into encrypted ciphertext. To an unauthorized person, the cipher data will be unreadable. That data can then be decrypted only by a user with an authorized key. Encryption is used to protect the data that you store (called data at rest) and data exchanged between databases, mobile devices, and the cloud (called data in transit). Your encryption keys must be securely managed, including protecting your critical management systems, managing a secure, off-site encryption backup, and restricting access.

## Data masking-

Data masking software hides data by obscuring letters and numbers with proxy characters. The data is still there, behind the masking. The software changes the data back to its original form only when an authorized user receives that data.

## Tokenization-

Tokenization substitutes sensitive data with random characters that are not algorithmically reversible. The relationship between the data and its token values is stored in a protected database lookup table, rather than being generated by and decrypted by a mathematical algorithm (as in the case of encryption). The token representing the real data is used across different systems as a replacement, while the actual data is stored on a separate, secure platform.

## Deletions and erasure-

When electronic data is no longer needed and must be permanently cleared from the system, erasure can overwrite that data so that it is irretrievable. Erasure is different from deletion, which is a process that simply hides data in such a way that makes it easy to retrieve.

## *11.5 DATA SECURITY TECHNOLOGIES*

The following are data security technologies used to prevent security breaches, reduce risk and sustain protections.

### Data Auditing-

The question isn't if a security breach occurs, but when a security breach will occur. When forensics gets involved in investigating the root cause of a breach, having a data auditing solution in place to capture and report on access control changes to data, who had access to sensitive data, when it was accessed, file path, etc. are vital to the investigation process. Alternatively, with proper data auditing solutions, IT administrators can gain the visibility necessary to prevent unauthorized changes and potential breaches.

### Data Real-Time Alerts-

Typically, it takes companies several months (or 206 days) to discover a breach. Companies often find out about breaches through their customers or third parties instead of their own IT departments. By monitoring data activity and suspicious behavior in real-time, you can discover more quickly security breaches that lead to accidental destruction, loss, alteration, unauthorized disclosure of, or access to personal data.

### Data Risk Assessment-

Data risk assessments help companies identify their most overexposed sensitive data and offer reliable and repeatable steps to prioritize and fix serious security risks. The process starts with identifying sensitive data accessed via global groups, stale data, and/or inconsistent permissions. Risk assessments summarize important findings, expose data vulnerabilities, provide a detailed explanation of each vulnerability, and include prioritized remediation recommendations.

### Data Minimization-

The last decade of IT management has seen a shift in the perception of data. Previously, having more data was almost always better than less. You could never be sure ahead of time what you might want to do with it. Today, data is a liability. The threat of a reputation-destroying data breach, loss in the millions or stiff regulatory fines all reinforce the thought that collecting anything beyond the minimum amount of sensitive data is extremely dangerous. To that end: follow data minimization best practices and review all data collection needs and procedures from a business standpoint.

### Purge Stale Data-

Data that is not on your network is data that can't be compromised. Put in systems that can track file access and automatically archive unused files. In the modern age of yearly acquisitions, reorganizations and "synergistic relocations," it's quite likely that networks of any significant size have multiple forgotten servers that are kept around for no good reason.

## *11.6 PROTECTING YOUR COMPANY'S DATA*

In recent years, data protection has become a must for all companies, no matter their size. While big organizations suffering data breaches such as Facebook, Orbitz or Quora are the ones making headlines, a more troubling reality awaits small and mid-sized companies: 60% of them go out of business within six months of a cyber-attack, according to the National Cyber Security Alliance. Additionally, the rise of data protection regulations around the world, has added an extra layer of urgency to the need for all companies to implement concrete data protection measures. Big companies are, in many cases, way ahead of the game, having already built their cyber security policies and tested them over the course of the last few years. Let's have a look at some of their most successful strategies:

### Write up a strategy-

Rather than having a vague idea of policy and procedures, businesses of all sizes should have a formal IT security strategy that's as detailed and exhaustive as possible. It's imperative that it not only lays out how to protect data and resources, but what to do should things go wrong. An incident-response strategy ensures you'll be a step ahead, rather than making any rash heat-of-the-moment reactions that might make things worse. Keep it updated and close to hand too; there's no point putting in all that effort writing it up only for the document to collect dust in a drawer somewhere.

### Protect against malware-

Ward off data threats by securing your PCs and network against malware. Malicious software that can cause massive amounts of data damage, malware can swarm on unprotected machines without you even knowing about it. It's essential that you protect yourself from malware through the following:

- Apply the firewall: While not enough on its own, your router's on-board firewall provides the first line of defence, so turn it on.
- PC protection: Sophisticated security software protects without compromising on the performance of your computer or network. Look for protection that can deal with identity theft, suspect websites and hacking in one fell swoop.

- Keep emails clean: Antispam software protects against unwanted emails, which can create risks and distractions for employees. Stop them in their tracks with the necessary precautions.

## Keep your wireless network secure-

If you have a wireless network, then beware: hackers are waiting to pounce on it without warning. An encryption key may flummox those who aren't especially tech savvy, but to hackers, it's be a breeze to bypass. Strengthen your router by using the strongest encryption setting you can to protect your business, and turn off the broadcasting function to make your network invisible. As far as hackers are concerned, they can't hack what they can't actually see.

## Safeguard passwords-

Even something as simple as a password can be optimised to fortify your data. They might be a nuisance to remember, but the more complex your passwords, the more protection you can provide. Make your passwords at least eight characters long, and embed numbers and other non-standard characters within them, so they can't be easily guessed. Changing them frequently can also help – as can employing credentials which aren't words, but combinations of seemingly random letters, numbers and special characters. Here's where passwords managers really come into their own, meaning your employees don't have to worry about remembering them and won't risk writing them down.

## Create a plan for personal devices-

More common in small-to-medium sized businesses make sure you're staying abreast of the security risks associated with employees bringing in and using their own devices. Create a plan for the practice in order to provide some protection against legal repercussions and mobile system costs. A clear, comprehensive policy covering pertinent data deletion, location tracking, and Internet monitoring issues can be very valuable. Additionally, businesses should look to make proper provision for employees who work remotely or use their own devices as part of their roles. While these practices can increase productivity and reduce overheads, they can also introduce new security concerns if not properly managed.

## Set up automatic software updates-

Hackers love to scan a network or site to see which version of software it's running on to make it easier for them to exploit the vulnerabilities of older versions. Updating device security settings, operating systems and other software to their latest versions can prevent this from happening. Set any patches and improvements to automatically update in the background to further safeguard against potential threats.

## Conduct background checks-

Be extra vigilant with regards to hiring new employees; safeguarding against internal threats plays a key role in effective cyber security. Look into their background and give yourself an idea of what kind of person they are. Additionally, be mindful of changes in the character of existing employees, as this could be indicative of other issues.

### Dispose of data properly-

Having the appropriate measures in place to dispose of data which is no longer required is a critical factor in reducing the risk of a security breach. Ensuring that retired and reused devices and storage media have had their contents properly removed will ensure that confidential company data can't be retrieved further down the line – and won't fall into the wrong hands. Remember; Reinstalling your operating system, formatting your hard drive or deleting specific files and folders doesn't ensure your data is gone. In fact, in most cases your data is still completely accessible with freely-available tools. Ensure your IT disposal partner is using a tool that overwrites your data multiple times ensuring your data is unrecoverable. Businesses should look to implement a sound data destruction policy which outlines the protocol for each use case (computers, phones, external hard drives and flash memory) – whether these devices are being redistributed within the business or discarded at the end of their lifecycles.

### Use the cloud-

If your business doesn't have the time or expertise to stay on top of all the security issues updates requiring attention, then it might be worth looking at a cloud service provider instead. A reputable cloud provider will be able to store data, maintain software patches and implement security. While not likely to be suitable for enterprise-level organisations, this can be a good approach for small businesses looking to provide themselves with a degree of protection.

### Educate your employees-

Making sure everyone in your business understands company security policy is important. Whether you opt to do it during onboarding or conduct bi-annual refresher courses, it's worth carrying out – just make sure everyone is heeding the practices, throughout the entire company.

## *11.7 A SECURITY CHECKLIST*

According to the National Cyber Security Alliance, 83% of small businesses do not have a formal cyber security plan (2012). Unless businesses take the necessary precautions, they will be more vulnerable to data breaches placing their employees, customers and business at risk. The financial liability associated with a breach can temporarily or permanently disrupt

business operations. By having a plan, you will be less vulnerable and more resilient. Below is a list of basic considerations.

[1] Activate firewalls and install anti-virus, anti-malware and anti-spyware software-Your Internet service provider may provide free software that you can download.

[2] Virus software should be updated and run weekly, at a minimum.

[3] Update software immediately- Security breaches may occur through vulnerabilities in software. Hackers learn about the security flaws that are patched with an update and attempt to exploit those vulnerabilities with companies that haven't updated.

[4] Keep software updated and stay informed about the latest security features and vulnerabilities.

[5] Create strong passwords- Weak passwords are the easiest way to infiltrate a computer network. Do all employees create strong passwords that are long and unique? Create a firm policy for employees and managers that includes the following recommendations:

- Do not use the same user IDs and passwords for work and home accounts. This way the company will not be at risk if an employee's personal accounts are breached.
- Select passwords that are unique, ideally random, 16 characters or longer with letters, numbers and punctuation. There are online tools that can help with password generation.
- Require password changes at least 6-12 times per year.
- Prohibit posting passwords on computers and work spaces.
- Provide your team with a multi-user password manager tool if needed.

[6] Cancel accounts upon employee terminations- Any time an employee leaves the company, either voluntarily or involuntarily, immediately cancel their account.

[7] Restrict access- Define what data your employees need access to. Restrict access to any area that is not necessary for the job.

[8] Encrypt confidential information- Use encryption software to protect confidential information on laptops, tablets, backups and other media.

[9] Reduce spam and phishing vulnerabilities- Scammers use emails that appear to be from legitimate sources to bait unsuspecting users into providing personal information or clicking on links containing malicious software. Ways to reduce these issues:

- Adust the protection level of your spam filter to reduce the amount of spam emails that are deposited to inboxes. Employees can assist with this effort by marking messages as spam or forwarding messages to the spam filter, whatever applies.

- Train employees how to identify phishing emails, so that they are less likely to click on links to malicious software and provide sensitive personal and company information to scammers.
- Have a policy that employees should immediately report any suspicious email that they've responded to or link that they've clicked on, so that you can assess if there are any security concerns.

[10] Establish two-factor authentication- on your web logins and online accounts. This security feature requires two forms of verification to gain access to accounts i.e. a password plus a code that is texted to a smartphone. It stops hackers from gaining access to an account when a password is compromised. Perform a secure wipe of all devices and copiers before they are recycled. Often data is retrievable even after it is deleted. A wipe overwrites the info several times making it difficult to recover.

[11] Limit login attempts on your website: - If someone can login to any public part of your website, ensure there is a login limiter i.e. WordPress has a Limit Login Attempts plugin. Hackers use software to attempt thousands to millions of user ids and password combinations to hack a company's website. Utilize software that allows you to set an account lockout threshold. When an IP address fails to input a correct user id and password for a specific number of attempts, the system will lock the user out.

[12] Adopt a backup plan for your files: The continuity of your business hinges on your resilience in the event of a disaster or your data being compromised by ransomware. Some aspects to consider in your policy:

- What storage medium(s) will you use to back up your data i.e. local device or cloud?
- How many backups do you need?
- How often do you need to back up? Frequency depends on how often you make changes to websites and account data. Ideally, back up your data more frequently than needed.
- Where will you store local drives?

[13] Secure your Wi-Fi networks with encryption and passwords- Securing Wi-Fi networks also means keeping a separate network for guest access, using a different router connection whenever feasible. Change the passwords to Wi-Fi accounts regularly.

[14] Establish security policies for employees who work remotely. Your level of security may be impacted by an employee's security practices outside of the office. Work cell phones and laptops must be password protected and never left unattended in public places including vehicles. Use only a private, secure Wi-Fi and a Virtual Private Network.

[15] Set firm policies of what apps can be downloaded- Have a policy about what apps employees can install on phones, tablets and computers. Employees should never jail break their phones or tablets to download apps because this bypasses security features provided by

the operating system. They should be prohibited from downloading applications and visiting websites not related to the job. This will reduce unnecessary risks.

[16] Consider vulnerabilities related to contractors: - Contractor access to your company's network can be vulnerability if policies aren't in place. If you employ third party contractors who must access your computer network:

- Restrict access to only the data that they will need.
- Require them to adopt the same security policies as employees where applicable.
- When their contract is complete, immediately terminate their user ids and passwords.

[17] Research local computer support companies who can help: - If you get into a bind, you want to have a contact for a trusted specialist who can help you immediately. Establish connections before there are problems.

[18] Screen companies that you hire to maintain your server- If you hire someone to maintain your server, did you research the best companies and seek referrals from other businesses? How do they protect your data against malware and natural disasters? What are their security policies?

[19] If a device is infected with malware, immediately remove it from the network so that it doesn't affect other computers. Turn off the device and change online and network passwords where possible.

## *11.8 CHALLENGES AND ISSUES*

Some of the key security challenges and issues are discussed here, As-

- Vulnerability to fake data generation
- Potential presence of untrusted mappers
- Troubles of cryptographic protection
- Possibility of sensitive information mining
- Struggles of granular access control
- Data provenance difficulties
- High speed of NoSQL databases' evolution and lack of security focus
- Absent security audits

**[1] Vulnerability to fake data generation**

Before proceeding to all the operational security challenges of big data, we should mention the concerns of fake data generation. To deliberately undermine the quality of your big data analysis, cybercriminals can fabricate data and 'pour' it into your data lake. For instance, if your manufacturing company uses sensor data to detect malfunctioning production processes, cybercriminals can penetrate your system and make your sensors show fake results, say, wrong temperatures. This way, you can fail to notice alarming trends and miss the

opportunity to solve problems before serious damage is caused. Such challenges can be solved through applying fraud detection approach.

**[2] Potential presence of untrusted mappers**

Once your big data is collected, it undergoes parallel processing. One of the methods used here is MapReduce paradigm. When the data is split into numerous bulks, a mapper processes them and allocates to particular storage options. If an outsider has access to your mappers' code, they can change the settings of the existing mappers or add 'alien' ones. This way, your data processing can be effectively ruined: cybercriminals can make mappers produce inadequate lists of key/value pairs. Which is why the results brought up by the Reduce process will be faulty. Besides, outsiders can get access to sensitive information.

The problem here is that getting such access may not be too difficult since generally big data technologies don't provide an additional security layer to protect data. They usually tend to rely on perimeter security systems. But if those are faulty, your big data becomes a low hanging fruit.

**[3] Troubles of cryptographic protection**

Although encryption is a well-known way of protecting sensitive information, it is further on our list of big data security issues. Despite the possibility to encrypt big data and the essentiality of doing so, this security measure is often ignored. Sensitive data is generally stored in the cloud without any encrypted protection. And the reason for acting so recklessly is simple: *constant encryptions and decryptions of huge data chunks slow things down*, which entails the loss of big data's initial advantage – speed.

**[4] Possibility of sensitive information mining**

Perimeter-based security is typically used for big data protection. It means that all 'points of entry and exit' are secured. But what IT specialists do inside your system remains a mystery. Such a lack of control within your big data solution may let your corrupt IT specialists or evil business rivals mine unprotected data and sell it for their own benefit. Your company, in its turn, can incur huge losses, if such information is connected with new product/service launch, company's financial operations or users' personal information. Here, data can be better protected by adding extra perimeters. Also, your system's security could benefit from anonymization. If somebody gets personal data of your users with absent names, addresses and telephones, they can do practically no harm.

**[5] Struggles of granular access control**

Sometimes, data items fall under restrictions and practically no users can see the secret info in them, like, personal information in medical records (name, email, blood sugar, etc.). But some parts of such items (free of 'harsh' restrictions) could theoretically be helpful for users with no access to the secret parts, say, for medical researchers. Nevertheless, all the useful

contents are hidden from them. And this is where talk of granular access starts. Using that, people can access needed data sets but can view only the info they are allowed to see.

The trick is that in big data such access is difficult to grant and control simply because big data technologies aren't initially designed to do so. Generally, as a way out, the parts of needed data sets, that users have right to see, are copied to a separate big data warehouse and provided to particular user groups as a new 'whole'. For a medical research, for instance, only the medical info (without the names, addresses and so on) gets copied. Though, the volumes of your big data grow even faster this way. Other complex solutions of granular access issues can also adversely affect the system's performance and maintenance.

**[6] Data provenance difficulties**

Data provenance or historical records about your data complicates matters even more. Since its job is to document the source of data and all manipulations performed with it, we can only image what a gigantic collection of metadata that can be. Big data isn't small in volume itself. And now picture that every data item it contains has detailed information about its origin and the ways it was influenced (which is difficult to get in the first place). For now, data provenance is a broad big data concern. From data security perspective, it is crucial because, unauthorized changes in metadata can lead you to the wrong data sets, which will make it difficult to find needed information. Untraceable data sources can be a huge impediment to finding the roots of security breaches and fake data generation cases.

**[7] High speed of NoSQL databases' evolution and lack of security focus**

This point may seem as a positive one, while it actually is a serious concern. Now NoSQL databases are a popular trend in big data science. And its popularity is exactly what causes problems. Technically, NoSQL databases are continuously being honed with new features. And just like we said in the beginning of this article, security is being mistreated and left in the background. It is universally hoped that the security of big data solutions will be provided externally. But rather often it is ignored even on that level.

**[8] Absent security audits**

Big data security audits help companies gain awareness of their security gaps. And although it is advised to perform them on a regular basis, this recommendation is rarely met in reality. Working with big data has enough challenges and concerns as it is, and an audit would only add to the list. Besides, the lack of time, resources, qualified personnel or clarity in business-side security requirements makes such audits even more unrealistic.

## Few more burning issues about data security, as-

**[i] Not knowing who uses what data and where it is?**

You can't secure data without knowing in detail how it moves through your organisation's network. Begin by doing a thorough inventory of sensitive data (See fig 1).Then develop a “Sensitive Data Utilisation Map" documenting your findings. Also consider building a series of diagrams to show where and how data moves through the system. All the parties involved should check these diagrams, and this process will itself raise awareness of both the value and the risk to sensitive data.

**[ii] Treating all data equally**

Business managers need to classify data according to its sensitivity and its worth to the organisation so they can correctly evaluate and fund different levels of protection. “Data Asset Valuation” is a very worthwhile ROI-type of activity. The goal is to correlate a variety of criteria, including regulatory compliance mandate, application utilisation, access frequency, update cost and competitive vulnerability to arrive at both a value for the data and a ratio for determining justifiable security costs.

**[iii] Focusing solely on regulatory compliance concerns**

Virtually all government and industry privacy and security regulations boil down to the most basic best practices of data security. So being able to pass a regulatory audit does not automatically ensure effective security. Instead of trying to protect your organisation's data assets by solely striving to meet individual regulatory requirements, focus on complying with security-centred processes, policies and people, reinforced by security solutions such as automated policy enforcement, encryption, role-based access and system auditing. In other words, do the right things instead of just the required things.

**[iv] Keeping what you don't need**

You can reduce the risk of retaining sensitive customer data by removing the electronic and paper data from all systems and files. However, just deleting files with infrequently accessed, highly sensitive data won’t work - it would violate multiple data retention regulations not to mention annoying your marketing department. A better way is to look at the specific data retention and protection regulations governing each of the sensitive data elements that need protecting, working in conjunction with legal department and the data librarian who will usually know the relevant regulations.

**[v] Security triage**

We have to move beyond dealing with the crisis of the moment and focus on securing data holistically and consistently. And while it may be difficult to free up the time and the budget to institute a comprehensive data security plan, ultimately a unified approach will be far more effective than the fragmented practices present at too many companies, increasing security and saving both time and money.

Data-driven security cannot be an occasional event sparked by a crisis; it needs to be an integral part of the organisation's daily routine.

**[vi] Outsourcing responsibility**

Virtually all data protection and privacy regulations state that firms can't share the risk of compliance, which means that if your outsourcing partner fails to protect your company's data, your company is at fault and is liable for any associated penalties or legal actions that might arise from the exposure of that data. Laws concerning data privacy and security vary internationally. To lessen the chance of sensitive data being exposed deliberately or by mistake, you must ensure that the company you are partnering with offshore or domestic takes data security seriously and fully understands the regulations that affect your business.

**[vii] Putting too much faith in risk assessments**

The simplistic Yes/No questions that are part of the generic ISO 17799 and PCI requirements focus on whether a particular technology, policy or control is in place, and not how effective these controls can be against careless or malicious insiders or outsiders. Risk assessments tend to look at one item at a time, and do not offer a holistic view of the system. Each component may look secure, but risk may still occur at the interface points or the points of inconsistency across systems. Think holistically to secure a system, considering the flow of data through the entire system rather than testing individual points.

**[viii] Settling For Less Than Real Security**

Knowing what enterprise data protection technologies, policies and procedures are "reasonable" relative to peer organisations is useful information, but don't allow others' actions to determine your security plan and goals. Model your policies and processes after the best practices of the most secure organisations in your industry, rather than those used by the common denominator. Strive for excellence.

**[ix] Fragmented processes and policies**

Despite claims that protecting data assets is strategic to an enterprise, the scope of data protection projects is all too often either regulation or department-specific. Look at developing an enterprise-wide data protection strategy instead. The goal of the project is not to produce a report, but to build awareness and executive support for the treatment of sensitive data assets with technologies, policies and procedures that match with the regulations, the utilisation and the potential loss if the data assets were to be compromised.

**[x] Retaining sensitive data without balancing risks against rewards**

Retaining sensitive data can be very valuable for analytic, marketing and relationship purposes. The rewards can be very high, provided you can properly secure the data and reduce the risks of storing it.

Make sure that your organisation's risk reward ratio is balanced toward reward and the data is being used in a way that brings real benefits to your organisation. And if securely storing data is costing more than its value to your organisation, it's time to refine your data retention policy.

## *11.9 POINTS TO REMEMBER*

- Data security is both the practice and the technology of protecting valuable and sensitive company and customer data, such as personal or financial information.
- Data security—the processes and technologies you should be using to safeguard that data is a crucial element in protecting your company's reputation and fiscal health.
- Safeguarding it from corruption and unauthorized access by internal or external people protects your company from financial loss, reputation damage, consumer confidence disintegration, and brand erosion.
- Authentication technology verifies if a user's credentials match those stored in your database.
- Tokenization substitutes sensitive data with random characters that are not algorithmically reversible. The relationship between the data and its token values is stored in a protected database lookup table, rather than being generated by and decrypted by a mathematical algorithm.
- Data masking software hides data by obscuring letters and numbers with proxy characters. The data is still there, behind the masking
- Data encryption software effectively enhances data security by using an algorithm (called a cipher) and an encryption key to turn normal text into encrypted ciphertext. To an unauthorized person, the cipher data will be unreadable
- A data backup entails making a copy of your data and storing it on a separate system or medium such as a tape, disk, or in the cloud. You can then recover lost data by using your backup.

## *11.10 GLOSSARY*

- Authentication is the process of identifying a piece of information, the veracity of information provided.
- An attack is an action with malicious intention to interrupt the operations of a network or steal the data, etc.
- Antivirus software is s program or a set of programs that help prevent any malicious code, program from entering your computer or network.

- A Distributed Denial of Service is a Denial of Service technique that uses numerous hosts to perform the task.
- A computer worm is a standalone malware computer program that replicates itself in order to spread to other computers.
- Vulnerability is a weakness which can be exploited by a threat actor such as an attacker to perform unauthorised actions within a computer system.

## *11.11 CHECK YOUR PROGRESS*

**Descriptive Type Questions-**

a) What is Cryptography?
b) What is the difference between Threat, Vulnerability and Risk?
c) What is the use of Firewall?
d) List the common types of cyber security attacks.
e) Define data leakage?
f) What is Distributed Denial of Service?

**Objective Type Questions-**

a) Data security means protecting digital data those in a database from destructive forces and from the unwanted actions of unauthorized users such as cyber-attack. (True/False)

b) A Firewall is a network security system that monitor and controls and outgoing network traffic.(True/False)

c) A threat is a potential negative action facilitated by vulnerability that results in unwanted impact to a computer system. (True/False)

d) Cryptography is a method of stealing information unwanted users (True/False)

e) Antivirus software is a program or a set of programs that help steal any malicious code, program from entering your computer or network. (True/False)

f) ……is the process of identifying a piece of information, the veracity of information provided.

g) A computer …… is a standalone malware computer program that replicates itself in order to spread to other computers.

**Answer (Objective Type Question)-**

| | | | |
|---|---|---|---|
| [a] True | [b] True | [c] True | [d] False |
| [e] False | [f] Authentication | [g] worm | |

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## *11.13 SUGGESTED READINGS*


- Hacking: The art of Exploitation by Jon Erickson
- The art of invisibility by Kevin Mitnick

# UNIT- 12
# E-BANKING



## *12.1 INTRODUCTION*

E- Banking is a process of banking services and products through electronic channels such as telephone, internet, cell phones etc. today many people are moving towards e-banking as buy its use it become easy for customers to manage their account from a place and at any time and this charge very nominal cost. It is not wrong to say that e-banking is one of the most popular and latest technological wonder in field of banking which has given a banking sector a new

dimension for growth. E-banking has helped the banking industry in several new ways but the biggest advantage that it has imparted to this sector in developing countries especially country like INDIA is related to improving customer relations.

E-banking is the electronic banking process that provides the financial service for the individual client by means of Internet. The evolution of electronic banking (E-banking) started with the use of automatic teller machines (ATMs) and has included telephone banking, direct bill payment, electronic fund transfer and online banking. According to some, the future direction of E-banking is the acceptance of mobile telephone (WAP-enabled) banking and interactive-TV banking. However, it has been forecast by many that online banking will continue to be the most popular method for future electronic financial transactions. Electronic funds transfer (EFT), refers to the computer-based systems used to perform financial transaction electronically. The term is used for a number of different concepts including electronic payments and cardholder-initiated transactions, where a cardholder makes use of a payment card such as a credit card or debit card. Card-based EFT transactions are often covered by the ISO 8583 series of standards. In order for customers to use their banks online services they need to have a personal computer and Internet connection.

## *12.2 OBJECTIVES*

After the successful completion of this unit, you will be able to-

- Define the importance of e-banking
- Explore online banking in India.
- Define the electronic payment system.
- Know the challenges of e-banking in India.

## *12.3 E-BANKING- AN OVERVIEW*

In its very basic form, E-banking can mean the provision of information about a bank and its services via a home page on the World Wide Web (WWW). More sophisticated E-banking services provide customer access to accounts, the ability to move their money between different accounts, and making payments or applying for loans via e-Channels. In the context of E-banking, electronic delivery of services means a customer conducting transactions using online electronic channels such as the Internet. Many banks and other organizations are eager to use this channel to deliver their services because of its relatively lower delivery cost, higher sales and potential for offering greater convenience for customers. But this medium offers many more benefits, which will be discussed in the next section. A large number of organizations from within and outside the financial sector are currently offering E-banking which includes delivering services using Wireless Application Protocol (WAP) phones and Interactive Television (iTV).

In entire Indian banking system, Electronic Banking has turned emerged as an important part. The concept of e- banking is off to some extent latest origin in India. Traditional model of banking i.e. branch based banking was widespread till 1990s, and after that non-branch banking services began. IT Act, 2000, was created by government of India with effect from the 17th October 2000. A Committee was laid down to study various aspects of Internet banking. The committee had paid enough consideration on three most important areas of Internet banking, Security issues, legal issues and regulatory issues. Recommendations and guiding principles of working committee was acknowledged by Reserve Bank of India and accordingly plans were issued to banks to employ internet banking in India.

E-banking is a popular modern technology that delivers the new and traditional banking products and services to the customers electronically. Any type of intelligent electronic devices such as, personal computer (PC), Personal Digital Assistant (PDA), Automated Teller Machine (ATM), kiosk or Touch Tone Telephone. But from among these the ATM card, Debit card, Credit card, online banking, phone banking, SMS banking etc. are most used for e-banking. In the developed countries e-banking has become an invaluable part of everyday life. Besides the developed world, the developing countries also come into contact with vast increase in e-banking such as; India.

### Benefits of E-Banking-

Banking has witnessed many innovations in last 3 decade and one of the major among it is e-banking which was result of information and technological revolution. These IT revolutions changed the entire working of banking sector as e- banking gave birth to new type of financial services which was created by the intersection of tradition retail financial services with the internet. E-banking provides provision of performing basic banking services or transaction through web. These services include

- Checking and savings accounts
- Consumer loans and mortgage financing
- Credit and debit cards
- Private banking services

Introduction of e- banking made banking very convenient and time saving. Main focus of e-banking is to provide a customer with convenient and secure methods of doing online financial transactions like automatic deposits, automatic bill payments from their bank account, getting online loan and many more.

## *12.4 INTERNET BANKING*

Online banking, also known as internet banking or web banking, is an electronic payment system that enables customers of a bank or other financial institutions to conduct a range of financial transactions through the financial institution's website. The online banking system

will typically connect to or be part of the core banking system operated by a bank and is in contrast to branch banking which was the traditional way customers accessed banking services.

Some banks operate as a "direct bank" (or "virtual bank"), where they rely completely on internet banking. Internet banking software provides personal and corporate banking services offering features such as viewing account balances, obtaining statements, checking recent transactions, transferring money between accounts, and making payments.

**Advantages of Internet Banking-** The most prominent benefits provided by online banking include:

- Speed and efficiency
- Online bill payment
- Low overhead can mean high interest rates on deposit accounts
- Low overhead can mean low fees
- 24/7 account and service access

**Disadvantages of internet Banking-** There are some drawbacks to using online banks as well. Here are some of the downsides of working with an online bank:

- No relationship with personal banker
- Inconvenient to make deposits
- Technology issues
- Security issues
- Inefficient at complex transactions

## *12.5 HOME BANKING*

Home banking is the practice of conducting banking transactions from home rather than at branch locations. Home banking generally refers to mobile banking, web banking, banking over the telephone, or banking by mail. The first experiments with online banking started in the early 1980s. However, it did not become popular until the rise of the Internet in the mid-1990s. Many Internet banks maintain few, if any, physical branches.

The increasing popularity of home banking has fundamentally changed the character of the banking industry. Many people can arrange their affairs so that they seldom need to visit a physical branch. Online-only banks have profited from this shift in the industry. The absence of brick-and-mortar locations allows many online banks to offer favorable interest rates, lower service charges, and other incentives for those willing to bank online.

Many of the limits on home banking revolve around initiating large transactions. Requiring a personal appearance reduces and even prevents some forms of fraud. Although there is an increasing trend toward offering more services online, many banks normally require that

some transactions occur in person. For instance, applying for a personal or business loan often calls for an appearance at a branch office. Applying for a mortgage is another financial transaction where the applicant historically had to visit the bank at some point.

**Advantages of Home Banking-**

Saving time and reducing physical risks are the main benefits of home banking. Financial transactions can often be completed in minutes at home. At best, banking in person requires walking over to a small branch office in a convenient location, such as a grocery store. At worst, traditional banking demands a separate trip and waiting in a long line upon arrival. Home banking also eliminates the need to take physical risks, which are not limited to the coronavirus. Car accidents killed tens of thousands of Americans every year in the early 21st century. Furthermore, many people are afraid of being robbed at ATMs.

**Disadvantages of Home Banking-**

With the increased shift to online banking, new security threats have arisen. All online information, such as account numbers and recent transactions, is vulnerable to malicious hackers and other thieves. Commercial banks with online arms have put into place cyber security measures to prevent such thefts from occurring. Cyber security has become essential as the world becomes more reliant on computers than ever before.

## *12.6 MOBILE BANKING*

Mobile banking has become immensely popular among customers as a suitable method for money transaction. Banks are assertively adopting this mode. It is playing a vital role in availing banking services in remote areas where placing branch or ATM booth is not economically feasible. Mobile banking is so far the easiest way of expanding banking coverage. But there is huge possibility of fraud in case of mobile banking as authentication & all type of transaction information is provided via mobile phone including pin. So mobile banking is not intended to be used for big transactions where ATM transactions are suitable because of its two layer authentication system. In this paper, a new system is introduced that provides ATM service without traditional booths but two layer authentications with a tiny OS independent device has been introduced named VATM. This paper discusses how this system works using a low cost device made of micro-controller & CDMA module for communicating with bank for authentication which is used as an alternate of Automated teller machine for providing two layer authentications. There are both advantages and disadvantages of mobile banking some of which have been highlighted below.

**Advantages**

- It utilizes the mobile connectivity of telecom operators and therefore does not require an internet connection.

- With mobile banking, users of mobile phones can perform several financial functions conveniently and securely from their mobile.
- You can check your account balance, review recent transaction, transfer funds, pay bills, locate ATMs, deposit cheques, manage investments, etc.
- Mobile banking is available round the clock 24/7/365, it is easy and convenient and an ideal choice for accessing financial services for most mobile phone owners in the rural areas.
- Mobile banking is said to be even more secure than online/internet banking.

**Disadvantages**

- Mobile banking users are at risk of receiving fake SMS messages and scams.
- The loss of a person's mobile device often means that criminals can gain access to your mobile banking PIN and other sensitive information.
- Modern mobile devices like Smartphone and tablets are better suited for mobile banking than old models of mobile phones and devices.
- Regular users of mobile banking over time can accumulate significant charges from their banks.

## *12.7 VIRTUAL BANKING*

In the present scenario all clients related to the Banking and other sectors has to do some sort of transaction in their everyday life. Their transaction come through various location and time which includes Railway Station, Airports, Hospitals, Super Market etc., This is possible through Virtual Banking wherein the customers have no time restriction or do they need any electronic device to any transaction. It is a form of self-made support system. Innumerable number of clients / customers now prefers to carry on their banking related transactions in a simpler, cheaper way at all the time irrespective of the geographical locations. This is where this Virtual Banking comes as a boon to all the clients.

Virtual Banking (VB) is a strategy of distribution channels which are used to provide financial services and seeks to expand the concept of the traditional bank branch. This is done through the growth and development of technology. This is the latest and foremost form of present day banking where most of the services are delivered "Virtually". Means the services are delivered through Web and there is almost 1 to 2% eventuality that customers require their physical presence at their Bank Branch. Virmati's iCBS Middleware is based on the integration of such technologies as the internet, mobile phone, and others which allow the client identification, and recording transactions carried out by clients, but electronically.

It is a comprehensive solution for banks/institutaions to manage the full-fledged Branchless Delivery or Direct Banking, thru the internet or mobile or call-center. It allows banks to expand in new markets, reduce operational issues, take banking services to the doorsteps of

its existing & potential customers. In a nutshell, iCBS Middleware is a technology enabler or technology infrastructure to drive customer acquisition, servicing & thus extend branch-less bank's outreach. The different channels are utilised as an interface with a Host CBS - core banking solution through a custom built middle-ware. It provides customers of the bank, real-time access to their relationships in the bank such as account inquiries, fund transfers, credit cards, payments and remittances, where one can make payments to individuals or institutions and other general payments on-line.

ICBS Middleware e-Banking is based on n-tier architecture. It offers a high degree of scalability as it can be used in both small application server environments and in multi-server distributed processing environments. The solution is platform independent. It is highly secured and provides support for different authentication mechanisms.

**Advantages**

- **More advanced web technology:** Virtual banks usually employ more advanced web features and online tools for customers than traditional banks. As a result, they usually come with a more robust, comprehensive set of features.
- **Environmentally friendly:** There will be no paper statements, no errands driving to the bank and no additional space needs for staffing or housing of operations.
- **Higher interest rates and lower mortgage and loan rates:** Internet-only banks do not have the same level of expenses for staffing and space as conventional banks with physical locations. These savings in infrastructure and personnel costs can be passed onto the consumers in the forms of higher interest rates on savings or checking accounts and lower mortgage or loan rates. Some virtual banks are even able to offer no-fee, interest-bearing accounts without minimum balance requirements.
- **Completely free checking:** Nearly all internet-only banks provide checking accounts at no cost. Though most brick-and-mortar banks also offer no-fee checking, conditions usually are attached, such as the requirement of direct deposit.
- **Convenience and mobility:** Virtual banks do not close. Your account is accessible around the clock.

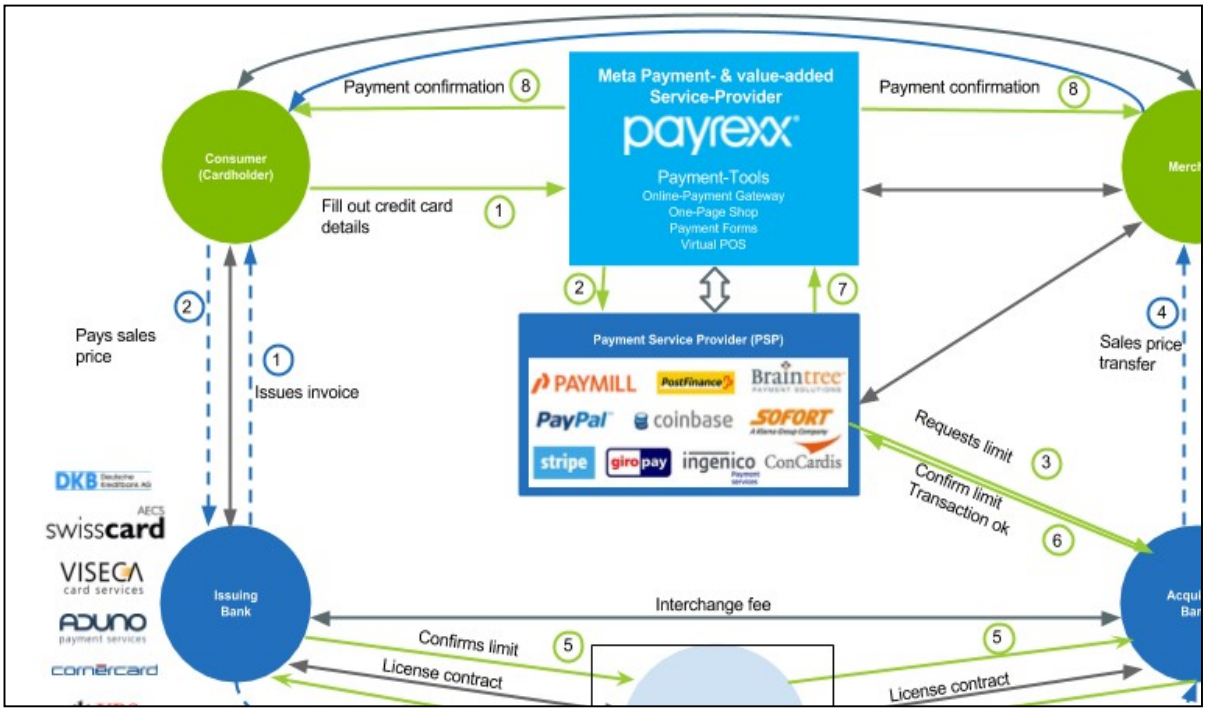
**Disadvantages**

- **Website outages:** Though increasingly uncommon, websites do go down at times, whether for planned maintenance or an unplanned glitch. If that happens, there is no physical place to go as a backup.
- **Lack of relationship:** Some transactions are easier when conducted face-to-face and more complicated issues can benefit from a personal interaction that is lacking in virtual banking.

- **Slower deposits:** Because there is no physical branch at which to make a deposit, adding money to an account can be delayed sometimes if a check has to be mailed. Advances in technology though are easing these delays, since most direct banks now allow remote deposits of checks through mobile phones. Cash, of course, still can present challenges unless the virtual bank partners with a network of banks or credit unions to allow members' deposits.

## *12.8 E-PAYMENTS*

An electronic payment (e-payment), in short, can be simply defined as paying for goods or services on the internet. It includes all financial operations using electronic devices, such as computers, smartphones or tablets. E-payments come with various methods, like credit or debit card payments or bank transfers. Note that one of the most popular and common online payment methods nowadays is credit cards.




Online payments are made instantly, so it's convenient and saves lots of time. It is important, especially today when every aspect of our lives happens at a fast pace. The entire process behind the payment button is complicated, so here's the basic to make you understand it better.

- **Customer action** – The process begins when a customer visits the merchant's site and adds to the cart items (products or services) they want to buy. They, then need to fill out the payment form with certain information (e.g. card number, expiration date, CVV code, address). Depending on the payment method, the customer is either redirected to external service or bank's website or continues the payment on the website or in an app.

- **Payment authentication by the operator** – The payment gateway (with other parties involved) checks whether the payment information is valid. If everything's OK, the process continues and the payment gateway reports back the successful transaction. After that, the customer receives a payment confirmation the notification is usually displayed in real-time.
- **Payment to the seller's account** – An online payment provider receives a payment from a customer's bank and transfers it to the merchant's account.

## Popular e-payment mediums-

**[1] ATM CARD/ BIOMETRIC CARD-** ATM is known as an automated teller machine or automatic teller machine. In simple sense it is an electronic computerized telecommunications device that allows customers to complete financial transaction like cash withdrawals or cash deposit by using their ATM cards and report of the account's balance can also be received that too without the aid of any bank branch representative or teller. In simple words, it is simple to use self-service solution.

**[2] DEBIT CARD/ CREDIT CARD-** Debit cards are also known as a bank card or check cards. Debit cards look like credit cards or ATM (automated teller machine) cards it is a plastic payment card that can be used instead of cash when making purchases but operate like cash or a personal check. But still Debit cards are different from credit cards as credit card is a way to "pay later," but debit card is a way to "pay now." When any customer uses a debit card his/her money is quickly deducted from their account. In simple words by use of debit card the money comes directly from the user's bank account when a transaction is being performed.

**[3] SMART CARD-** A smart card is also known chip card, or integrated circuit card (ICC) it is a pocket-sized plastic card that has embedded in form of computer chip. The microprocessor is under a contact pad on one side of the card. Think of the microprocessor as replacing the usual magnetic stripe present on a credit card or debit card. The microprocessor on the smart card is there for security. The host computer and card reader actually "talk" to the microprocessor. The microprocessor enforces access to the data on the card. The chips in these cards are capable of many kinds of transactions like cash withdrawal, deposit and balance inquire etc.

**[4] EFT-** Electronic funds transfer (EFT) is a service that allows a bank to transfer large amounts of money to another bank by sending an electronic message. Electronic transfers take only an instant. An electronic message instructs a computer to deduct a certain amount of money from one bank account and then add the same amount to another bank account. The message is sent, and the appropriate amount is transferred. No cash or paper changes hands, but money is transferred just the same.

**[5] ECS-** When you take a loan like a home loan or personal loan, you are required to pay its EMI on a fixed date every month. We are generally so busy with our personal and

professional lives that it can be challenging to remember the EMI date. Missing EMI date could result in a penalty, and regular late payments can also affect your credit rating.

To eliminate this inconvenience, lenders in India now offer Electronic Clearing Service (ECS) facility to the borrowers. Let us have a look at what this facility is and how it works. ECS was launched by the RBI for facilitating bulk transfer of funds from one bank account to another bank account. Loan providers use this facility to debit loan EMIs on a fixed date from the bank account of the borrower. This is done with the help of a clearinghouse. In India, ECS debit is mostly handled by the NACH (National Automated Clearing House) which works under NPCI (National Payments Corporation of India).

**How Does ECS Works?**

When you take a loan, you are required to sign an ECS payment mandate. This mandate gives the authority to the clearinghouse to debit the monthly EMI from your bank account and credit the same into your loan account, or lenders account on a fixed date. This mandate will have detailed information about your bank account, bank branch, ECS debit date and amount.

**How to Stop ECS?**

If for some reason you want to stop ECS debit from your bank account, you need to inform the same first to your loan provider. A written application needs to be submitted in a format prescribed by the loan provider. Once this is done, you also need to inform the same to your bank by submitting a written application.

Submit the application to the loan provider as well as your bank at least a couple weeks before your EMI debit date so that the necessary steps can be taken in time.

**Things to Keep in Mind When Using ECS-**

While the ECS facility eliminates the need for you to issue a cheque or go to an online payment gateway for regular payments like loan EMIs, you should make sure that your bank account has adequate funds for clearing the ECS. If at all you do not have adequate funds in your bank account and the ECS bounces, you will mostly be required to pay a penalty which can be as high as the penalty you pay for a bounced cheque. So, be a little cautious while using this facility for automating your EMI payments.

## *12.9 E-MONEY*

Electronic money or e-money is a payment system which now is getting popular. E-money is a cashless payment system which now is many used in several big cities in Indonesia, including Jakarta. The existence of electronic money has been replacing the function of cash. You don’t have to pull out your money from your wallet to paying anything, you only have to use one card and all is done. Although behind its advantages, don’t mean there is no disadvantage. Below are advantages and disadvantages of electronic money.

**Advantages-**

- **More practical-** To use electronic money, you have to charge the balance. You can top up at the merchants and now is easier to find the merchant. The balance in your e-money can be used for any transactions, wherever and whenever. You only have to use one card and you can pay anything you want as long as you never run out of your balance.
- **Faster Transaction-** Payments using electronic money are indeed faster than use cash. As example when you want to pay for a train ticket. you can directly tap in on an available machine, then go to the platform, and wait for your train to come. No need to long queue at the counter, pull out money, or waiting for the change.
- **Global Transaction-** For those who love online shopping, e-money also can be useful. Because, it can be used as a payment on any e-commerce sites, including overseas. It is because e-money applies globally. In online transaction, e-money has the same function with credit card. You only have to enter your card number, and the payment is done.

**Disadvantages-**

- **Consumptive-** Aware or not, e-money who gives us a lot of convenience has make us into a consumptive person. Why? Because the convenience make us want to buy things a lot, until we don't realize that the balance almost run out.
- **Low Security-** E-money can change hands easily. No need to entering password or something, everyone can use it without any permission. When your card is lost, the people who find your card can directly use it. That is the consequences behind its convenience which incriminating. All you have to do as the owner is keep it very well.
- **The Left Balance Can't Turn Into Cash-** Although transaction using electronic money card is very easy, not all payments can be made using electronic money. When you want to pay for something cash, or you are top up your balance too much, the balance that has been transferred can't be cashed or turn into cash. Unless your electronic money card is lost or damaged, you can report it to the bank concerned and the remaining balance can be cashed.

## E-Purse (Electronic Purse)

An electronic purse is "designed to facilitate small-value face-to-face retail payments by offering a substitute for banknotes and coins. They are intended to complement rather than substitute for traditional retail payment instruments such as cheques and credit and debit cards. "Electronic purses differ from other cashless payment instruments in that they are supplied in advance with generally accepted purchasing power. They can be loaded at bank counters, through Automated Teller Machines (ATMs) or through specifically equipped telephones, against a debit entry in a credit institution account, or against banknotes and coins. The embedded purchasing power is drawn down at the point of sale by an electronic

device that can suitably adjust the information on the card. Their potential to reduce significantly the use of notes and coins is even greater than that of other debit instruments since they are the first cashless instrument which would be used for very small amounts.

Their potential to replace other cashless instruments will depend: 1) on the level of fees and other costs levied by the issuer on those who use or accept these new instruments; 2) on the technical possibility, and the issuer's willingness, to remunerate the purchasing power embedded in electronic purses; and 3) on solutions adopted to compensate users in case of the loss, theft or malfunction of the card. "For electronic purses to become a success, a distinct business case must exist for cardholders, for shopkeepers and for issuers. Electronic purses can have various advantages for cardholders. The most important aspect relates to convenience as there would be less need to carry loose change for low-value transactions. An additional advantage might be that, compared with notes and coins, the risk of robbery might diminish if the use of the electronic purses included a security feature such as a PIN code. Furthermore, prepaid cards would have the advantage that non-cash payment transactions could be made without necessarily being linked to a bank account. On the other hand, there are disadvantages as well: first, transaction costs may apply, and second, the electronic purse has to be supplied with value in advance, which may give rise to a transfer of float income from consumers to card issuers.

## *12.10 DIGITAL CASH AND DIGITAL TRANSCATION*

Electronic money is broadly defined as an electronic store of monetary value on a technical device that may be widely used for making payments to undertakings other than the issuer without necessarily involving bank accounts in the transaction, but acting as a prepaid bearer instrument.

**Basic Model of Digital Cash transaction-** A Digital Cash transaction usually involves three types of users:

- A Payer (P) or consumer
- A Payee (R), such as a merchant
- A financial network like a Bank with whom both Payer and Payee have accounts, And usually involves three transaction: (i) Withdrawl, the Payer (P) transfer some money (token) from his/her account to her wallet (which could be a computer or smart case); (ii) Payment, the Payer (P) transfer the withdrawn money (token) to the Payee's (R) wallet; (iii) Deposit, the Payee (R) transfers the received money (token) to his/her account.

**Important properties of a Digital Cash system**

- **Security**- The most important feature of a Digital Cash system is that it should ensure a high-level of security through sophisticated authentification techniques, Which means it should not be copied or reused by the payer, the payee or anyone else.
- **Anonymity**- It should be able to maintain the anonymity of the person, i.e the transaction carried out should not be traceable.
- **Portability**- The use of such a system should be independent of the location. The transactions can be carried over computer networks and into storage devices and vice versa.
- **Tranferability**- The user can spend the money received in payment without having to contact a bank for authentication
- **Divisibility**- This allows the digital cash to be sub-divided into smaller denominations and the customer can choose to spend only a part of it.
- **User friendly**- Both the payer and payee should be able to use it with ease which would make it widely acceptable.

**DIGITAL TRANSACTION-**

A digital transaction is a seamless system involving one or more participants, where transactions are effected without the need for cash. Digital transaction involves a constantly evolving way of doing things where financial technology (fintech) companies collaborate with various sectors of the economy for the purpose of meeting the increasingly sophisticated demands of the growing tech-savvy users.

As the needs of investors and financial service users become more complex, there is a demand for effective tools to simplify the processes and transactions carried out by end-users. It is inevitable that financial institutions would have to increase the number of digitized services and offerings, given a rise in the use of automated services. Implementing technology in the financial industry is a necessity for the survival of businesses as customers seek lower-cost alternatives to traditional financial services. Fintech companies have led the revolution in transforming the financial sector by digitalizing the end-client's transactional eco-system.

**Digital Transaction Benefits**

The example of a digital transaction above was made to show how the benefits of technology adaptation outweighs the costs for businesses, financial institutions, and end-users. Still, there are digital initiatives that come up to disrupt the previous digital transaction setups. Just as credit cards are disrupting the use of cash, processes like online transactions and crypto currencies are disrupting the regimen where physical presence and credit cards, respectively, are required for transactions. The e-commerce portal has provided a means by which buyers

and sellers can engage in digital transactions; cloud service platforms have provided a digital process for storing data; crowdfunding gateways have provided a means by which individuals and startups can have access to funds; peer-to-peer lending forums have provided a way for individuals to lend to and borrow from each other without the hassles of the traditional banking regulation; roboadvising tools have provided a way for individuals to plan their retirement phase; etc. These all constitute digital transactions that may eventually get disrupted by new inventions over the years.

## *12.11 E-BANKING CAUTIOUS*

The banking industry is undergoing a radical shift, one driven by new competition from FinTechs, changing business models, mounting regulation and compliance pressures, and disruptive technologies. The emergence of FinTech/non-bank startups is changing the competitive landscape in financial services, forcing traditional institutions to rethink the way they do business. As data breaches become prevalent and privacy concerns intensify, regulatory and compliance requirements become more restrictive as a result. And, if all of that wasn't enough, customer demands are evolving as consumers seek round-the-clock personalized service. These and other banking industry challenges can be resolved by the very technology that's caused this disruption, but the transition from legacy systems to innovative solutions hasn't always been an easy one. That said, banks and credit unions need to embrace digital transformation if they wish to not only survive but thrive in the current landscape.

**[1] Increasing Competition**

The threat posed by FinTechs, which typically target some of the most profitable areas in financial services, is significant. Goldman Sachs predicted that these startups would account for upwards of $4.7 trillion in annual revenue being diverted from traditional financial services companies. These new industry entrants are forcing many financial institutions to seek partnerships and/or acquisition opportunities as a stop-gap measure; in fact, Goldman Sachs, themselves, recently made headlines for heavily investing in FinTech. In order to maintain a competitive edge, traditional banks and credit unions must learn from FinTechs, which owe their success to providing a simplified and intuitive customer experience.

**[2] A Cultural Shift**

From artificial intelligence (AI)-enabled wearables that monitor the wearer's health to smart thermostats that enable you to adjust heating settings from internet-connected devices, technology has become ingrained in our culture — and this extends to the banking industry. In the digital world, there's no room for manual processes and systems. Banks and credit unions need to think of technology-based resolutions to banking industry challenges. Therefore, it's important that financial institutions promote a culture of innovation, in which technology is leveraged to optimize existing processes and procedures for maximum

efficiency. This cultural shift toward a technology-first attitude is reflective of the larger industry-wide acceptance of digital transformation.

**[3] Regulatory Compliance**

Regulatory compliance has become one of the most significant banking industry challenges as a direct result of the dramatic increase in regulatory fees relative to earnings and credit losses since the 2008 financial crisis. From Basel's risk-weighted capital requirements to the Dodd-Frank Act, and from the Financial Account Standards Board's Current Expected Credit Loss (CECL) to the Allowance for Loan and Lease Losses (ALLL), there are a growing number of regulations that banks and credit unions must comply with; compliance can significantly strain resources and is often dependent on the ability to correlate data from disparate sources.

**[4] Changing Business Models**

The cost associated with compliance management is just one of many banking industry challenges forcing financial institutions to change the way they do business. The increasing cost of capital combined with sustained low interest rates, decreasing return on equity, and decreased proprietary trading are all putting pressure on traditional sources of banking profitability. In spite of this, shareholder expectations remain unchanged.

This culmination of factors has led many institutions to create new competitive service offerings, rationalize business lines, and seek sustainable improvements in operational efficiencies to maintain profitability. Failure to adapt to changing demands is not an option; therefore, financial institutions must be structured for agility and be prepared to pivot when necessary.

**[5] Rising Expectations**

Today's consumer is smarter, savvier, and more informed than ever before and expects a high degree of personalization and convenience out of their banking experience. Changing customer demographics play a major role in these heightened expectations: With each new generation of banking customer comes a more innate understanding of technology and, as a result, an increased expectation of digitized experiences.

Millennials have led the charge to digitization, with five out of six reporting that they prefer to interact with brands via social media; when surveyed, millennials were also found to make up the largest percentage of mobile banking users, at 47%. Based on this trend, banks can expect future generations, starting with Gen Z, to be even more invested in omnichannel banking and attuned to technology. By comparison, Baby Boomers and older members of Gen X typically value human interaction and prefer to visit physical branch locations.

**[6] Customer Retention**

Financial services customers expect personalized and meaningful experiences through simple and intuitive interfaces on any device, anywhere, and at any time. Although customer experience can be hard to quantify, customer turnover is tangible and customer loyalty is quickly becoming an endangered concept. Customer loyalty is a product of rich client relationships that begin with knowing the customer and their expectations, as well as implementing an ongoing client-centric approach.

In an Accenture Financial Services global study of nearly 33,000 banking customers spanning 18 markets, 49% of respondents indicated that customer service drives loyalty. By knowing the customer and engaging with them accordingly, financial institutions can optimize interactions that result in increased customer satisfaction and wallet share, and a subsequent decrease in customer churn.

**[7] Outdated Mobile Experiences**

These days, every bank or credit union has its own branded mobile application — however, just because an organization has a mobile banking strategy doesn't mean that it's being leveraged as effectively as possible. A bank's mobile experience needs to be fast, easy to use, fully featured (think live chat, voice-enabled digital assistance, and the like), secure, and regularly updated in order to keep customers satisfied. Some banks have even started to reimagine what a banking app could be by introducing mobile payment functionality that enables customers to treat their smart phones like secure digital wallets and instantly transfer money to family and friends.

**[8] Security Breaches**

With a series of high-profile breaches over the past few years, security is one of the leading banking industry challenges, as well as a major concern for bank and credit union customers. Financial institutions must invest in the latest technology-driven security measures to keep sensitive customer safe

**[9] Antiquated Applications**

Organizations using antiquated business management applications or siloed systems will be unable to keep up with this increasingly digital-first world. Without a solid, forward-thinking technological foundation, organizations will miss out on critical business evolution. In other words, digital transformation is not just a good idea — it's become imperative for survival.

While technologies such as blockchain may still be too immature to realize significant returns from their implementation in the near future, technologies like cloud computing, AI, and bots all offer significant advantages for institutions looking to reduce costs while improving customer satisfaction and growing wallet share.

Cloud computing via software as a service and platform as a service solutions enable firms previously burdened with disparate legacy systems to simplify and standardize IT estates. In doing so, banks and credit unions are able to reduce costs and improve data analytics, all while leveraging leading edge technologies. AI offers a significant competitive advantage by providing deep insights into customer behaviors and needs, giving financial institutions the ability to sell the right product at the right time to the right customer. Additionally, AI can provide key organizational insights required to identify operational opportunities and maintain agility.

**[10] Continuous Innovation**

Sustainable success in business requires insight, agility, rich client relationships, and continuous innovation. Benchmarking effective practices throughout the industry can provide valuable insight, helping banks and credit unions stay competitive. However, benchmarking alone only enables institutions to keep up with the pack it rarely leads to innovation. As the cliché goes, businesses must benchmark to survive, but innovate to thrive; innovation is a key differentiator that separates the wheat from the chaff.

Innovation stems from insights, and insights are discovered through customer interactions and continuous organizational analysis. Insights without action, however, are impotent — it's vital that financial institutions be prepared to pivot when necessary to address market demands while improving upon the customer experience.

Financial service organizations leveraging the latest business technology, particularly around cloud applications, have a key advantage in the digital transformation race: They can innovate faster. The power of cloud technology is its agility and scalability. Without system hardware limiting flexibility, cloud technology enables systems to evolve along with your business.

## *12.12 POINTS TO REMEMBER*

- E-banking is the electronic banking process that provides the financial service for the individual client by means of Internet.
- E-banking is a popular modern technology that delivers the new and traditional banking products and services to the customers electronically. Any type of intelligent electronic devices such as, personal computer (PC), Personal Digital Assistant (PDA), Automated Teller Machine (ATM), kiosk or Touch Tone Telephone.
- Most large banks, many regional banks and even smaller banks and credit unions offer some form of online banking, variously known as PC banking, home banking, electronic banking or internet banking.

- Online shoppers use credit for a majority of their Internet purchases. A credit card such as visa or master has a present spending limit based on the users credit limit.
- Debit card can be used for e commerce transactions in much the same way as credit card. Fewer sites offer the facility to use debit cards. Debit cards are not appropriate for very small transactions and do not afford anonymity.
- Electronic checks are another popular form of payment instrument on internet. Most of checks based transactions usually held between businesses and therefore this mode of payment is relevant in B2B e commerce.
- An electronic wallet serving a similar function to a physical wallet, hold credit cards, electronic cash, owner identification, and owner address information and provides that information at an electronic commerce site checkout counter.

## *12.13 GLOSSARY*

- Online Banking: A system that allows individuals to perform banking activities at home via the internet is called online banking.
- E Banking: E banking is a safe, fast, easy and efficient electronic service that enables you access to bank account and to carry out online banking services, 24 hours a day, and 7 days a week.
- Mobile Banking- It is a facility which enables customer to initiate and perform banking tasks on their mobile phones.
- ATM: Automated Teller Machine
- PDA: Personal Digital Assistance
- Debit Card: Debit cards draw money directly from your checking account when you make purchase. They do this by placing a hold on the amount of the purchase.
- Credit Card: A credit card is a card that allows you to borrow money against a line of credit, otherwise known as the card's credit limit.
- Electronic Payment System: An Electronic Payment System (EPS) is a way of paying for goods or services electronically instead of using cash or a cheque.

## *12.14 CHECK YOUR PROGRESS*

**Descriptive Type Questions-**

a) What is Online Banking?
b) What can I do with Online Banking?
c) What is Mobile Banking? Explain in details.
d) What is E-Money? Explain in details.

e) Explain E Payment System?

f) Difference between credit card and debit card.

### Objective Type Questions-

a) Mobile Banking is a facility which enables customer to initiate and perform banking tasks on their mobile phones (True/False)

b) A system that allows individuals to perform banking activities at home via the internet is called online banking. (True/False)

c) An Electronic Payment System (EPS) is a way of paying for goods or services electronically instead of using cash or a cheque. (True/False)

d) ATM stands for Any Time Money. (True/False)

e) A debit card is a card that allows you to borrow money against a line of credit, otherwise known as the card's credit limit (True/False)

f) Electronic checks are popular form of ……. instrument on internet.

g) …… is an electronic payment system that enables customers of a bank or other financial institutions to conduct a range of financial transactions through the financial institution's website

### Answer (Objective Type Question)-

[a] True [b] True [c] True [d] False [e] False

[f] Payment [g] Online Banking

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## *12.16 SUGGESTED READINGS*


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