

**TEERTHANKER MAHAVEER UNIVERSITY
MORADABAD, INDIA**

**CENTRE FOR ONLINE & DISTANCE
LEARNING**



Accredited with NAAC **A** Grade

12-B Status from UGC

**Programme: Bachelor of Arts
(Economics)**

Course: Computer Fundamentals

Semester-III

Syllabus

OBJECTIVE AND EXPECTED OUTCOME OF THE COURSE:

The objective of the paper is to acquaint the students with various IT Applications in the business.

UNIT-I:

Internet: Brief History and Development, Working, Control Mechanism, WWW: Hypertext and Hyperlinks, Websites and web pages, URL, IP addressing and Domain Naming System. Internet and WWW tools and Applications: Browser, FTP, Telnet, Email, Information and Knowledge sharing using IT tools, computer networks and the Internet.

UNIT-II:

E-Commerce: Introduction, Comparison between Traditional commerce and E-commerce; Advantages & disadvantages of e-commerce, Buying & Selling on Internet, Issues in implementing Electronic Commerce. Information Technology applied to various functional areas of management such as Production/Operations, Human Resource, Marketing, Finance and Materials Management.

UNIT-III:

B2B E-commerce; e-procurement, supply chain coordination; on-line research; organizing for online marketing, Internet retailing; Mobile Commerce: Introduction to mobile commerce; benefits of mobile commerce; mobile commerce framework; Internet advertising

UNIT-IV:

Software Packages for Office Applications, Word Processing using MS Word: Basic features, formatting text, creating and managing tables, inserting images and graphs, mail merge, managing page layout and printing. Spreadsheets using MS-Excel: Spreadsheet features, uses and advantages, autofill features, inserting formulas and functions, Inserting charts and graphs, macros, managing page layouts and printing. Presentations using MS Powerpoint: Basics of presentations, conventions and advantages, managing different views, adding and managing animations, managing slide transitions, managing slide templates, setting up slide shows.

SUGGESTED READINGS/ BOOKS:

1. Basandra SK, *Computers Today*, Galgotia Publications
2. Cyganski, *Information Technology: Inside and Outside*, Pearson Edu.
3. Kakkar DN, Goyal R, *Computer Applications in Management*, New Age Publications
4. Leon A and Leon M, *Introduction to Computers*, Leon Vikas
5. Peter Norton, *Introduction to Computers*, TMH, New Delhi
6. Rajaraman, *Introduction to Information Technology*, PHI, New Delhi

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Lesson-1

Internet

Structure:

- 1.1 Introduction.
- 1.2 Brief history and Development of Internet.
- 1.3 Working of the Internet.
- 1.4 Control Mechanism of the internet.
 - 1.4.1 Administration Aspect.
 - 1.4.2 Internet operation Aspect.
 - 1.4.3 Internet Security Aspect.
- 1.5 World Wide Web.
 - 1.5.1 Hyperlinks.
 - 1.5.2 Hypertext.
- 1.6 Websites.
 - 1.6.1 Static websites.
 - 1.6.2 Dynamic websites.
 - 1.6.3 Text, Media and other Alternative contents
 - 1.6.4 How to open a website.
 - 1.6.5 Steps to publish a website
- 1.7 Webpages.
- 1.8 URL
- 1.9 IP Addressing.
 - 1.9.1 Format of IP Address
 - 1.9.2 IP Address structure & classification
- 1.10 Domain Naming System
 - 1.10.1 Domain Names.

1.10.2 Domain Name Space.

1.10.3 Name Servers.

1.10.4 Working of Domain Name Server

1.11 Summary.

1.12 Glossary.

1.13 Answers to check your progress.

1.14 References.

1.15 Suggested Readings.

1.16 Terminal and Model Question.

Objectives:

After reading this lesson, you should be able;

- To understand the basics of internet and its working.
- To understand about the websites and their different components.
- To understand the concept of WWW and its associated mechanism.

1.1 Introduction:

Now a day, Internet is a part and parcel of our life. It is a repository of vast information. The Internet started way back in 1960 and remains in growth even today. Being not a property of any individual organization, a number of organizations are helping in its growth and control. Internet helps in the creation of World Wide Web along with the other services of internet. World Wide Web is the service of internet which is being used 99% of the time. A number of websites are being created daily with the help of webpages coded in HTML or XHTML. The hyperlink, hypertext, hypermedia plays a major role in creating these webpages

1.2 Brief History And Development of Internet

The Internet started in 1960 as a way for the government researchers to share information. The U.S Department of defense (D.D) started a project ARPANET (Advance research Project Agency Network) to link the scientists and university professors around the world. ARPANET was a great success but its membership was limited to academic and research organizations only.

By 1972, ARPANET had grown to approximately 15 nodes. At that time, the various computer networks did not have a standard way to communicate with each other. Ultimately a new communication project was established Transfer Control Protocol/ Internetwork protocol (TCP/IP). This allowed the different kinds of computers in different network to communicate with each other. Since ARPANET and other networks finally adapt TCP/IP standard on January 1, 1983, it is considered as the official birthday of Internet. All networks could now be connected by a universal language.

Today, Internet is also known as “Network or Networks”. It serves as a global communication system that links millions of private, public, academic and business networks via international telecommunications backbone. Internet is decentralized by its designs, so no one owns the internet and it has no central governing authority. Internet is a vast hardware and software infrastructure that enables the computer inter-connectivity.

1.3 Working of the internet:

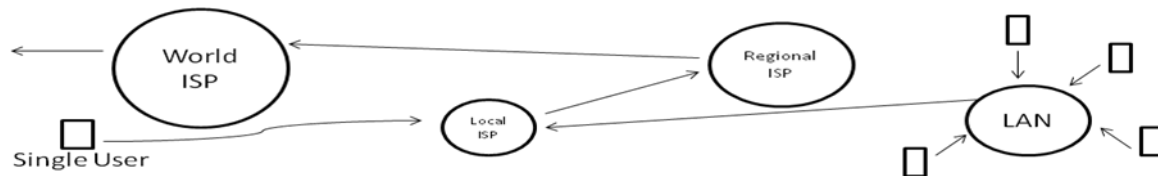
The internet is a “network or networks” connecting millions of computers belonging to private, public, academic and government organizations. The Internet works because “Open Standards” allow every network to connect every other computer. Anyone can create contents, offer services, and sell different types of products on internet and that too without requiring any permission from a central authority. It is the only reason that today different types of application and services are available on internet. The characteristics of internet are:

1. Open now
2. Independent
3. Run by non-profit organization

The computers connected in the internet are also called hosts and they are TCP/IP protocol for communication. The communication media are telephone lines, Fiber Optics cables (wired media) and microwaves, satellites (non-wired media). Almost every line of information is available on the internet in the electronic form.

As discussed earlier, no particular organization controls the Internet. A personal computer can be connected to the Internet by using phone-line modem, DSL (Digital Subscriber Line) or a cable modem. The modem is used to communicate with ISP (Internet Service Provider, like BSNL, Airtel, Idea etc.). ISP is a company that provides the Internet connections to the users.

Similarly a computer in a business or a university is usually connected with LAN (Local Area Network) using NIC (Network Interface Card, or LAN Card). The LAN of the university connected to the ISP using some high speed medium like Fibre Optic Cable. The local ISP connects to the larger ISPs. The largest ISPs maintain the Fibre Optic Links, under-sea cables or satellite links. So in this way every computer is connected to every other computer on the Internet.



Since ISPs play a major role in the working of internet, let us discuss something more about different kind of ISPs.

1. Local ISPs: A local ISP is an organization that has its own computers connected to the internet and it provides the facility to the individual users to connect to the Internet through their own computers. Generally it is the telephone company, where the telephone line of the user terminates e.g. BSNL, Airtel, Idea etc. The user connects to the local ISP through a modem or Network Interface Card (NIC).
2. Regional ISPs: The local ISPs connect to the regional ISPs through specialized devices routers. It is a special purpose device consisting of memory, processor and i/o interface, used for the purpose of interconnecting various networks.

1.4 Control Mechanism of Internet:

As discussed earlier Internet is not the property of a single organization. But there must be some control mechanisms which governs the working of Internet for this a number of governing bodies have been formed these governing bodies govern the internet from administration point of view, internet operations point of view and Internet security point of view.

1.4.1 Administration Aspect:

Since every computer (node) connected to the internet must have a unique address (IP Address), the overall responsibility for managing Internet Protocol Address at upper levels lies with IANA (Internet

Assigned Numbers Authority), which divides the actual administration of most functions to other bodies. At global regional levels, the various bodies providing allocation and registration service to support the operation of Internet are:

1. RIPENCC (Reseaux IP Europeans Network Coordination Centre).
2. ARIN (American Registry for Internet Number).
3. APNIC (Asia Pacific Network Information Centre).
4. LACNIC (Latin American & Caribbean IP Address Regional Registry).
5. AfriNIC (African Regional Registry for Internet Numbers Resources)

1.4.2 Internet Operation Aspects:

Internet operations are coordinated globally through IEPG (Internet Engineering Planning Group). It assists various ISPs to interoperate within global Internet. At regional levels different bodies actively involved in coordinating the operations are:

ARIN(American Registry for Internet Numbers).

APOPs(Asia Pacific Networking Group).

1.4.3 Internet Security Aspect:

Internet security is facilitated by a number of Computer Emergency Response Team (CERT). They continuously monitor the network for security incidents thus act as repository of information about such incident. Some other governing bodies of Internet are:

ISOC (Internet Society): It provides information about Internet and it is also responsible for the development for the Internet.

IAB (Internet Architecture Board): It is responsible for the development of architecture of Internet and also serve as advisory body of ISOC.

IETF (Internet Engineering Task Force): It is a group of network designers, operators, vendors and researchers.

IESG (Internet Engineering Steering Group): It reviews the standards developed by IETF.

IRTF (Internet Research Task Force): It focuses on research towards the future of Internet.

Inter NIC (Internet Network Information Centre): It is responsible for domain name (e.g. www.abc.com) registration.

W3C (World Wide Web connections): It is responsible to develop the technologies for www (World Wide Web)

1.5 WWW (World Wide Web):

World Wide Web is used by millions of people around the world for so many things like checking of weather, reading news, watching movies etc. i.e. it remains around us all the time. First thing you must note that “www is not just Internet” even though the words are used interchangeably.

“Internet is simply the way, computers connect to each other in order to share information. Today networks are around us and computers can easily communicate with each other. It has so many advantages like accessing email, file transfer etc. but the most common is accessing World Wide Web”.

But what is it exactly?

WWW consists of web servers, a computer which always remain connected to Internet. This computer is specially designed to store information and store it. When you make a website, you have to purchase space on webserver (on rent). The information that gets stored on these kinds of computers (webservers) is in the form of languages like HTML & Java scripts. You access these websites through a graphical user interface called web Browser or simply browser (Internet explorer, Netscape, Navigator, Safari, Mozilla, Firefox, Chrome, etc.)

WWW is the intercommunication of all these servers where you can communicate and access their information in a simple way. No one owns the web. We have to access www through ISP (Inter-pole Service Provider). Most of the information on the web is in the form of hyperlinks where one can click to get information on another topic. It is an important part of our life because its contents and structure is flexible and useful for everyone.

1.5.1 Hyperlinks:

Have you ever notice that when you look at something on internet, sometimes your mouse pointer takes the shape of a pointing finger (image). That is known as hyperlink.

A hyperlink is a command embedded in the webpage which allows you to jump somewhere else on the web. Every webpage is filled with so many hyperlinks, each one relating for some webpage, picture or file. When you click on the hyperlink, it loads another page/picture/file on your machine. It can even be used to launch a movie clip. Hyperlinks are used to facilitate web surfing, giving user the ability to move freely from one webpage to another webpage in quick and easy manner. When you click on hyperlink, you move to another page, if you want to come back simply press the back button on the back button

on the browser. One important point to note that if you hold ctrl key while clicking on a hyperlink, new page will open in a new window.

Types of Hyperlinks:

1. Underlined Text (generally in blue color)
2. Images
3. Drop-down menus
4. Animation

Hyperlinks can even be placed in PDF file, Word document or an Email. World Wide Web is made up of these hyper-linked documents, contents and media. The web pages which contain information on a topic and contain these hyperlinks (to refer to another topic) are written using a particular hypertext mark-up language called HTML.

The HTML code to create a text in the form of hyperlink is

```
<a href=www.yahoo.com/news.html> click here to open yahoo </a>
```

To make an image as hyperlink, use the following code of HTML

```
<a href=www.mysite.com></a>
```

what ever you write in href = " _____ ", it acts as the path to open a new file. However this path can be absolute or relative. Absolute means the path of the target file is completely as such like

<http://www.yahoo.com/news.html/>

Whereas in case of relative pathname only file name is given and it is supposed that, file exist in same folder in which already opened webpage is present. E.g. news.html/

As we discussed that link can be to an image, sound file or video file also known as hypermedia, but appropriate program should be available at the computers (on which webpage is being opened) to open/play that file like sound/movie player. Even an image can be subdivided into different parts to create separate links for separate areas of the image. E.g. an image of India can be created in the form of hyperlink to open information about each state when the user click on a particular state

1.5.2 Hypertext:

Hypertext is the text which contains links to other texts. In other words, it is not linear. Hypertext contains hyperlinks on which you can click and move to another page or on the different portion of the same page. A hypertext page contains multiple hyperlinks. If you want to read a novel, you have to read it in a sequential fashion i.e. you cannot move from 3rd page to 7th and then to 15th and so on, whereas

in case of hypertext, you can move anywhere (new webpage) by clicking on the hyperlinks present on that page. E.g. given below is a hypertext

“Hello. This page contains information about Albert Einstein. He has done the so many experiments in his life and gave different concepts”

In this hypertext, if you are interested in reading about life of Albert Einstein, you can click on his name (a hyperlink). In simple words, a hypertext is simple text document that contains hypertext. There is another term hypermedia which is used in this context. Hypertext contains only text whereas hypermedia contains images, sounds and videos besides text.

Check your progress 1

1. What is the full form of ARPANET?
2. What is the full form of TSP?
3. _____agency is related to Internet Security.
4. _____tag is used to create a hyperlink in HTML.
5. Hypertext includes_____whereas hypermedia includes_____, _____and_____.

1.6 Websites:

As you have already learned, that www was created by Tim-Berners Lee in 1990 and it was free to use for everybody. Earlier File Transport Protocol and Gopher protocols were used to access the various file from web servers. At that time, documents were used to be plain text kind of files. After the introduction of HTML and HTTP(Hyper Text Transfer Protocol), the concept of accessing the websites changes.

A websites is simply a collection of webpages. Suppose you want to create a websites about yourself. You want to create a homepage, a webpage belonging to your personal education, another webpage belonging to your education, another webpage belonging to your hobbies and so on. Thus the collection of all these webpages is called a website. A website can be a personal website, government website, a college website, a university websites or even a website for online selling purchasing (E-Commerce). Let it be any website, all the websites will have the webpages coded using HTML language. HTML language makes a normal text file into more presentable form. This language includes so many tags for formatting and other kind of jobs. These websites nowadays can be accessed on any kind of devices having Internet access like computers, laptops, tablets, cell phones etc. To access a website a (web browser) is required.

The websites are hosted/placed on a special machine called server or web server which fulfill the request for that website to different clients. A single server can host so many websites. In case if windows Platform, IIS (Internet server) is used and on UNIX Platform, Apache web server is used.

There are different types of websites but on the base of contents, we generally divide it into two kinds:

1. Static Website.
2. Dynamic Website.

1.6.1 Static Website:

A website is considered to be static, if it does not includes any processing on the server side i.e. the contents of a website or server will be displayed to the client as such. In these kinds of websites, same content is displayed to each user every time until and unless content is modified at the server. These kinds of websites do not have any involvement of database. However, these websites do have images, animation, audio & video content to make it look more attractive and little bit interactive. Static websites can be edited by

- 1) Editors like Notepad
- 2) Special Editors having WYSIWYG (what you see is what you get) property like Microsoft Frontpage.
- 3) Other template-based editors.

Some of the static websites includes the use of CSS (case coding style sheets) to present the information in a uniform way.

1.6.2 Dynamic Website:

A dynamic websites is the one which produces different contents to different users based in his/her choice i.e. dynamic pages are produced “on the fly” by the server. It will be clearer with the help of an example. Suppose there is a website which asks you about your choice of subject and then produces the table of books belonging to that subject. In this case, there must be a database on server side having information about all the subject books. Depending upon the information passed by you, a dynamic webpage will be created “on the” by picking information from the database. These kinds of websites are called dynamic websites. All the e-commerce based websites are dynamic websites because the contents keep on changing. Dynamic websites always perform some processing on server side. To create dynamic website, a number of technologies exist like CGI (Common Gateway Interface), ASP (Active Server Pages), Java Servlets, PHP, Perl, Python etc.

1.6.3 Text, Multimedia & other Interactive content:

Earlier websites used to have only textual information, whereas now a day websites have multimedia contents (audio, video, etc.) and other interactive content. But to play this kind of content on website in

your web browser, proper software should be installed in your web browser. Even if it is not installed, you can install it from Internet. These softwares are available form of plug-in.

1.6.4 How to open a website:

To open any website, all you used is a web browser (IE, Netscape, Navigator, Safari, Google Chrome, Firefox etc.). Every website has a unique name associated with it, which is also called the domain name E.g. www.abc.com . Simply open the browser and type the address, (www.abc.com) in the address bar of the browser and press Enter key. The homepage of the website will be opened in front of you, if your system is connected to internet.

1.6.5 Steps to publish a website: Suppose you have make a simple static (collection of webpage) and you want to publish it (put it on Internet). The steps you need to perform is as under

1. Firstly, you have to register a domain name for your website (E.g. www.mysite.com) you have to play a fee for it.
2. After domain name registration, purchase space on any web servers of your choice. You can purchase as much space as you require. Upon purchasing, you will be given a unique user id & password.
3. Now, you simply need to transfer your webpages on that web server where you have purchased the web choice. You can use FTP or any other file transfer software for it.

1.7 Webpages:

Webpages are what make up the World Wide Web. These documents are written in HTML and are translated by the web browser. Each webpage represents various types of information in an aesthetic and readable manner. The information in all these webpages is located on a remote machine called web server in form of text, images and script files. The pages can be either static or dynamic. Static pages show the same content each time they are viewed whereas dynamic pages show different content each time they are accessed. The dynamic pages are written using scripts like PHP, Perl, ASP, JSP, Java Servlets etc. The scripts generally run on the server and return the information like date, time and database etc. The important point is that the information reviewed by the web browser is always in the form of HTML Code.

1.7.1 How do web pages work?

The information on a web page is displayed when you connect to a web server using client software web browser. If you look at the website address, it always has **http://** at the beginning which shows that the information is going to be transferred using hypertext transfer protocol. On some E-commerce sites you have noticed **https://** https is used for security i.e. information is transferred in encrypted form. The webpages contents are usually presented in HTML or XHTML format which allows it to be structured

easily. Some webpages use CSS (Cascading Style Sheets) which provides the precise control over the webpage's look and feel concerning layout, elements, color scheme and navigation.

1.8 URL (Uniform Resource Locator)

It is the unique address for a file that is accessible on the Internet. A simple way to access a Web site is to enter the URL of its home page file in your Web browser's address line. However, any file within that Web site can also be specified with a URL. Such a file might be any Web (HTML) page other than the home page, an image file, or a program such as a CGI Application or Java Servlets. The URL has three parts

1. The protocol used (http,https,ftp,gopher,telnet,mailto)
2. Name of the Server where webpage is stored
3. Pathname, a hierarchical description which specifies the location of a file in that computer.

E.g. <http://www.abc.com/xyz/tuv.txt> specifies the use of a HTTP (Web browser) application, a unique computer named www.abc.com, and the location of a text file or page to be accessed on that computer whose pathname is /xyz/tuv.txt

A URL for a particular image on a Web site might look like this:

<http://abc.mysite.com/data/images/image1.gif>

A URL for a file to be downloaded using the File Transfer Protocol (FTP) would require that the "ftp" protocol be specified

<ftp://ftp.myftpsite.org>

There are two forms of URL

Absolute URL: It is a complete address of a resource on the web. This completed address comprises of protocol used, server name, path name and file name. For example [http:// www.abc.com/xyz/index.htm](http://www.abc.com/xyz/index.htm)

Relative URL: It is a partial address of a webpage. Unlike absolute URL, the protocol and server part are omitted from relative URL. Relative URLs are used for internal links i.e. to create links to file that are part of same website as the Webpages on which you are placing the link.

For example, to link an image on abc.com/xyz/tuv, we can use the relative URL which can take the form like [/xyz/tuv/image1.jpg](#).

Difference between Absolute and Relative URL

Absolute URL	Relative URL
Used to link web pages on different websites	Used to link web pages within the same website.
Difficult to manage.	Easy to Manage

Changes when the server name or directory name changes	Remains same even if we change the server name or directory name.
Take time to access	Comparatively faster to access.

Activity 1:

Explain the role of Webpages in making a website and how websites helps in making World Wide Web.

1.9 IP Addressing:

As you already study, Internet is a network of networks i.e. connecting millions of computers with each other. The computers in such a case communicate with each other only if they will have the identity of each other. The identity in a network is established with IP address. i.e. each computer in a network have a unique address called IP address.

1.9.1 Format of IP Address:

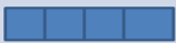




IP address or internet protocol address is the address that computer servers and other devices used to identify one another online. IP consists of **32 bits (4 bytes)**. It is also known as **IPv4**. Since it consists of 32 bits, theoretically 32 addresses are possible. The vast majority of IP addresses are arranged into 4 sets of digits e.g. **12.36.42.28**. Every machine which connects to the internet has its own unique IP address, may be statically fixed or may be for short time duration only.

1.9.2 IP address structure & classification:

The individual numbers in a 4 set of numbers in IP address are called octets. e.g. **a.b.c.d** where a,b,c,d are octets. **12.36.42.28** is the IP addresses for human understanding whereas in binary format it would be

00001100. 0010001. 0010101. 00011100

The octets in the IP address have a major role. It divides the IP address into different classes.

Class	The first Octet range	Default Subnet Mark	Max. no. of hosts	format
A	1-126	255.0.0.0.	16M	
B	128-191	255.255.0.0	64K	
C	192-223	255.255.255.0	254	
D	224-239	N/A	N/A	
E	240-255	N/A	N/A	

An IP address actually contains information about network and host both. The network part starts from the left and is used to define the network to which machine belongs to. The host part defines the machine itself in the network. The following table describes the different classes of IP addresses.

Class A IP address: Since class A has first 8 bits as the N/W part and among these 8 bits first bit is always 0 i.e. 0_____

So, the minimum & maximum value is 0 and 127. But 0 & 127 are reserved for special purposes, so permissible value is between 1 and 126 both inclusive.

Class B IP address: The class B IP address has first 16 bits (2 octets) as Network part and other 16 bits (2 octets) as host part. The first two bits in N/W part is always be 10 i.e. 10_____

So, permissible value is between 128 & 191.

Class C IP address: the class C address has 24 bits a network id and only 8 bits as host Id and first three bits in Network part is always 110 i.e. 110_____

So, permissible value for the first octet is between 192 & 223.

Remember that you can directly find out the class of IP address by looking at the value of the first octet only. In case of IP address, one another important concept is the subnet mask. Since from a binary string of 32 bits, it is not possible to find out what Network Address is and what Host Address is. For this purpose, subnet masking is used. Any IP address is masked with the corresponding subnet masked value

to find out the Network Address. E.g. 192.168.1.1 is the IP address of C class and the value of subnet mask for C class address is 255.255.255.0.

To calculate N/W address, mask the two numbers

192.168.1.1	=	01100000	10101000	00000001	00000001
255.255.255.0	=	11111111	11111111	11111111	00000000

After masking the result is,

192.168.1.0	=	01100000	10101000	00000001	00000000
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It means while assigning IP address to a machine, subset mask value is also to be assigned.

As we have discussed above that every machine (computer, laptop, tablet, cell phone) which connects to the internet must be having a unique IP, but you will be surprise that you had never set it before using internet. Actually IP addresses are automatically assigned to our machines dynamically by the ISP. wherever we try to connect to ISP, the DHCP(Dynamic Host Configuration Protocol)server at ISP side assign the network configuration from its protocol address to our machine for a small period only after which it is renewed or released depending upon whether we remain in contact to the internet or disconnect.

1.10 Domain Naming System:

Since every computer connected to internet has a unique IP address, similarly different web servers on which different websites are hosted must be having unique IPs. But it is not possible for a human to remember such IP address for a number of websites. For this purpose domain names are used i.e. each website has a unique domain name associated with it and it is easy to remember domain names. E.g. www.yahoo.com is easy to remember than 20-30.142-68. Similarly when we enter an email address, we always enter a symbolic address such as abc@gmail.com. Since machines communicate by using IP address rather than names, Domain Naming System is used which resolves the host names into IP address. It uses a hierarchical naming scheme and distributed database of IP addresses and associated names. The Domain Names System consists of Domain Names, Domain Namespace and Name Server.

1.10.1 Domain Names:

Suppose you have a machine with the IP address 20.72.1.40 which can also be referred to as www.ptu.edu

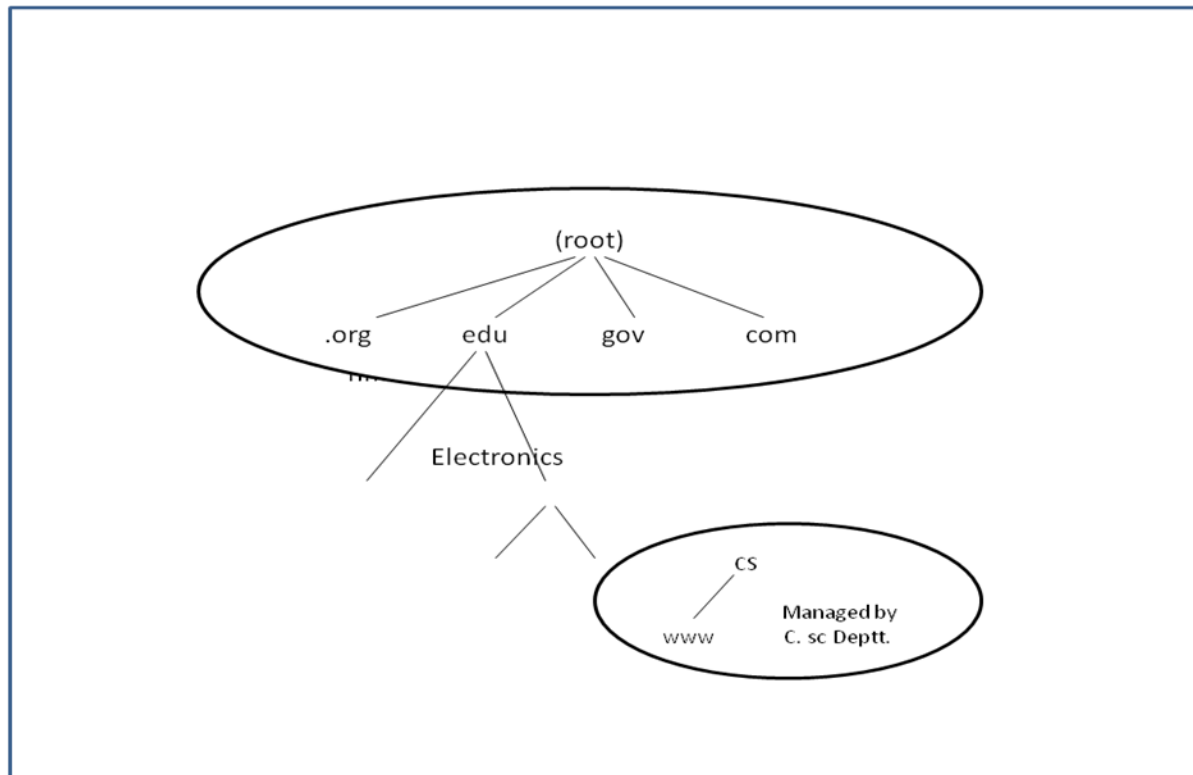
The whole string is the host name. The first part (www) is the name of the machine itself, while other (ptu.edu) is the domain name. The domain name is the name of the network associated with the organization. Similarly www.maruti.com refers to the Web server (www) in maruti.com domain.

ftp.ptu.edu refers to the FTP server (named ftp) on ptu.edu domain network. Remember that a machine can have several names. In that case other names are called aliases. There are several kinds of domain names available. Some of them are generic while others are country level domain names.

<u>Domain Name</u>	<u>Meanings</u>
com	Commercial
edu	Education
gov	Government agency
int	International
mil	Military organization
net	networking organization
org	non-profit organization

1.10.2 Domain name space:

It refers a hierarchy in the internet naming structure. The hierarchy has multiple levels (0 to 127) with root at the top. DNS hierarchy can be easily represented by a tree.



The name of the machine from lower to upper level is called FQDN (Fully Qualified Domain Name)

i.e. www.cs.ptu.edu

Root and the top level domain are administered by Internet Central Name Registration Authority. Below top level, administration of name space is delegated to the individual organizations.

1.10.3 Name Servers:

It is another form of server comprising of various domain names and their corresponding IP addresses. Since, it is not possible for a single server to maintain the entire record; this record information is distributed among many servers which are again hierarchical in nature.

1.10.4 Working of Domain Naming System:

1. When we type www.ptu.edu into the browser, it asks the local DNS server for its IP address. There local may be DNS maintained by PTU or DNS maintained by ISP.
2. The local DNS does not find the IP address of the given name, it forwards the request to the main root DNS server.
3. The root DNS server replies with the IP address of DNS Server of edu domain.
4. Local DNS server asks the same question to edu DNS server. It passes the IP address of ptu DNS server.
5. Local DNS server again ask the same question to ptu.edu DNS server which ultimately replies with IP address of www machine in ptu.edu domain.

So DNS & IP addresses have major role in the working of Internet. Otherwise, Existence of Internet would not have been possible. The process of finding IP address corresponding to domain name also happens in case of email i.e., abc@yahoo.com

Here yahoo.com's IP address is first find out by the same method as discussed earlier.

Check your progress 2

State whether true/false

1. There is a difference between website and webpages
2. Domain name registration is not required to publish a site.

Fill in the blanks

1. Websites can be classified into_____and_____.
2. Webpages are coded in_____

3. IP address consists of _____ bits.
4. Domain naming system is used to convert _____ into _____.
5. IP address consists of _____ bits.
6. Domain naming system is used to convert _____ into _____.

Activity 2:

How IP address is used in making of a network and how Domain Name System helps in the conversion of name to IP in case of email address?

1.11 Summary:

The concept of Internet started with the project ARPANET (Advance Research Project Agency Network) by the U.S department of defense. However, its tremendous growth was due to the introduction of a communication protocol TCP/IP. Different kinds of organization called ISP (Internet Service Provider) both local and regional helps in bringing the Internet close to users. Although Internet is free and kind, IESG and CERT helps in controlling it. World Wide Web (www) which is different from Internet provides major show of service available on internet through different kinds of websites. Website on almost every topic is available today. These websites built up from a combination of different webpages which are coded in HTML or XHTML and cross kinked with the help of hyperlinks. Those hyperlinks are possible in different options like text & images.

IP address plays a major role in setting up/connecting a machine to a network/Internet. The IP address and domain name provides uniqueness to the websites and conversion of Domain Name of IP address and vice-versa is possible through DNS Server.

1.12 Glossary:

ISP (Internet Service Provider): Organization which provides the internet services to the users on some payments.

WWW (World Wide Web): Consists of so many special machines (web servers) linking millions of documents (HTML pages) in hypertext form.

Hyperlinks: A link upon the clicking of which one can move to a different webpage.

Hypertext: Text which contains links to another text.

Websites: A collection of web pages.

Web pages: Text documents in an aesthetic and readable manner may have hyper links to other documents.

IP address: Internet Protocol address consisting of 32 bits assigned to each device connecting in a network.

DNS (Domain Name Server): A machine capable of mapping domain

1.13 Answers to Check your progress:

Answers to check your progress 1

1. Advance Research Project Agency Network.
2. Internet Service Provider.
3. CERT (Computer Emergency Response Team).
4. <a>
5. text, text, images, videos.

Answers to check your progress 2

1. True
2. False
3. Static, Dynamic
4. HTML
5. 32

6. Domain name, IP address

1.14 References:

1. Internet Complete, BPB Publications.
2. James F. Kurose, Keith w. Ross, Computer networking ; A top down approach featuring the internet, Addison wesley.
3. Charanjeet Singh, Pardeep Bhandari, Gurmeet singh, Computer networks, Kalyani Publishers.

1.15 Suggested readings:

1. Kamlesh k.Bajaj, Debjani Nag, E-commerce; The cutting edge of a business, Tata Mc-Grow Hill.
2. Computer fundamentals and windows, ABS Publications.

1.16 Terminal And Model Questions

1. How the Internet evolved? Explain briefly.
2. Explain the role of ISPs in the working of Internet .
3. Specify various agencies involved in the working of internet
4. How www is different from internet?
5. Differentiate between hyperlinks and hypertext
6. Explain the concepts of a website and the steps to publish it.
7. Briefly explain about webpages and its types.
8. Explain the concept of IP address and its significance in case of World Wide Web.
9. Why Domain Naming System is important related to the working of internet?

Structure:

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- 2.1 Introduction
- 2.2 Browser
 - 2.2.1 General Features of Internet Explorer
- 2.3 FTP
 - 2.3.1 How to use FTP
 - 2.3.2 Accessing FTP sites with the help of a Browser
 - 2.3.3 Accessing FTP sites with specialized application like CuteFTP
 - 2.3.4 Accessing FTP sites using command line
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 - 2.3.6 Advantages of FTP
 - 2.3.7 Disadvantages of FTP
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2.0 Objectives

After reading this chapter, you should be able to

- Understand working of Browser and its various uses
- Use FTP, Telnet, Email and its internal working
- Use various Knowledge sharing tools
- Understand working of Computer Networks

2.1 Introduction

To access the vast Information available at the Internet, you need some kind of simple, easy to use, and GUI (Graphical User Interface) based Software. The Browser has all the given features for this purpose. There are a variety of Browsers available with the varying functionality. Before using any one, you must have information about its working, features and usage. Many applications like FTP, Telnet are used for uploading/downloading files and remote login purposes respectively. To securely use these services, one must be familiar with its inner working. Email, which is the main form of communication, provides so many features that now it has become an indispensable part of our life. Creating an email account, sending/receiving emails and other functions provided by the email are so important that one must be fully familiar with it. Now a day, almost all the organizations, is it small or large or even at home, Computer Networks exist.

2.2 Browser

It is a software application through which you can view and explore information available on the web via HTTP (Hyper Text Transfer protocol). The Browser is capable of displaying information available in HTML format. It also includes capabilities to display graphics, play audio and video long with displaying text. Browser includes various kinds of buttons and menus through which you can perform various functions. The biggest advantage of browser is that it delivers the same kind of Interface as of Operating System on which it executes.

A Web Browser is a software which allows you to review the Web Content, save and download the content, copy and print the information you have visited, mark a bookmark to save the location of websites you have visited, record a history of websites you have visited and security features to prevent unauthorised access.

There are different kinds of browsers available. Some of earlier web browsers were text based while almost all of the browsers available today are Graphical User Interface (GUI) based. Theses browsers are available freely on Internet. You simply need to download and install it. Otherwise most of the Operating Systems has already browser available. Some examples of Browsers are:

1. Internet Explorer.
2. Netscape Navigator
3. Google Chrome
4. Safari

5. Mosaic
6. Mozilla Firefox
7. Lynx

Netscape Navigator: It is also GUI based Web browser developed by Netscape Communications Corporation. It includes various features like simultaneous image loading and continuous document streaming. By using this browser, users can chat and it also provides feature of web based browsing.

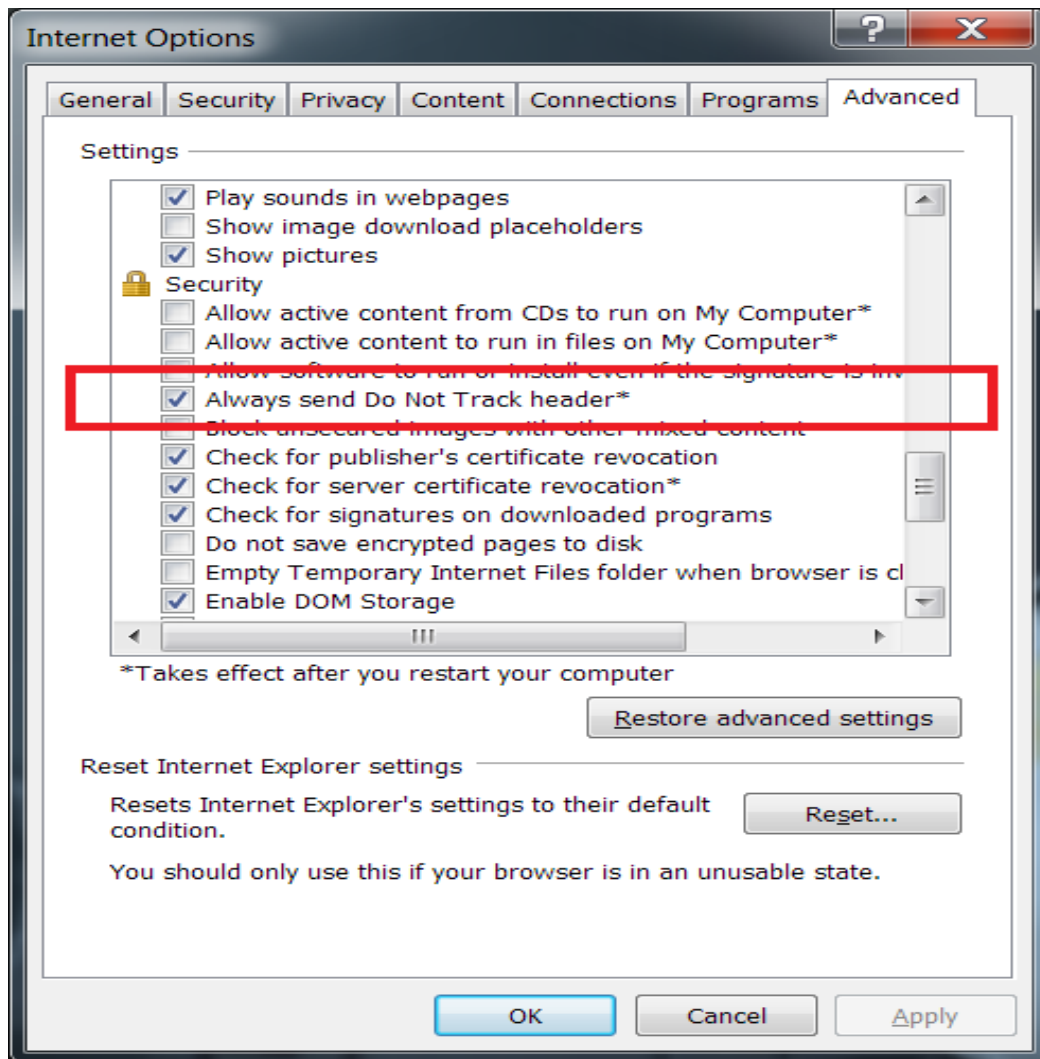
Firefox: It is customizable kind of Web Browser having features of both the Internet Explorer (IE) and Netscape Navigator. It is a secure and fast browser.

Mosaic: It is the first graphical web browser and was developed at National Centre for Supercomputing Applications. It includes the features of easy navigation for users between various hypertext documents.

Internet Explorer: This browser is a product of Microsoft and is one of the most popular browser which is being used now a days. It provides GUI and its current version id 10.0. It is supported by Windows, Macintosh and Solaris Operating Systems.

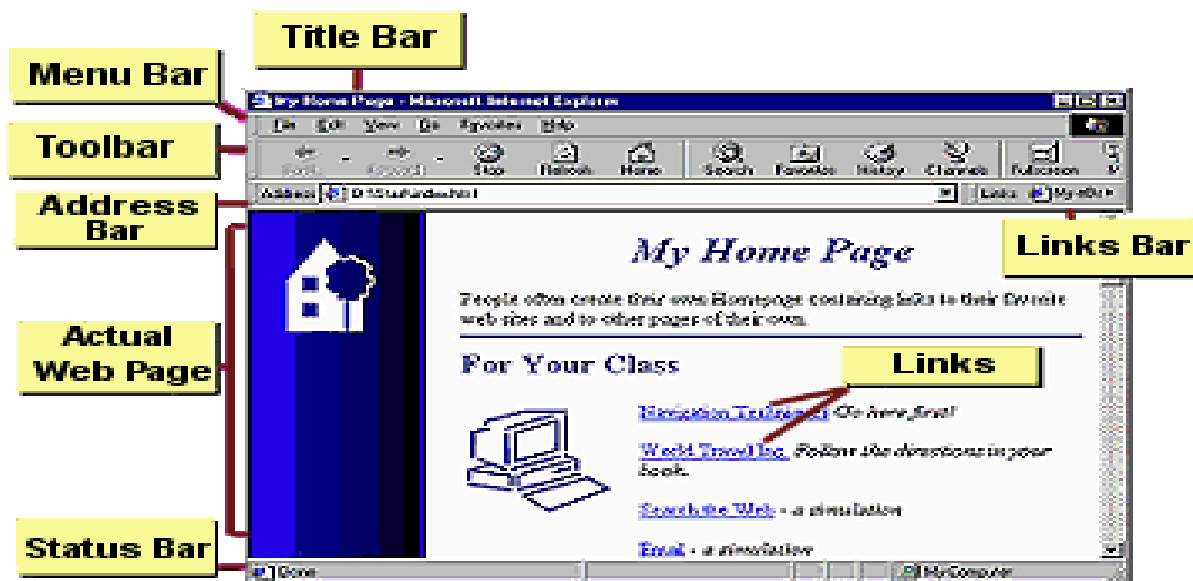
2.2.1 General Features of Internet Explorer:

1. It is easy to use kind of Web Browser.
2. It includes options to save time for routine tasks like automatically filling addresses and forms.
3. User can manage the privacy features like cookies and security zones.
4. It displays web pages in multiple languages.
5. It provides features to read contents of webpage offline.
6. Version 10 supports the feature of Spell Checking
7. Version 10 supports the feature of “**Do not Track**” option.



This option actually helps the browser to prevent certain websites from tracking a user's behaviour for the purpose of serving targeted ads. But it is applicable only to websites that comply with the request.

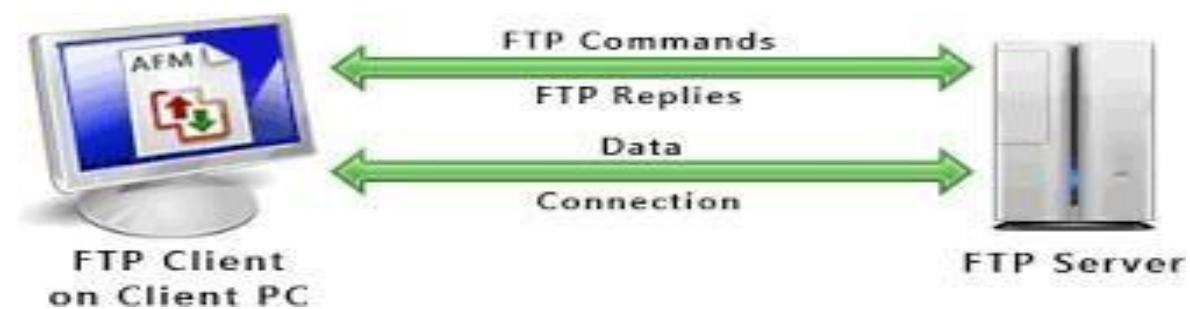
Structure of Internet Explorer



2.3 FTP

Internet is a vast repository of information and different resources. This information may include various software, audio, video and images etc. To use these resources, this information has to be downloaded to your machine from a remote machine. For this purpose, Internet provides a service called File Transfer Protocol (FTP).

FTP is a part of TCP/IP suite. Although email can be used for moving files from one computer to another, but for larger files, it becomes cumbersome. FTP was created as a way to retrieve these files interactively. By using FTP, people can browse the files in different directories (folders), select and download these files. FTP provides the way communication i.e. you can transfer the files from your own computer to remote computer also.



2.3.1 How to Use FTP

FTP works on client server principle. A software program remains at client side called FTP client and a software called FTP server remains at Server side (at

Remote Computer). The client program interacts with the server to access the information present on the server computer. The steps to perform FTP are as follows:

1. FTP client contacts to FTP Server which prompts the user for a valid username and password. In some cases, simply give username as anonymous and email as password.
2. After specifying the username and password, a connection (control connection) is established between client and server.
3. FTP Server displays the files and folders present. A user can select the file/files which he/she wishes to transfer to client machine. To transfer the files, another connection (data connection) is established which breaks automatically after transfer.

Note that a client can transfer file/files from his/her computer towards server also. But in case of anonymous access, this is not possible. Software on the client side can be of different types like command based, Browser (IE, Google Chrome etc.) or some special application software (Cute FTP).

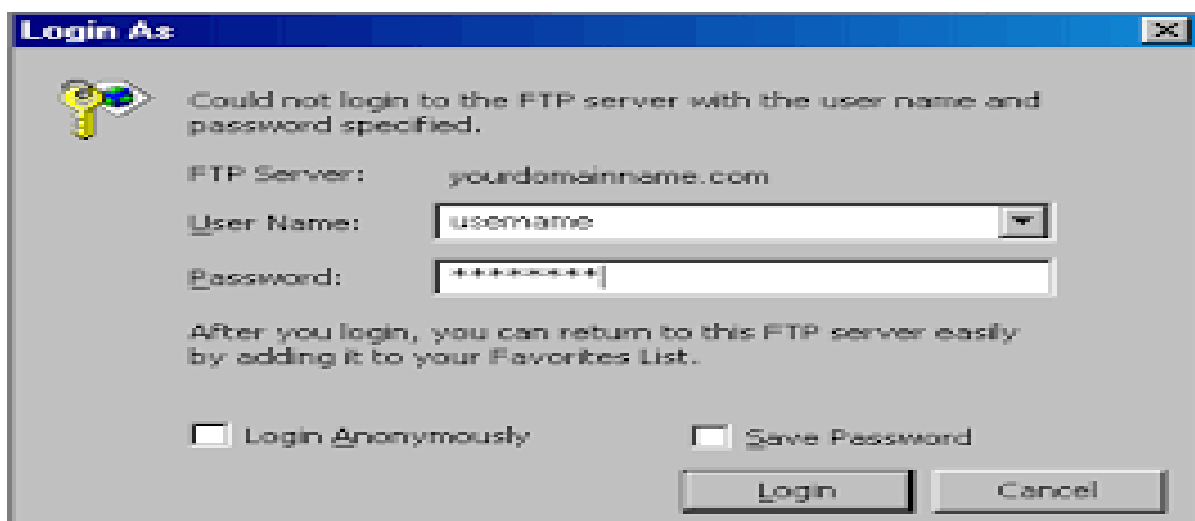
2.3.2 Accessing FTP Sites with the help of Browser

Almost every browser has built-in support for FTP. Through Browser, one can easily upload or download the files to and from the server. Open the browser and type the following kind of URL in the address bar and press ENTER key.

<ftp://ftp.ptu.edu>

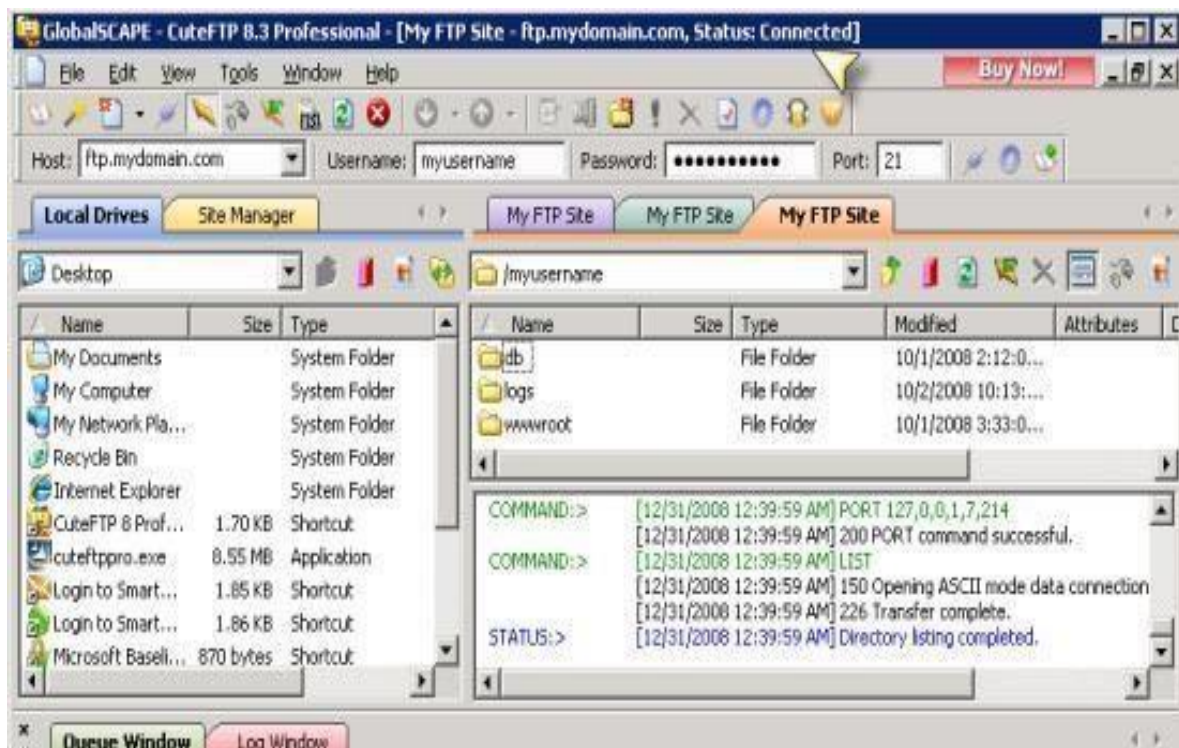
Note the beginning. It is ftp and not http.

It will display a window asking for the username and password.



Once you input these parameters or chose anonymous login option, the list of files and folders will be displayed in front of you. You can select any file and use drag and drop to download it. It is a convenient method, but not flexible.

2.3.3 Accessing FTP sites with specialized application like CuteFTP.



2.3.4 Accessing FTP sites using Command Line

As discussed earlier, almost every operating system has built-in support for FTP client software. So there is no need to install it separately. To use it, click on START--→ RUN and type “command” in the dialog box and click OK. On the command prompt, type

ftp ftp-site-name

Enter valid username/password or anonymous/anonymous for anonymous login.

At ftp prompt, various commands can be given to upload/download the file/files. The various commands are as follows:

2.3.5 Table of FTP Command

?	to request help about the FTP commands
ascii	to set the mode of file transfer to ASCII
binary	to set the mode of file transfer to binary
bye	to exit from FTP environment
cd	to change directory on remote machine
close	to close a connection with another computer
delete	to delete a file in a directory at remote machine
get	to copy one file from the remote machine to the local machine

	get ABC	copies file ABC in the current remote directory
help	to get a list of all available FTP commands	
ls	to list the names of the files in the current remote directory	
mkdir	to make a new directory within the current remote directory	
mget	to get multiple files from the remote machine	
	mget ABC XYZ	copies ABC and XYZ file from remote machine.
mput	to copy multiple files from the local machine to the remote machine;	
open	to open a connection with another computer	
put	to copy one file from the local machine to the remote machine	
pwd	to find the present working directory	
quit	to exit from the FTP environment	

2.3.6 Advantages of FTP

1. FTP can be used to transfer a file of almost any size whereas it is not possible in case of email.
2. It is a simple, fast and reliable method of uploading/downloading the files.
3. It can be used to transfer files from/to different platforms (e.g Windows client to LINUX Server)
4. With the help of FTP, files can be transferred in ASCII or binary mode.
5. FTP clients are available for almost all types of Operating Systems.

2.3.7 Disadvantages of FTP

1. FTP provides little security during file transfer. The username/password is transferred in clear text.
2. It is not user friendly.

2.4 Telnet

Internet is a network of thousands of networks connected all over the world. Through Internet, you can access resources stored at different computers which are geographically placed at distant places with the help of a service called TELNET. With the help of telnet, you can access computers available in your labs and offices even while sitting at home. In the previous section, you have learnt about FTP. Suppose we want to do some administration on the files present at FTP Server. It would not be possible with FTP Service. You have to remotely login at FTP Server for this.

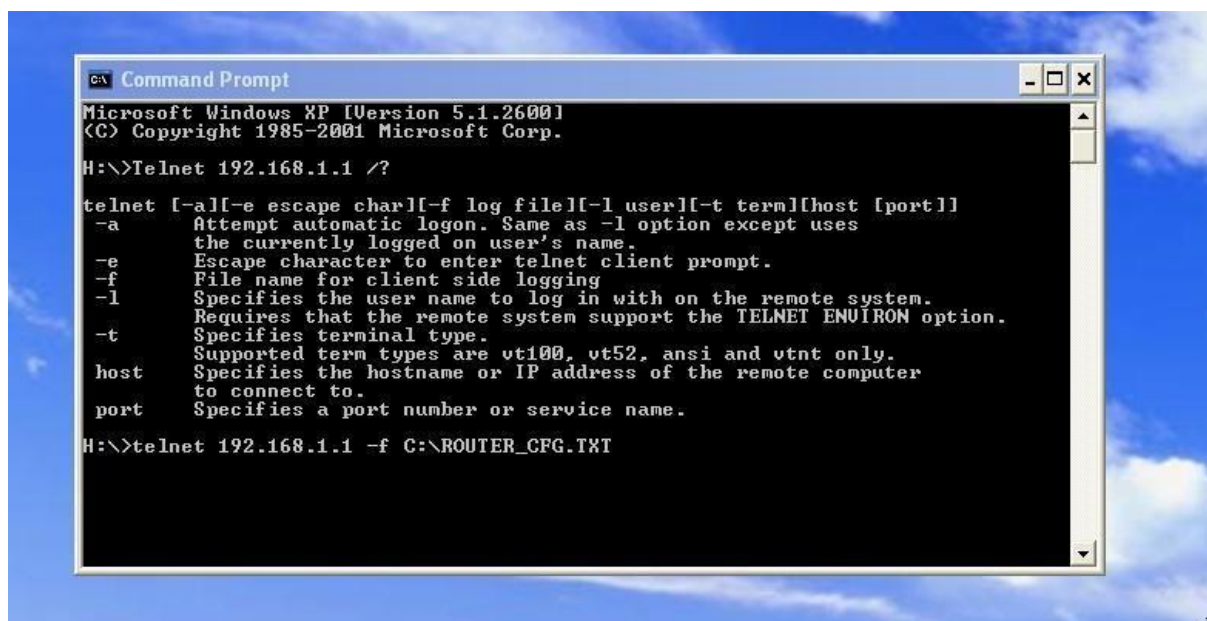
Telnet is a TCP/IP suite protocol used for remotely login. It is a combination of two words (Terminal Network). It allows you to sit on your PC and access a remote computer which may be even at the opposite end of the world. Like FTP Service, Telnet also require software, one on the client side (telnet client) and other on the server side (telnet server). It is based on

client server technology. This protocol specifies the standard that how client keystrokes would be encoded to send to the server and how the server encodes the output for transmission back to the client.

To access the Telnet Service, you need to know the domain name or IP Address of the telnet server. Some telnet servers provides the guest login (username guest) option without password like anonymous login in FTP whereas some requires a valid Username/Password combination. While using telnet service, your own computer (client) works like a dumb terminal (having no processing power) i.e. only monitor and keyboard are used. The commands typed by you are simply pass-on to the telnet server and executed there and the results generated are displayed on your machine. Telnet is used to access a number of resources like FTP, WWW, Gopher, Library Catalogues and other public databases. One most important part of telnet is that it can also be used to check the configuration of various services like SMTP (Simple Mail Transfer Protocol), POP3 (Post Office Protocol version 3) etc. Every operating System has a built-in support to use the Telnet Service. It means that the telnet client software is already available in every operating system. If you want to use different applications for Telnet client - PUTTY, Absolute Telnet and TeraTerm are some other options.

2.4.1 How to use Telnet

1. Click on Start Menu and then choose Run Option. Type “command” in the box and press “ENTER” key. A command prompt will appear in front of you.
2. On command prompt type the command
telnet IPAddress/FQDN of Telnet Server
3. A Connection will be established to the Telnet Server. Input the required username and password.



```
C:\> Command Prompt
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

H:\>Telnet 192.168.1.1 /?

telnet [-a][-e escape char][-f log file][-l user][-t term][host [port]]
-a      Attempt automatic logon. Same as -l option except uses
        the currently logged on user's name.
-e      Escape character to enter telnet client prompt.
-f      File name for client side logging
-l      Specifies the user name to log in with on the remote system.
        Requires that the remote system support the TELNET ENVIRON option.
-t      Specifies terminal type.
        Supported term types are vt100, vt52, ansi and vtnt only.
host    Specifies the hostname or IP address of the remote computer
        to connect to.
port    Specifies a port number or service name.

H:\>telnet 192.168.1.1 -f C:\ROUTER_CFG.TXT
```

To quit from the Telnet Session, simply type “quit” at the command prompt.

2.4.2 Advantages

1. You can access the remote computer without being physically present at that computer.
2. You can connect to Bulletin Boards, Play Games with other users.
3. You can chat with multiple users.
4. User can directly login on SMTP/POP3 Servers with the help of Telnet Service and can Send/Receive Emails.
5. One can directly edit the files available at FTP Server.

2.4.3 Disadvantages

1. Telnet has a CUI (Command User Interface). Non availability of GUI (Graphical User Interface) makes it less interesting.
2. You can remotely access the machine but cannot download/upload the files from/to that machine.
3. The information between Telnet Client and Telnet Server transmits in unencrypted form. So security issues arise in this service. If Security is a major concern for you, try to use SSH (Secure Shell) in place of Telnet. SSH is secure version of telnet in which all the information transmits in encrypted form between Client and Server.

Check you Progress 1

1. The browser uses _____ protocol to access the information available on Web.
2. Full form of HTTP is _____.
3. FTP uses two connections _____ & _____.
4. _____ command is used to download multiple files from FTP Server.
5. _____ command is used to upload a single file on FTP Server.
6. Secure version of Telnet is _____.

Activity 1

Suppose you need to login an FTP Site and download some files. What steps will you perform for this.

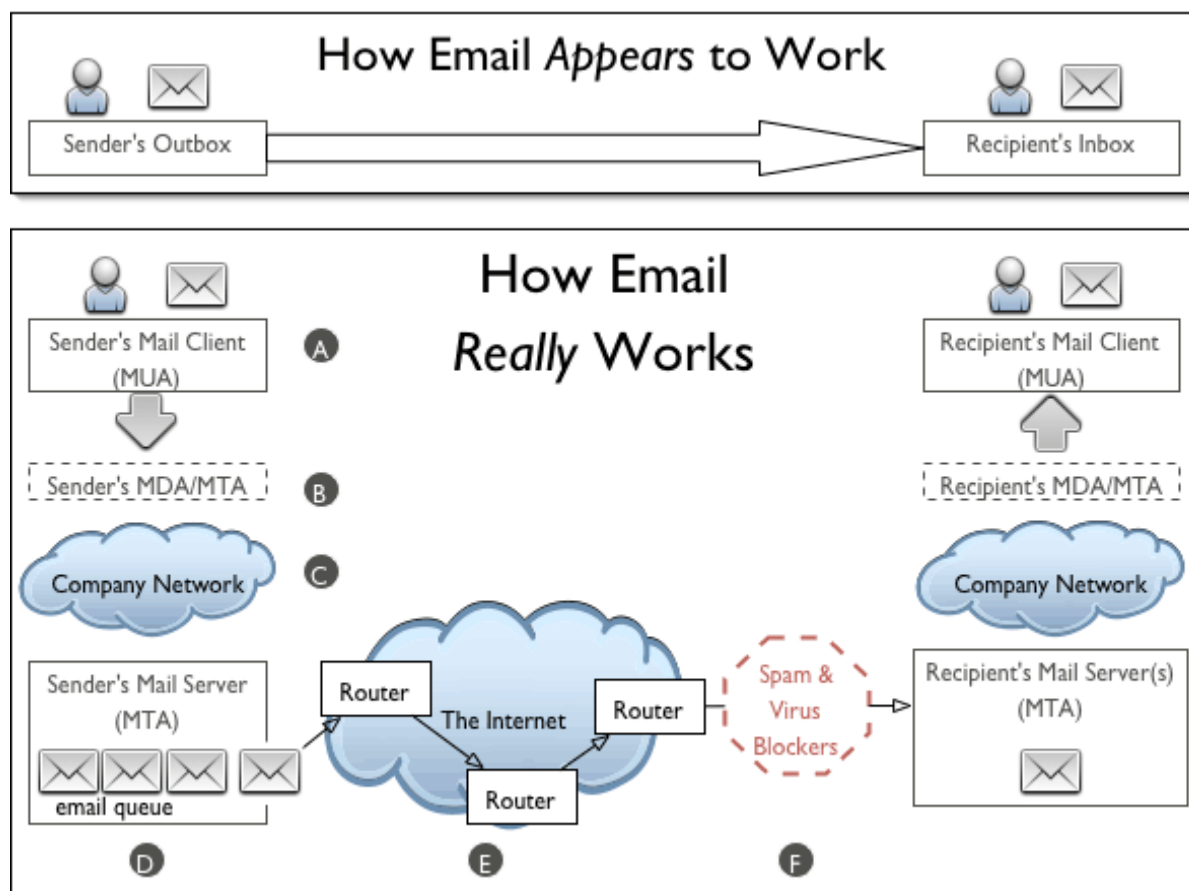
2.5 Email

Electronic Mail also known as email is the way of sending electronic messages from one computer to other anywhere in the world. The email may include text, picture, audio or video files. This is now a day one of the fastest and cost effective method of communication. It takes fraction of seconds to reach the email from one point to another. Most of the people in business, government and education prefer using email. It has become part and parcel of our life. People even use mobile phones, tablets and PDAs (Personal Digital Assistant) to send/receive emails.

2.5.1 Email Address, its working and associated Protocols

An email address is generally of the form **username&domainname** . Username can contain letters, numbers and some special symbols like underscore and period. However commas, parenthesis and spaces are not allowed. Domain name specify the name of the company or Online Service Provider.

The various protocols related to email are SMTP (Simple Mail Transfer Protocol), POP3 (Post Office Protocol version 3) and IMAP (Internet Message Access Protocol). SMTP is used for sending email efficiently and reliably over the Internet. It handles the exchange of messages between two email servers (E.g. abc@gail.com sends email to xyz@yahoo.com). This protocol specifies commands which are carried out automatically between two email servers. The different commands of SMTP are HELO, MAIL, RCPT and DATA. Similarly POP3 is a protocol to move the emails from the mail server to the computers of the users. It allows email client to connect to any email server. The various commands associated with this protocol are USER <Username>, PASS <Password>, RETR, LIST and DELE. Similarly IMAP protocol is used to manipulate email messages on the server without downloading them on the local computer. It is like an advanced version of POP3.



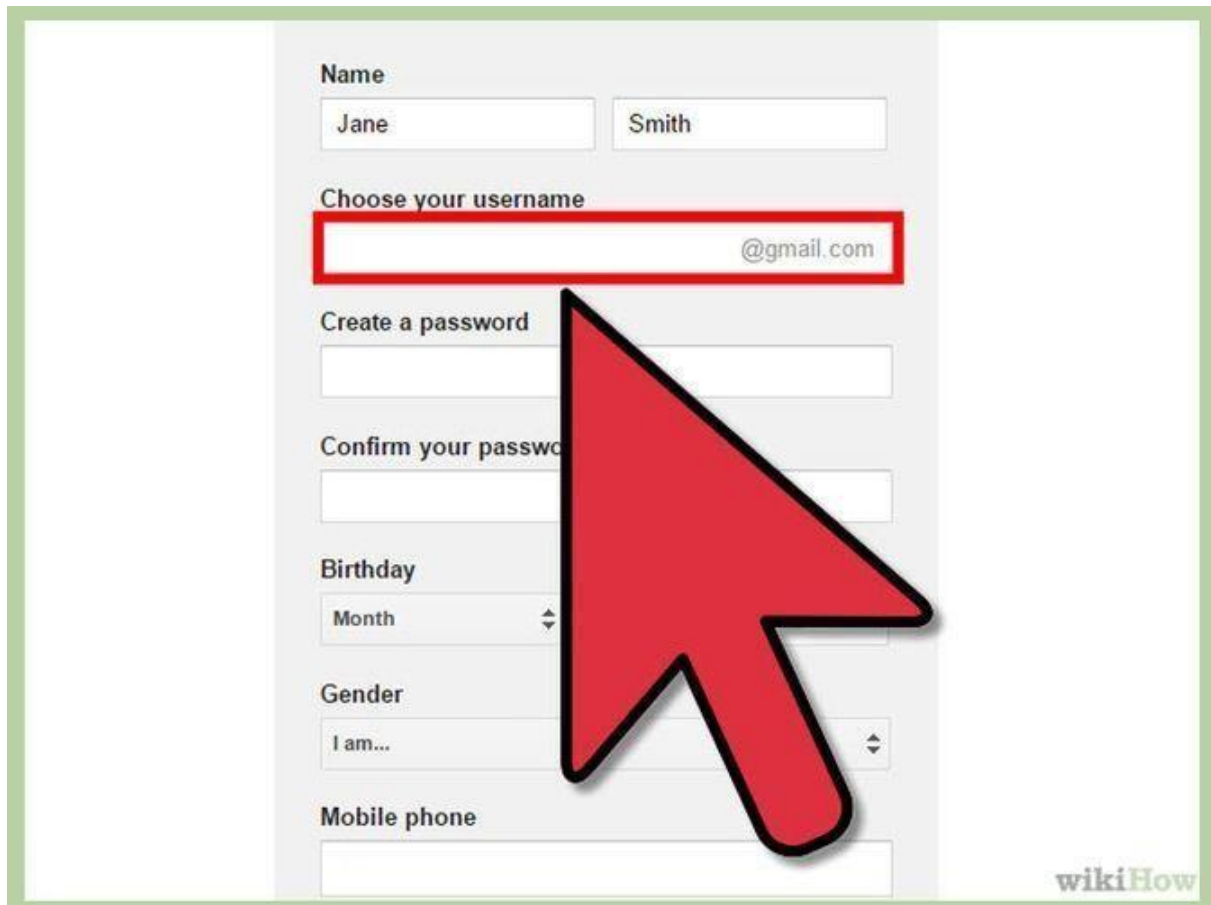
2.5.2 Steps to create an Email Account

There are so many email programs like yahoo, rediffmail, gmail etc. that offer email free of cost. To create an email account in gmail, follow the given below steps:

Step 1: Connect to the Internet. Open any browser of your choice like Microsoft Internet Explorer. Type www.gmail.com in the address bar of browser and press ENTER key. Home page of www.gmail.com will appear in front of you. Click on the "Create an account>>" button.



Step 2: Type the desired information like First Name, Last Name, Birthdate, Gender, Mobile Number, USERNAME and password. Make sure the USERNAME you are using is available. To check the availability of username, click on “Check Availability” button. Mobile number proves to be an important resource because google can send the text in case you lose contact to your email.

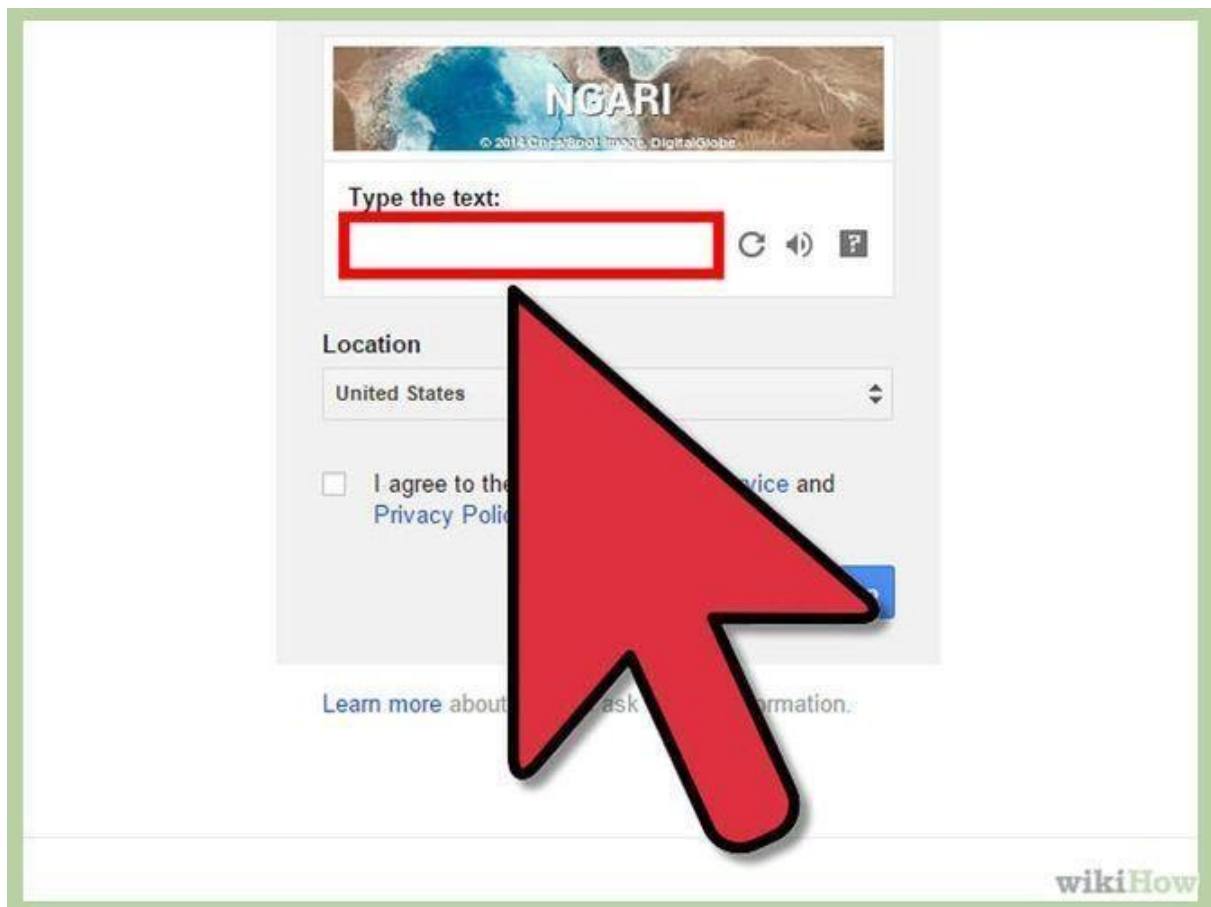


The image shows a registration form with the following fields:

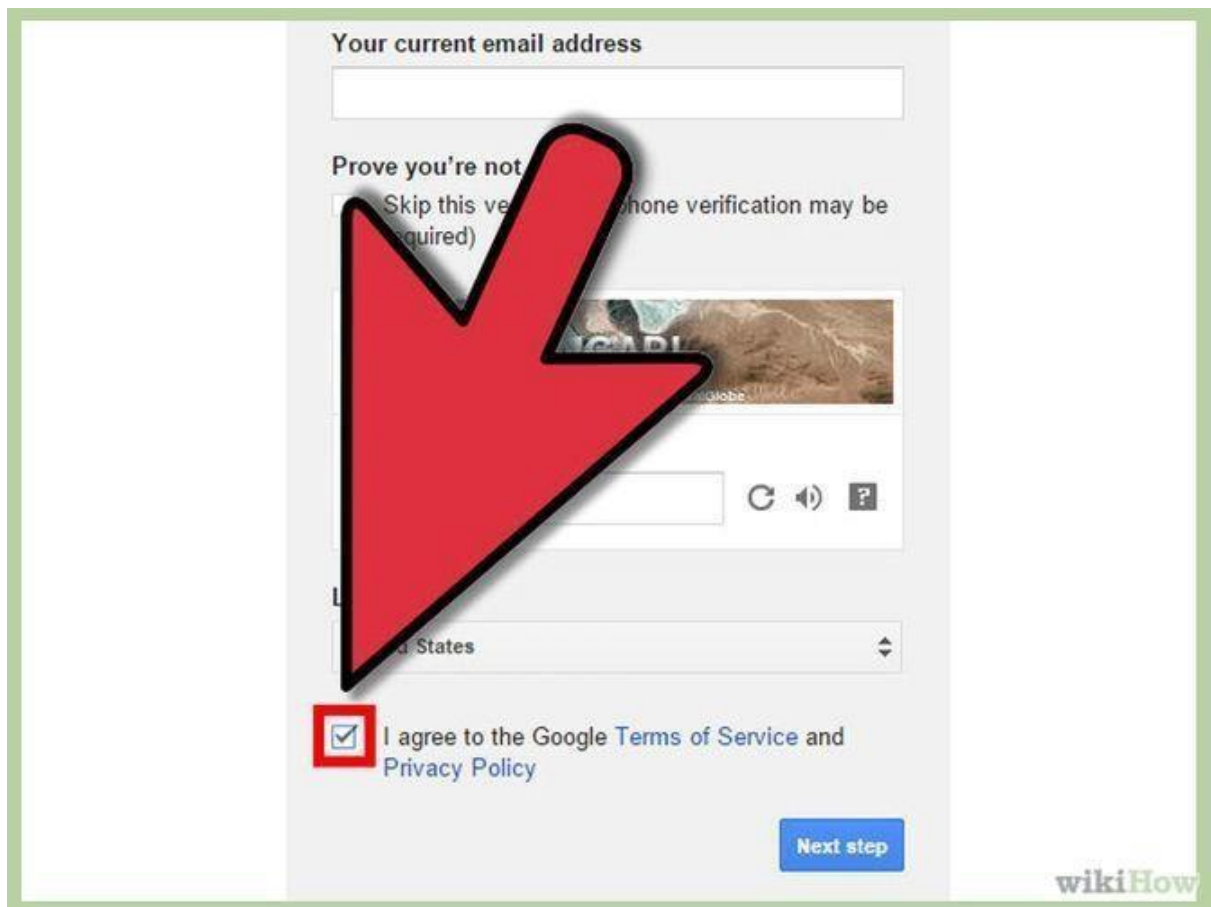
- Name**: Two input boxes, the first containing "Jane" and the second containing "Smith".
- Choose your username**: A single input box with "@gmail.com" at the end. This box is highlighted with a red border, and a large red arrow with a black outline points directly at it.
- Create a password**: An empty input box.
- Confirm your password**: An empty input box.
- Birthday**: A dropdown menu currently showing "Month".
- Gender**: A dropdown menu currently showing "I am...".
- Mobile phone**: An empty input box.

The "wikiHow" logo is visible in the bottom right corner of the form area.

Step 3: Fill out the captcha information. This is a security feature which confirms that a real person is creating the account.

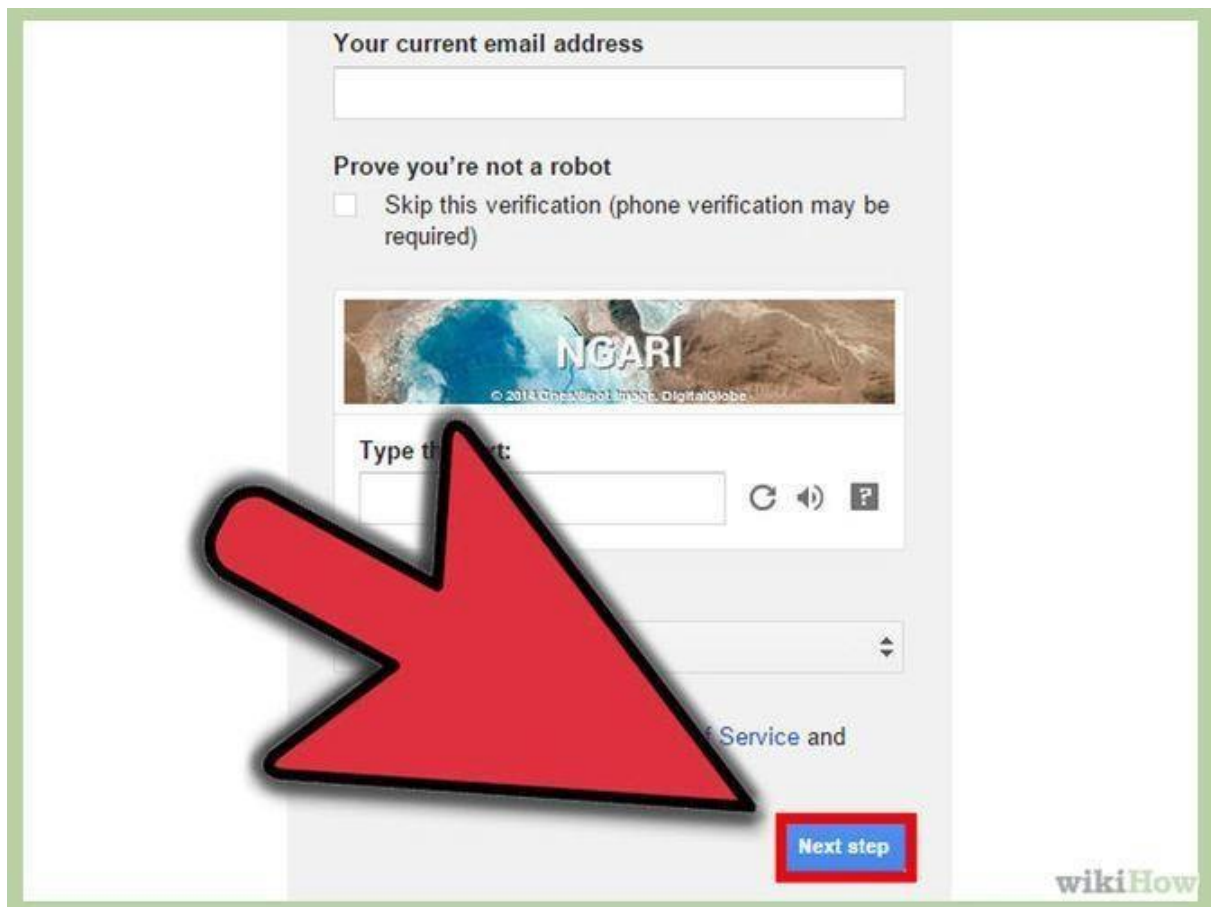


Step 4: Agree to the private Policy. Take the time to read the entire privacy policy to remain aware about what Google can and can't do with your personal information. Check the box to agree to Google's terms.



The screenshot shows a Google account creation interface. At the top, there is a text input field labeled "Your current email address". Below this is a section titled "Prove you're not" with a checkbox labeled "Skip this verification" and a note "(phone verification may be required)". There is a video player showing a landscape with the word "CABLE" overlaid. Below the video is a text input field and a "Next step" button. At the bottom, there is a checkbox labeled "I agree to the Google Terms of Service and Privacy Policy" which is checked. A large red arrow with a black outline points from the top right towards the "Next step" button. The "wikiHow" logo is visible in the bottom right corner.

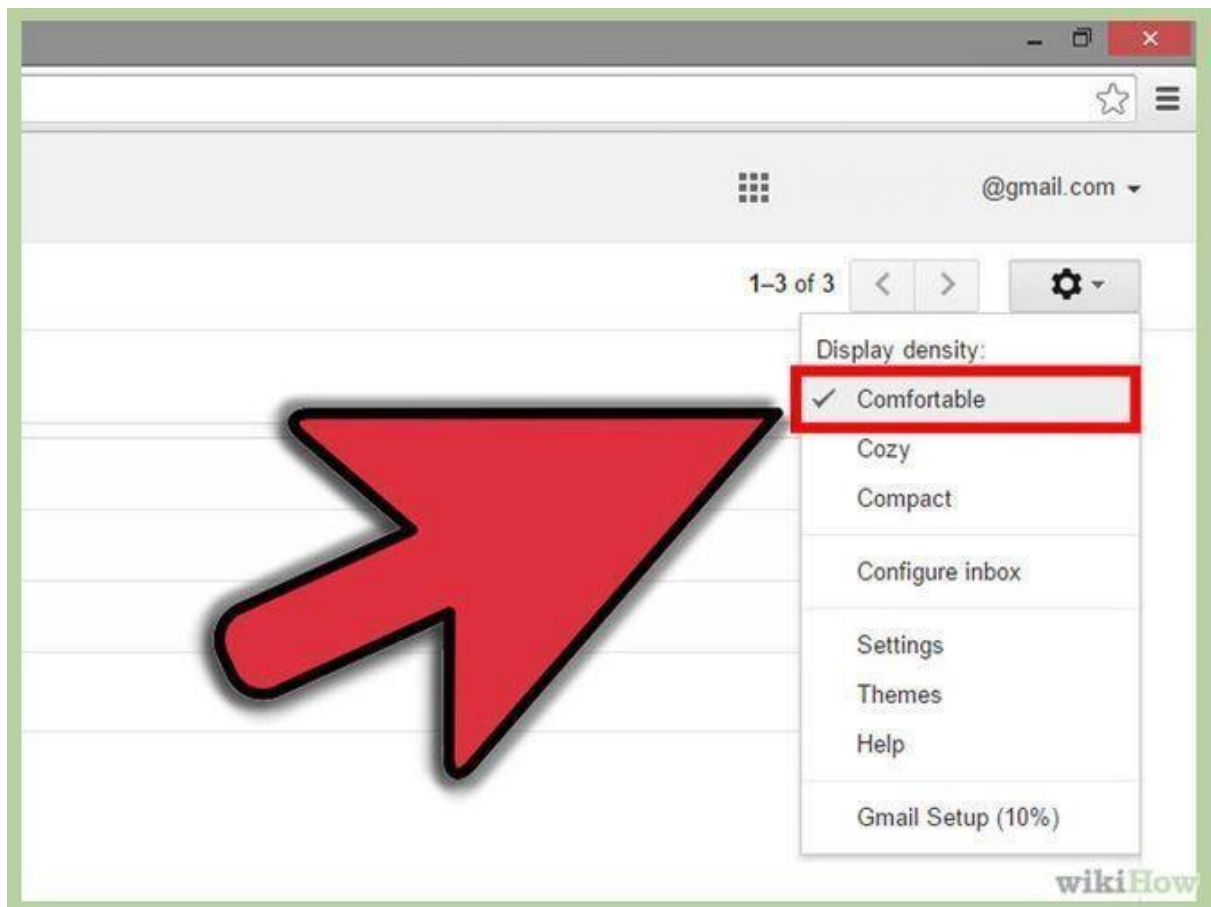
Step 5: Click on the Next step and you will move to Google+ profile creation page. All Google accounts create a Google+ account when they are created. It is Google's Social Network, and many of Google's services are linked to it.



A new window will show the confirmation of your email account.

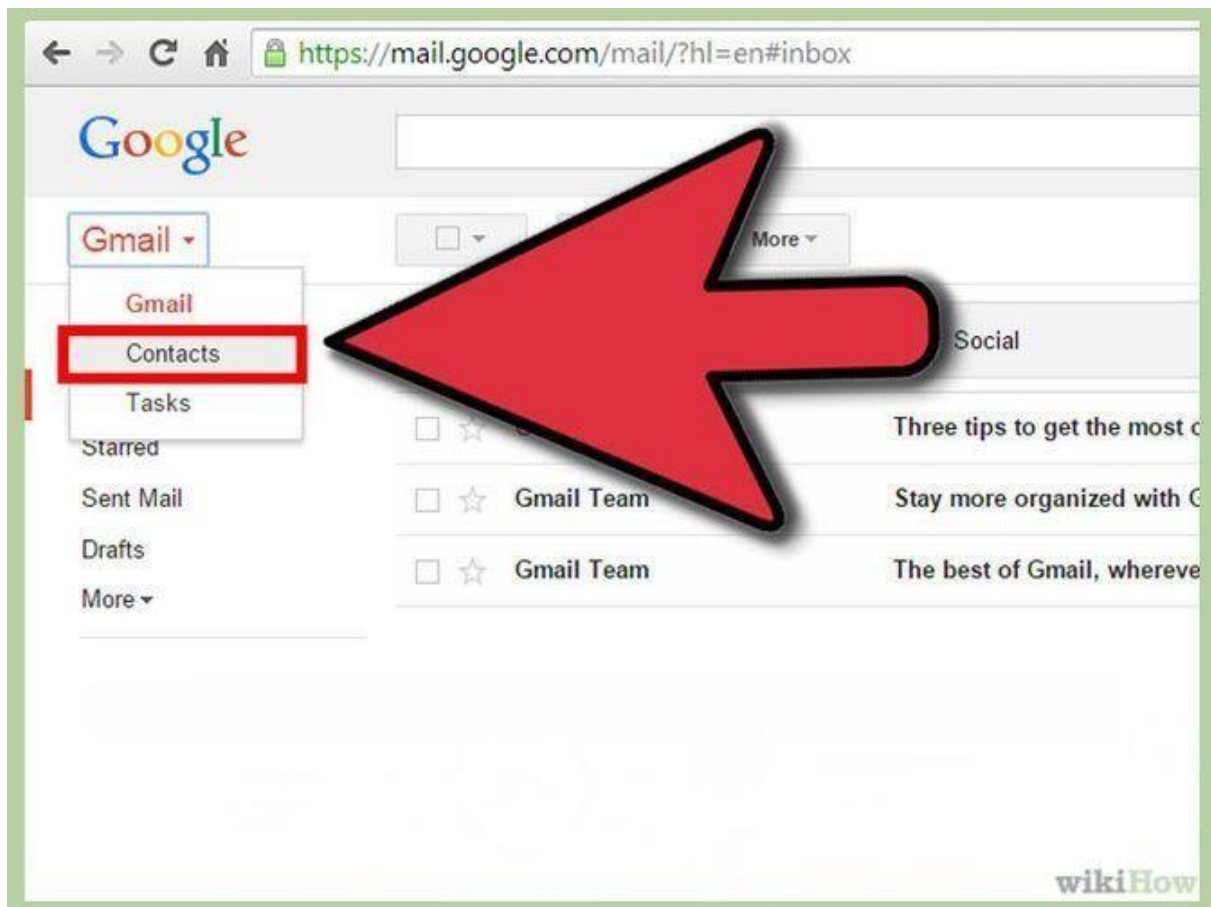
2.5.3 Changing View of Email

Gmail supports different views. These views affect the space between each email in your inbox. Click the Gear icon in the upper-right corner of the Gmail window and select one of the Display Density options (Comfortable, Cozy, and Compact).



2.5.4 How to Import Contacts

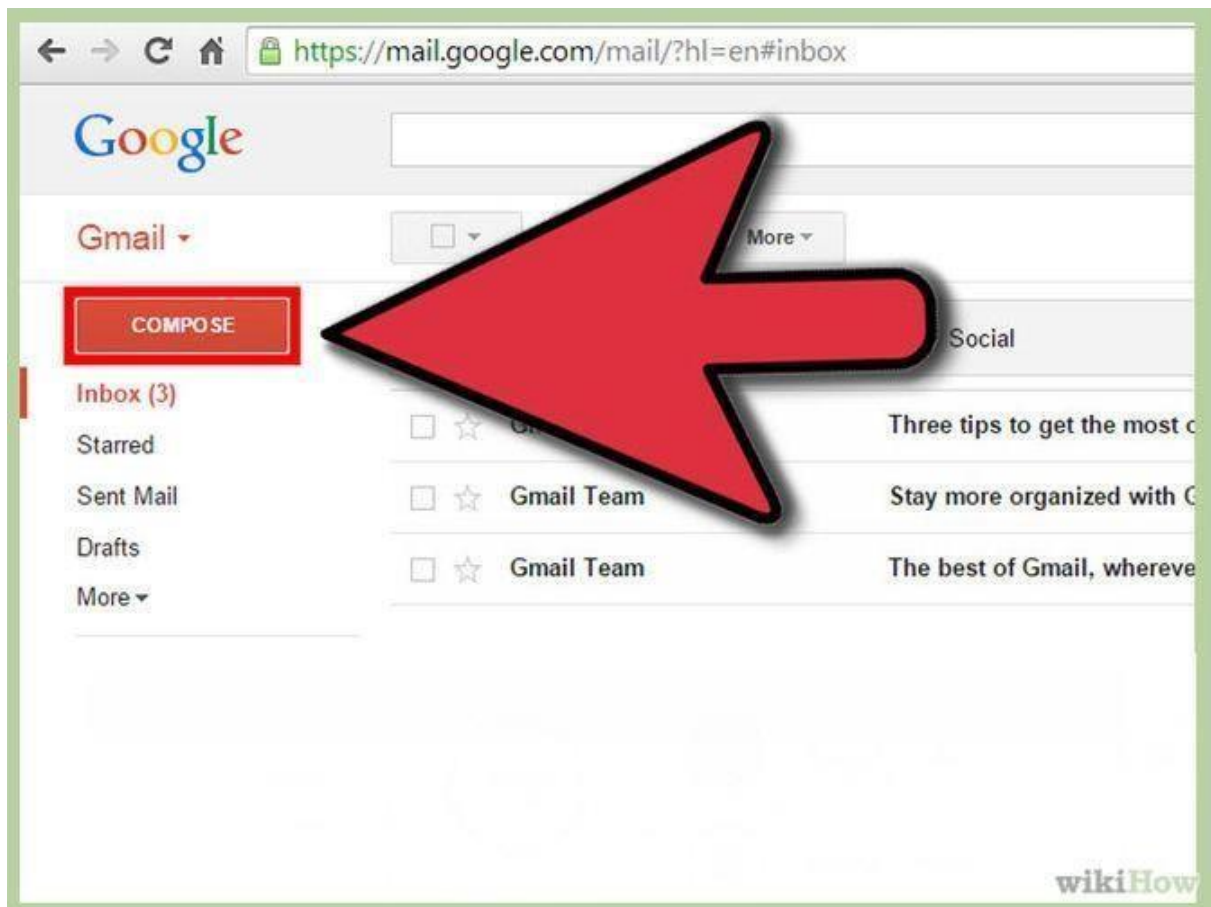
By using Gmail's Import Contacts tool, you can quickly add your contacts from another mail program. You have to export your contacts from your old email program, such as Outlook or a CSV file.



2.5.5 Composing and Sending email with or without attachment

This option is used to write and send the email to someone. The various steps for it are as follows:

Step 1: Click on the “Compose Mail” button. A window to write the text will appear.

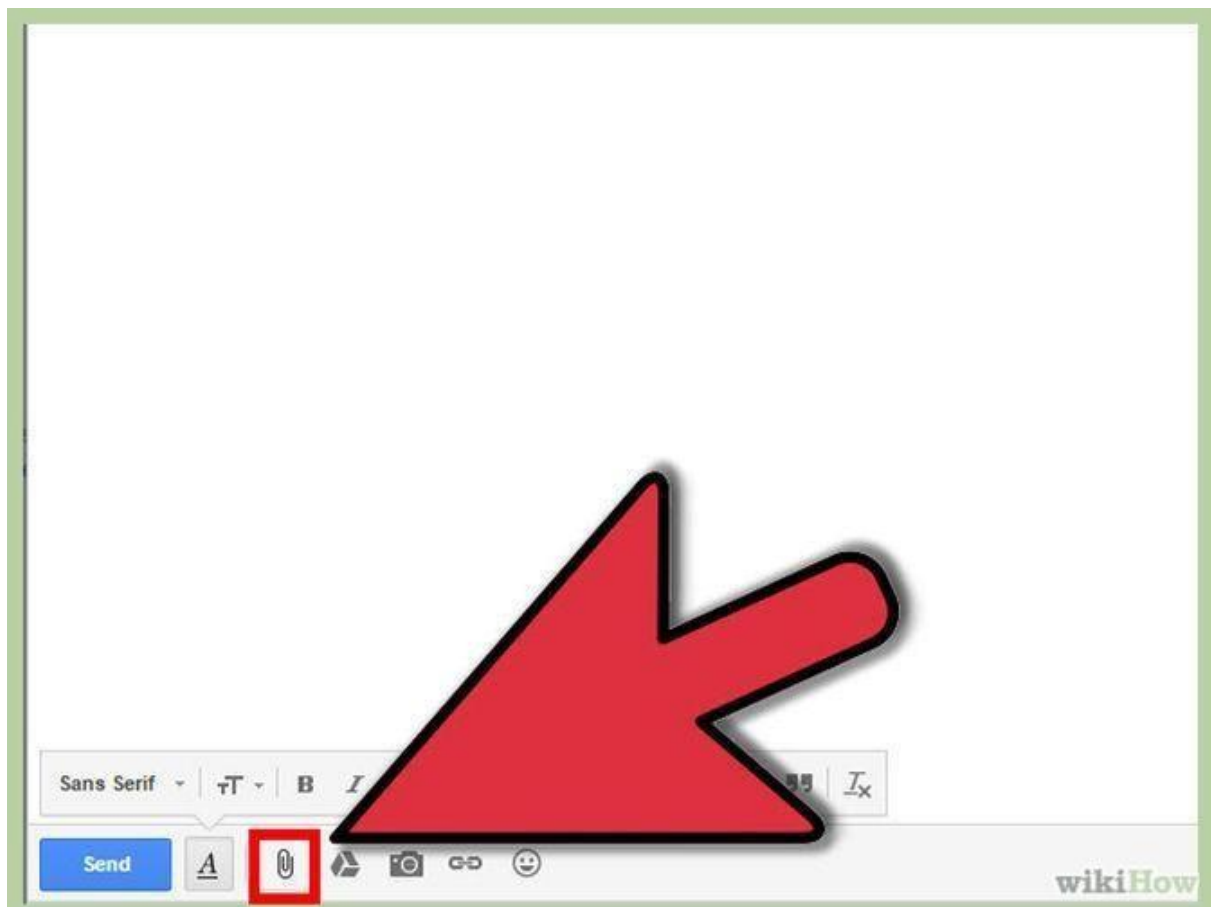


Step 2: In the “To” field, specify the address of the receiver’s email. Enter the address of other person’s in “Cc” to whom you want to send the same email. There is another field “Bcc” (Blind Carbon Copy) to which email address of another recipient can be given. But in this case, he will not know that same copy of email is being sent to some another persons.

Step 3: Enter the subject of email, which specifies the purpose of your message.

Step 4: Type the contents of the message.

Step 5: In case you want to attach one or more files, click on “Attach a File” link in the same window. A dialog box appears from where you can select the file and click on “open” button. Repeat the process, in case more files need to be attached.



Step 5: Click on the “Send” button to send the email.

2.5.6 Other Options in Email

Gmail provides various other options to reply an email, forward the email, deleting the email from Inbox and creating folders (called Labels in Gmail). Folders/Labels help in arranging the different kinds of emails. Like all other email programs, gmail also provides the option for Signout.

2.6 Information and Knowledge Sharing using IT tools

Knowledge sharing is a process where the knowledge of an individual is converted or transformed into public knowledge in an organization or institution. It refers to "activities of transferring or disseminating knowledge from one person, group, or organization to another". With the use of Information Technology, this knowledge is developed in the form of new computer programs at the same site. The process of KS involves both the creation and the transfer of knowledge through different methods. Today knowledge is stored electronically and access is usually controlled by password. Information technology (IT) support can be classified into the use of proper repository for storing and sharing knowledge and the use of a communication medium for communicating and transporting knowledge among individuals. Also, it acts as a web-tool and permits easy accessibility to a variety of knowledge databases that include written text, as well as interactive multimedia such as music, video films, special simulations and virtual tours to museums.

2.6.1 Different IT Tools to share Knowledge

E-mail: It acts as the main source of communication mechanisms

Website: Different contents to share the resources can be placed at the website.

Mobile Phones: Mobile phones are also one of the main tools for knowledge sharing as one can read emails or follow the newsletters;

Spaces for project management: Different organizations create spaces for sharing the materials and evaluating the projects.

Web-based conference tools and communication: It provides a mechanism to share knowledge between different persons with the help of Web Based Conference.

Newsletters: This includes different information which are passed as letters in electronic form.

Some Social media tools also exist to share the knowledge like Facebook, Twitter, LinkedIn, GoogleDocs (Collaborative creation of documents), Wikipedia, Weblog, Doodle etc.

2.7 Computer Networks

A Computer Network is an interconnection of two or more computer systems located at different places. In a computer network, the computers are linked together with some communication media (wired or non-wired) and communication devices to share the data and other resources. In a network the concept of client and server is generally used. A server is a machine which provides resources to other computers and clients are the machines which requests for the resources. The clients are called workstations and nodes.

2.7.1 Advantages: Computer networking provides a number of advantages. Some of them are listed below.

1. Sharing of
data: This is the biggest advantage of computer networking. You can share documents, reports and almost any type of content between your groups. Suppose you and your friend wants to share a document, In the absence of networking, you have to manually copy the document on some media (Pen Drive) and give it to your friend. With the help of Networking, it is a matter of seconds to share the document.
2. Internet
Sharing: A single Internet Connection can be shared among different users with the help of a network. Suppose all of your family members want to access Internet at same time on their devices. You need not to purchase a separate Internet Connection for each. Just connect all the devices in a network and access one Internet Connection among each other.
3. Hardware
Sharing: This is also a major advantage of Networking. Suppose you need to manage a small office in which ten persons need to work on their desktop, laptops or other devices. They all need to use the printer. Rather than purchasing a separate printer for

everyone, you can share a single printer among all. Moreover with the help of Network, no one need to move to the machine to which printer is physically connected. Everyone can give the command to take printouts from his/her computer.

4. Data
Security and Management: In business environment, employees generally need to access the critical data related to business. So the Security of this data is of paramount importance. In the absence of networking separate copies need to maintain at different computers. Management from the security point of view is very difficult in this case. However, with the help of Networking, a separate server (File Server) can be maintained upon which critical documents can be placed and accessed by employees. Management (Backup and Security) of data in this case is quite easy.
5. Flexible
Access: Network allows the users to access their data from any of the available computers. Now a days, people belonging to marketing departments (travelling people) access the company's Servers even during travelling and from hotels, This is only possible due to Networking (Internet in this case). It allows different users to work on the same project.

2.7.2 Disadvantages: Although networks have a number of advantages, it has some limitations also.

1. Hardware,
Software and Setup Cost: To setup a network, you need some specialized hardware along with computers like wires, connecting devices e.g. hubs, switches etc., some piece of software. It involves a huge cost. Moreover there is another cost for planning, designing and implementing the network called setup cost.
2. Negative
Effects of Sharing: Proper Planning is required to share the data among various users. Every data should not be available to everyone. Since Network provides easy sharing, it also leads to sharing of Viruses and Worms.
3. Security
Issues: This is one of the major concern areas for the networks. If network is not properly implemented, it puts critical data at risk. There should be no unauthorized access to the data. Proper care should be taken to save the data from hackers and other malicious users.

2.7.3 Types of Network

There are many possible ways of classifying the different networks, such as their size, scale and the geographical distance. Most network types are known as different types of „area“ networks. This is no longer always the case due to new technology. Some of the most common types of network are:

LAN (Local Area Network)

This is one of the original and simplest types of network. LAN networks connect computers over relatively small distances, like within a single building or within a group of buildings situated nearby. Network in a home is often LAN network, even if there is more than one device in the home. They do not contain more than one subnet, and even if exists, are usually controlled by a single administrator.



Advantages:

- | | | |
|----|--------------------------------------------------------------------------------|-----------|
| 1. | Reliability, because failure of one does not affect the functioning of others. | High |
| 2. | addition of a computer is easy. | New |
| 3. | devices like printers and disks can be shared easily. | Different |
| 4. | rate of data transmission is possible. | A high |

WAN (Wide Area Network)

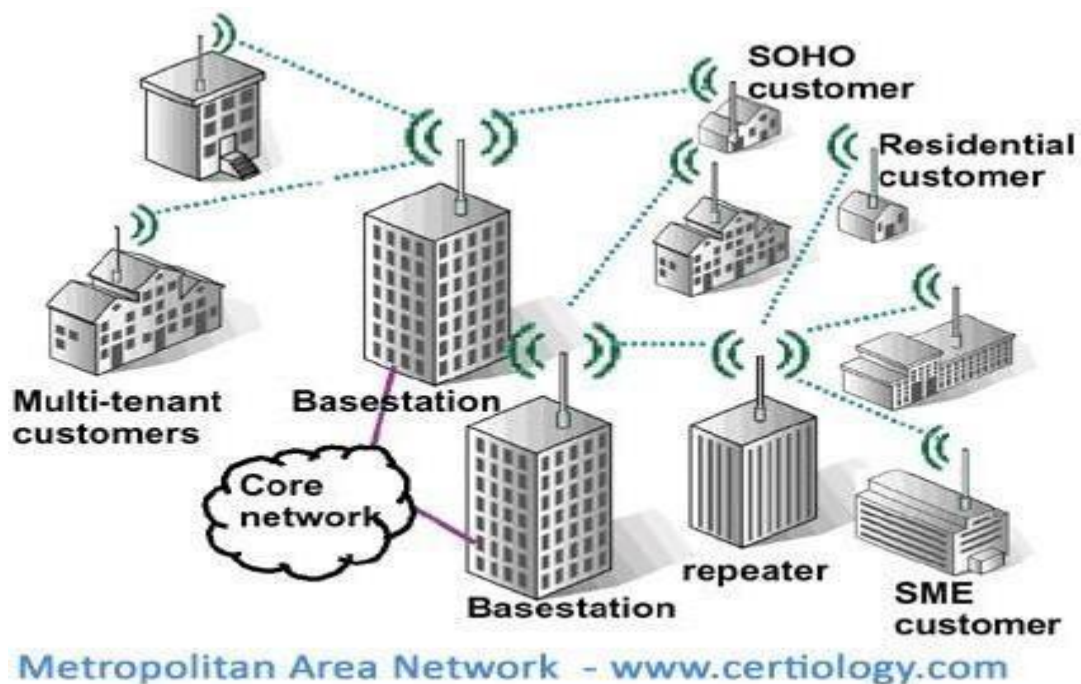
This is another category of network, and is more complex in nature. WAN networks connect computers together over a large physical distance and allowing them to communicate. The Internet is a WAN, and connects computers all around the world.



LANs connect to WANs, such as the internet, using special devices called routers to transfer data quickly and securely. WANs being the large network cannot be controlled by one administrator. In the case of the Internet, it is publicly owned.

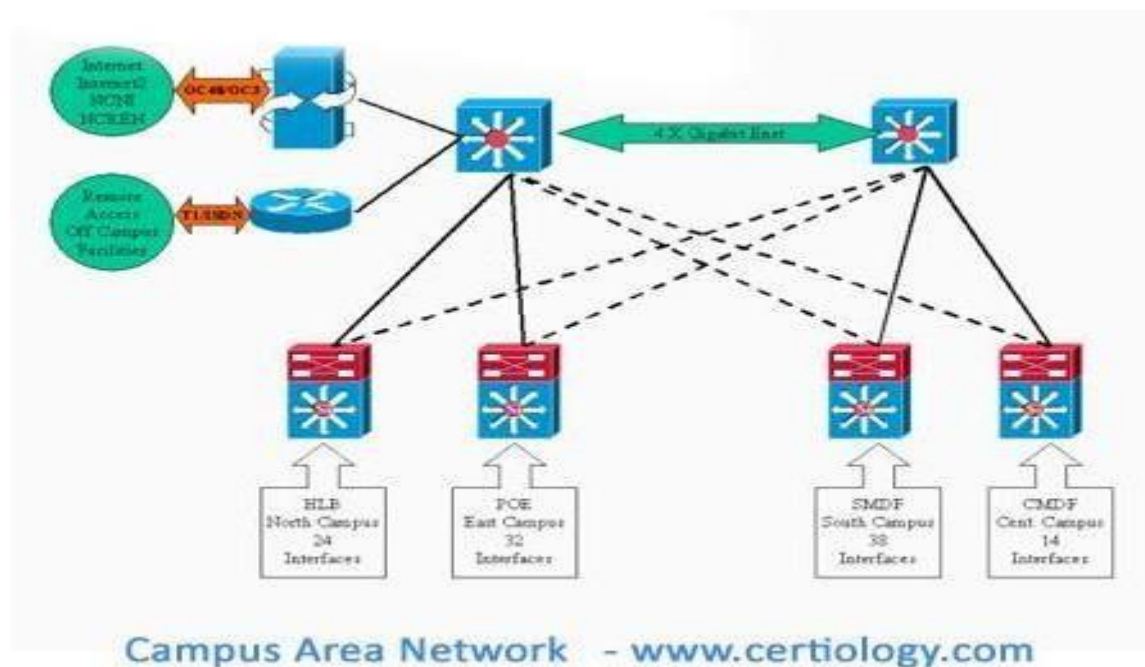
MAN (Metropolitan Area Network)

This Network is larger than a LAN but smaller than a WAN. It includes properties of both. It generally includes a town or city and is owned by a single person or company.



CAN (Campus Area Network)

This network is larger than a LAN, but smaller than an MAN. This exists in areas such as a university, large school or small business. It spreads over a number of buildings which are local to each other. It may have the option to connect another network from outside and the capability to the internet.



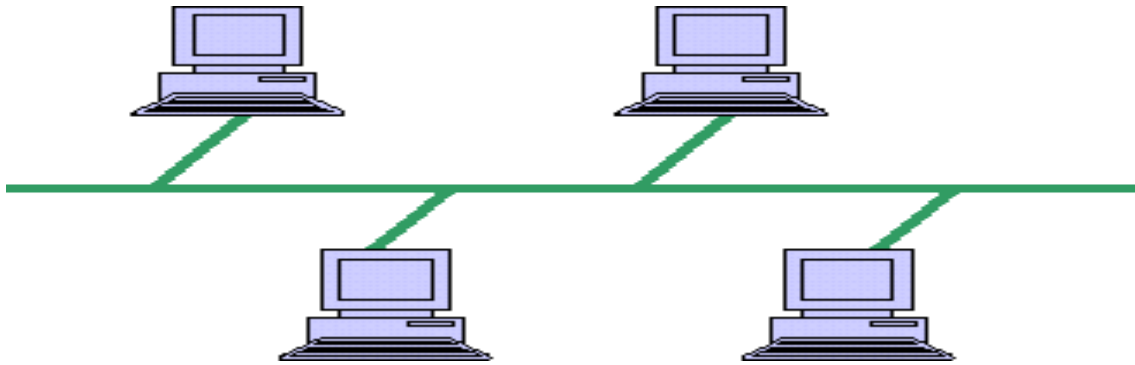
2.7.4 Network Topologies

Network Topologies specify the way in which various nodes (computers, printers and other devices) of a network are linked together. It can also be referred to as the geometrical representation of the relationship of links connecting nodes. While selecting a topology for your network, always keep in mind the following factors

- | | |
|-------------|---------------------|
| 1. | Cost |
| 2. | Reliability |
| 3. | Capacity |
| (Bandwidth) | |
| 4. | Installation Effort |
| 5. | Troubleshooting |
| 6. | Scalability. |

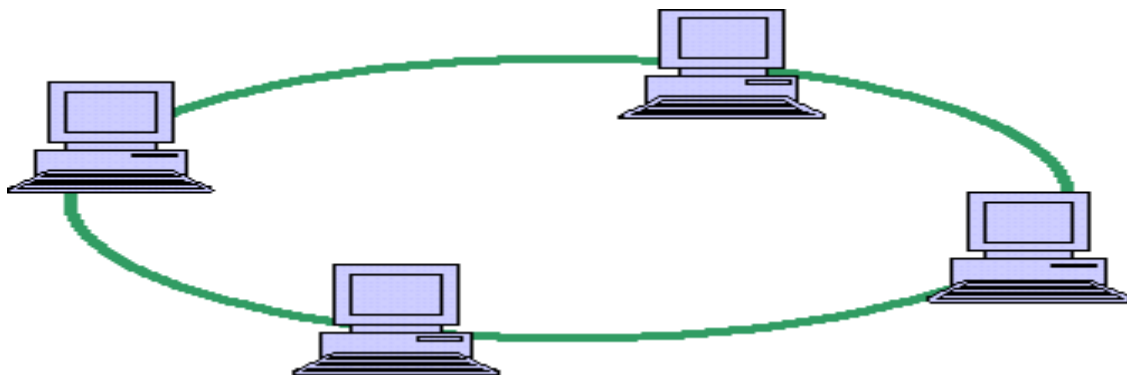
The different types of topologies are BUS, RING, STAR, MESH, TREE and HYBRID. The detail of each one is as follows:

BUS Topology



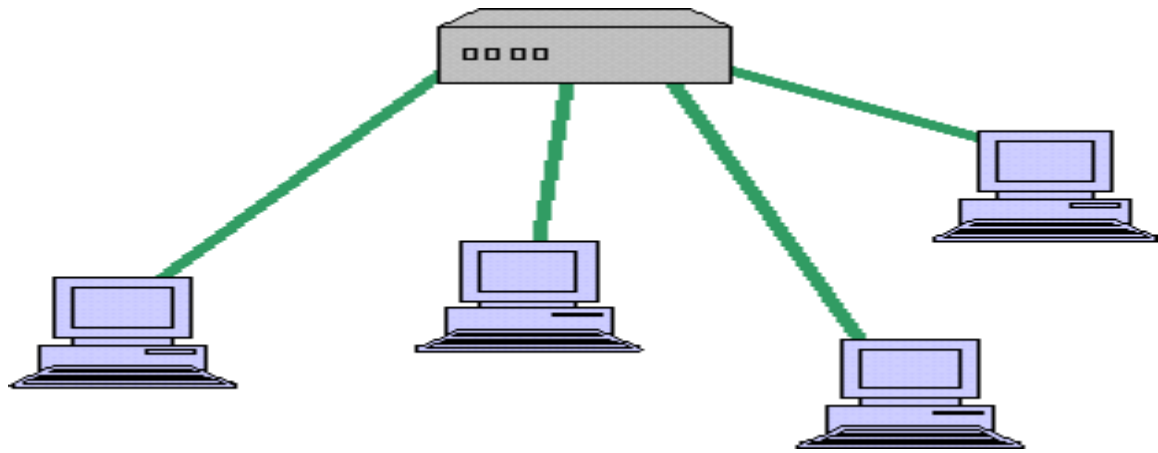
Bus topology uses a common backbone to connect all the devices. A single cable acts as a shared communication medium to which devices attach with an interface connector. Devices communicate with each other by sending a broadcast message onto the wire which all other devices see, but only the actual recipient accepts and processes the message. Bus topologies are relatively easy to install. It does not require much cabling. Bus networks work best with a limited number of devices. If more computers are added to a network bus, performance degrades. Moreover, if the backbone cable fails, the entire network goes down.

RING Topology



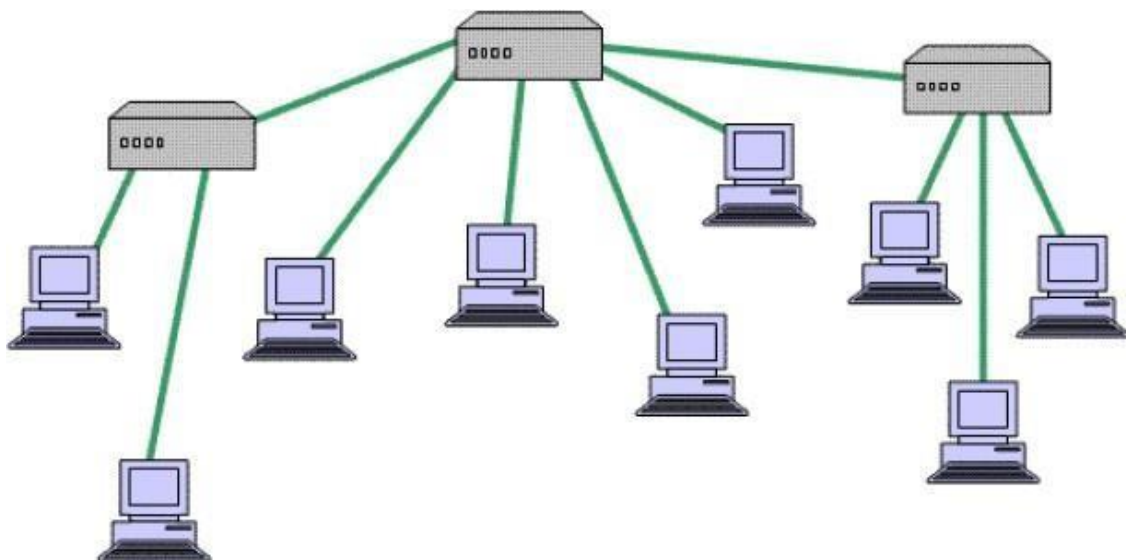
In ring topology, A ring of the all the computers and connecting devices exist. In this configuration, every device has exactly two neighbours for communication purpose. The messages travel in the same direction through a ring (either "clockwise" or "counter-clockwise"). Any failure in the cable or device breaks the loop thereby breaking down the entire network. To implement a ring network, Token Ring technology is used. Ring topologies are commonly found in some office buildings or school campuses.

STAR Topology



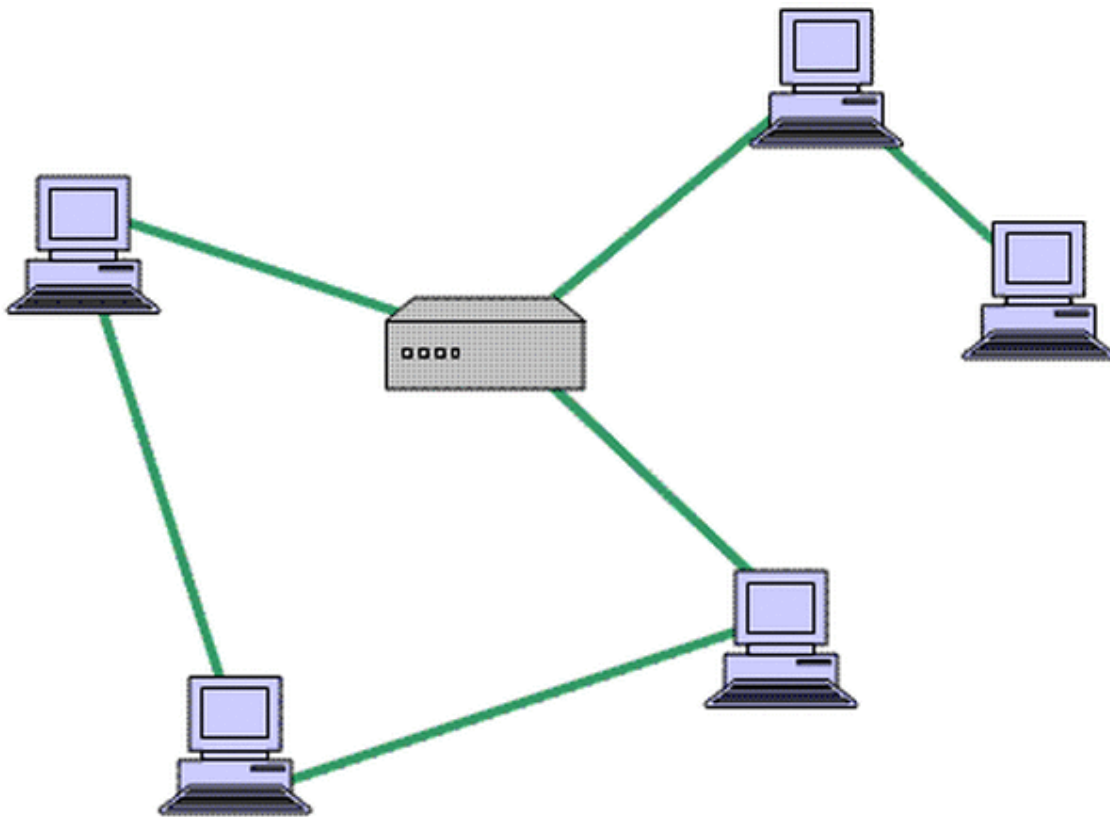
Many home networks use the star topology. A star network topology includes a central connection point called a "node" that may be a network hub, switch or router and all the computers connect in a fashion to form a star. Computers typically connect to the hub with Un-shielded Twisted Pair (UTP) Ethernet. As compared to the bus topology, a star network generally requires more cable. It is more reliable as a failure in any star network cable will break down only one computer's network access. However, if the hub fails, the entire network also fails.

TREE Topology



A tree topology joins various star topologies together onto a bus. In the simplest form, hub devices connect directly to the tree bus, and each hub functions as the root of a tree of devices. This bus/star hybrid approach supports future expansion of the network.

MESH Topology



Mesh topology includes various paths. Messages sent on a mesh network can take any of several possible paths from source to destination. Internet, which is a network of networks has mesh topology. In mesh network, where every device connects to every other is called a full mesh. Partial mesh networks also exist in which some devices connect only indirectly to others.

2.7.5 Transmission Media

To transmit data in a computer network, some kind of transmission media is required. Various physical media can be classified as guided (e.g. cables) and unguided (wireless). Each one has its own characteristics like bandwidth, delay, cost, ease of installation and maintenance.

Bandwidth: It specifies the rate at which data can be transmitted. If all other factors remain constant, greater bandwidth leads to higher data rate.

Transmission Loss: As the signal travels, it gets weak. Try to limit the distance in this case.

Interference: Signal can interfere with each other thereby leading to distortion or complete wipe out. Interference is of particular concern for unguided media but is also a little bit problematic with guided media. Proper shielding of a guided medium can minimize this problem.

The various guided and unguided media are as follows.

Communication Media	
Guided	UnGuided
Twisted Pair	Radio Wave
Coaxial Cable	Microwave
Optical Fibre	InfraRed

These are the technical names, whereas if you go to market to purchase the cables, the commercial name is CAT5 and CAT6

Check your Progress 2

1. Email uses_____,_____ & _____ protocols.
2. Bcc stands for_____ in Email.
3. In a Network client machines are also called_____.
4. WAN stands for_____.
5. Ring Topology uses_____ technology.

Activity 2

You need to design a Network for your home in which maximum five computers (including laptops and desktops) and two printers (coloured, black & white) will be used. What factors will you keep in mind while designing it?

2.8 Summary

The Internet provides a large number of features. Almost all the features are accessible, now-a-days with the help of Browsers. The browsers are available by a number of Companies like Microsoft, Google, Netscape Communication etc. The features provided by the various browsers are more or less similar. Internet Explorer Browser provides the “Do not Track” Option which is really helpful. It also provides the option of Spell Checker in its latest versions. Different applications are available on www. FTP is used to upload and download the files of almost any size. However it suffers from a security issue which is easily resolved by a secure version of FTP called SSH (secure Shell). Telnet provides the feature to remotely login a machine/server. This proves to be really helpful to persons who need to access the company network from outside the company premises. Email which is the major application of www provides a number of features. One can send/receive text messages, audio, video or any kind of data. Some email providers provide the option to create folders so that you manage your emails from different persons in a more manageable way. All the facilities are possible because of the Network. Networks can be created in different sizes, topologies by the use of different kinds of communication media.

2.9 Glossary

HTTP (Hyper Text Transfer Protocol): A protocol used to access the web.

Web Browser: A software which is used to view the information presented in HTML form.

GUI (Graphical User Interface): An Interface to which you can interact with a mouse.

CUI (Command user Interface): An interface to which commands need to type to use.

FTP: File Transfer Protocol use to upload/download the files.

Telnet: A protocol used for remote login.

SMTP (Simple Mail Transfer Protocol): A protocol used to transfer email from one server to another.

POP3 (Post Office Protocol version 3): A protocol used to download emails on client machines.

2.10 Answers to Check your Progress

Check your progress 1

1. HTTP
2. Hyper Text Transfer Protocol
3. Control Connection & Data Connection
4. mget
5. put
6. SSH

Check your progress 2

1. SMTP, POP3, IMAP
2. Blind Carbon Copy
3. Workstations
4. Wide Area Network
5. Token Ring

2.11 References

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Kamlesh K. Bajaj, Debjani Nag, E-Commerce: The Cutting Edge of Business, TMH Publications

Anurag Gupta, Vikram Sharma, Anshuman Sharma, Fundamentals of Internet Applications, Lakhanpal Publications

2.12 Suggested Readings

Internet Complete, BPB Publications

<https://www.techopedia.com/definition/25597/computer-network>

<https://www.coursera.org/course/comnetworks>

Charanjit Singh, Pardeep Bhandari, Gurmeet Singh, “Computer Networks”, Kalyani Publications

2.13 Terminal and Model Questions

1. How Email is useful to everyone now a days
2. List various FTP Commands along with examples
3. Explain the working of Telnet
4. Explain various features of any Browser of your choice.
5. Explain the steps to send an Email with attachment to multiple users.
6. What are the various possible topologies to create a Network
7. What is meant by a Network and how many types of Networks can be created?
8. Explain the inner working of FTP.

Structure:

- 3.0 Objectives
- 3.1 Introduction
 - 3.1.1 Scope of Internet and Web Portal
 - 3.1.2 World Wide Web to reach Customers
- 3.2 Comparison between Traditional Commerce and E-Commerce
 - 3.2.1 Traditional Commerce
 - 3.2.2 Online Commerce
 - 3.2.3 Difference between Traditional Commerce and E-Commerce
- 3.3 Advantages and Disadvantages of E-Commerce
 - 3.3.1 Advantages to the Customers
 - 3.3.2 Advantages to the Business Houses
 - 3.3.3 Advantages to the Society
 - 3.3.4 Disadvantages
- 3.4 Buying and Selling on Internet
- 3.5 Issues in implementing E-Commerce
- 3.6 E-Commerce Models
- 3.7 Summary
- 3.8 Glossary
- 3.9 Answers to check your progress
- 3.10 References
- 3.11 Suggested Readings
- 3.12 Terminal and Model Questions

3.1 Introduction

E-commerce is a buzzword these days. It is a revolution in the world of Commerce and Management. It opens millions of new doors for the people living in different corners of the world. This word changed the way to do business. In simple words, E-Commerce means to buy and sell the products online. The product may be a good or service or information, Under the E-Commerce, seller use the digital power to know the preferences and requirements of customer and then try to deliver the same as quickly as possible. These automated and quick services increase the revenue of the producers or the supplier. With the help of E-Commerce we can buy the product/services from any part of the world. So, in these days E-Commerce change the feature of shopping, retailing etc. E-Commerce also refers to the paperless exchange of business transactions. Information is transferred from one place to another through computers and network. The boosts in the Internet Services also boost the E-Commerce.

E-Commerce is an emerging field. To get the benefits from it companies are doing their best. Although it is generating profits at the higher level but implementation of E-Commerce on the traditional business or the transit of traditional business into E-Commerce business is a complex task. Companies are reengineering the business processes to maximize the benefit from the E-commerce. With the advancement in the E-Commerce, new vendors emerged in the market to provide their services for the support of E-Commerce. Different websites/portals are offering wide range of products and services to the consumers and worked as virtual shopping malls, where one customer may buy any of the products/services by a simple click on the Desktop/Laptop/Mobile. Dear Students, in this lesson we will learn about the different types of product and services which are available, different parties involved in E-Commerce and then the comparative analysis of both the world i.e. Traditional Commerce and E-Commerce.

3.1.1 Scope of Internet and Web portal

To sell the goods/services online, along with the hardware and software, there is one prerequisite i.e. Internet and Websites. With the advancement of technology, new milestones have been created in the Commerce and Management. For the electronic interchange high Internet services are required. EDI(Electronic Data Interchange) can be used to transmit documents i.e. purchase orders, invoices, receiving invoices and other business correspondence between the parties. EDI also support to transfer financial information and payments in Electronic form.

For all these services, the requirement is internet and web portals. The internet is helpful to allow millions of computers to be linked together, which offers global network that connects Universities, Government agencies etc. During the inception of Internet, it was mainly used for research and academic activities. At present, it seems that Internet Services have been hijacked by the business player for commercial use. During 2010, United Kingdom had biggest E-Commerce market in the world according to amount spent per capita. China's share is also increasing with 384 million Internet Users. China's online sales were \$36.6 billion in

2009. E-Commerce transaction between China and other Countries increased to 2.3 trillion yuan in year 2012. In 2013 Alibaba had a market share of 80% in E-Commerce in China.

3.1.2 World Wide Web to reach customers

WWW, a platform/market place/shopping mall where vendor from all spheres of life can offer goods, services and information. www provides a link between the buyer and seller. Now it is a virtual place whereby buyer and seller meet. To be successful in E-business rules are the same. Customers and their satisfaction is on the priority list of vendors. In E-business there are different types of challenges and problems to retain the old customer and to create new one. In online Business, consumers have different alternatives which are just a click away. So for online consumer, a good experience to buy the product/service is a key or most significant factor. A good experience include number of issues i.e. easy to use, user friendly sites, speed, dependability and less quantitative data etc.

3.2 Comparison between Traditional Commerce and E-Commerce

Traditional Commerce or marketing is location based, personalized touch is there and it depends upon the individual skills. E-Commerce is done on the virtual space known as www. There is absence of personal touch and human intervention,

With the increased popularity of E-Commerce, many traditional small businesses wants a convergence in the E-commerce to boosts their sales. When we look at the features of E-Commerce and Traditional Commerce, a number of differences exist. While deciding about the shift from traditional to E-Commerce, one must give weightage to all the points so that right decision could be taken about shifting. The internet proves to be disappointment for many retailers and manufacturers. Companies must evaluate their ROI (Return on Investment) before investing huge amount in the technologies.

3.2.1 Traditional Commerce

It consists of marketing to reach the customers, getting together with them at a place of business. Marketing Techniques which are used include mailings, advertisements and phone calls. Buyer and Seller are the two main parties in the traditional Commerce. Normally, the following methods were used for buying and selling:

1. In first case, customers took the initiative and went to place of seller and buy the commodities.
2. In the second case, salesman went to the place of buyer to sell the product or make the calls on the phone to sell the product.
3. In the third case both the parties took the action. Seller send the catalogue to the buyer to buy the product and the buyer buy the goods after making selection from the catalogue.

All these methods are applicable on B2B or B2C .

3.2.2 Online Commerce

In this market, all the steps involved are online. Mainly there are two forms of E-Marketing/E-Commerce. One is Push Marketing and other is Pull Marketing.

Push marketing is sending emails, posting online ads on various websites. It is so called because it pushes the information to the people and insists them to buy.

Pull marketing is a case whereby the company have its websites to sell the products. Social marketing is also used in pull marketing.

Both these methods include the use of online media to buy the goods, the metaphor of browsing a store along with shopping cart/bag. This facility allows the customer to put the selected items in a bag to hold until the shopping is finally done.

3.2.3 Difference between Traditional Commerce and E-Commerce

1. **Direct Interaction:** Traditional Commerce is based upon direct interaction between buyer and seller. The buyer has the chance to look and feel the product. He has the opportunity to interact with the salesman to know the features of the product. At the same time, this facility also proves to be helpful to the vendor. Salesman gets a chance of up-selling and induce-selling. Salesman will admire the buyer to buy more product or the related items to enhance the profit of the organisation.
If we talk about E-commerce, then above cited advantages will not be there unless websites have been customize to do the same, like showing related products or live chat.
2. **Reduction in Cost:** Maintenance of physical store is quite expensive as compared to having an online store. The costs which are available in traditional commerce like rent of commercial space are absent in E-Commerce. An online store can be opened with a minimum price of operational cost i.e. cost to run the website. It can be really suitable for the small retailer.
3. **Difference in Reach:** Online Business has global reach whereas under the traditional commerce, shop is available only for those who are willing to pay a visit to the shop. An online store has global reach and no capability limit.
4. **Return Policy:** In case of online exchange of goods, rate of return is high. On the other hand, in case of traditional shopping, as the buyer buys the goods after careful examination, return rate will be quite low. In case of online sale, physical examination is not possible, so return rate will be quite high.
5. **Online Shopping and Frauds:** Traditional Commerce is not free but to some extent quite trustworthy because buyer and seller are personally attached with each other and no one wants to break the trust. Whereas in case of E-Commerce, a large number of cases of frauds exists.
 - a) **Frauds related with products:** In a number of cases, it has been informed that products are not delivered properly. Instead of product, useless material has been delivered to the buyer. These type of frauds may be not at the sellers end but it ruins the image of the company thereby affecting the business.

- b) Debit/Credit Card Frauds: E-Commerce is not totally secure. There are numerous security issues. Everyday a number of frauds related to credit and debit cards are reported.
- 6. Economic Goods: As online stores has a wide access and sale volume is quite large, so they are providing goods at economical rates as compare to traditional market.
- 7. Anytime shopping: Traditional market is time based market and accessible only in operational hours. On the other hand online market is 24 by 7 markets. One may buy the product according to his/her convenient time and requirements.

3.3 Advantages and Disadvantages of E-Commerce

With the enormous growth of Internet, companies have the option to expand their business opportunities. There would be only few companies that do not use E-Commerce as the E-Commerce has a number of advantages.

3.3.1 Advantages to the Customers

The biggest advantage of E-Commerce is to the customers. Some of the advantages from an unending list are as follows:

- a) Reduction in Prices: In E-Commerce, there is a direct interaction between buyer and seller, thereby reducing the intermediaries. Reduction in Intermediaries leads to passing the savings to the customers and thus buyers get the goods at reduced prices.
- b) 24*7 Access: E-Commerce does not have the time and distance barrier. One can access the E-Commerce site at any point of time and buy/sell on the click of the mouse.
- c) Large Choices: E-Commerce sites provide larger options to customers. One can easily and quickly compare items of different brands.
- d) Quick Delivery: Almost all the E-Commerce sites provide the quick delivery of items purchased. Some of the sites provide delivery “On Next Very Day”, may be at some price.
- e) Global Market: It is like a global marketplace where customers can buy anything from anywhere.
- f) Information about Goods: One can obtain detail information about products in seconds.

3.3.2 Advantages to the Business Houses

The beauty of E-Commerce is that it provides various benefits to Business Houses also along with the customers. The Business Houses can gain a lot by adapting E-Commerce. Some of the advantages to Business Houses are as follows.

- a) Advertising Cost: Advertising on Internet costs very low as compared to costs on Electronic (Televisions) Media and Print Media (Newspapers)

- b) Lesser Start-up Cost: Since less amount of capital is required to start an E-Commerce site, any person can start a company.
- c) Increased Market Share: E-commerce sites do not have physical barriers. So Business houses can have access to even International markets.
- d) Other Benefits: Various kinds of operating costs decrease in case of E-Commerce as compared to traditional method of doing business. Traditional Business can reduce delivery time labour cost, data entry, documentation preparation etc. costs by shifting to E-Commerce enabled Business.
- e) Improved Customer Relationship

3.3.3 Advantages to the Society

1. People from the developing countries can have the products and services from the developed countries with the help of E-Commerce.
2. People can shop at E-Commerce sites at the choice of their time, even at home enjoying the comfort thereby reducing the traffic and pollution on the roads.
3. A number of services offered by the government can be accessed online.

3.3.4 Disadvantages

Although E-Commerce offers a long list of advantages, yet it has some demerits which are listed below:

1. Unreliable Network: Although the structure of Internet overcomes single point of failure, yet there is large number of network failures in history. In such a case, it affects the credibility of site leading to loss of customer base. The failure of a network may be due to some technical reason or other natural calamity like floods etc.
2. Security Issues: Lack of adequate security for online transactions leads to non-acceptance of E-Commerce. Customers are generally worries about security related to credit/debit cards. A number of cases of online stealing related to debit/credit cards have been occurred in the past.
3. Hidden Costs: Online purchases often have high shipping cost, lack of warranty and unacceptable delivery time. These indirect hidden costs discomfort the buyers.
4. Privacy Issue: Since E-commerce site store different kind of personal information about buyers like their purchasing habits, demographic data, credit/debit card information. This information can go in wrong hands. This privacy issues keeps the customer away from buying online.
5. Service Issues: A number of complaints by the buyers have occurred about the after sale service provided by the E-Commerce sites.

Check your progress 1

1. E-Commerce means to _____ & _____ the products online.
2. _____ & _____ play a major role in the growth of Internet.

3. There is absence of _____ in E-Commerce
4. ROI stands for _____
5. E-Commerce involves _____ marketing & _____ marketing

True/False

- 6 E-Commerce has no direct/indirect advantage to society.
- 7 E-Commerce improves the customer relationship

Activity 1

Explain the role of World Wide Web (WWW) in the context of E-Commerce

3.4 Buying and Selling on Internet

To sell on Internet, there are some requirements which a business house has to fulfil. These technical requirements have a major impact on the success/failure of any E-commerce Business. Three main requirements for online sale transactions are

1. Shopping Cart
2. Secure Server
3. Payment Processing

1. Shopping Carts : It is a software which keeps track of user's selection of items from the website before the final "checkout". An online shopping cart contains Product Catalogue, Shopping List and Checkout System. An online shopping cart has product catalogue, shopping lists and checkout systems

a) The product catalogue presents the product information to the customer and it also includes any other detail required to complete a transaction online. Information about the product generally includes the price, unique identification number of the product, image of the product or any other information of interest to user.

b) A shopping list (i.e. list of selected products) allows users to keep track of the items which you want to purchase. A shopping cart image is used to show what items the shopper has selected for purchasing. Remember, to function properly the user's computer must enable "cookies" in their browser setting. **Cookies** are small pieces of information that gets store on

users' computers. It is used to keep track of people who arrive at the website and how they use the website. If your website uses „cookies“, you must inform the users that, how and why this information is being used.

c) The checkout system allows the customers to select different products by clicking on “Add/Insert items to cart” button. It enables them to pay for the products.

2. Secure Server : Secure Socket Layer (SSL) is the technology for secure online transactions. SSL encrypts the data between the company's server and the buyer's computer. This makes it almost impossible for someone to access any information like credit card numbers exchanged between buyer and seller. In this way the secure server provide protection against the loss or modification of personal information.

3 Payment Processing System: Shopping carts do not deal with the entire transaction. They pass information to a payment gateway. There are three payment options.

- a) Third party processing software.
- b) Internet Merchant Account
- c) Offline Payment Processing

While choosing any of the payment options, following things must be kept in mind.

- Cost (transaction fee, setup fee, monthly fee etc.) associated with the payment option.
- Privacy of the transaction data
- Fraud Protection
- Credibility of the Service Provider.

- a) Third party Processing Software: These services offer an alternative to Internet Merchant Account. In this method, it is possible to start selling online more quickly and easily. There are registration, transaction and monthly fee associated with it. In this case, money from the transaction is deposited in a special account controlled by the service provider. The merchant initiate the transfer to obtain the money.
- b) Internet merchant Account: This account is used by the financial institute that enables the business to accept credit card payments online. For each type of credit cards (Visa, MasterCard), a separate Internet Merchant Account needs to be maintained.
- c) Offline Payment Processing: If an E-Commerce company has a limited number of online orders, they can take orders online but can process the credit card offline. In this option, Credit Card Information is obtained through a secure server and transaction can be processed manually.

For online selling, you need a **Digital Certificate** for SSL technology to work. A Digital Certificate is a kind of electronic ID that show the credibility of a website. Before buying anything from Internet, check whether website is on a secure server or not. Just look at the URL address of the website. It must starts with **https://** and not **http://**. Another method is to have a have a look at the browser. Many browsers use a symbol (e.g. lock icon) to show Security.

Security and Privacy Issues

One must remain aware of security and privacy issues associated with e-commerce. Some common threats are fraudulent use of credit cards, viruses, spam e-mail messages, and theft of computers or information. Phishing is another security threat that involves an e-mail message that looks coming from an official source but message go to a fake website where you may disclose your personal information. Common threats to privacy include theft of personal information, and inadequate protection of private information. The following things must be kept in mind for minimizing security and privacy risks.

Review the security features provided by the web hosting service, ISP, web designing company.

Pay attention to security alerts and install security patches.

Regularly update software and perform scanning for spyware and viruses.

Regularly backup systems and information

Design of an e-commerce website should minimize security threats.

Always obtain a digital certificate for your website.

3.5 Issues in Implementing E-Commerce

There are certain implementation issues which companies must consider before the development and deployment of E-Commerce.

1. **Cost Issue:** It is a major issue. To implement the E-commerce, companies need high end technologies in the form of hardware, software etc. At the same time, there will be cost to train the staff regarding new technologies. Then there is requirement of support staff, comprehensive solutions with greater ease of use to help cost effective deployment.
2. **Cost-Benefit Analysis:** Before the implementation of E-commerce, it is essential for the business concern to know that their investment in Electronic Commerce system will produce a return. Moreover companies might be interested to know that either the benefit will be greater than cost or not. It is not only the monetary value, the goals and objectives must also be satisfied after the implementation of E-Commerce. Such systems must be flexible enough so that the required changes can be made as and when essential.

3. Security Issues: Because of the universal approach, Internet provides access to everyone. In such a scenario, there are certain points which companies must keep in mind while implementing the E-Commerce.
 - a. Protection of Assets of Companies: Companies need to protect their assets from misuse from both internal and external.
 - b. Information Security: In today's competitive world Information is power and security of information is required. Certain Security requirements must be fulfilled to secure the information
 - c. Customers Information: Proper care must be taken to secure the information of customers. Privacy systems should be strong enough to safeguard the information critical to building sites that is essential for customer as well as for business.
4. Accelerate the existing System: Companies which are already in existence and using the Information Technology for certain operations like marketing, billing, ordering, distribution etc. must integrate their systems in such a way that it should generate maximum profits.
5. Relationship Building: Companies should work in such a way during the transitional phase that it established strong relationship between all the stakeholders of the business. It is hard to run the business in a vacuum. Companies need to have a strong bonding for the efficient running of the business and the E-Commerce must help to enhance the cordial relationship among all.
6. Other Issues: While implementing the E-Commerce, companies have to face many issues like resistance from the present employee. Human Labour is quite expensive and high end technologies supplement the job of human beings and in some cases simply eliminates the role of human beings. So their fear insists the employee to raise voice against the implementation of automation.

3.6 E-Commerce Models

E-Commerce is the transaction of the business with the use of Internet and World Wide Web. There are many different models of E-Commerce.

1. Business to Consumer (B2C) : It is clear from the name that this model involves Business and Consumers and is one of the most popular model among all. It was having a small share in the market, but as the technology advances, its growth was exponential. In this model, online retailers and marketers sell their products to the online consumers by the visible data which is made available to them through various online marketing tools. E.g Amazon.com sale different kinds of products to customers. In this model, the E-commerce activities are focussed on Consumers rather than on business. Another example could be online banking. Transactions can take place between business houses and consumers. Individuals are involved in the online business transactions.

2. Business to Business (B2B): This model is one of the largest business model involving millions of dollars. In this model both the buyers and sellers are business entities and they do not involve individual customers. This is just equivalent to manufacturer supplying goods to retailers or wholesalers. E.g a particular Company just assemble the product (they do not manufacture them) and sale those products online. The company must be purchasing the items from different manufacturing groups. This model involves E-Commerce activities between businesses only. The transactions are carried out by the help of Electronic Data Interchange (EDI). It increases transparency among business houses involved and therefore business run efficiently. The security requirements in this model are higher as compared to B2C model. This model is helpful to improve the efficiency of several common business functions like supply management, inventory management and payment management. The business in this model is carried out in the same way as a manufacturer supplies the goods to wholesalers.
3. Consumer to Consumer (C2C): In involves online transaction of goods or services between people. Although it seems that there is no third party involved, but it is not possible to carry out the transaction without third party. The third party's job is to provide the platform for online transaction just like e-bay. It is a person to person type of transaction that excludes business from the equation. Customers are themselves part of the business and they can interact directly with each other.
4. Customer to business (C2B): This model involves activities where the customer determines the price of the product or the service. The focus shifts from selling to buying. In this type of E-Commerce, consumers get a wide choice of products or services along with the opportunity to specify prices which he/she is willing to pay or afford to pay. It reduces bargaining time, enhance the flexibility and creates ease for both the consumer and merchant.

Check your progress 2

1. EDI stands for _____
2. E-Commerce uses _____ technology to secure the transaction between buyer and seller.
3. SSL uses _____ to provide Security
4. To maintain information about users, E-Commerce sites generally uses _____
5. For SSL technology to work, you need a _____
6. E-Commerce site name must start with _____

Activity 2

Explain the Payment Processing System which is followed in the E-Commerce.

3.7 Summary

E-Commerce brought out a revolution in the field of Commerce. The habits of buying are changing at a very rapid pace. People now prefer to buy and even sale on the Internet due to its numerous advantages. Due to it, traditional methods of buying as selling are also changing. In E-Commerce, seller uses the power of digital technology to know the preferences and requirements of the customers. It is providing numerous advantages to sellers, buyers and even to society also in a direct or indirect manner. In other words it is proving to be beneficial for all. There are different models of E-Commerce like B2B (Business to Business), B2C (Business to Consumer), C2B (Consumer to Business) and C2C(Consumer to Consumer).

In spite all this boom and advantages, there are some issues that need to solve so that E-Commerce grow to its full potential. Among various issues, Security issue is of utmost importance. Due to some privacy and data theft issues (especially related credit/debit card) in the history, people are somewhat reluctant. No doubt these issues are resolving these days but still this issue needs a proper importance. The E-Commerce requires Internet to work, some developing or under-developed countries do not have proper infrastructure form its implementation. Another issue regarding service of the product after its sale (i.e. warranty and after-sale-service) has some serious flaws. E-Commerce Business Houses must take care of this.

3.8 Glossary

E-Commerce: Buying and selling the products online

EDI(Electronic Data Interchange): A method to transmit documents electronically. E.g. purchase orders, invoices etc.

Push marketing: Sending emails, posting online ads on various websites for the purpose of marketing the products

Pull marketing: Have own websites to display the products information for the purpose of marketing and selling.

Secure Socket Layer (SSL): Technology which uses encryption to conduct secure online transactions.

3.9 Answers to check your progress

Check you Progress 1

1. buy , sell
2. Internet, www
3. Personal touch
4. Return on Investment

5. Push, pull
6. False
7. True

Check your Progress 2

1. Electronic Data Interchange
2. SSL
3. Encryption
4. Cookies
5. Digital Certificates
6. https

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www.networkworld.com/article/.../how-to-protect-online-transactions.ht

3.11 Suggested Readings

Pete Loshin, John Vacca, Electronic Commerce, Firewall Media Publications
Greenstein, Feinman, Security, Risk Management & Control, Tata Mc-Graw Hill Publishing Company Limited
www.uky.edu/~dsianita/390/390wk4.html

www.msen.com/~chad/ecommm_sec.html

3.12 Terminal and Model Questions

1. Explain various E-Commerce models
2. How E-commerce has changed the concept of selling/buying.
3. Explain the difference between traditional commerce and E-Commerce
4. Explain various advantages and disadvantages of E-Commerce
5. What technical factors must be kept in mind while buying/selling on Internet.
6. Explain various types of Security Issues involved in E-Commerce

4 Information Technology in Management

Structure

4.1 Objectives

4.2 Introduction

4.3 Role of Technology in Operations

4.3.1 How Technology Affects Operations

4.3.2 Technology in Manufacturing

4.4 Information Technology and Human Resource Management

4.5 Information Technology in Marketing

4.5.1 Use of Technology in Marketing

4.6 Information Technology in Finance

4.7 Information Technology in Materials Management

4.8 Summary

4.9 Glossary

4.10 Answer to check your progress

4.11 Model Question Paper

4.1 Objectives

After reading this chapter, the students will be able to understand following points.

- To understand about various applications of information technology in business.
- To understand that how technology impacts important areas of management
- Students will learn how technology has conquered areas like Production, Human Resource, Marketing, Finance and Materials Management.

4.2 Introduction

The computers have made great influence on the humans. Over the past few decades it makes this world as global village. The technological growth gives new dimensions to the business community by offering solutions which were earlier impossible to think with the traditional techniques from statistic to operations research. Today, the Information Technology plays a vital role in the processing and management of business data. Use of Information Technology is now an investment and plays a expanding role in business.

To improve the efficiency and effectiveness of the business processes the managers use Information Technology for their decision making, and workgroup collaboration. It will definitely help the managers to strengthen the positions of their company in a fast changing environment. IT has become a required constituent for Managers to succeed in today's dynamic global environment.

Chaffey and Wood described Information Technology as “technology resources used for business information management”. The resources include software, hardware and telecommunication networks used for managing information".

According to Benemati et al., IT is changing rapidly and considering the increasing strategic impact of IT on business operations, its successful management is of utmost importance.

Irani and Love suggested that for IT management to be successful, it must be perceived as an iterative business process capable of providing organizational learning throughout the lifecycle of the technology .

However, even when IT is managed successfully, the question arises, as to what role IT plays in the achievement of organizational strategic goals and objectives. In response to this question, Venkatraman et al and Franz and Klepper postulated that the proper role of IT in an organization is usually epitomized as a fit or alignment with the strategic goals of the

organization. Therefore, IT can only be appropriately aligned when infrastructure put in place to implement the IT strategy is adequate; the strategy supports the organization's strategy and business processes.

4.3 The Role of Technology in Operations

Businesses are affected greatly by the advances in technology and so operations management is no exception. From robotics and automation in the manufacturing units to information technology in the form of enterprise resource planning (ERP) systems, the information technology is considerably changing the way how the both manufacturing and service operations are being designed and managed.

One should keep in mind the technology is only a tool. It should not be installed at your site if it doesn't properly satisfy the requirements of the firm. Managers also need to realize that the technology will provide the necessary means to meet their customers' requirements in today's highly competitive atmosphere. It is also very important that managers must make out the need for these new technology-driven infrastructures to be compatible with all of the organization's functional elements. If so then the information can be rapidly and efficiently transmitted and shared without any errors. The Operation managers need to understand about the technology to properly integrate technology into their organizations. In addition to that the managers must recognize the need of proper training at all levels so that the technology can be used effectively and efficiently. Here one thing that need to be keep in mind that the training should be a continuous process rather than a one shot deal.

4.3.1 How Technology Affects Operations

Operations strategy means the different ways by which a enterprise competes in the marketplace. These strategies include

- (a) low cost
- (b) quality
- (c) speed of delivery
- (d) customization

Earlier the managers had to decide out of these strategies which were most suitable to the particular market segment they were serving. Sometimes there were trade-offs involved as there may not be both low cost and a high degree of customization, or there was a choice to be made between providing fast product delivery and providing a highly customized product. These

traditional trade-offs are no longer applicable for most businesses because technology has set the higher performance bar by allowing enterprises to compete on several of these dimensions simultaneously.

For example, firms using technology, such as Dell Computer, can now produce and quickly deliver individually customized products, and at a very competitive price.

4.3.2 Technology in Manufacturing

The use of information technology in manufacturing operations can be divided into four major groups of software systems:

- (a) Enterprise Resource Planning (ERP)
- (b) Supply Chain Management (SCM)
- (c) New Product Development (NPD),

These software packages have significant overlap with each other in terms of their capabilities and what they provide.

Enterprise Resource Planning (ERP)

Before the introduction of ERP systems in the organizations , each functional area within an organization had its own software and database. These software packages were most of the time incompatible with each other the transactions cannot be take place directly between systems. AS there were more than one database, so generally there were multiple records for the same data, which results in the unnecessary errors throughout the firm. For example, an employee might be listed as Amit Kumar in the Human Resources database, Amit Kumar Gupta in the Accounting Department, and Dr. Amit Kumar Gupta in the Engineering Department. From the systems' point of view, these would be viewed as three different people. In such an atmosphere, transactions between functions were done manually most of the time which may result in additional errors. As a result each of the functional areas within an organization was viewed as an independent operation.(see Fig. 1)

To address this issue of incompatibility and multiple databases, ERP systems were designed and developed to provide a framework with a common information technology platform that would link all of the functional areas with a single database, and also fulfills their individual needs (see Fig. 2)

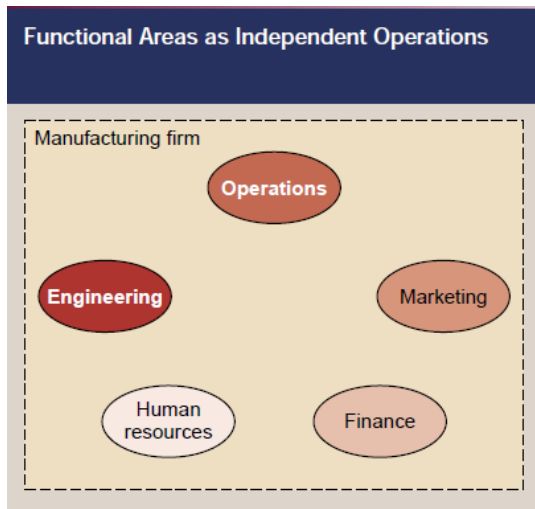


Fig.1

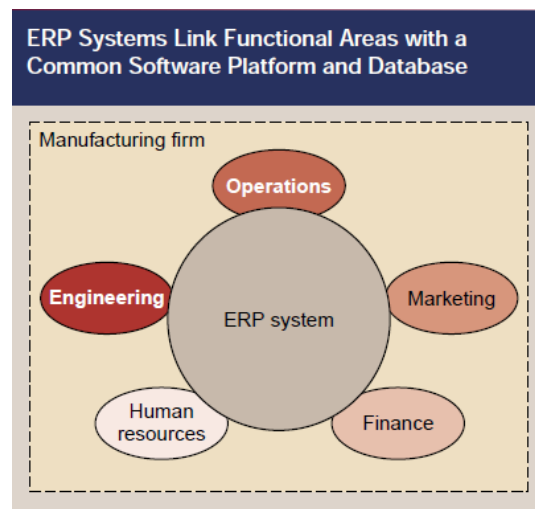


Fig.2

Benefits of ERP Systems

An ERP system when properly installed and functioning correctly can provide a significant competitive advantage to an organization. The benefits of using an ERP system includes:

- (a) reduction in the number of errors through the use of a common database
- (b) faster customer response times
- (c) faster order fulfillment times
- (d) better overall communication within the organization.

Supply Chain Management (SCM)

A supply chain is the collection of interdependent steps when followed accomplished a certain objective such as meeting customer requirements. With customers increasingly calling the shots, manufacturers are scrambling to meet customer demands for options/styles/features, quick order fulfillment and fast delivery. Meeting customer specific demands for product delivery has emerged as an opportunity for competitive advantage. Clearly the hypothesis is that the firms that manage their supply chains will be more successful in the global marketplace.

Supply Chain Management is a general term that includes the coordination of order generation, order taking, and order fulfillment/distribution of product, services or information. Interdependencies in the supply chain create an "extended enterprise" that reaches far beyond the manufacturing facility. Material suppliers, channel supply partners (wholesalers/distributors and retailers) and customer themselves are all key players in supply chain management.

Goals of SCM

- To cut cost

- Increase Profits
- Improve performance in relationships with customers and suppliers
- Helps to develop value added services that provide a competitive edge to the organization..

Functions of SCM

Main functions of Supply Chain Management include:

- Inventory Management
- Distribution Management
- Channel Management
- Payment Management
- Financial Management
- Supplier Management
- Transportation Management

Benefits of SCM

- Get the right product at the right place at the least cost
- By keeping inventory as minimum as possible and still coming up with superior customer service
- Reduce Cycle time (supply chain management means to simplify and accelerate operations that deal with how customers order and processed through the system and eventually filled and also how raw materials are required and delivered for manufacturing process.

4.4 Information Technology and Human Resource Management

The resources available to the organization generally fall into three categories: physical, organizational and human. Today in the era of global economy, the management of human resources' is most critical as it is the biggest asset for organization. The organization can gain competitive advantage, if it gets timely and accurate information about its present employees and potential employees. The Information Technology makes it possible by creating Human Resource Information System (HRIS).

A human resource information software system or HRIS system is use to manage everything easily and become even more productive. If the organization have such system then it could aid

the human resource team to become more organised and practice being practical in the workplace. It is a database application used to track information pertaining to the employees and applicants.

Definition of Human Resource Information Systems (HRIS)

HRIS is a process that uses the information technology for the effective management of human resource functions and applications. It is a computerized system includes a data base or inters related data bases that track employees and their employment specific information (Gill and Johnson, 2010). It can be briefly defined as integrated systems used to gather, store and analyze information regarding an organizations human resources (Hendrickson 2003).

Tannenbaum (1990) defines HRIS as a technology-based system used to acquire, store, manipulate, analyze, retrieve, and distribute pertinent information regarding an organization's human resources.

Kovach et al., (1999) defined HRIS as a systematic procedure for collecting, storing, maintaining, retrieving, and validating data needed by organization about its human resources, personnel activities, and organization unit characteristics.

HRIS – Why it is needed?

HRIS helps HR professionals. HRIS offer HR professionals with opportunities to increase their contribution to the strategic direction of the firm, It not only automate and devolve many routine human resource task but also provides HR professionals to make attention towards more critical and strategic level tasks of business, such as leadership development and talent management. Other incentives for HRIS implementation are mentioned as following.

- To formulate the policies and programs associated to human resource.
- provides decision making in areas like promotion, transfer, nomination, to set employees provident funds, retirement, gratuity, leave travel concession and earned leave compensation.
- To Supply data and to submit the returns to government and other constitutional agencies.
- To Collect suitable data and converting them to information and then to knowledge for timeless decision making.

- To Produce a more number of varieties of accurate and real time human resource related reports.
- Increase competitiveness by Reengineering human resource processes and functions.
- Improving employee satisfaction by delivering human resource services more quickly and accurately.
- Provides a comprehensive information picture as a single, integrated data base

Functions of HRIS

HRIS functions interactively with HRM systems such as human resource planning, staffing, training, career development, performance management and compensation management .The functions can also be categorized as following.

1. **Create and maintain employee record:** The data which is entered create an employee record and this record is maintained throughout employment. Generally the HRIS administrator is responsible for creating and maintaining these records in an organization.
2. **Ensure legal compliance:** Once the data is entered into the HRIS then it can be used to help the organization to comply with government regulations in an accurate and timely fashion. It is the responsibility of HR professional to ensure the data integrity and accuracy.
3. **Human resource planning and forecasting:** The information obtained from various subsystems like recruitment, training and development, and administrative subsystems about the number of positions, types of positions, employee skills and competencies, job rates, retirement eligibility helps the managers to develop long range staffing plans and also provides precious information to the HR professionals.
4. **Talent management/Knowledge management:** The data such as skills, competencies, jobs held, training and employee development interests entered into the system can help the managers to provide development opportunities for their employees. It ensures that the employees are offered positions that will enhance their skills, provide the suitable training for employees so that they can make improvements in the organization. This information will help HR professionals to provide more targeted advice and counsel to managers to create a development plan that meets organizational and employee needs.

5. **Strategic alignment:** The organizations can be benefitted from the information obtained from the system to align human resource activities more effectively with their strategic plan.
6. **Enhanced decision making:** The relevant, useful, timely and accurate information obtained from the system improve the quality of management decision.

Users of HRIS applications

HRIS meet the needs of a number of persons associated with the organization. Generally , the people in the firm who interact with the HRIS are grouped into three categories:

- (1) HR professionals
- (2)Managers
- (3) Employees

HR professionals depend upon the HRIS in fulfilling job functions regarding regulatory reporting and compliance, payroll, pension, skill inventory, compensation analysis, profit sharing administration, benefits administration etc.).

Managers of different functional units expect that HRIS must provide the things which help to meet the unit's goals and objectives. Rather a manager depends on the HRIS's capabilities to provide better data collection and analysis particularly for performance appraisal and performance management. It also includes résumé processing, skill testing, assessment and development, recruitment and retention etc.

Finally, the individual employees become end users of many HRIS applications.

HRIS Benefits

Benefits for management include:

- Increase the efficiency as far as overall decision making is concerned.
- Cost reduction and budget control.
- It provides business transparency and makes the vision clear.
- Makes transparency in the process of hiring and firing employees.

Benefits for human resource department include:

- Centralized database of all employees in the organization with all required information and opportunities of different reports.

- Reduces the paper work to great extent which is much slower and have higher chances of errors.
- The ability to bring up to date in data bases as soon as change happens, which is very important to regionally diversified organizations.
- Reduces the errors which are caused by human factor.
- Improved management system in accordance with the legislation.
- Eliminate the duplicate records in the system.
- Business processes are standardized.

Benefits for employees:

- Saves time
- The independent access to data can be given.
- 24×7 data availability.
- Boost staff morale.
- Business obligations and events are automatically tracked and reminders are generated.
- Employees can make decisions on the basis of information obtained in the HRIS system.

4.5 INFORMATION TECHNOLOGY IN MARKETING

Technology came into existence as boon for marketing industry. We can't even imagine marketing without use of technology. The most important aspect of marketing is communication. Communication helps businesses grow and prosper, creates relationships, strengthens the effectiveness of organizations and allows people to learn about one another. Technologies such as the Internet, mobile phones, social media, and customer relationship management systems greatly affect the way companies communicate with prospective customers. Technology has provided various tools for marketing such as internet advertising, e-mails, and text messaging. Newer technologies, including GPS, social media and smart phone applications, are becoming increasingly important.

Two major tools being used today are customer relationship management systems (CRMs) and social media marketing.

CRM

Customer relationship management systems use technology to organize, synchronize, and automate business practices. CRM systems for marketing help the enterprise identify and target potential clients and generate leads for the sales team. In CRM all the data related to customer is collected and companies keep gathering certain amount of marketing information all the time to target potential customer as and when required.

Social Media Marketing

Social media marketing refers to the process of gaining website traffic or attention through social media sites. Social media marketing aims to develop brand name by addressing large number of customers. In other words, programs usually center on efforts to create content that attracts attention and encourages readers to share it with their social networks. Hence, this form of marketing is driven by word-of-mouth. Examples of famous social networking sites which helps in marketing are facebook, Twitter, LinkedIn etc.

4.5.1 The use of technology in marketing:

- 1) **Helps companies gain competitive advantage:** With help of technology a company can deliver its products to clients before anyone in market. when a company **uses technology** to speed up its services or production, it wins the customers trust hence getting ahead of competition.
- 2) **Strengthen brand name:** Establishing a Brand name is very important for marketing. Technology makes it easier to make a brand popular and spread its name world wide.
- 3) **Online Surveys:** Online surveys have proved to be beneficial for business growth. By directly interacting with clients and understanding their needs companies can alter their work as demanded by clients.
- 4) **Use of social networking sites:** Social networking sites can be used as platform for advertisement and product promotion.

4.6 INFORMATION TECHNOLOGY IN FINANCE

Finance is the segment of management that requires accuracy and reliability. Information Technology provides both along with fast transactions. Information technology focuses on the development of electronic networks that exchange information. Because all financial transactions involve the exchange of information, the increasing popularity of online finance coincided with advances in information technology. Information Technology has many uses in finance like trading financial instruments, keeping records of personal budgets and reporting the earnings of a business. It allows rapid transfers of funds and calculation of financial statistics.

Following are important segments of finance industry where information Technology is used:

- **Trading:** Information technology provides instant information for stock traders to make decisions, and allows them to enter orders that are immediately executed. Financial trading is enhanced with help of Information technology. A computer can be programmed to buy and sell orders when price of stock reaches certain level.
- **Financial Reports:** Companies prepare their financial reports with help of IT tools with which they can better understand and organize their statistics.
- **Convenience:** Personal finance is simplified using information technology. Debit cards and credit cards have made transactions so easy and portable. Information technology allows transactions during weekends and holidays, when there is no staff working at the bank.
- **Bookkeeping:** Information Technology helps companies with their budgets considering financial transactions. Computer systems calculate and display the interest and principal of a loan, and estimate the returns on investment when the company borrows money to expand its operations. Companies can securely transfer data online, and the computer system records all transfers, which simplifies bookkeeping.

4.7 INFORMATION TECHNOLOGY IN MATERIALS MANAGEMENT

World is shrinking day by day with advancement of technology. Technology has significant role in materials management as well. Computerization can be of great help to meet the followings objectives of materials management.

1. Accurate and speedy remittance of information to customers and suppliers, bills, statements, reminders, etc.

2. Information for management for control purposes e.g. stock levels, inventory position, customer's acceptance etc.
3. Improvement of customer relations, vendor and employee relations, by timely accurate and relevant information and through vendor analysis etc.
4. Reduction of inventories to free the working capital.
5. To increase profits at the same time giving better service by optimum scheduling, forecasting and optimizing utilization of traffic facilities, warehouses, machines, etc.
6. To increase the productivity of materials and facilities.

4.8 Summary

Information Technology has significant importance in business management's functional areas. In today's competitive world it's impossible to compete without help of technology. We have studied how technology plays vital role in almost all the segments of management including production, human resource management, finance and material management. The outcomes of using technology in these functional areas are commendable.

4.9 Glossary

- **Asset:** Something that is expected to generate future benefit and is owned or controlled by the company.
- **Customer relationship management (CRM):** It is a term that refers to practices, strategies and technologies that companies use to manage and analyze customer interactions and data, with the goal of improving business relationships with customers, assisting in customer retention and driving sales growth
- **Enterprise resource planning (ERP):** ERP is business process management software that allows an organization to use a system of integrated applications to manage the business and automate many back office functions related to technology, services and human resources.
- **Financial reports:** A financial statement (or financial report) is a formal record of the financial activities and position of a business, person, or other entity.
- **Information technology (IT):** IT is the application of computers and telecommunications equipment to store, retrieve, transmit and manipulate data, often in the context of a business or other enterprise.

- **Social media:** It refers to computer-mediated tools that allow people to create, share or exchange information, career interests, ideas, and pictures/videos in virtual communities and networks.
- **Transaction:** A transaction symbolizes a unit of work performed within a database management system against a database and treated in a coherent and reliable way independent of other transactions. A transaction generally represents any change in database.

4.10 Answer to check your progress

1. Which system connects a company's ERP system to those of its customers?

- | | |
|-------------------------|-------------------------------------------|
| a. Application Platform | b. Customer Relationship Management (CRM) |
| c. Enterprise Solution | d. Product Lifecycle Management (PLM) |

Answer: b

2. Which functional area is responsible for taking customer orders?

- | | |
|---------------------------|----------------------------------------|
| a. Marketing and sales | b. Production and materials management |
| c. Accounting and finance | d. Human Resource |

Answer: a

3. Information systems that allows data to be shared throughout the organization are called _____

- | | |
|---------------|-----------------|
| a. Integrated | b. Unintegrated |
| c. Bounded | d. Unrestricted |

Answer: a

4. The following is concerned with developing a pool of candidates in line with the human resources plan

- | | |
|----------------|---------------------|
| a. Development | b. Training |
| c. Recruitment | d. All of the above |

Answer: c

5. The company's HR team is responsible for

- | | |
|----------------------------|---------------------------------------------|
| a. training of supervisors | b. monitor the appraisal system affectivity |
| c. training the employees | d. All of the above |

Answer: d

6. The purpose of supply chain management is

- | | |
|---------------------------------------------|---------------------------------|
| a. Provide customer satisfaction | b. Improve quality of a product |
| c. Integrating supply and demand management | d. Increase production |

Answer: c

7. Information Technology means

- a. Hardware that manages information
- b. Hardware and software that manages information
- c. Software that manages information
- d. Paper-pencil method that manages information

Answer: b

8. A person who ensures that systems are developed on time within budget and with acceptable quality is a

- a. System designer
- b. Project manager
- c. System owner
- d. External system user

Answer: b

2.11 Terminals and Model Question

Q1. How can technology help to increase the sales in an organisation?

Q2. What is HRIS and what are its benefits?

Q3. Explain the role of information technology in marketing.

Q4. How internet has affected customer relationship with companies?

Q5. List various functions of Human Resource Information Systems.

5. B to B E-Commerce

Structure

5.1 Objective

5.2 Business-to-Business E-commerce

5.2.1 Advantages

5.2.2 Key Technologies

5.2.3 Architectural Models

5.3 e-procurement

5.4 Supply Chain Coordination

5.4.1 Bullwhip Effect

5.4.2 Effects on Performance due to lack of coordination

5.4.3 Obstacles to coordination

5.4.4 Managerial Levers to achieve coordination

5.5 Online Market Research

5.5.1 Online Market Research Tools

5.5.2 Research tools and techniques

5.6 Online Retailing

5.7 Summary

5.8 Answer to check your progress

5.9 References / Suggested Readings

5.10 Model Question Paper

5.1 Objectives

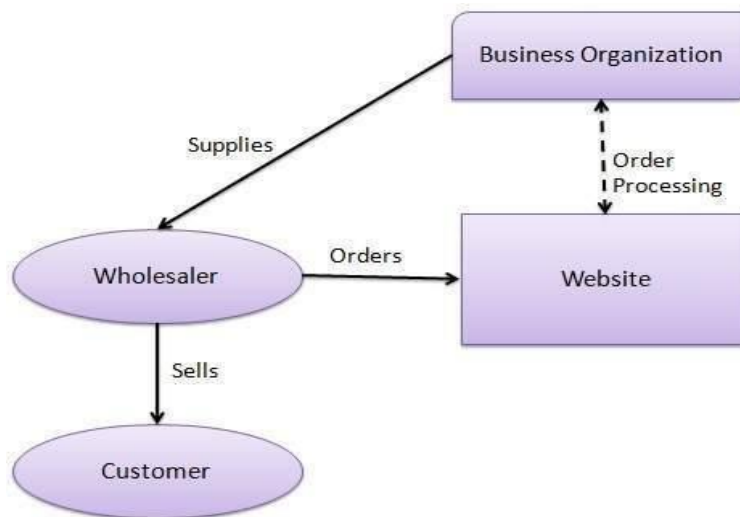
After reading this chapter, the students will be able to understand following points.

- To understand Business-to-Business E-commerce
- Advantages and Key Technologies of B2B E-commerce
- To understand the concept of e-procurement and coordination between the supply chain
- To understand how to conduct the online market research
- To understand the online retailing

5.2 BUSINESS-TO-BUSINESS E-COMMERCE(B2B)

Business-to-Business(B2B) E-commerce provides electronic transactions between business operations and their partners in marketing, sales, development, manufacturing and support. It is now the biggest portion of the Internet market place and growing very fast.

The websites which follows B2B business model sells its goods to an transitional buyer who in turn sells the goods to the final customer. For example, a merchant places an order from a enterprises's website and after receiving the shipment sells the end product to final customer who comes to buy the product at merchant's retail outlet. B2B here means the buyer and seller are the business groups.



Wal-Mart Stores is an example for B2B e-commerce. The major suppliers of Wal-Mart like Proctor & Gamble, Johnson and Johnson etc. sell to Wal-Mart Stores electronically. These suppliers check the inventory status in each store online and stock up the required goods in time.

B2B e-commerce reduces inventory and prices that makes it possible for the business partners to share significant, accurate, and timely information. This results into the improved supply-chain management among business partners.

5.2.1 Advantages of B2B E-commerce

1. **Instant Purchases** - When our business is online, obviously the quick purchases can be done. Earlier the business managers fix meetings and appointments for different purchases but now everything can be done online. It allows the organization to make frequent purchases with a click of mouse.

2. **Increased Revenue** - When we perform B2B transaction online, it will increase the organization's revenue as online ordering is available 24/7. The clients may belong to different time zone and their working hours may be different but it will not affect your business because now the ordering can be placed anytime.

3. **Expands Company's Presence** - When your organization become online it will increase your brand awareness. The search engine optimization of organization's site can be improved by creating pages that can be indexed by search engine crawlers which increased your presence on the internet.

4. **Closer business relationship** - When the business is done online, it will create closer relationship with your client due to increased number of transactions. When more business transactions are done frequently then it build a stronger connection between you and your clients without even going face to face interaction.

5.2.2 Key Technologies

The key technologies used in B2B e-commerce are as follows:

- **Electronic Data Interchange (EDI)** - EDI is the way in which business documents are exchanged in a structured and machine processable format between organizations
- **Internet** - Internet represents the World Wide Web or we can say that it is a network of networks connecting computers across the world.

- Intranet - Intranet represents a committed network of computers within a organization.
- Extranet - It represents a network where the business partners from outside, suppliers, or customers can have a access to a portion of enterprise intranet/network in a limited format.
- Back-End Information System Integration – Back-end information systems are database management systems particularly used to manage the business data.

5.2.3 Architectural Models

The architectural models in B2B e-commerce are as follows:

- **Supplier-oriented Marketplace** - This model represents a common marketplace provided by a supplier for the use of both the individual customers as well as the business users. A supplier offers an e-store for sales promotion.
- **Buyer-oriented marketplace** - This model represents a marketplace where the buyer has his/her own market place or e-market. He/she invites suppliers to bid on the product's catalog. A buyer company opens a bidding site.
- **Intermediary-oriented marketplace** - This model represents a marketplace in which an intermediary company runs a marketplace and business buyers and sellers can transact with each other there..

5.3 e-procurement:

The process of using electronic information and communication technology(ICT) to procure the goods and services between business organization is called e-procurement. It is the key component of e-commerce and also e-business.

The concept of e-Procurement came in the beginning of 1980s with the development of electronic data interchange (EDI). This allowed customers and suppliers to send and receive orders and invoices through secure store and call forward networks. Such EDI systems permits businesses to exchange and synchronize data files on products, prices, specifications and information about each other's locations and trading practices.

Another development in e-Procurement that arose at a analogous time was the concept of e-marketplaces. e-marketplaces, also known as B2B exchanges. These electronic hubs bring together suppliers and purchasers in common virtual environments. e-marketplaces are either -many-to-many, or "one-to-many".

"Many-to-Many e-marketplaces" means where many buyers and sellers bring together in a particular vertical market.

"One-to-many" e-marketplace means the place where one major supplier or consumer will magnetize many of its trading partners to its e-marketplace. In the past the "one-to-many" e-marketplaces are very successful.

5.4 Supply Chain Coordination:

Supply Chain: It is defined as the movement of materials to flow from their source to the end customer. Supply chain generally includes three functions:

- Supply of material to a manufacturer
- manufacturing process
- Distributor and retailers distribute the finished products to the final customers

Supply Chain Coordination: It means all the supply chain stages take actions together which results greatly in increase of total supply chain profits. Supply Chain coordination requires that each stage take into account the impact of its actions on the other stages.

A lack of coordination happens either due to confliction of objectives of different stages of the supply chain or due to the delay and distortion of the information moving between stages. Different stages of a supply chain may have conflicting objectives if each stage has a different owner. So, each stage tries to maximize its own profits, resulting in actions that often reduce the total supply chain profits.

5.4.1 Bullwhip Effect:

The bullwhip effect is the ambiguity or uncertainty arises due to distorted information flowing up and down the supply chain. Due to this distorted demand information within the supply chain, each stage having a different estimate of what demand looks like. The result is a loss of supply chain coordination.

Causes for the bullwhip effect

Forecasting updating – When the each entity updates a multiple forecast in the chain that leads to significant distortions. Every member of the chain updates forecast as per the orders received at his/her end and those are not based on the demand raised by the end customer.

Order batching – Every member of the chain has his own way of thinking in production and transportation which results in planning practices that lead to order batching.

Price fluctuations – When there are discounts or price promotions than it results in forward buying, causing much distortion. Also if there are regular changes in the price it affect the ordering pattern of the buyer.

Long lead time – If there are long lead times then it increase the planning horizon of other partners in the chain. Also due to this, each partner is forced to keep large amounts of safety stock.

Shortage gaming – When there are shortages of goods then the suppliers usually resort to rationing, which in turn provides incentives to buyers to inflate orders.

5.4.2 Effects on Performance due to Lack of Coordination

Supply chain coordination fails if each stage try to achieve only its local objectives, without considering the impact on the complete supply chain. The profits will be less than what could be achieved through coordination. The lack of coordination affects the following:

Manufacturing Cost – It will increases manufacturing cost. Due to Bullwhip effect, the manufacturer must satisfy a stream of orders that may be variable than the customer demand. Manufacturer can satisfy the increased variability by either making the goods in excess capacity or holding excess inventory that increases the manufacturing cost.

Transportation Cost – It will increase transportation cost. Transportation requirements vary significantly over time. To handle the high demand periods surplus transportation capacity needs to be maintained.

Replenishment Lead Time – It increases replenishment lead times. Due to the increase in variability, it will be more difficult for the manufacturer to schedule and the available capacity and inventory cannot supply the orders coming in.

Inventory Cost – It increases inventory cost. To manage the increased demand variability, manufacturer has to maintain the higher level of inventory.

Relationships across the Supply Chain – It will make a negative effect on performance at every stage and results in the bad relationships between different stages of the supply chain.

Level of product availability – It will result in low product availability more stock outs will happen in the supply chain. Large variations in orders make it worse for the manufacturer to supply all distributor and retailer orders in time.

Labor cost for shipping and receiving – It increases labor costs. The labor requirements varies with orders. So the manufacturers will either make arrangements for the varying labor or carry excess labor, both of which increases total labor cost.

5.4.3 OBSTACLES TO COORDINATION IN A SUPPLY CHAIN

- Incentive Obstacles
- Information Processing Obstacles
- Operational Obstacles
- Pricing Obstacles
- Behavioral Obstacles

Incentive Obstacles

- When incentives are offered to different stages or participants in a supply chain it will lead to increase in variability and lower total supply chain.
- There are local optimization approach within functions or stages of a supply chain and ignorance of overall objectives of an organization.
- In many organizations, sales force incentives means the amount the sales sells during an evaluation period of a month. But the sales generally are measured by a manufacturer by the quantity sold to distributors or retailers (sell-in), not the quantity sold to final customers (sell-through).

Information Processing Obstacles

- When the distortion information of demand moves between different stages of the supply chain, it leads to increased variability in orders.
- When the forecasting is based on orders and not on customer demand then it will magnifies demand fluctuations moving up the supply chain from retailer to manufacturer
- When there is lack of information sharing between stages of the supply chain, it will magnifies the bullwhip effect.

Operational Obstacles

- Ordering in Large Lots – When a firm places orders much larger than the demand arises, there will be variability of orders magnified up in the supply chain. Firms may order in large quantity because of significant fixed cost associated with placing, receiving or transporting an order and supplier offers discounts based on quantity.
- Large replenishment lead times

- Rationing and shortage gaming - when a high demand product is in short supply then the rationing schemes that allocate limited production in proportion to the orders placed by retailers lead to a magnification of the bullwhip effect.

Pricing Obstacles

- Lot-size based quantity decisions- When discount is based on quantity it will increase the the quantity of orders placed within the supply chain and thus magnify the bullwhip effect.
- Price fluctuations - The wholesaler or retailers purchases in large quantity during the trade promotions and other short- term discounts offered by a manufacturer to cover demand during future periods that results in forward buying. Large orders during the promotion period followed by very small orders increases the bullwhip effect.

Behavioral Obstacles

- When all the stage of the supply chain views its actions locally without thinking the impact of that on other stages.
- When the different stages react to the present local situation instead of trying to identify the root causes.
- After the local analysis, different stages blame each other for the variations which increases gap in the coordination.
- No stage want to learns from its actions over a period of time because the most significant consequences of the actions of any one stage occur elsewhere, result in a vicious cycle of actions and blame.
- When there is lack of trust it will results in opportunism, duplication of effort, and lack of information sharing.

5.4.4 MANAGERIAL LEVERS TO ACHIEVE COORDINATION

- Aligning Goals and Incentives
- Improving Information Accuracy
- Improving Operational Performance
- Designing Pricing Strategies to Stabilize Orders
- Building Strategic Partnerships and Trust

Aligning Goals and Incentives

- There should be some alignment in the incentives for all the participant to do the things that will maximize total supply chain profits.
- Align incentives across functions : To ensure that the objective of all the stages must be aligned with the firm's overall objective. All facility, transportation and inventory decisions should be evaluated based on their effect on profitability.
- Pricing for coordination : A manufacturer can use quantity based discounts to achieve coordination for commodity products if the manufacturer has large fixed costs associated with that. Manufacturers can give buy-back, revenue sharing facility to retailers to maximize supply chain profits.
- Alter sales force incentives from sell-in (to the retailer) to sell-through(by the retailer): Managers should associate the incentives for the sales force to sell the units to the end customer (sell through) and not to the retailer (sell in).

Improving Information Accuracy

- Sharing point of sale data: Each stage of the supply chain generally uses orders to forecast future demand. If retailers share POS data with other supply chain stages then all stages can forecast future demand based on customer demand.
- Collaborative forecasting and planning: After sharing the point-of-sale data, the different stages of the supply chain must forecast and plan jointly to achieve the complete coordination.
- Single stage control of replenishment: Need to design a supply chain in which a single stage controls replenishment decisions for the entire supply chain should be taken to diminish the bullwhip effect..

Improving Operational Performance

- Reducing replenishment lead time: By reducing the replenishment lead time, the uncertainty of demand during the lead time can be decreased. Especially it will be beneficial for seasonal items because it allows multiple orders to be placed in the season with a significant increase in the accuracy of the forecast.
- Reducing lot sizes: A reduction in the sizes of lot can decreases the amount of fluctuation and it decrease the bullwhip effect.

- Rationing based on past sales and sharing information to limit gaming: Managers can design rationing schemes that discourage retailers from artificially inflating their orders in the case of a shortage.

Designing Pricing Strategies to Stabilize Orders

- By encouraging retailers to order in smaller quantities and it will reduce forward buying
- Moving from lot size-based to volume-based quantity discounts: The incentives or discounts should be given on the purchases that are made during the specified time and not for the orders given in lots.
- Stabilizing pricing: Managers can eliminate the bullwhip effect by removing promotions. This will eliminate the forward buying by retailers and results in orders that match customer demand.

Building Strategic Partnerships and Trust: When the accurate information will be shared and that is trusted by every stage results in a better matching of supply and demand throughout a supply chain and reduces the cost.

5.5 Online Market Research

The businesses may be conducting online market research for the betterment of business—but they may not know it. There are most common tools which are easy to use. Web searches, online questionnaires, customer feedback forms can help you gather information about your market, your customers, and your future business prospects.

The arrival of the Internet has given small businesses with a wealth of additional resources which they can use either to conduct free or low-cost market research. The following is the list of different types of tools to conduct online market research.

5.5.1 Online Market Research Tools

The following techniques can be used to collect market information with the click of mouse.

- **Keyword Search.** We all know how to do a simple search on the Web using search engines such as Google or any other search engine. Just move a step farther by searching for "keywords" that generally people would use to find your type of products or services online. Keyword searches can remind you of some other aspects of product that you might not have considered earlier. Secondly, these services will also give you a rough estimate of how many existing sites already use that phrase.

- **Competitor Links.** A traditional search engine can also help you check out your competitors, their cost, and their offerings if any. There may be possibility that your competitor is promoting a product or service similar to you and you may get publicity because you have a new or better product.
- **Read Blogs.** Generally the blogs are updated much more regularly than traditional websites and, therefore, they can be another way to know the public opinion about any specific product or services. By search blogs by using blog-specific search engines can really help.
- **Conduct Online Surveys.** Another way to know public opinion is by conducting online surveys. Online surveys are a low-cost idea to conduct the market research about whether an idea or a product will be appealing to consumers or not.

5.5.2 Research Tools and Techniques

There are a range of types of market research tools both offline and online which are used by many large businesses and can be available everyone.

The major categories are as follows:

1. **Audience Research.** Audience research is focussed at discovering who is listening, watching, or reading radio, TV, and print media respectively. Such kind of studies are performed to profile the audience and to determine the popularity of the medium.
2. **Product Research.** Product tests are directly related to use of the product. For example the tasting tests used to pick the most popular flavors and consumer tests of vehicle or device prototypes to uncover problematical features or designs.
3. **Brand Analysis.** Brand research aims at identifying the reasons for brand loyalty who are using this brand.
4. **Psychological Profiling.** Psychological profiling aims at preparing profiles of customers by temperament, lifestyle, income, and other factors which can affect sales.
5. **Scanner Research.** Scanner research uses checkout counter scans of transactions to develop patterns for all manner of end users to help users track the success of coupons and to establish linkages between products.

6. **Database Research.** This is form of research that try to exploit all kinds of data on customers. For example the purchase records can reveal the buying habits of different income groups.
7. **Post-sale or Consumer Satisfaction Research.** We all are familiar with the Post-consumer surveys as many consumers are called from telephone after having a car serviced. Such surveys are planned to determine if the customer was satisfied and also to show that the additional attention is given to the customer to build good will.
8. **Writing Online Questionnaires.** When the Web-based surveys are conducted, small businesses should keep in mind a few simple but important rules:
 - **The Shorter the Better.** Don't put long questionnaires and limit yourself to 25 questions so that it takes five to seven minutes to finish. If surveys are much longer, people will not fill accurate information and the next time you send them a survey they won't even open it. Try to make the first page simple, present answer options in multiple columns or a drop-down box, and put a status bar at the top of each question page so respondents know how close they are to being finished.
 - **Avoid Open-Ended Questions.** It is wise not to include a lot of open-ended questions as generally people do not like to type out the answers. Close-ended questions they can click on a button. Companies can design the close-ended questions in such a way that in-depth analysis can be extracted as in open-ended questions by providing rankings scales.
 - **Be Persistent.** You must take permission to conduct the survey before sending the survey.
 - **Be Patient.** When the businesses decide and conduct a survey then get impatient when they can't get the results right away. So patience is required.

5.6 Online Retailing

Due to increase in the impact of internet. improvement in the security measures, convenience and number of choices attracted more and more consumers to shop online. In fact, the past trends and surveys shows that online shopping is gaining more popularity due to these factors. Online shopping is an easy way for comparison of different products on the basis of their features and specifications without going from shop to shop

The two important models of e-retailing marketplace are

- Online retailing

➤ Online Auctions

5.7 Summary

These are the trends in the e-commerce which were earlier not possible. It not only changes how to do business but also adds new trends of doing business. B2B commerce is revolution in the e-commerce and provides a platform to the businesses where this world become a global village. Internet has changed the way of retailing and marketing the products.

5.8 Answer to check your progress

1. The supply chain concept originated in what discipline?

- a) **marketing**
- b) operations
- c) logistics
- d) production

2. Which of the following are not key attributes of supply chain management?

- a) inventory control
- b) leveraging technology
- c) **customer power**
- d) all are key attributes

3. Which of the following are advantages normally associated with B2B e-commerce?

- a) shorter cycle times
- b) reduction in costs
- c) reaches wider audiences
- d) **all of the above**

Which form of e-commerce currently accounts for about 97% of all e-commerce revenues?

- a) **B2B**
- b) B2C
- c) C2B
- D) C2C

5.9 References / Suggested Readings

1. Kalakota, Ravi and Whinston, Andrew B. -Electronic Commerce – A Manager's Guidell, Pearson Education, Inc.

2. Kalakota, Ravi and Whinston, Andrew B. -Frontiers of Electronic Commerce, Pearson Education, Inc.

5.10 Model Question Paper

1. Explain the B2B model of E-commerce.
2. Discuss the advantages and key technologies of E-commerce.
3. Explain the concept of e-procurement.
4. What do you mean by Supply chain Coordination. Explain
5. What is Bullwhip effect. Explain its causes.
6. What are the effects of lack of coordination in the supply chain on the performance of the company.
7. Discuss the online Market Research in detail.

6 MOBILE COMMERCE

Structure

6.1 Objectives

6.2 Introduction

6.3 Applications of Mobile Commerce

6.4 Mobile Commerce advantages and disadvantages

6.5 Mobile Commerce Framework

6.6 Internet Advertising

6.7 Summary

6.8 Glossary

6.9 Answer to check your progress

6.10 References / Suggested Readings

6.11 Model Question Paper

6.1 Objectives

After studying this chapter the students will be aware about the most revolutionary handheld technology-*m commerce*. The objective of this chapter is to familiarize the students with the meaning and concept of mobile commerce. The advantages and applications of technology and the future scope will also be discussed.

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6.2 Introduction

Evolution of computer was considered the great technical achievement where a machine was made to work with tremendous speed, accuracy and memory. But this was not end rather it was beginning of miraculous technological inventions. Internet greatly enhanced the services computer can provide. The bulky computer system were replaced with the easy to carry compact laptops then came the device which completely turned the way we can use internet is the *mobile phones*.

Mobile phones are portable, easy to carry cellular system which can be used without physical connection with the network. Mobile commerce or m-commerce is the technology that allows us to use our mobile phones for various commercial purposes like buying and selling of goods and services. It also eliminates the need of finding plug-ins to activate internet.

The phrase mobile commerce was originally coined in 1997 by Kevin Duffey at the launch of the Global Mobile Commerce Forum, to mean "the delivery of electronic commerce capabilities directly into the consumer's hand, anywhere, via wireless technology.

DEFINITION

"Mobile Commerce is the use of information technologies and communication technologies for the purpose of mobile integration of different value chains an business processes, and for the purpose of management of business relationships."

- Webagency, 2001

Mobile Commerce Development has become a crucial element for success today. Mobile websites and m-commerce apps provide customers with the ability to shop anytime, and anywhere. It's so easy to use that most people prefer to use m-commerce instead of e-commerce.

Customers enjoy the convenience of doing shopping, business transactions etc in handy way on their mobiles whereas it brings equal advantage to entrepreneur's to enhance their business.

Mobile commerce apps are not mere presence of business online, but opportunities for business expansion that includes tapping the huge mobile user base and getting an edge over the competition.

Mobile commerce includes usage of mobile phones and other personal digital assistants (PDAs) which use the technology based on the Wireless Application Protocol (WAP).

6.3 APPLICATIONS OF MOBILE COMMERCE

Following are important areas of application of m-commerce:

Mobile ticketing

Mobile ticketing is blessing for users provided by m-commerce. Now booking a ticket is just a click away. Users can book their air tickets, train tickets and movie tickets etc by using either simple applications or by accessing WAP portals of various Travel agents or direct service providers. Users are then able to use these tickets by showing their phones at the venue. This saves lots of time as user is not required to visit booking station and then wait in long queue. Apart from convenient booking it provides advantage of knowing the status of tickets and easy cancellation as well.

Mobile vouchers, coupons and loyalty cards

Mobile ticketing technology can also be used for the distribution of vouchers, coupons and loyalty cards. The voucher, coupon, or loyalty card is represented by a virtual token that is sent to the mobile phone. These can be redeemed for shopping thus provides good gifting option and also helps companies to promote their sales and develop bonding with their customers.

Content purchase and delivery

Currently, mobile content purchase and delivery mainly consists of the sale of ring-tones, wallpapers, and games for mobile phones. The convergence of mobile phones, mp3 players and video players into a single device will result in an increase in the purchase and delivery of full-length music tracks and video. Download speeds, if increased to 4G levels, will make it possible to buy a movie on a mobile device in a couple of seconds, while on the go.

Location-based services

Mobile commerce proved to be quite useful in providing location based services. Using the current location of user it provides services like local maps, offers, weather etc. It's very useful for people who keep travelling to new places. It acts as local guide providing reliable information about the place.

Information services

A wide variety of information services can be delivered to mobile phone users in much the same way as it is delivered to PCs. These services include:

- news services
- stock data
- sports results
- financial records
- traffic data and information

Mobile Banking

Banks and other financial institutions are exploring the use of mobile commerce to allow their customers to not only access account information, but also make transactions, e.g. purchasing stocks, remitting money, via mobile phones and other mobile equipment. This service is often referred to as Mobile Banking or M-Banking. M-Banking is one of the biggest advantages of m-commerce for customers; they can use banking services anytime, anywhere even when the banks are closed.

Mobile brokerage

Stock market services offered via mobile devices have also become more popular and are known as Mobile Brokerage. Irrespective of their physical locations people can now act timely as per current market scenario which is available on their phones.

Purchasing

Mobile purchase allows customers to shop online at any time in any location. Customers can browse and order products while using a cheap, secure payment method. Instead of using paper catalogues, retailers can send customers a list of products that the customer would be interested in, directly to their mobile device or consumers can visit a mobile version of a retailer's ecommerce site. Additionally, retailers will also be able to track customers at all times and notify them of discounts at local stores that the customer would be interested in.

Mobile marketing and advertising

Mobile marketing is an emerging concept, but the speed with which it's growing its roots is remarkable. Mobile marketing is highly responsive sort of marketing campaign. And almost all brands are getting higher campaign response rates. Corporations are now using m-commerce to expand everything from services to marketing and advertisement. Although there are currently very few regulations on the use and abuses of mobile commerce, this will change in the next few years. With the increased use of m-commerce comes increased security. Cell phone companies are now spending more money to protect their customers and their information from online intrusions and hackers.

6.4 MOBILE COMMERCE ADVANTAGES AND DISADVANTAGES

Following are advantages of m-commerce:

1. **Instant Contact:** M-commerce provides features like live chat, one click call, toll free calling etc which makes it easier for customers to contact vendor with ease. Now the trend of mailing and then waiting for response is not the scenario.
2. **Consumer deals:** The competition among various businessmen gives advantage to consumers. As more users use m-commerce, there are lots of companies use m-commerce site to reach them by giving different and better deals in comparison of their competitor.
3. **Savings:** As companies reach the consumers directly through m-commerce so the goods reach the consumers at cheaper prices. Moreover as consumers are not required to visit stores physically so it saves both time and money.
4. **Convenience:** The small size and ease of use of mobile receivers, coupled with freedom from problems caused by infrastructure, makes for a higher degree of user convenience. M-commerce allows consumers to shop while travelling, waiting for someone.

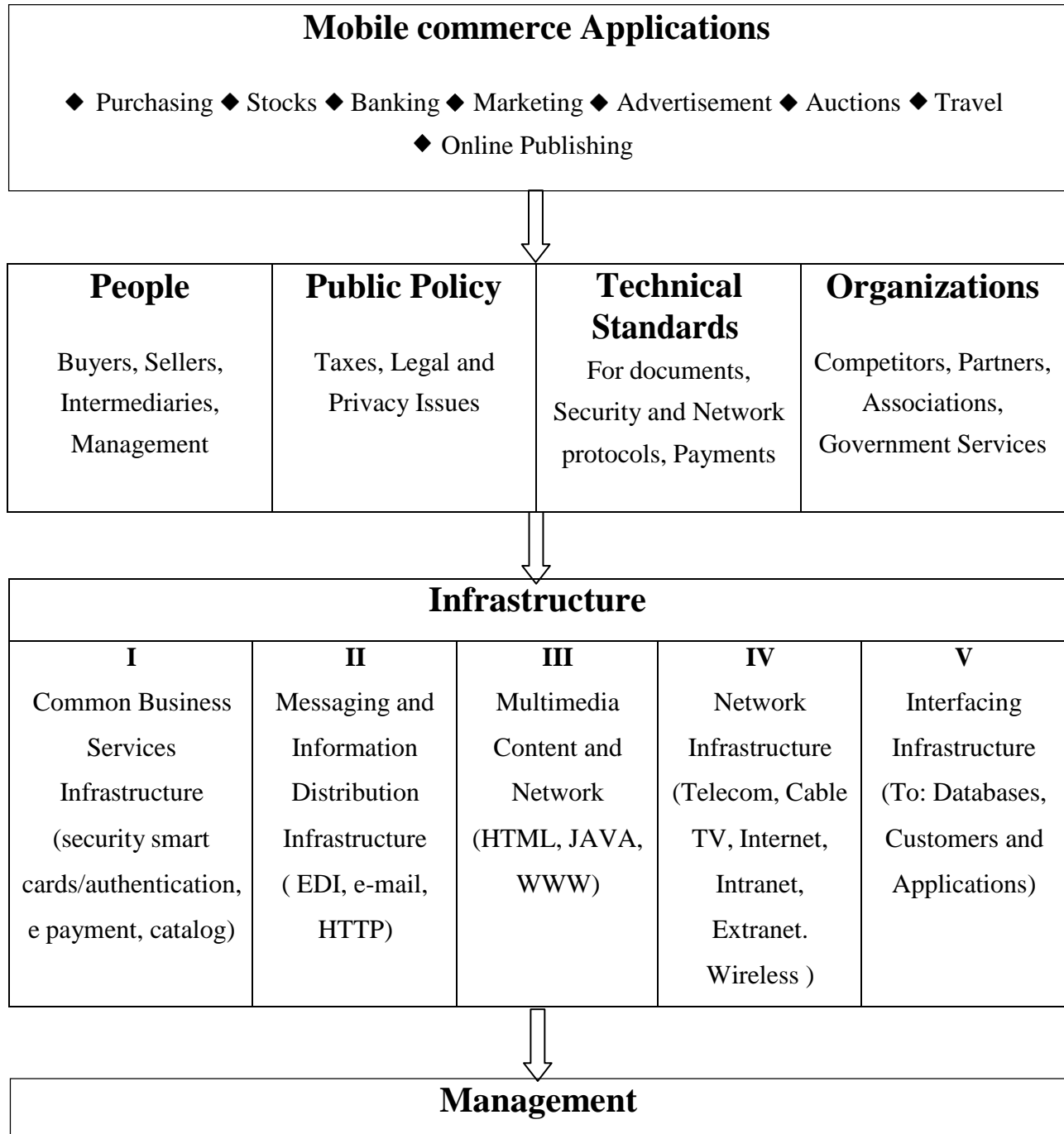
5. **E Wallet:** Analysts believe that use of easy many is one of the reasons for success of m-commerce. Mobile phones work as electronic wallets for easy payments.
6. **Diversity:** With m-commerce consumer is not limited to local stores to choose product from instead mobile commerce has made international products available in hand of consumers.
7. **Ease of use:** Mobile commerce is very use to use. Consumer don't need any skill to use m-commerce not even need to use any browsers as it is in case of e-commerce thus making it possible for everyone to use.
8. **Customization:** Retailers can use it as per their convenience. The application for m-commerce can be developed as per need keeping in mind the target users. So retailers can get application developed the way it will benefit their business.

Disadvantages of mobile commerce

Every coin has two sides so do m-commerce. M-commerce is a young service which is still growing rapidly. Though not much but m-commerce do have few disadvantages too which are listed below:

1. **Small Display:** Mobile phones have small screens as compared to laptops and personal computers therefore the counter provided by m commerce for shopping is not as clear as provided by e-commerce. Presently, mobile commerce applications have particular restrictions associated to graphics & functionalities because it is a new technology.
2. **Internet Speed:** The speed of internet is one of the driving forces for this new technology. If users don't have access to reasonable speed of internet then whole process can turn out to be wastage of time.
3. **Hacking:** This is one of the major areas of concern using m-commerce. Information transferred through wireless networks have high risk of getting hacked and misused.
4. **Cost of setup:** Developing the m-commerce software can be expensive so not all retails opt for this.

6.5 MOBILE COMMERCE FRAMEWORK



6.6 INTERNET ADVERTISING

The Internet is a global network connecting millions of computers. More than 100 countries are linked into exchanges of data, news and opinions. Internet is the place where we can target millions of users easily. It provides the best platform for advertisement. Internet advertising is a form of marketing and advertising which uses the Internet to deliver promotional marketing messages to consumers. It includes email marketing, search engine marketing (SEM), social media marketing, many types of display advertising (including web banner advertising), and mobile advertising. Internet advertising is one of the most effective ways for businesses of all sizes to expand their reach, find new customers, and diversify their revenue streams.

A major advantage of online advertising is the quick promotion of product information without geographical boundary limits. A major challenge is the evolving field of interactive advertising, which poses new challenges for online advertisers.

Online advertisements are purchased through one of the following common vehicles:

- Cost per Thousand (CPM): Advertisers pay when their messages are exposed to specific audiences.
- Cost per Click (CPC): Advertisers pay every time a user clicks on their ads.
- Cost per Action (CPA): Advertisers only pay when a specific action (generally a purchase) is performed.

Examples of online advertising include banner ads, search engine results pages, social networking ads, email spam, online classified ads, pop-ups, contextual ads and spyware.

6.6 SUMMARY

As m-commerce applications and wireless devices are evolving rapidly, one will take forward the other one towards empowering innovation, versatility and power in them. There are number of business opportunities and grand challenges provided by wireless technology for realizing the strength of m-commerce in this internet era. Present usage of m-commerce is considered to be the tip of iceberg. This technology is growing rapidly providing convenience to users. Users welcome services and accept the changes whole heartedly giving scope to mobile commerce to grow. It is expected that future of mobile commerce is bright in coming time.

6.7 Glossary

- **E-commerce** (electronic commerce or EC) is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the Internet.
- **Cost Per Click (CPC)** is the amount paid by an advertiser to a search engine or other Internet publishers for every time an advertisement viewer makes a click on a link in an advertisement. This click transfers the viewer to the advertiser's web site.
- **E-commerce** (electronic commerce or EC) is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the Internet.
- **M-commerce (mobile commerce)** is the buying and selling of goods and services through wireless handheld devices such as cellular telephone and personal digital assistants (PDAs).
- **Mobile Marketing** any marketing activity conducted through a ubiquitous network to which consumers are constantly connected using a personal mobile device".
- **Wireless Application Protocol (WAP)** is a technical standard for accessing information over a mobile wireless network. A WAP browser is a web browser for mobile devices such as mobile phones that uses the protocol.
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6.8 Answer to check your progress

1. In B2B mobile commerce, the business is conducted between

- | | |
|-----------------------------------------|------------------------------|
| a. two companies over the internet | b. two persons over internet |
| c. business to government over internet | d. none of the above |

Answer: a

2. Mobile commerce refers to the use of internet and the web to transact

- | | |
|-------------|--------------|
| a. sales | b. business |
| c. purchase | d. documents |

Answer: b

3. Emerging technologies will continue to influence consumer behavior in future by enabling

- a. Newspapers
- b. Measurement
- c. Consumer centricity
- d. Relevance filtering

Answer: c

4. Which of the following is not a standard in online advertising?

- a. Dynamic banners
- b. Signal
- c. Banners
- d. Referrals links

Answer: b

5. Which of the following are online advertising methods through which advertisers attempt to drive traffic to internet sites?

- a. CPM
- b. CPC
- c. SEM
- d. SEO

Answer: d

6. Paid advertising based on per click model is called

- a. Sponsored search engine advertising
- b. Source advertising
- c. Feedback
- d. Search engine optimizing

Answer: a

7. Internet advertising has weaknesses because

- a. It is not easy to track
- b. It does not deliver good targeted reach
- c. It is not emotive
- d. It can be intrusive

Answer: c

6.9 References / Suggested Readings

https://en.wikipedia.org/wiki/Mobile_commerce

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6.10 Terminals and Model Question

- Q1. Discuss various applications of mobile commerce.
- Q2. What is difference between e-commerce and m-commerce?
- Q3. What are unique features of m-commerce? Discuss
- Q4. What are key dimensions of mobile commerce security?
- Q5. List various advantages and disadvantages of mobile commerce.

7. Word Processing with Microsoft Word

Structure

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7.0 Objectives

After reading this chapter, the student will be able to understand

- How to create documents using the word.
- How to do editing / formatting the document files
- How to use advanced features of MS Word

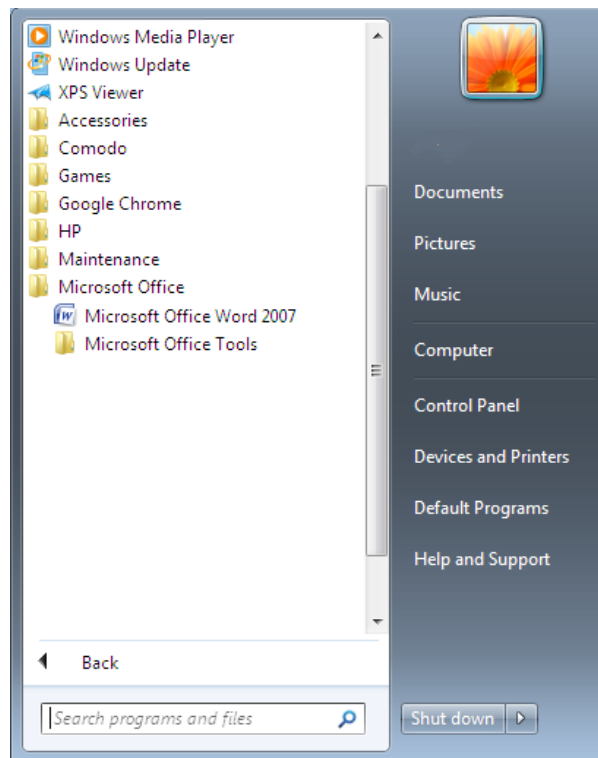
7.1 Introduction to MSWord

Microsoft Word is a feature packed word processor and was previously considered as the main program in Microsoft office. Its proprietary DOC format is considered as a standard, although new MS Word can also use a new XML-based optimized format called .DOCX. It is used to create and print text documents that might otherwise be prepared on a typewriter. The key advantage of a word processor is its ability to make changes easily, such as correcting spelling, adding, deleting, formatting and relocating text. Once created, the document can be printed quickly and accurately saved for later modifications. In fact, the document that you are reading now was created using only a small amount of the many features available in Microsoft Word. Most Microsoft programs allow a minimum of 3 different ways to accomplish any single task. It isn't necessary for you to learn all three. Simply pick the method, which best fits you.

7.2 Opening Microsoft Word

Before you get started with Microsoft Word (commonly referred to as MS Word), you will need to locate and open it on the computer. It may be on your desktop having its icon as shortcut. There are following steps to start MS-word.

- a) Click on Start button of Windows operating system
- b) Go to _All Programs
- c) You will see the folder named _Microsoft Office
- d) Click on the folder and then click on Microsoft Word




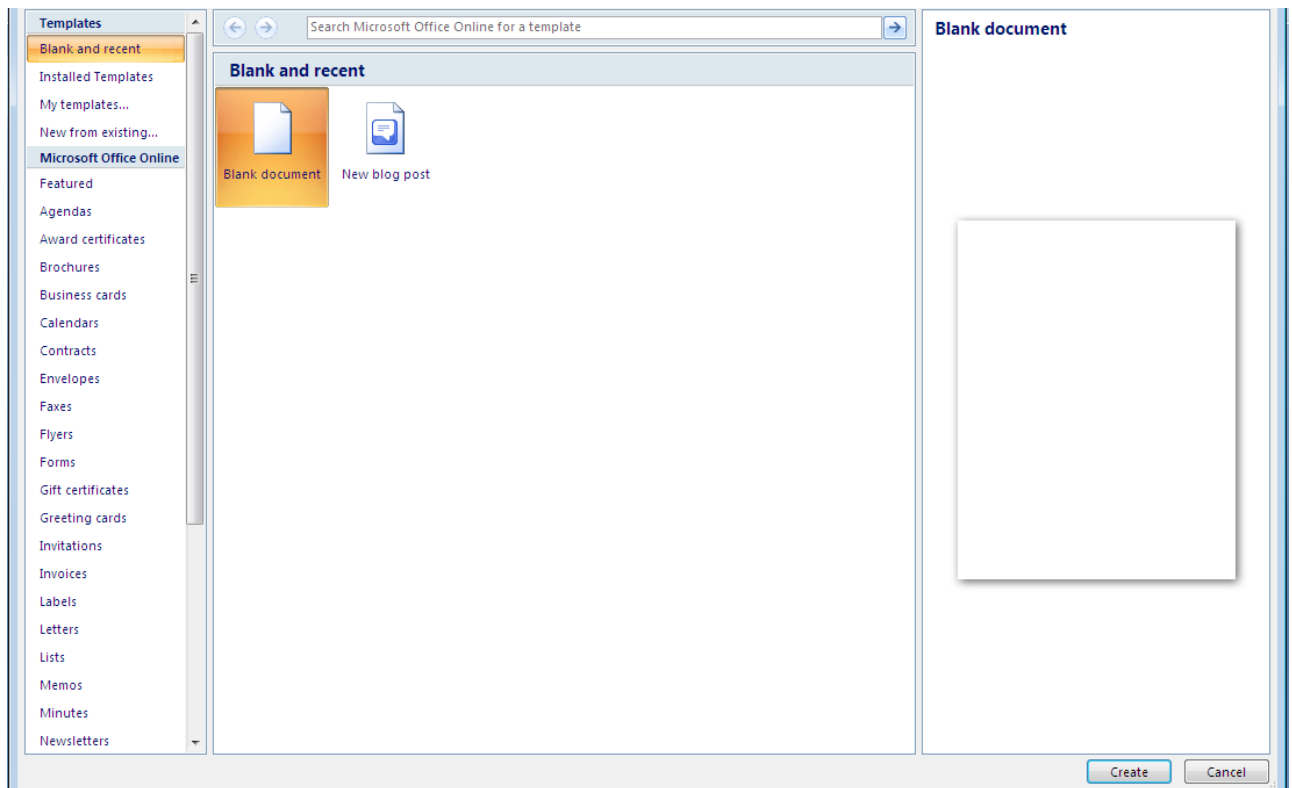
7.3 Creating a New Document File

In this activity you create a document file and save it by assigning a name of your choice. If you want to create a new document then the steps are as follows:

- Start Microsoft word application from the Programs folder
- The application by default opens with a blank sheet.
- The user can type the content on the blank page.

The user can open a new Microsoft word file using Ctrl+N command. He can also open the file using the following steps:

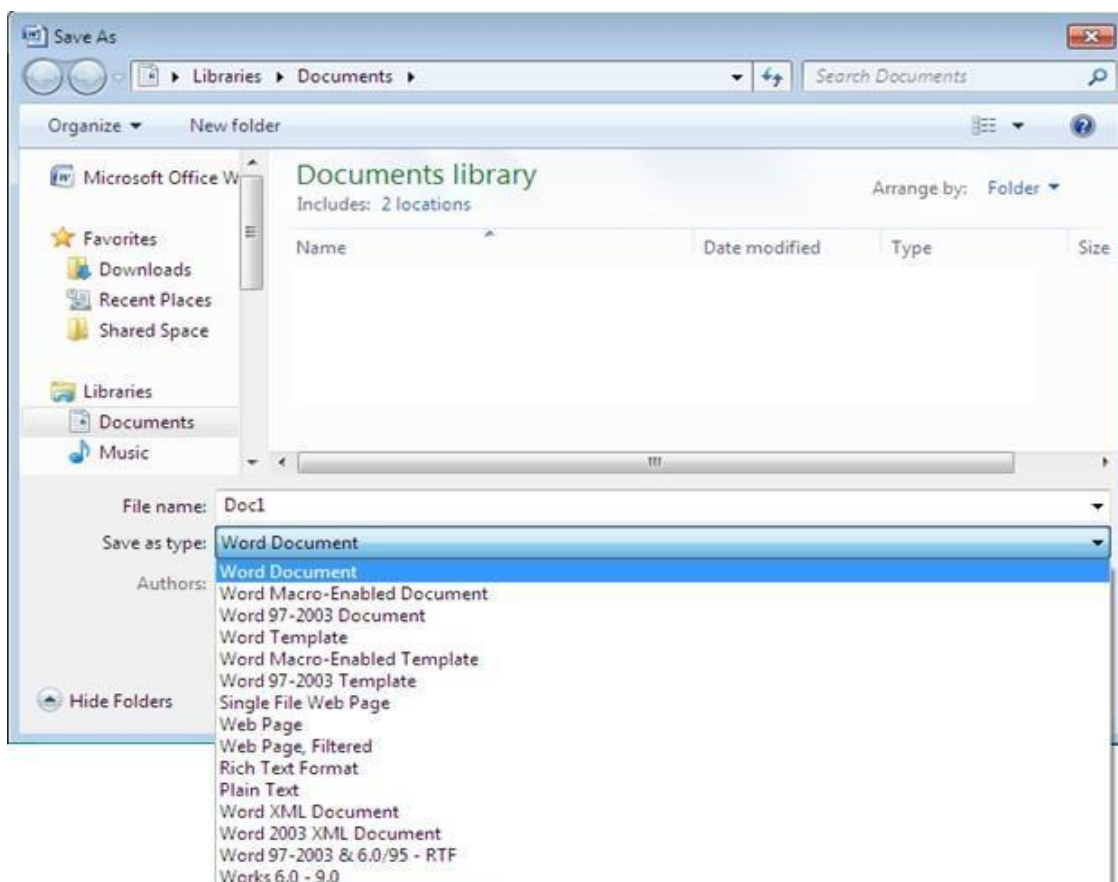
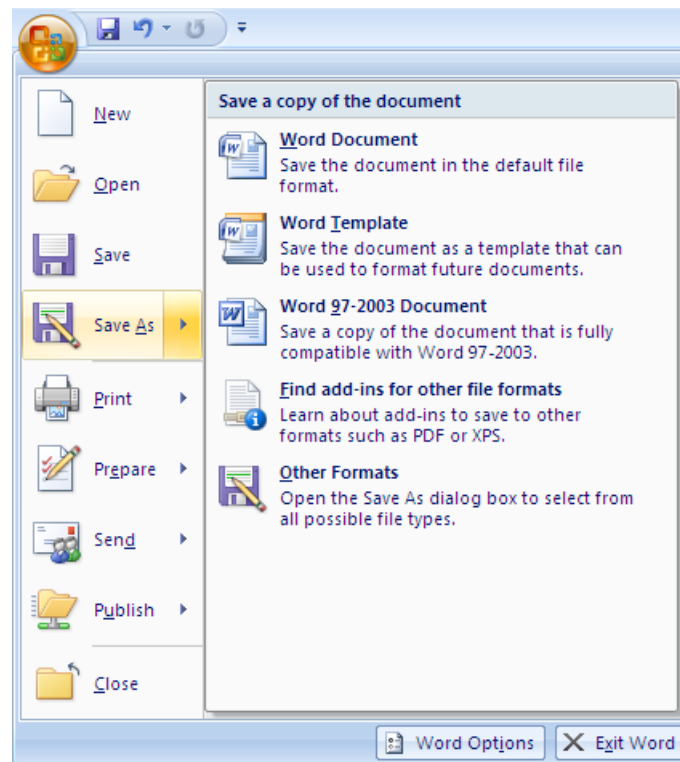
- Click on MSOffice Button  located on the top left of the program
- Click on '_New' document link
- The new window opens with various options. Click on '_Create' and the new blank document opens.



The usage of MS Word is not limited to typing documents only. It is also used for preparing agendas, business cards, brochures etc with predefined templates. The user can also design his or her own templates for repeated jobs.

7.3.1 Saving the document

Once the document is created, it needs to be stored for future reference or editing or use. To save the document, click on MS Office button located on the top left of the program and click _Save or _Save As. The new window asks for naming the file to be saved. The file can be saved in various formats as shown in the figures below:

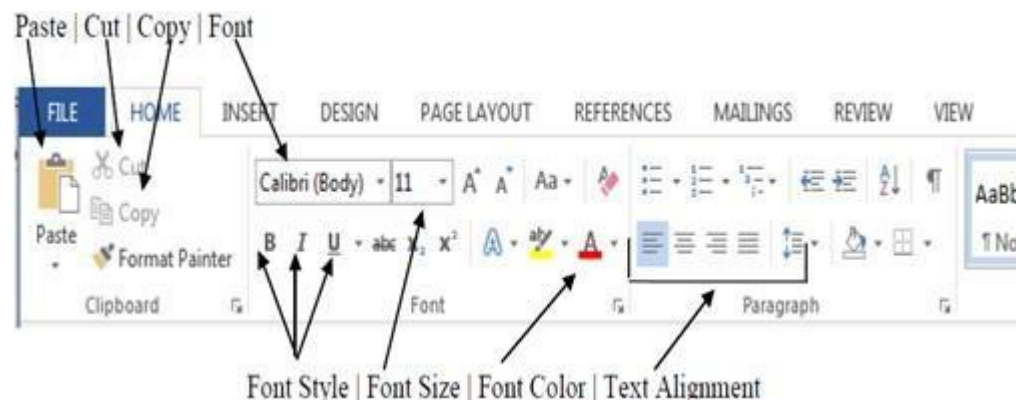


Once the document is saved and edited later, the user should click 'Save' option to save the document after its editing. The user should avoid the use of 'Save As' option otherwise the program will create a new file every time the option is clicked. The program saves the file

with .docx file extension. But the user can change it by choosing the required extension from the drop down list of file extensions.

7.3.2 Editing the document

Once the document is written and saved, it can be edited. The following are some of the editing functions available in the MS Word application.



Cut / Copy & Paste: This ‘Cut’ function is used to move the text from one place to another place within the file or from one file to another file. The ‘Copy’ function is used to create the copy of the text and put it in another place. This avoids the time of re-typing the text and the settings and formatting of the text also remains unchanged. The function is used as under:

- Select the text which is to be cut or copied.
- Once the text is selected, the icons of ‘Cut’ and ‘Copy’ will get activate/enable. Click on the relevant icon and move to the place where text is to be pasted.
- Left click the place for placing the cursor where text is to be pasted.
- Now click on ‘Paste’ icon of the MS Word and you will see the text gets pasted on the new place.

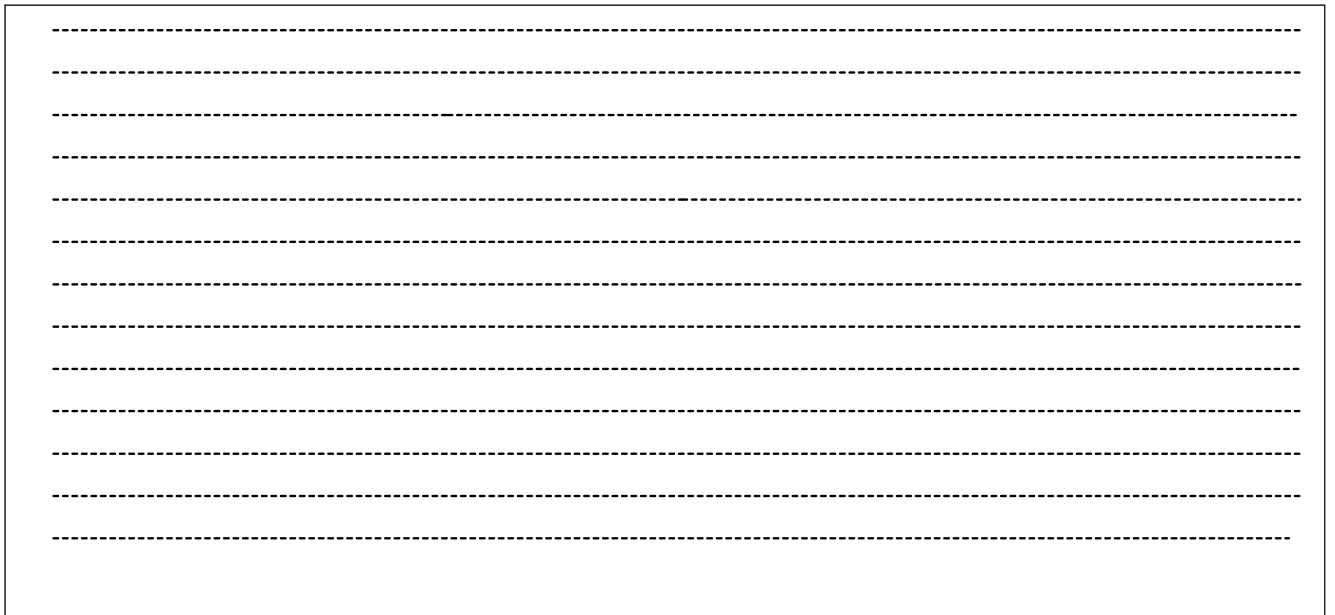
However, shortcut keys can also be used for these functions. Ctrl+X is shortcut key for cut function, Ctrl+C is the copy function and Ctrl +P is the paste function.

- Make your selection, press the right mouse button and select –Copy, position your cursor to where you want your copy to appear, and then press the right mouse button and select —Pastell.

The Repeat feature enables you to repeat an operation such as typing, formatting, inserting, and so on. The Repeat button looks like a U-turn arrow, and appears in place of the Redo button on the toolbar, when available

Activity A

[illegible]

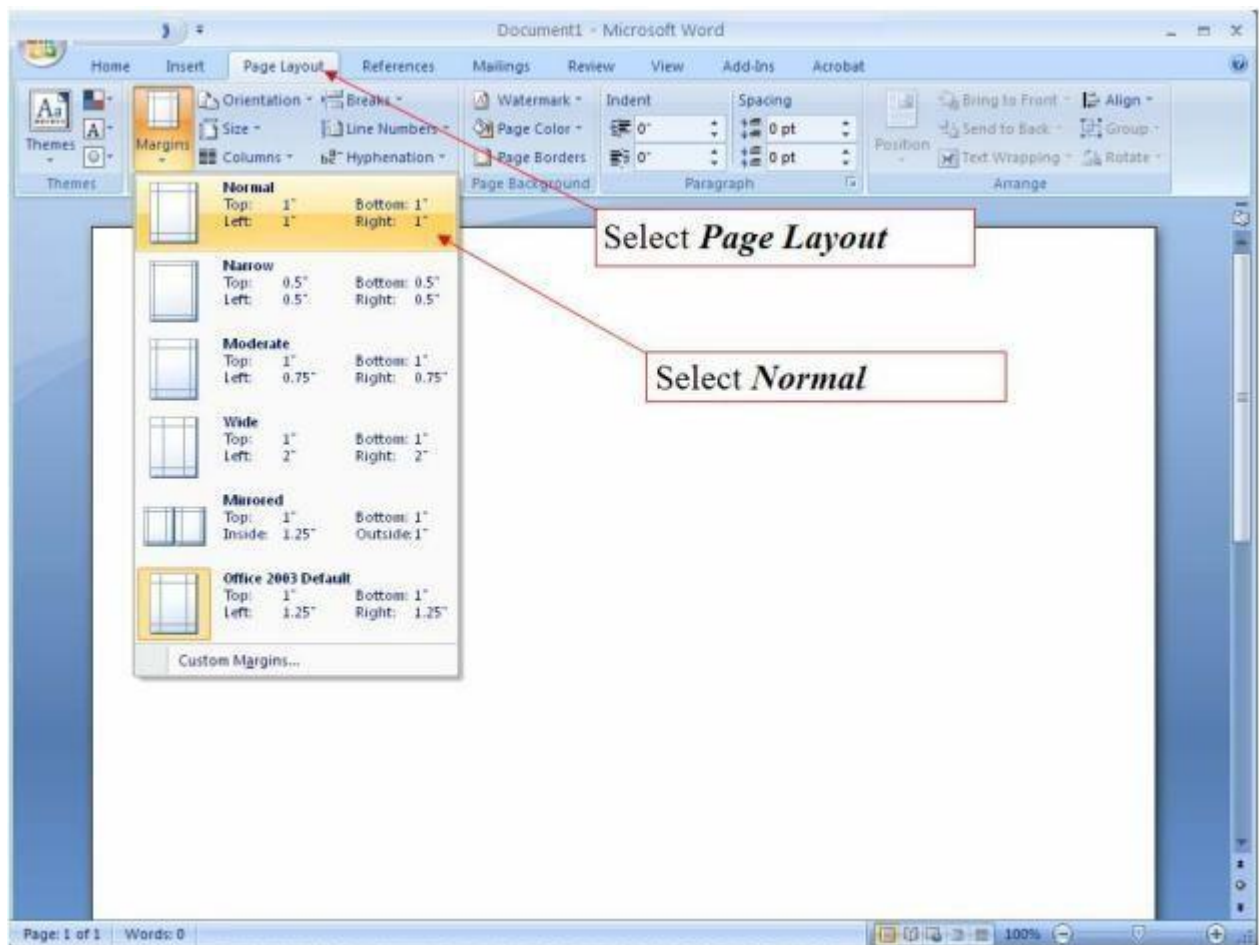


7.3.3 Formatting the document

Formatting is one of the most important steps in making the document presentable. Various formatting functions are available in MS Word program.

Page Setup and Margin Formatting: The screenshot below displays the menu path to change the margins in a paper. All margins, by default, are set at 1 inch.

1. From the menu tab at the top of Word, select Page Layout.
2. In the Page Layout menu, the margins button will allow you to change the margins to the correct format.
3. Select Normal to set all margins to one inch or use ‘_Custom Margins’ to customize your margins according to the requirements.

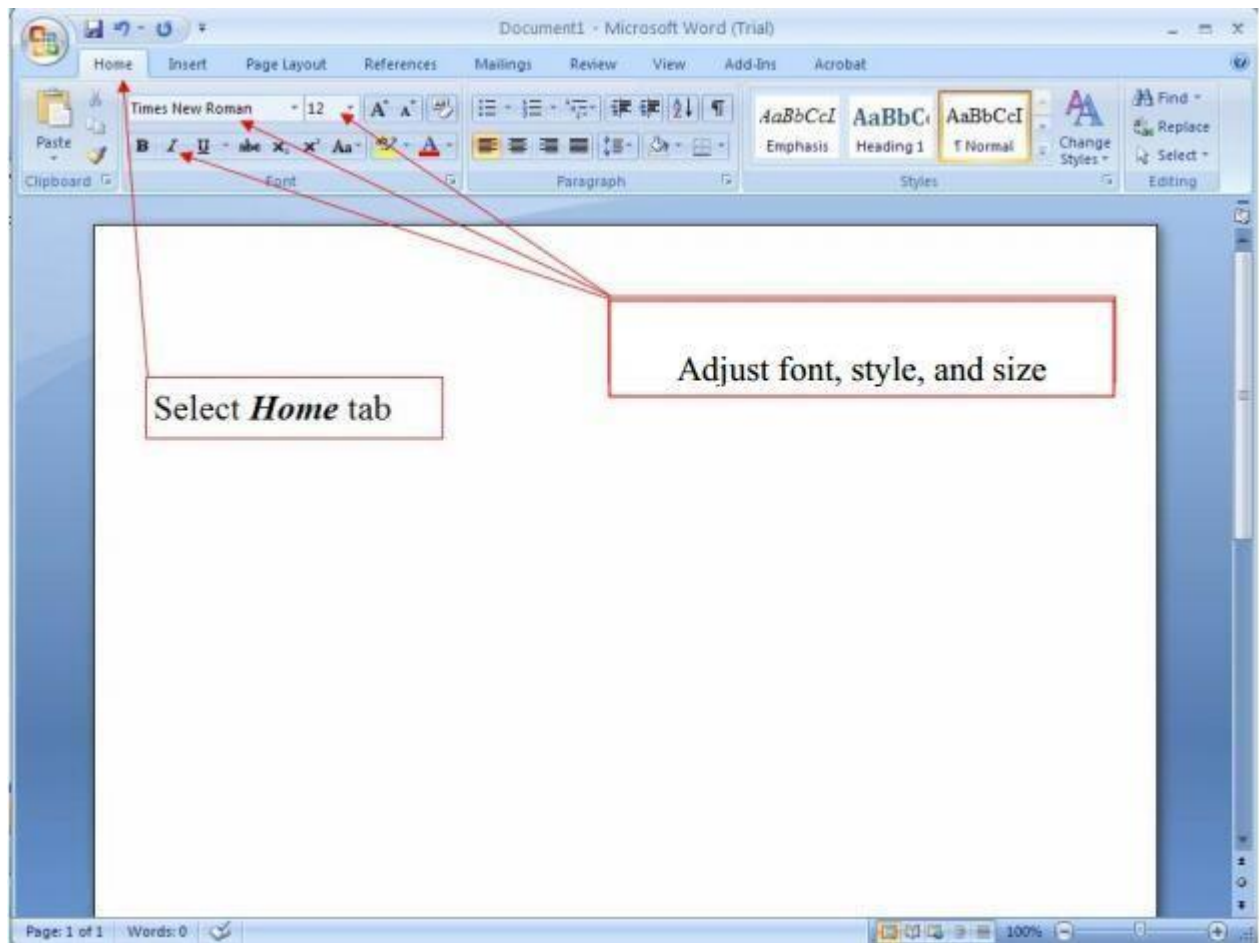


Formatting Font

The screenshot below displays the menu path to change the font. Use a traditional font such as

Times New Roman or Courier in 12-point size or any other size.

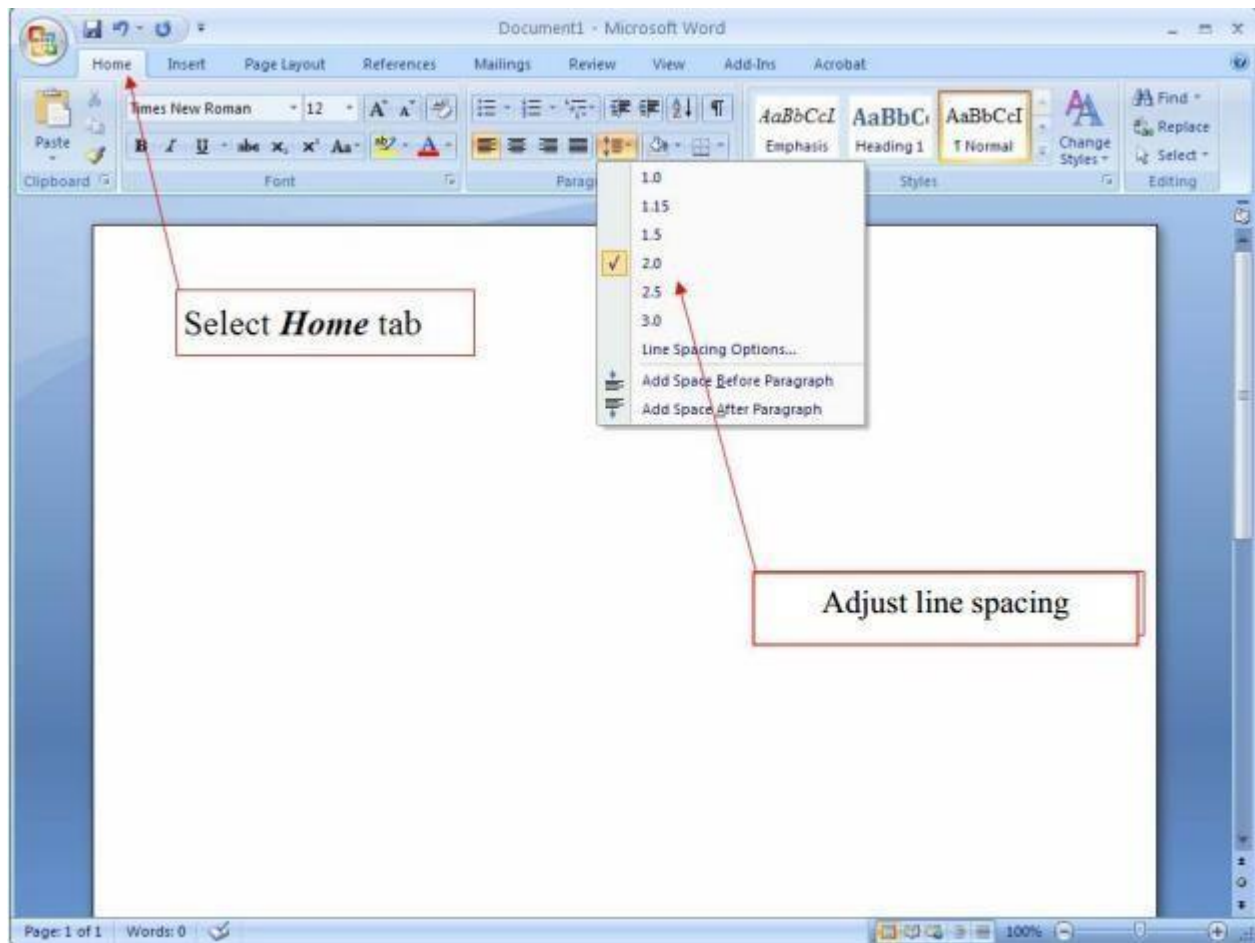
1. Select the Home tab.
2. From the Font menu, you may adjust the font, style, and size to the correct format.



Formatting Spacing

The standard spacing format for a paper is double-spacing. Double-space the entire document, including the reference page. The screenshot below displays the menu path to change the spacing format to double.

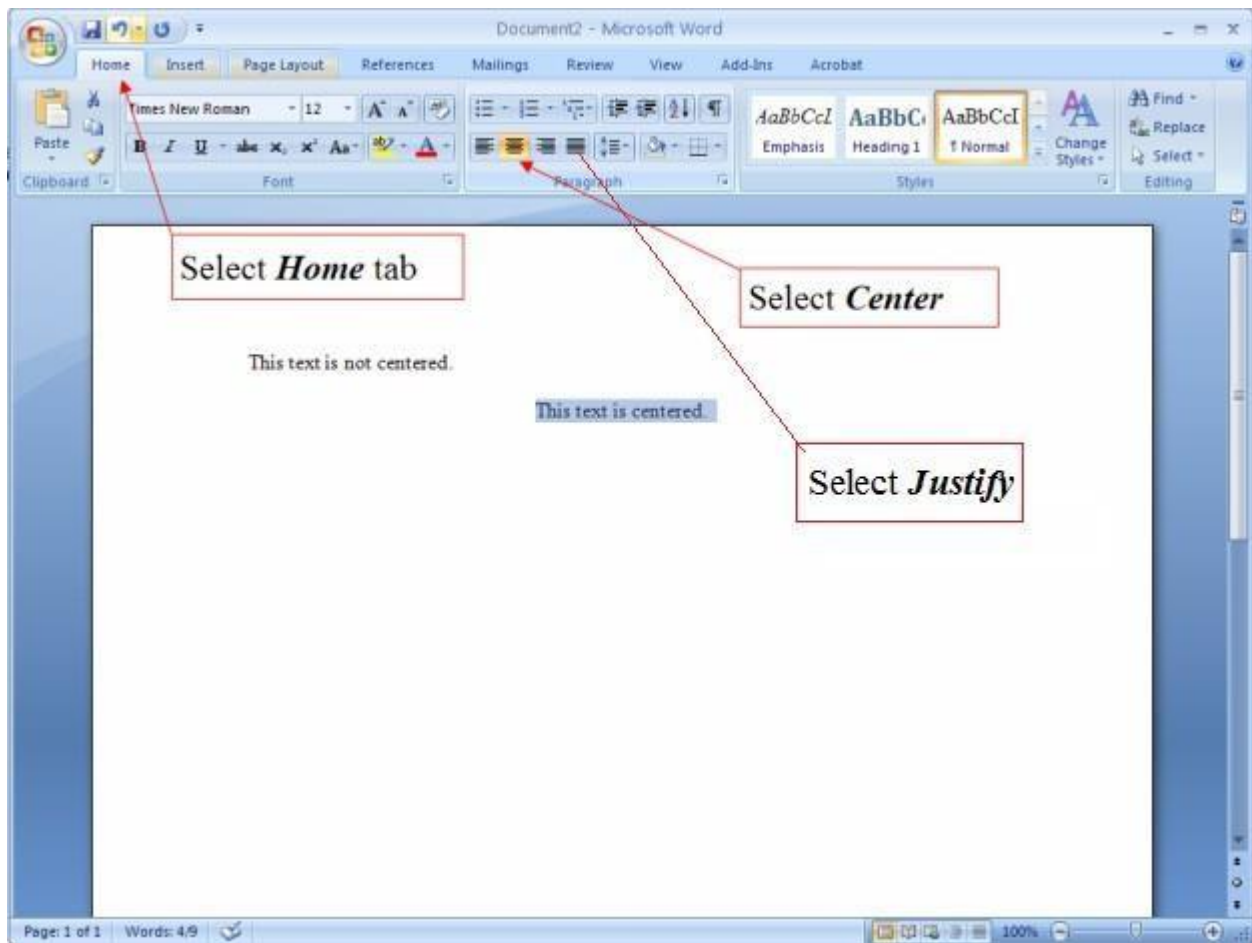
1. Select the Home tab.
2. From the Paragraph menu, you may adjust the line spacing from the Line Spacing dropdown menu.



Centering or Justifying Text

The screenshot below is an example of text that is centered and that is not centered. In order to center text highlight the text that requires centering and select the icon in the formatting toolbar as shown.

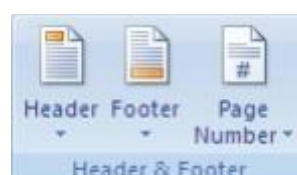
1. Select the Home tab.
2. Highlight the text to be centered.
3. Click the button to center the text on the Paragraph toolbar.



The Justify command is used to justify the text at the both margins. The rows of the text will be even at the right margin as the word program automatically adjusts the space in between the words.

Page Headers/Footers and Page Numbers

Page headers/footers are used to mark each page with topic name or file name. Identify each page with the first two or three words of the title and with the page number placed on the upper right hand corner of the page. Use five spaces between the title and the page number. Do not use your name to identify each page. Footers are used to name title on each page at the bottom of the page. Be sure the font type and size are the same as that used in the document.



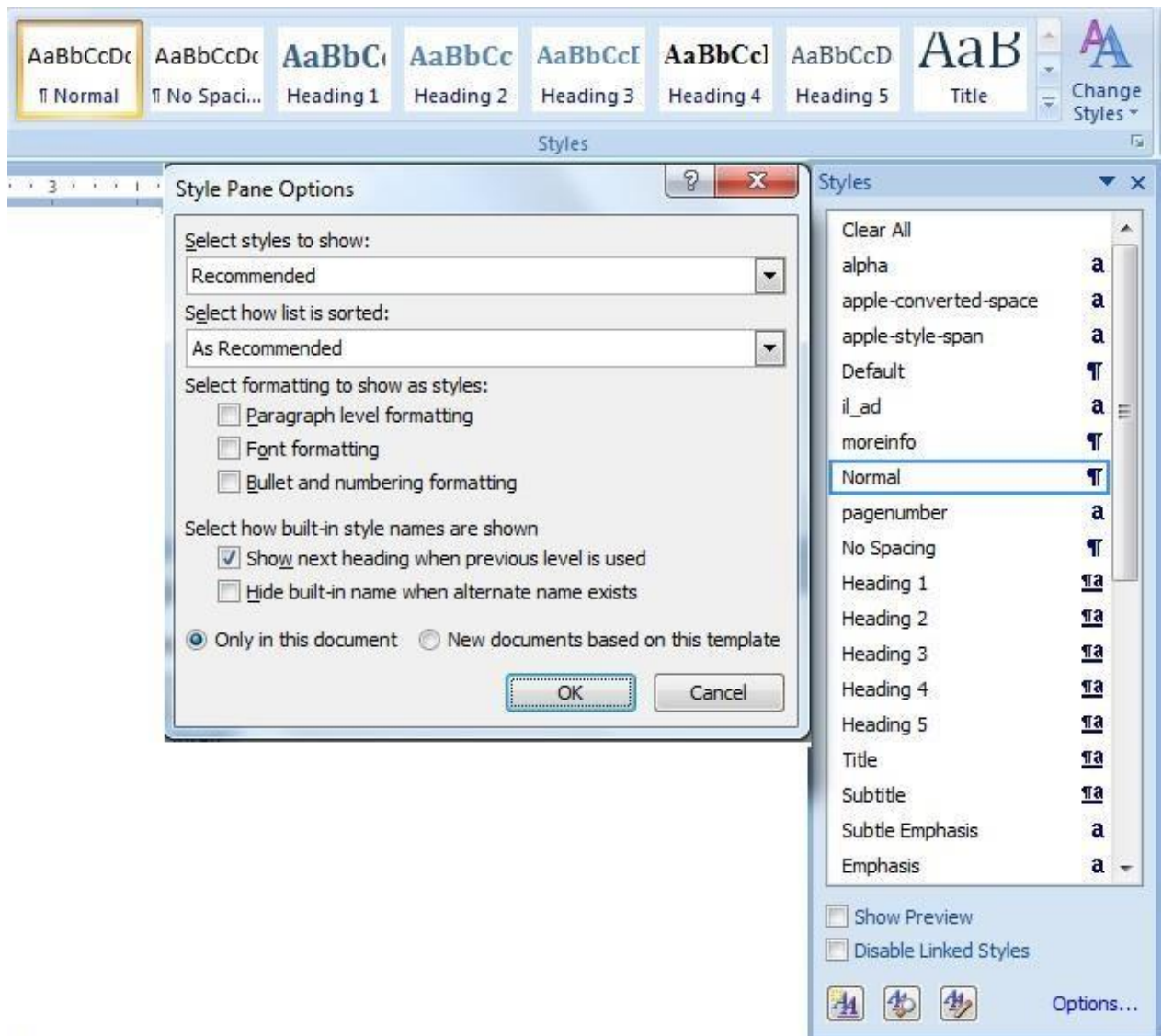
1. Click on the Insert tab.
2. Click on the Header tab.

3. Click on the Blankheader tab from the drop-down menu. This will put the cursor inside the header.
4. Click on the Page Numbertab.
5. Place the cursor on the drop-down menu over Top of Page to bring up another drop-down menu.
6. Click on Plain Number 3 on the drop-down menu (the third choice). This will place a page number inside the header at the right margin.
7. Type the portion of the title to go in the header and add five spaces. Your header is complete.
8. Click on Close Header and Footer on the far right.

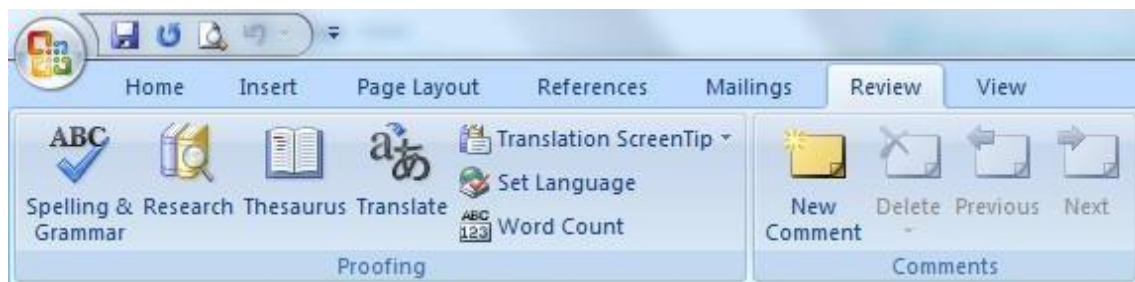
Format Painter: Once you get formata section of text to look the way you want it to, you can copy all of its attributes to another section of text using the **-Format Painter** tool. This tool looks like a paint brush and is located under the Clipboard option of Home Tab. It reduces the repeating document formatting and saves time and energy.




Styles: Like the -Format Painter, -Styles allow you to pass the attributes of one section of text to another. Unique to -Styles, you can create format templates such as -normal or -headline to apply to the appropriate sections of your document. Should you change your mind about what a -headline looks like, simply modify the settings for that -style and all of the sections of text which were formatted as -headline will automatically take on the new settings.



7.4 Review the Document



Turn on or off the red lines that appear under misspelled words

1. On the top-left corner, click the Microsoft Office Button. 
2. At the bottom of the menu, click Word Options.
3. In the Word Options dialog box that appears, click Proofing.
4. In the Exceptions for list, click the currently-open document name.
5. Select or clear the hide spelling errors in this document only and hide grammar errors in this document only check boxes. (To turn on or off automatic spelling and grammar checking for all documents, select All New Documents in the Exceptions for list).
6. Click OK.
7. Return to your document. When lines appear under words, right-click the word, and then make selections from the corrections menu.


Check spelling and grammar

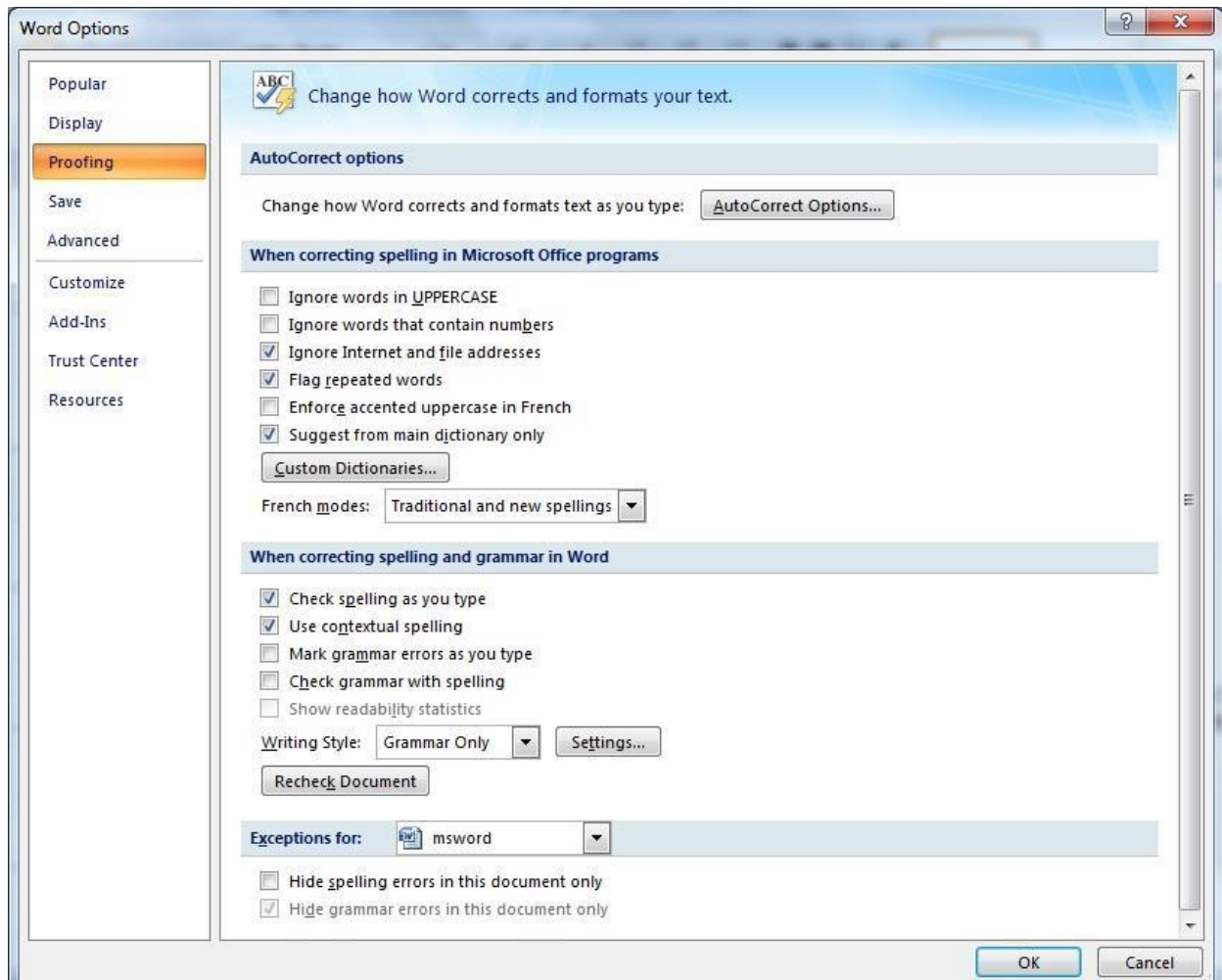
1. Open a Word document that needs to be checked.
2. On the review tab, in the proofing group, click Spelling & Grammar.
3. In the Spelling and Grammar dialog box appears, and the first suggested correction is highlighted.
4. Use the following buttons to check your spelling and grammar:

Ignore Once: Ignore this word once, but check it again.	Ignore All : Ignore this word throughout the document.
Ignore Rule: Ignore this rule throughout the document.	Next Sentence: Check the next sentence.
Add to Dictionary: Include this word in the program's dictionary.	Change: Use the suggested word in the Suggestions pane.
Explain: See an explanation for the suggested change.	Change All: Use the suggested word to change all instances of this word.
Change All: Use the suggested word to change all instances of this word.	AutoCorrect: Use the first suggested word each time you click Auto Correct.
Check grammar: Select to correct the grammar in this document.	Undo: Undo the change. Continue clicking for previous corrections.

Options: The Options dialog box appears. Select how the program corrects spelling and grammar for all documents.	
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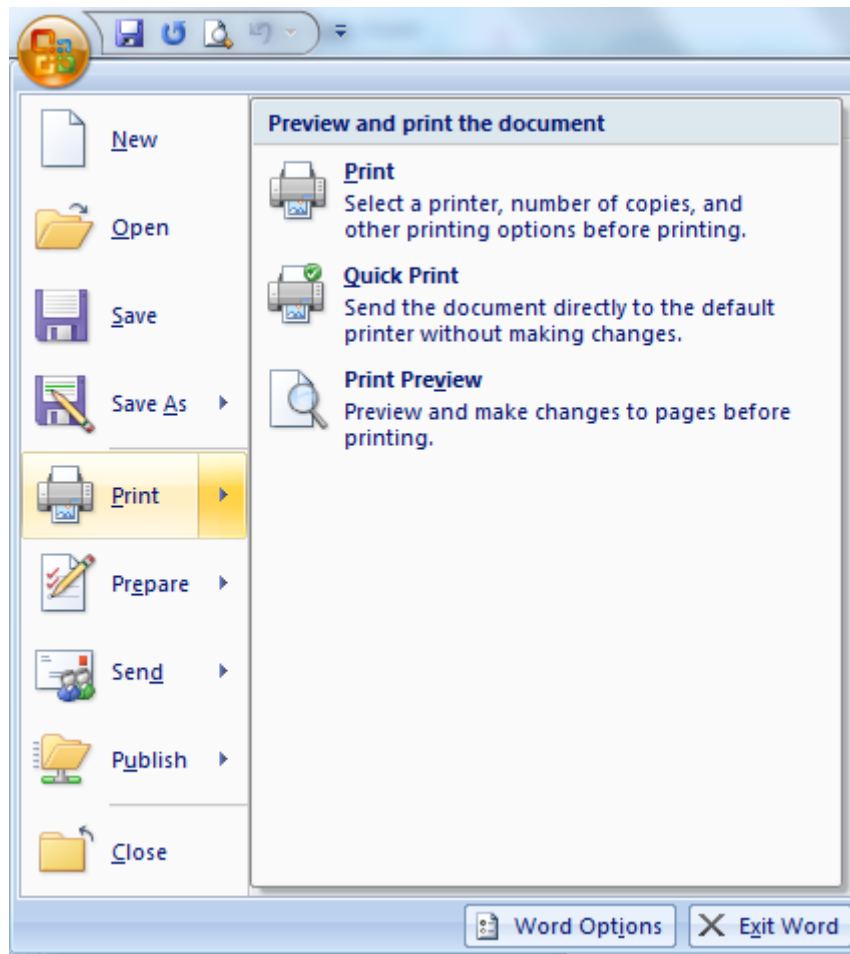
Recheck the words and grammar that you previously checked and chose to ignore

1. Open the document that you want to recheck.
2. On the top-left corner, click the Microsoft Office Button .
3. At the bottom of the menu, click Word Options.
4. In the Word Options dialog box that appears, click Proofing.
5. Under Correcting spelling and grammar in Word, click Recheck Document.
6. To recheck the spelling and grammar, click Yes when you see the following message:
This operation resets the spelling checker and the grammar checker so that Word will recheck words and grammar you previously checked and chose to ignore. Do you want to continue?
7. In the Word Options dialog box, click OK to go back to the document.
8. On the Review tab, in the Proofing group, click Spelling & Grammar.



7.5 Printing the Document File

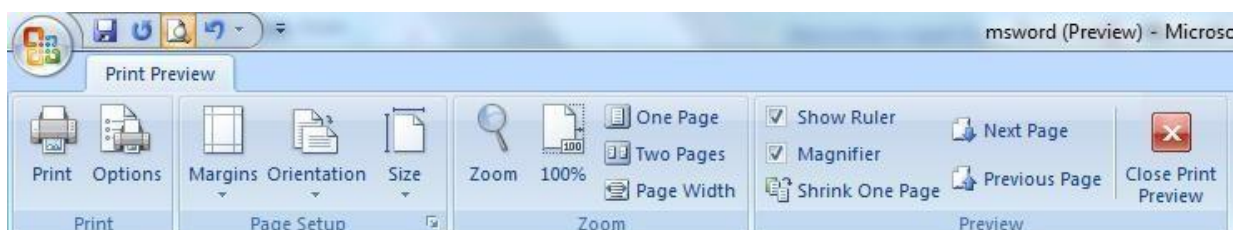
It's really simple to configure printing options in Microsoft Word 2007. We can print an open document by going to office button → Print. There are three options in Print Menu.



1- Print – If you select the first option, which is print, it will give you the print dialog where you can configure different options. We will see that in detail later.

2- Quick Print – If you select quick print, it will just use the default settings and will print the document directly. It will not ask you of any configuration settings. So if you have configured your printing settings, then you can easily print using Quick Print option as it will be faster.

3- Print Preview – Print preview will give you the view of how the document will look like after it has been printed on the paper. So by previewing your document, you can make sure everything is according to what you're expecting.



In print preview, you can change the margins and orientation of the page to be printed. And you can select the paper being used for printing i.e. whether you're using A4 size paper or a letter or an envelope etc.

7.6 Mail Merge

Mail merge is a software function describing the production of multiple (and potentially large numbers of) documents from a single template form and a structured data source. The letter may be sent out to many "recipients" with small changes, such as a change of address or a change in the greeting line. MS Word Mail Merge allows a user to send letters or documents to many people simultaneously; users simply create one document that contains the information that will be the same in each version, and then add placeholders for the information that will be unique to each version. The following steps are followed for sending multiple mails at a time.

- Click Start Mail Merge on the Mailings ribbon and select the type of document you'd like to create.
- Select document type
 1. In the **Mail Merge** task pane, click **Letters**. This will allow you to send letters to a group of people and personalize the results of the letter that each person receives.
 2. Click **Next: Starting document**.

Select the starting document

1. Click one of the following options:
 - **Use the current document:** Use the currently open document as your main document.
 - **Start from a template:** Select one of the ready-to-use mail merge templates.
 - **Start from existing document:** Open an existing document to use as your mail merge main document.
2. In the **Mail Merge** task pane, click **Next: Select recipients**.

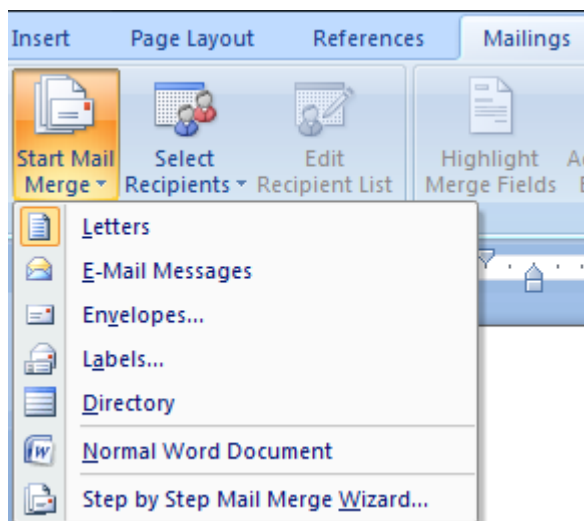
Select recipients

When you open or create a data source by using the Mail Merge Wizard, you are telling Word to use a specific set of variable information for your merge. Use one of the following methods to attach the main document to the data source.

A) Use an existing data source

To use an existing data source, follow these steps:

1. In the **Mail Merge** task pane, click **Use an existing list**.
2. In the **Use an existing list** section, click **Browse**.
3. In the **Select Data Source** dialog box, select the file that contains the variable information that you want to use, and then click **Open**. Word displays the **Mail Merge Recipients** dialog box. You can sort and edit your data if you want to.
4. Click **OK** to return to the main document.
5. Save the main document. When you save the main document at this point, you are also saving the data source and attaching the data source to the main document.
6. Type the name that you want to give to your main document, and then click **Save**.



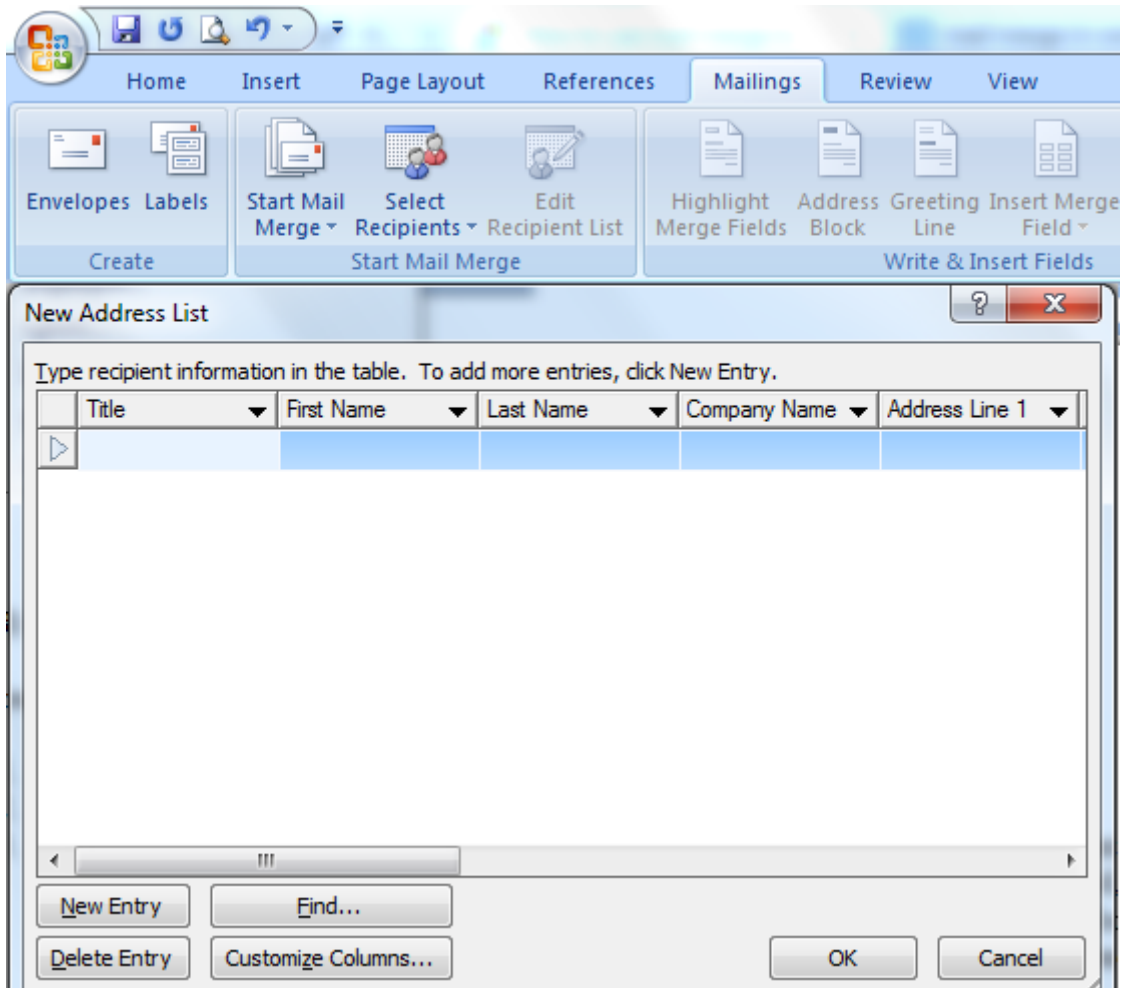
B) Create a database of names and addresses

To create a new database, follow these steps:

1. In the Mail Merge task pane, click Next: Select Recipients.

2. Click Type a new list.
3. Click Create. The New Address List dialog box appears. In this dialog box, enter the address information for each record. If there is no information for a particular field, leave the box blank. By default, Word skips blank fields. Therefore, the merge is not affected if blank entries are in the data form. The set of information in each form makes up one data record.
4. After you type the information for a record, click New Entry to move to the next record.

To delete a record, click Delete Entry. To search for a specific record, click Find Entry. To customize your list, click Customize. In the Customize Address List dialog box, you can add, delete, rename, and reorder the merge fields.
5. In the New Address List dialog box, click OK. In the Save Address List dialog box, type the name that you want to give to your data source in the File name box, and then click Save.
6. In the Mail Merge Recipients dialog box, make any changes that you want, and then click OK.
7. Click Next: Write your letter to finish setting up your letter.
8. Save the main document. When you save the main document at this point, you are also saving the data source and attaching the data source to the main document.
9. Type the name that you want to give to your main document, and then click Save.



7.7 Macros

In Microsoft Office Word, you can automate frequently used tasks by creating and running macros. A macro is a series of commands and instructions that you group together as a single command to accomplish a task automatically. The typical uses for macros are:

- To speed up routine editing and formatting
- To combine multiple commands — for example, to insert a table with a specific size and borders, and with a specific number of rows and columns
- To make an option in a dialog box more accessible
- To automate a complex series of tasks

The following steps are followed to record or run the macros:

1. Click the Microsoft Office Button , and then click Word Options.
2. Click Popular.

3. Under Top options for working with Word, select the Show Developer tab in the Ribbon check box.

Note The Ribbon is a component of the Microsoft Office Fluent user interface.

7.7.1 Record a Macro

On the Developer tab, in the Code group, click Record Macro.

1. Do one of the following:
 - **Begin recording:** To begin recording the macro without assigning it to a button on the Quick Access Toolbar or to a shortcut key, click OK.
 - **Create a button:** To assign the macro to a button on the Quick Access Toolbar, do the following:
 1. Click Button.
 2. Under Customize Quick Access Toolbar, select the document (or all documents) for which you want to add the macro to the Quick Access Toolbar.

Important: To make your macro available in all documents, be sure to click Normal.dotm.

3. Under Choose commands from dialog box, click the macro that you are recording, and then click Add.
4. To customize the button, click Modify.
5. Under Symbol, click the symbol that you want to use for your button.
6. In the Display name box, type the macro name that you want to display.
7. Click OK twice to begin recording the macro.

The symbol that you choose is displayed in the Quick Access Toolbar. The name that you type is displayed when you point to the symbol.


1. **Assign a keyboard shortcut** To assign the macro to a keyboard shortcut, do the following:
 - Click Keyboard.
 - In the Commands box, click the macro that you are recording.

- In the Press new shortcut key box, type the key sequence that you want, and then click Assign.
2. Click Close to begin recording the macro and perform the actions that you want to include in the macro.

Note When you record a macro, you can use the mouse to click commands and options, but not to select text. You must use the keyboard to select text.

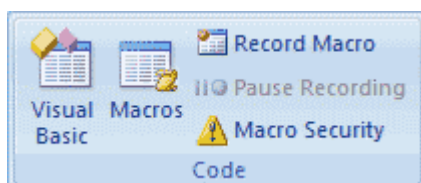
3. To stop recording your actions, click **Stop Recording** in the **Code** group.

Change the keyboard shortcut for a macro

1. Click the Microsoft Office Button , and then click Word Options.
2. Click Customize.
3. Next to Keyboard shortcuts, click Customize.
4. In the Categories list, click Macros.
5. In the Macros list, click the macro that you want to change.
6. In the Press new shortcut key box, type the key combination that you want to choose.
7. Check the Current keys box to make sure that you aren't assigning a key combination that you already used to perform a different task.
8. In the Save changes in list, click the option that matches where you want to run your macro.
9. Click **Close**.

7.7.2 Run a Macro

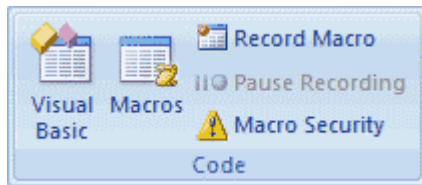
1. On the Developer tab, in the Code group, click Macros.



2. In the list under Macro name, click the macro that you want to run.
3. Click Run.

Write a macro from scratch

1. On the Developer tab, in the Code group, click Macros.



2. In the Macro name box, type a name for the macro.

Note If you give a new macro the same name as a built-in macro in MS Word, the new macro actions will replace the built-in macro. To view a list of built-in macros, click Word Commands in the Macros in list.

3. In the Macros in list, click the template or document in which you want to store the macro.

Activity B

Who will be responsible for taking care of macros?

This image shows a full page of handwriting practice paper. It contains ten identical rows of horizontal guidelines. Each row is composed of three lines: a solid top line, a dashed middle line, and a solid bottom line. The rows are evenly spaced across the entire page, providing ample space for practicing letter formation and alignment. There is no text or other markings on the page.

7.8 Summary

MS-word is the processing of textual information that may include the typing, editing and formatting of information by using various ways and printing it after proofing it according to the requirement. A word processor is a software package that helps you create, edit, format and print a document. Most of Word processors available today allow more than just creating and editing of document. It is quite flexible and easy to use. It is one of the most popular word processors for the windows based platform on IBM and its compatible personal computer.

7.9 Glossary

Alignment: Alignment refers to the position of lines in a paragraph in relation to the documents left and right margins; i.e., whether they are left-aligned, centered, right-aligned, or justified (evenly spaced).

Auto Correct: An automatic feature in software that corrects common spelling and capitalization errors, and can replace certain designated characters with special symbols

Auto Format: AutoFormat is a feature that automatically changes text as you type. AutoFormat includes such formatting as numbered and bulleted lists, borders, capitalization, and common spelling errors.

Blank Document: A new blank document opens each time you start word. The word document has a temporary name, such as document 1. When you finish typing in the document, you can save it with a new name

Blue Underline: Correctly spelled word used inappropriately

Database and database field: A database is a collection of organized information. A field is a specific category of information in a database. Some examples of possible fields are Name, Telephone Number, and Address.

Default Margins: 1" top and bottom, 1 1/4" left and Right, this refers to the amount of non-printable space on a page.

Double Space: Pressing the enter key twice (2) leaving one blank line. This can also refer to line spacing using the word processing feature to leave one blank line between each line of text.

Footer: A printed note placed below the text on a printed page

Footnote: A printed note or definition placed below the text at the bottom of the page

Hanging Indent: A paragraph format in which the first full line of text is not indented but the following lines are indented

MS Clipboard: It allows you to copy up to 24 multiple text and graphical items from Office documents or other programs and paste them into another Office document. By using it, you can arrange the copied items the way that you want in the document.

Normal View: Normal View is Word's default document view and is the most practical view for performing such routine functions as typing, editing, and formatting.

Outline View: Outline View provides a structured view of the document, arranging its contents according to heading levels and opening the Outlining toolbar for modifying the document's organization.

Styles: Sets of formatting specifications

Wizard: A wizard is a feature of Microsoft applications that lets you work through a series of dialog boxes to help you complete a task.

Check your progress

1. Selecting text means, selecting?
 - 1.8 a word b) an entire sentence c) whole document d) All of the above
2. Using Find command in Word, we can search?
 - 2.8 Characters b) Format c) Symbols d) All of the above
3. Which key should be pressed to start a new paragraph in MS-Word?
 - 3.8 Down Cursor Key b) Enter Key c) Shift + Enter d)Ctrl + Enter
4. Which of these Tabs allows changing of Fonts and their sizes?
 - 4.8 Insert b) Review c) Home d) None of these
5. Which option in File pull-down menu is used to close a file in MSWord?
6. New b) Quit c) Close d)Exit
7. Graphics for word processor is
 - a) Peripheral b) Clip art c) Highlight d) Execute
8. Minimum zoom percentage supported by MS Word is
 - a) 10% b) 25% c) 15% d) 4%.
9. The red wave underline in MS Word document indicates
 - a) Spelling errors b) Grammar errors c) Address block d) None of these.
10. The icon B in the tool bar stands for
 - a) Underline b)Bold c) Italics d) None of the above
11. Which of the following option is not in Page Layout Tab?
 - 11.8 Header and Footer b) Footnote c) Bookmark d) All of the above
12. Which input device is most suitable to work with MS Word?
 - a) Keyboard b)Mouse c) Both a & b d) Joystick.
13. The insertion point in a table can be moved by using
 - a) Tab key b) Shift + Tab key c) Arrow keys d) All of above
14. Which page orientation you will select if you wish to print in wide format?
 - a) Landscape b) Portrait c) Horizontal d) Vertical.
15. By default, on which page the header or the footer is printed
 - 15.8 On first page b) on alternate page c) on every page d) none of the above
16. Which of these tabs allows Mail Merge options?

16.8 Home b) Mailings c) Page Layout d) None of these

17. What is the maximum number of lines you can set for a drop cap?

- a) 10 b) 15 c) 20 d) none of above

18. How many columns can you insert in a word document in maximum?

- a) 50 b) 45 c) 30 d) 40

19. Thesaurus tool in MS Word is used for...

- a) Spelling suggestions b) Synonyms and Antonyms
c) Grammar options d) all of the above

20. What do you mean by vertical separation between a single page?

- a) Orientation b) Column c) Margin d) index

21. MS Word is an application software which is a

- a) Freeware b) Paid software c) Both a & b d) None of the
above

7.10 Answers to check your progress

- | | | | |
|------|-------|-------|-------|
| 1. D | 6. B | 11. C | 16. A |
| 2. D | 7. A | 12. D | 17. B |
| 3. B | 8. A | 13. A | 18. B |
| 4. C | 9. B | 14. C | 19. B |
| 5. C | 10. D | 15. B | 20. B |

7.11 References / Suggested Readings

1. V. C. Jain, -Computer Fundamentals and Personal Computer Software” BPB Publication.
2. Introduction to information technology, Pearson Education.
3. Donald Hearn, M Pauline Baker, -Computer Graphics, 2nd Edition, Pearson Publication
4. V. Rajaraman , -Fundamentals of Computers, Prentice Hall – India
5. Dr. M N Doja, Computers & Information Technology Deep & Deep Publications
6. Cerealy killer X -Microsoft Office Books for Dummies 2007-2013.

7.12 Terminal and Model Questions:

1. Whatdo you mean by Word processing?
2. How can you edit the text in the table?
3. What do you mean by Printing of the document file?
4. Define Mail-Merge. Write Steps how to create Mail-Merge
5. Explain Macros with Example.
6. Expalin Template and Wizard

8. Spreadsheet with Microsoft Excel

Structure

8.0 Objectives

8.1 Introduction to MS Excel

8.2 Uses of Spreadsheet in business

8.3 Basics of MS Excel

8.3.1 Creating a new workbook

8.3.2 Enter your data

8.3.3 Cut, Copy or Paste the data

8.3.4 Format Painter

8.4 Use AutoSum to add your data

8.5 Create simple formula

8.6 Adjusting Column Width and Row Height

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8.8 Put your data in a table

8.9 Sorting of the Data

8.10 Showing Totals for your numbers

8.11 Add meaning to your data

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8.20 Answers to check your progress

8.21 References / Suggested Readings

8.22 Terminal and Model Questions

8.0 Objectives

After reading this chapter, the students will be able to understand:

- The basics of MS Excel
- Features of MS Excel
- Uses of Excel in Business
- Creating formulas in the spread sheet
- Preparing Charts
- Advanced features in MS Excel

8.1 Introduction to MS Excel

A spreadsheet is a computer program in which data is arranged in the rows and columns of a grid which can be manipulated and used in calculations. It is an interactive [computer application](#) program for organizing and analyzing of [data](#) in [tabular](#) form. Spreadsheets have been developed as computerized simulations of paper accounting [worksheets](#). The program operates on data represented as cells of a table organized in rows and columns. Each cell of the table is a [model-view-controller](#) element that can contain either numeric or text data, or the results of [formulas](#) that automatically calculate and display a value based on the contents of other cells.

Microsoft Excel is an electronic spreadsheet which is used to organize the data into rows and columns. It is also used to perform mathematical calculations quickly.

8.2 Uses of Spreadsheets in Business

The business houses use spreadsheets for the following purposes:

- Calculating tax
- Making basic payrolls
- Calculating revenues
- Preparing charts, graphs etc
- Financial analysis and business decisions
- Expense statements or records
- Sales and marketing
- Engineering records
- To show financial information in form of income statements
- Cash flow statements, and balance sheets
- Forecasting
- Inventory tracking
- Employee management
- Customer management

Activity A

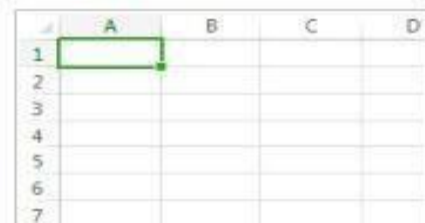
Ramesh Ahuja wants to store data of his monthly expenditure over the last financial year. Which of the Office application is most suitable for this purpose?

[illegible]

8.3 Basics of MS Excel

8.3.1 Create a new workbook

Excel documents are called workbooks. Each workbook has sheets, typically called spreadsheets. You can add as many sheets as you want to a workbook, or you can create new workbooks to keep your data separate.



1. Click **File>New**.
2. Under **New**, click the **Blank workbook**.

8.3.2 Enter your data

1. Click an empty cell. For example, cell A1 on a new sheet. Cells are referenced by their location in the row and column on the sheet, so cell A1 is in the first row of column A.
2. Type text or a number in the cell.
3. Press Enter or Tab to move to the next cell.

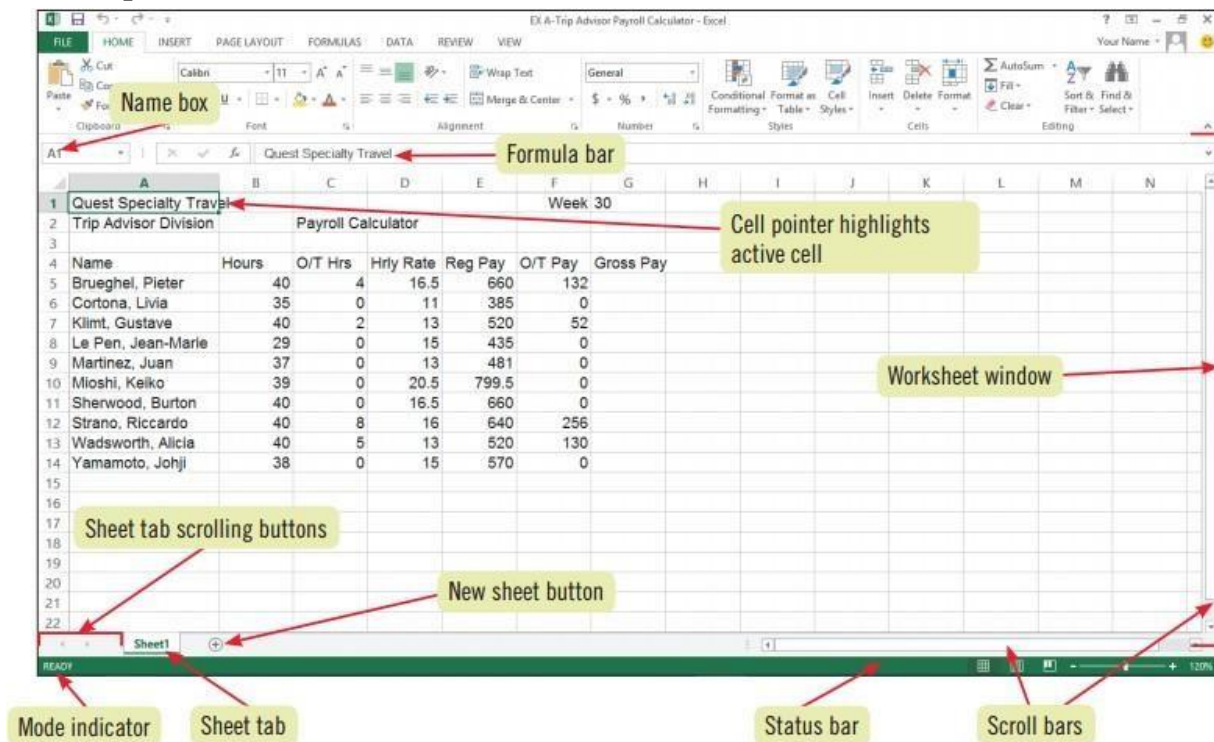
It is worth to mention that the spreadsheets have made the business life too simple. The following figures are a clear example of the traditional paperwork and modern spreadsheet.

Traditional paper worksheet

Quest Specialty Travel Trip Advisor Division Payroll Calculator

Name	Hours	O/T Hrs	Hrly Rate	Reg Pay	O/T Pay	Gross Pay
Brueghel, Pieter	40	4	16.50	660–	132–	792–
Cortona, Livia	35	0	11–	385–	0–	385–
Klimt, Gustave	40	2	13–	520–	52–	572–
Le Pen, Jean-Marie	29	0	15–	435–	0–	435–
Martinez, Juan	37	0	13–	481–	0–	461–
Mioshi, Keiko	39	0	20.50	799.50	0–	799.50
Sherwood, Burton	40	0	16.50	660–	0–	660–
Strano, Riccardo	40	8	16–	640–	256–	896–
Wadsworth, Alicia	40	5	13–	520–	130–	650–
Yamamoto, Johji	38	0	15–	570–	0–	570–

Modern Spreadsheet



8.3.3 Cut or Copy or Paste the data

You can use the Cut, Copy and Paste commands to move or copy information in an Office Excel worksheet. These commands use the Office Clipboard as a kind of electronic halfway house where the information you cut or copy remains until you decide to paste it somewhere. Because of this Clipboard arrangement, you can use these commands to move or copy information to any other worksheet open in Excel or even to other programs running in Windows based programs.

Moving a cell selection

To move a cell selection with Cut and Paste follow these steps:

1. Select the cell(s) you want to move.
2. Click the Cut command button in the Clipboard group on the Home tab (the button with the scissors icon).

As an alternative, press Ctrl+X. The program surrounds the cell selection with a *marquee* and displays the following message on the Status bar: Select destination and press ENTER or choose Paste

3. Move the cell cursor to, or click the cell in the upper-left corner of, the destination range.

When you indicate the destination range, you don't have to select a range of blank cells that matches the shape and size of the cell selection you're moving. Excel only needs to know the location of the cell in the upper-left corner of the destination range.

4. Press Enter or Ctrl+V to complete the move operation.

Alternatively, you can click the Paste button in the Clipboard group on the Home tab. The cell contents disappear from where they began and reappear in their new location.

Copying a cell selection

Copying a cell selection with the Copy and Paste commands follows a nearly identical procedure to the one you use with the Cut and Paste commands. After selecting the range to copy, you click the Copy button on the Home tab or press Ctrl+C.

An advantage to copying a selection with the Copy and Paste commands and the Clipboard is that you can paste the information multiple times. Just make sure that, instead of pressing Enter to complete the first copy operation, you click the Paste button on the Home tab in the Ribbon or press Ctrl+V. After you select the first cell of the next range where you want the selection copied, choose the Paste command again. When you make the last copy, press Enter. If you forget and choose Paste, you can remove the marquee around the original cell range by pressing the Esc key.

Right after you click the Paste button on the Home tab of the Ribbon or press Ctrl+V to paste cell entries that you copy (not cut) to the Clipboard, Excel displays a Paste Options button with its own drop-down button at the end of the pasted range. Click the button to see options that you can select to modify the paste operation. For example, you can select Formatting Only to copy only the formatting, or select Keep Source Column Widths to also copy the column widths.

8.3.4 Format Painter

When the formatting is required in each sheet or workbook, the user need not do the settings repeatedly. The user can opt for 'Format Painter' function in the program. Adding formatting to your [spreadsheet](#) not only makes it more attractive and easier to read, but it can make it easier for users to find the information they are after. To quickly copy formatting from one part of a sheet to another, or to another sheet in the same [workbook](#), use the **Format Painter**. Format Painter is very useful when you are extending a spreadsheet to accommodate new data and need to format the new cells to match the original data area.

To use Format Painter to copy formatting options to one cell

1. Add all the formatting options you want to use to at least one cell.
2. Click on that cell with the mouse pointer to make it the [active cell](#).
3. Click on the Format Painter icon on the formatting toolbar.
4. Click on the cell that you want to copy the formatting to.

To use Format Painter to copy formatting options to adjacent cells

1. Add all the formatting options you want to use to at least one cell.
2. Click on that cell with the mouse pointer to make it the active cell.

3. Click on the Format Painter icon on the formatting toolbar.
4. Click on the first cell and then drag the mouse pointer to select additional cells.

To use Format Painter to copy formatting options to non-adjacent cells

1. Add all the formatting options you want to use to at least one cell.
2. Click on that cell with the mouse pointer to make it the active cell.
3. Double click on the Format Painter icon on the formatting toolbar.
4. Click on the first cell you want to copy the formatting to and then continue clicking on additional cells to copy the formatting to these cells as well.
5. Click on the Format Painter icon on the formatting toolbar to turn it off.

8.4 Use AutoSum to add your data

When you've entered numbers in your sheet, you might want to add them up. A fast way to do that is by using **AutoSum**.

1. Select the cell to the right or below the numbers you want to add.
2. Click **Home>AutoSum**, or press Alt+=.



AutoSum adds up the numbers and shows the result in the cell you selected.

8.5 Create a simple formula

Adding numbers is just one of the things you can do, but Excel can do other math too. Try some simple formulas to add, subtract, multiply or divide your numbers.

1. Pick a cell and type an equal sign (=). That tells Excel that this cell will contain a formula.
2. Type a combination of numbers and calculation operators, like the plus sign (+) for addition, the minus sign (-) for subtraction, the asterisk (*) for multiplication, or the forward slash (/) for division.

For example, enter **=2+4**, **=4-2**, **=2*4**, or **=4/2**.

3. Press Enter. That runs the calculation.
4. Following are the main operators at a glance that work in MS Excel 2013

Operator	Description
-	Negation (e.g., -1)
%	Percentage
^	Exponentiation
* and /	Multiplication and Division
+ and -	Addition and Subtraction
&	Concatenation (adding two strings together)
=, >, <, >=, <=, and <>	Equals, Greater Than, Less Than, Greater Than or Equal To, Less Than or Equal To, and Not Equal To

You can also press Ctrl+Enter if you want the cursor to stay on the active cell.

8.6 Adjusting Column Width and Row Height

Modifying column width and row height can make a workbook's contents easier to work with, but you can also insert a row or column between cells that contain data to make your data easier to read. Adding space between the edge of a worksheet and cells that contain data, or perhaps between a label and the data to which it refers, makes the workbook's contents less crowded. You insert rows by clicking a cell and clicking the Home tab on the ribbon. Then, in the Cells group, in the Insert list, click Insert Sheet Rows. Excel inserts a row above the row that contains the active cell. You insert a column in much the same way, by choosing Insert Sheet Columns from the Insert list. When you do this, Excel inserts a column to the left of the active cell. When you insert a row, column, or cell in a worksheet that has had formatting applied, the Insert Options button appears. When you click the Insert Options button, Excel displays a list of choices you can make about how the inserted row or column should be formatted, as described in the following table.

Option	Action
Format Same As Above	Applies the formatting of the row above the inserted row to the new row
Format Same As Below	Applies the formatting of the row below the inserted row to the new row
Format Same As Left	Applies the formatting of the column to the left of the inserted column to the new column
Format Same As Right	Applies the formatting of the column to the right of the inserted column to the new column
Clear Formatting	Applies the default format to the new row or column

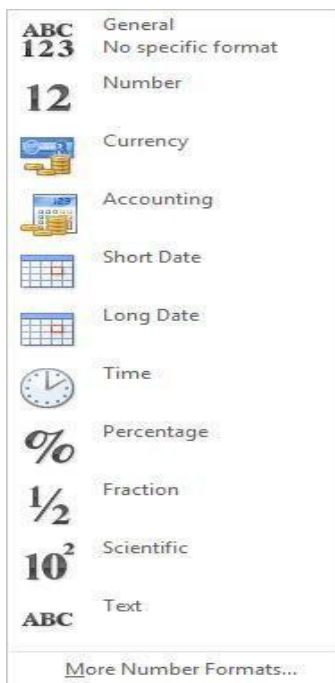
8.7 Apply a number format

To distinguish between different types of numbers, add a format, like currency, percentages, or dates.

1. Select the cells that have numbers you want to format.
2. Click **Home**> Arrow next to **General**.




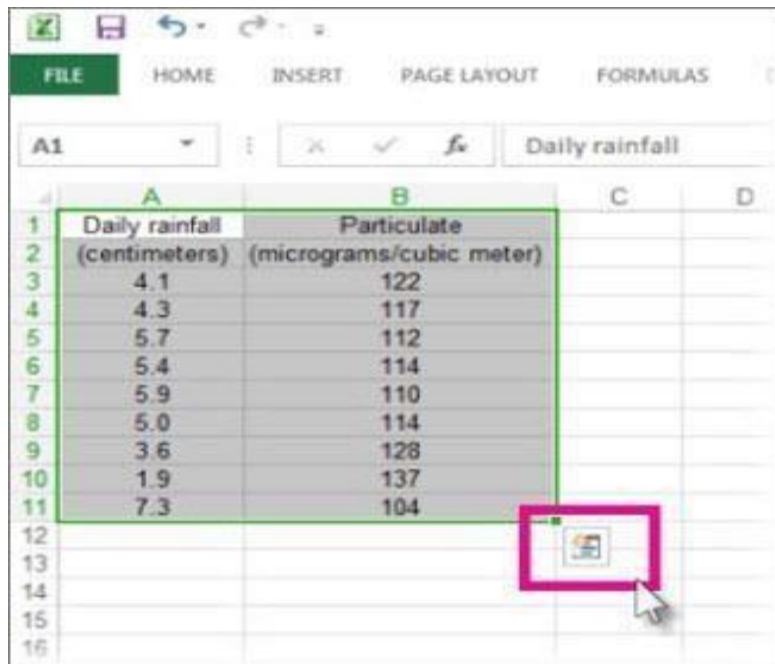
3. Pick a number format.



8.8 Put your data in a table


A simple way to access a lot of Excel's power is to put your data in a table. That lets you quickly filter or sort your data for starters.

1. Select your data by clicking the first cell and dragging to the last cell in your data. To use the keyboard, hold down Shift while you press the arrow keys to select your data.
2. Click the **Quick Analysis** button  on the bottom-right corner of the selection.



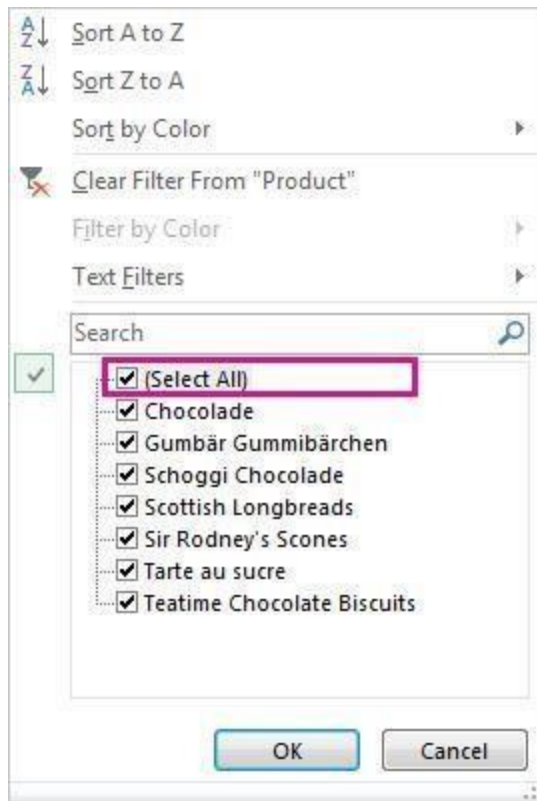
3. Click **Tables**, move your cursor to the **Table** button so you can see how your data will look. If you like what you see, click the button.



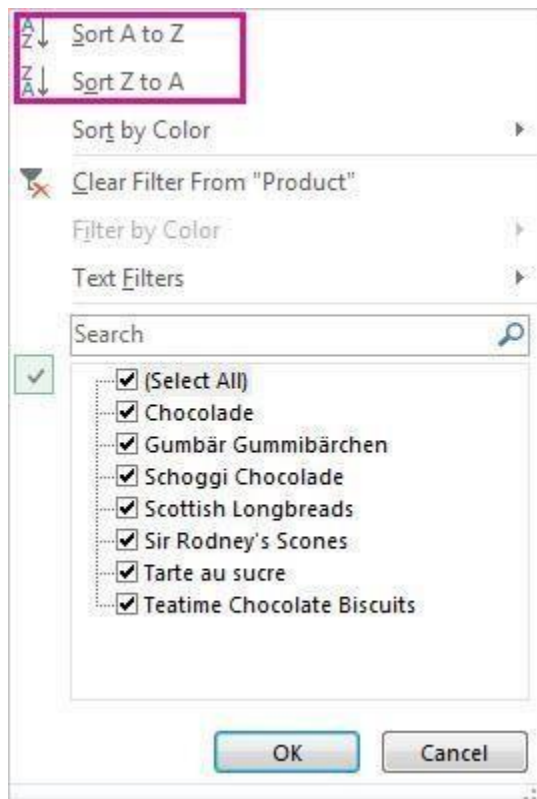
4. Now you can play with your data: Filter to see only the data you want, or sort it to go from, say, largest to smallest. Click the arrow  in the table header of a column.
5. To filter data, uncheck the **Select All** box to clear all check marks, and then check the boxes of the data you want to show in your table.

8.9 Sorting of Data

The excel data can be sorted alphabetically or in ascending or descending order. The data can also be sorted according to the requirements by adding the value in the sort filters.




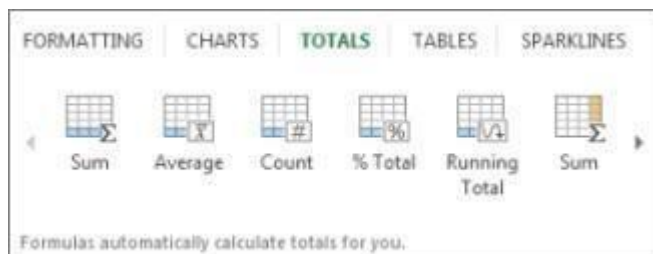
6. To sort the data, click **Sort A to Z** or **Sort Z to A**.



8.10 Show totals for your numbers


Quick Analysis tools let you total your numbers quickly. Whether it's a sum, average, or count you want, Excel shows the calculation results right below or next to your numbers.

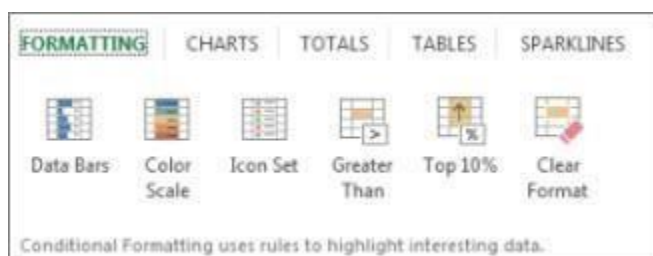
1. Select the cells that contain numbers you want to add or count.
2. Click the **Quick Analysis** button  in the bottom-right corner of the selection.
3. Click **Totals**, move your cursor across the buttons to see the calculation results for your data, and then click the button to apply the totals.



8.11 Add meaning to your data

Conditional formatting or spark lines can highlight your most important data or show data trends. Use the Quick Analysis tool for a live preview to try it out.

1. Select the data you want to examine more closely.
2. Click the **Quick Analysis** button  that appears in the lower-right corner of your selection.
3. Explore the options on the **Formatting** and **Sparklines** tabs to see how they affect your data.




For example, pick a color scale in the **Formatting** gallery to differentiate high, medium, and low temperatures.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2	Avg High	40	38	44	46	51	56	67	72	70	59	45	41
3	Avg Low	34	33	38	41	45	48	51	55	54	45	41	38
4	Record High	61	69	79	83	95	97	100	101	94	87	72	66
5	Record Low	0	2	9	24	28	32	36	39	35	21	12	4

8.12 Show your data in a chart

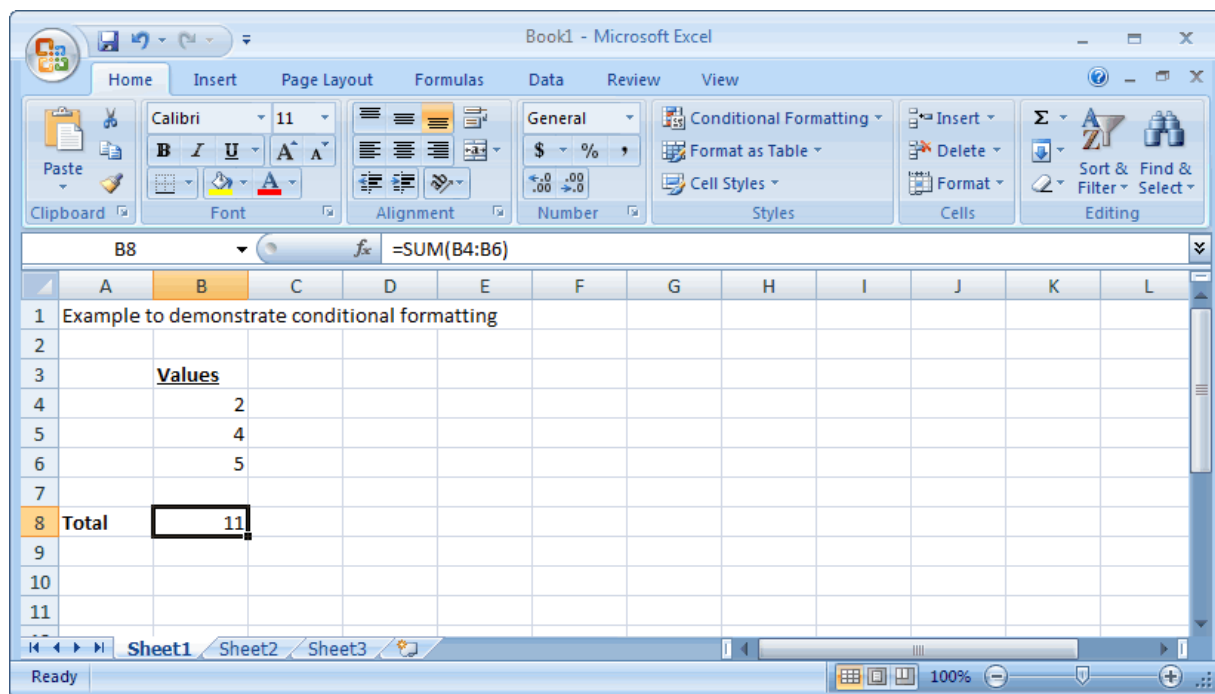
The Quick Analysis tool recommends the right chart for your data and gives you a visual presentation in just a few clicks.

1. Select the cells that contain the data you want to show in a chart.
2. Click the **Quick Analysis** button  that appears in the lower-right corner of your selection.
3. Click **Charts**, move across the recommended charts to see which one looks best for your data, and then click the one that you want.

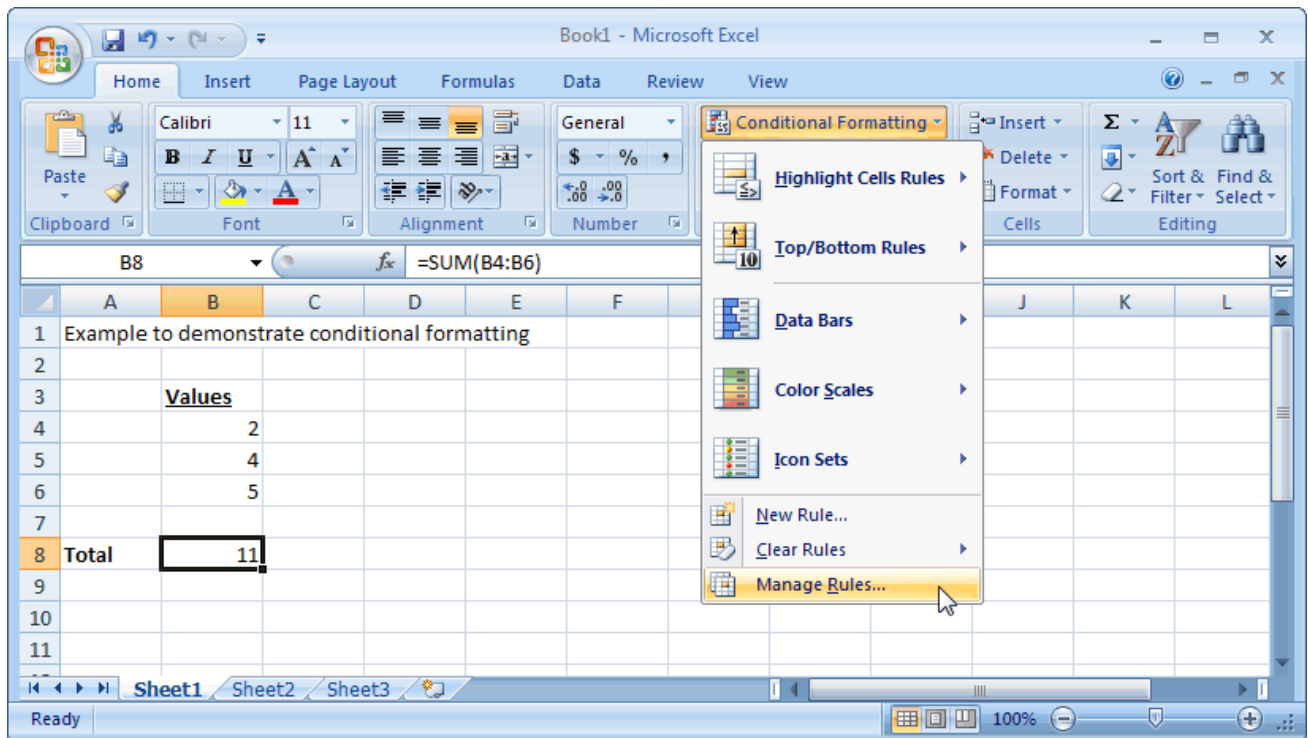


8.13 Conditional Formatting

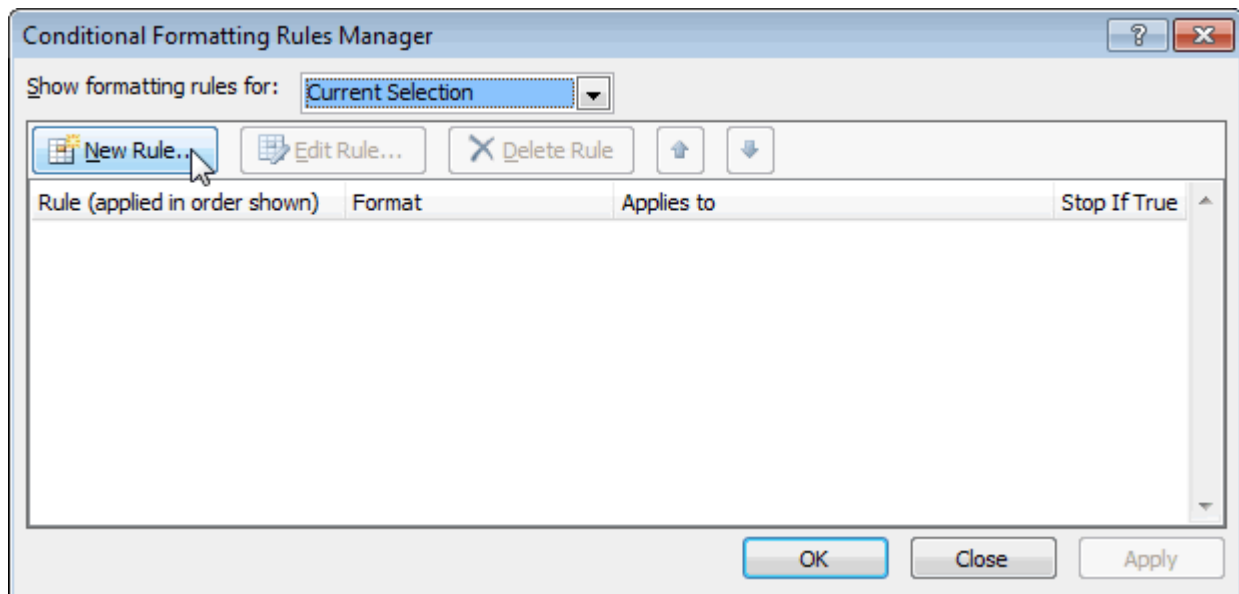
If you wish to change the color of the font based on the value in a cell, you will need to apply conditional formatting. To do this, select the cell that you wish to apply the formatting to. In this example, we've selected cell B8.



Select the **Home** tab in the toolbar at the top of the screen. Then in the **Styles** group, click on the Conditional Formatting drop-down and select *Manage Rules*.



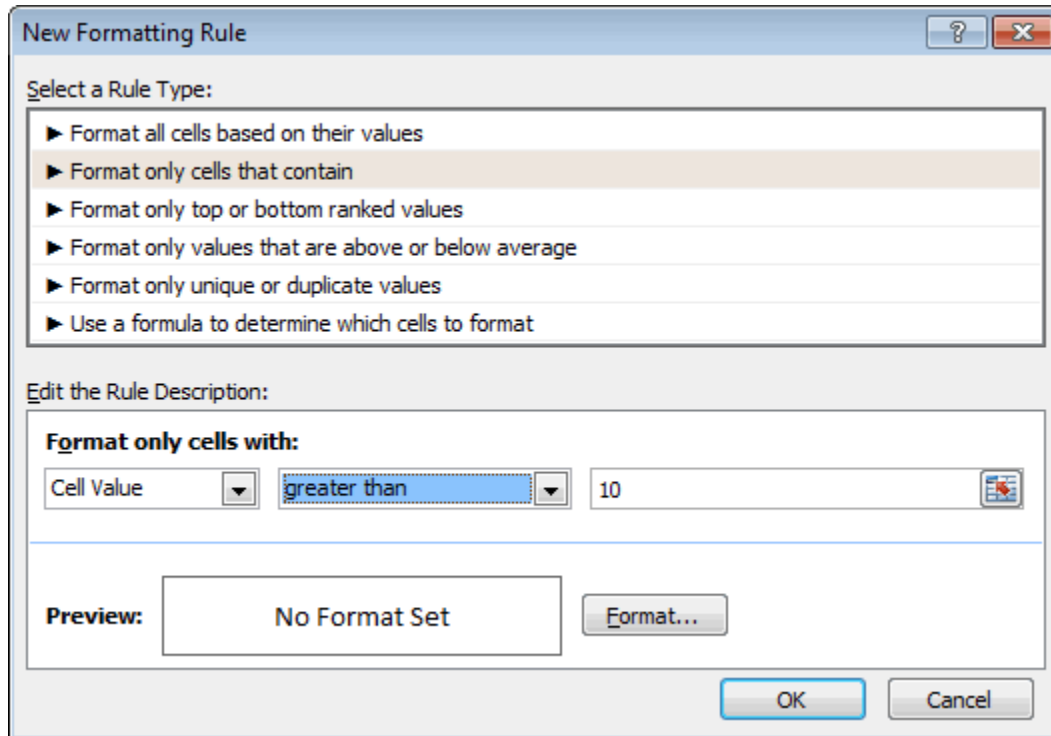
When the Conditional Formatting Rules Manager window appears, click on the "New Rule" button to enter the first condition.



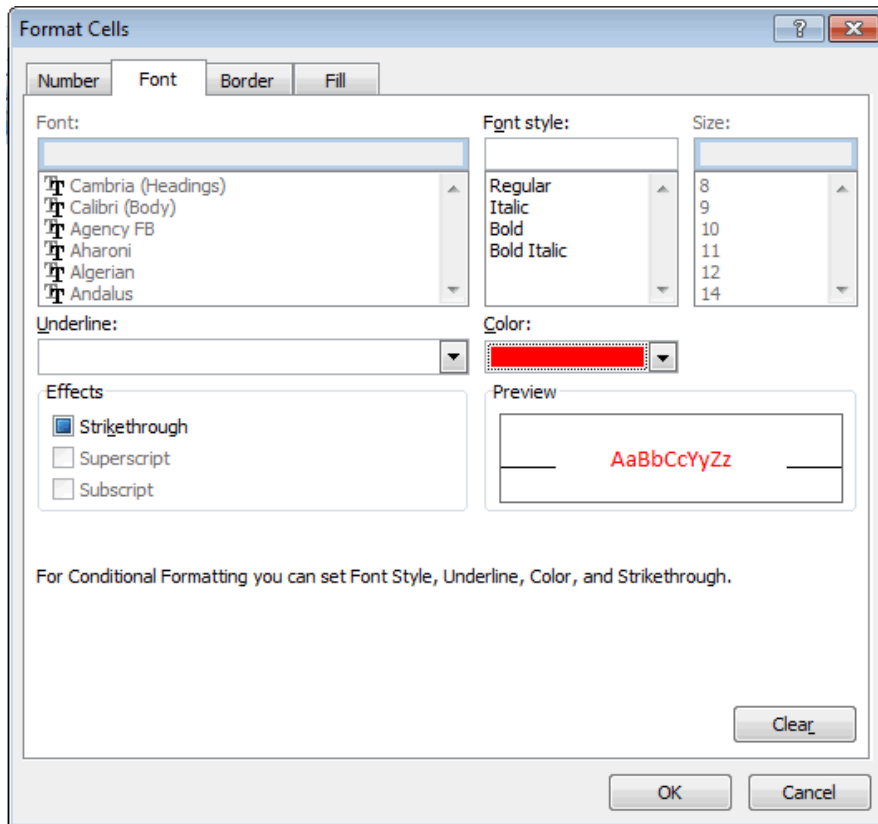
When the New Formatting Rule window appears, select **Format only cells that contain** as the rule type.

Then select **Cell Value** in the first drop down, **greater than** in the second drop down, and enter **10** in the final box. In our example, we've selected when the cell value is greater than 10.

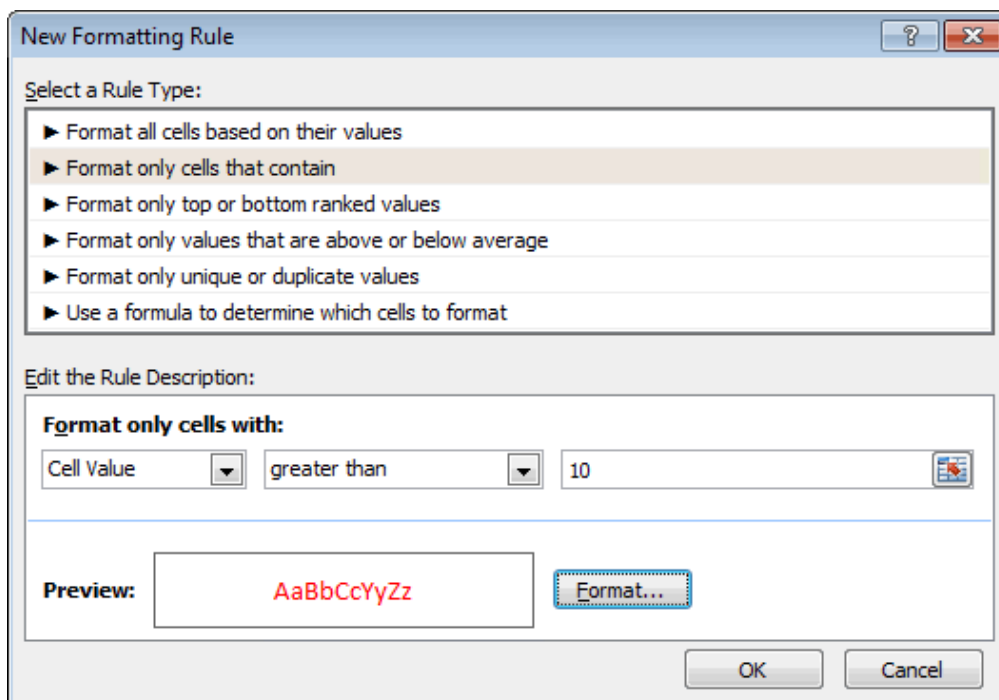
Next, we need to select what formatting to apply when this condition is met. To do this, click on the Format button.



When the Format Cells window appears, select the formatting conditions that you wish to apply. We've changed the Color to Red. Then click on the OK button.

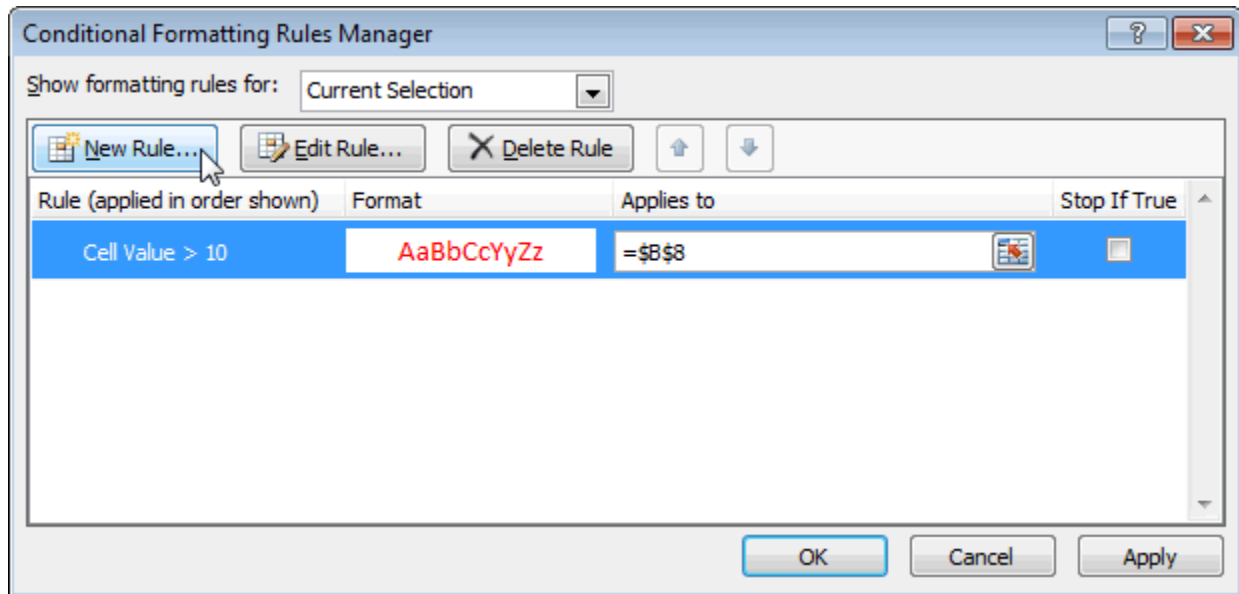


When you return to the New Formatting Rule window, you should see the preview of the formatting in the Preview box. In this example, the preview box shows the text in red. Next click on the OK button.



This will return you to the Conditional Formatting Rules Manager window.

If you wish to apply more than one condition, you will need to click on the New Rule button again.

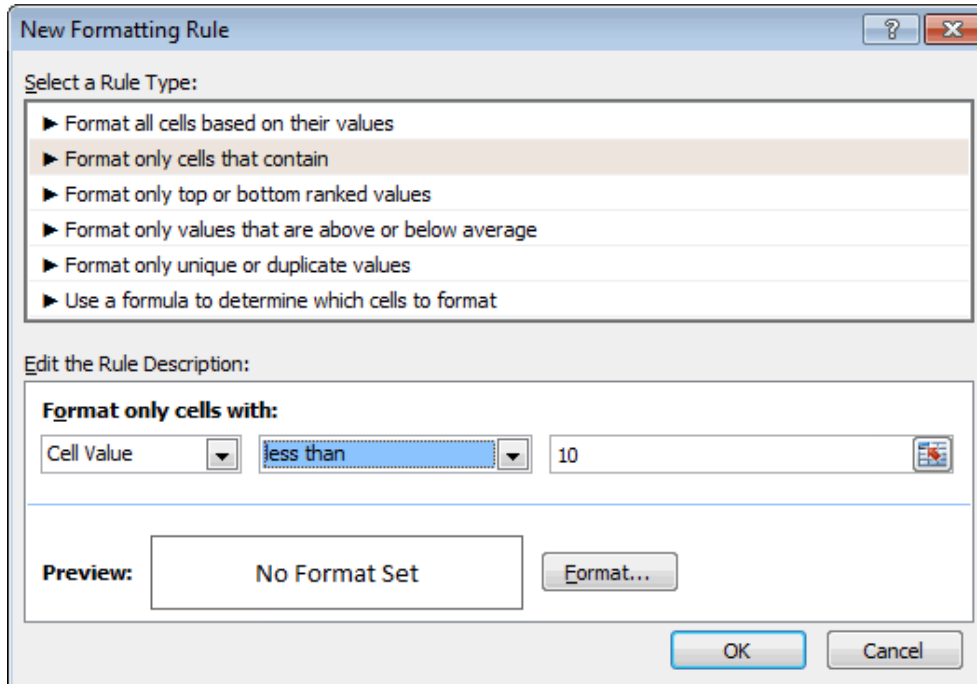


When the New Formatting Rule window appears, we need to set up the second condition.

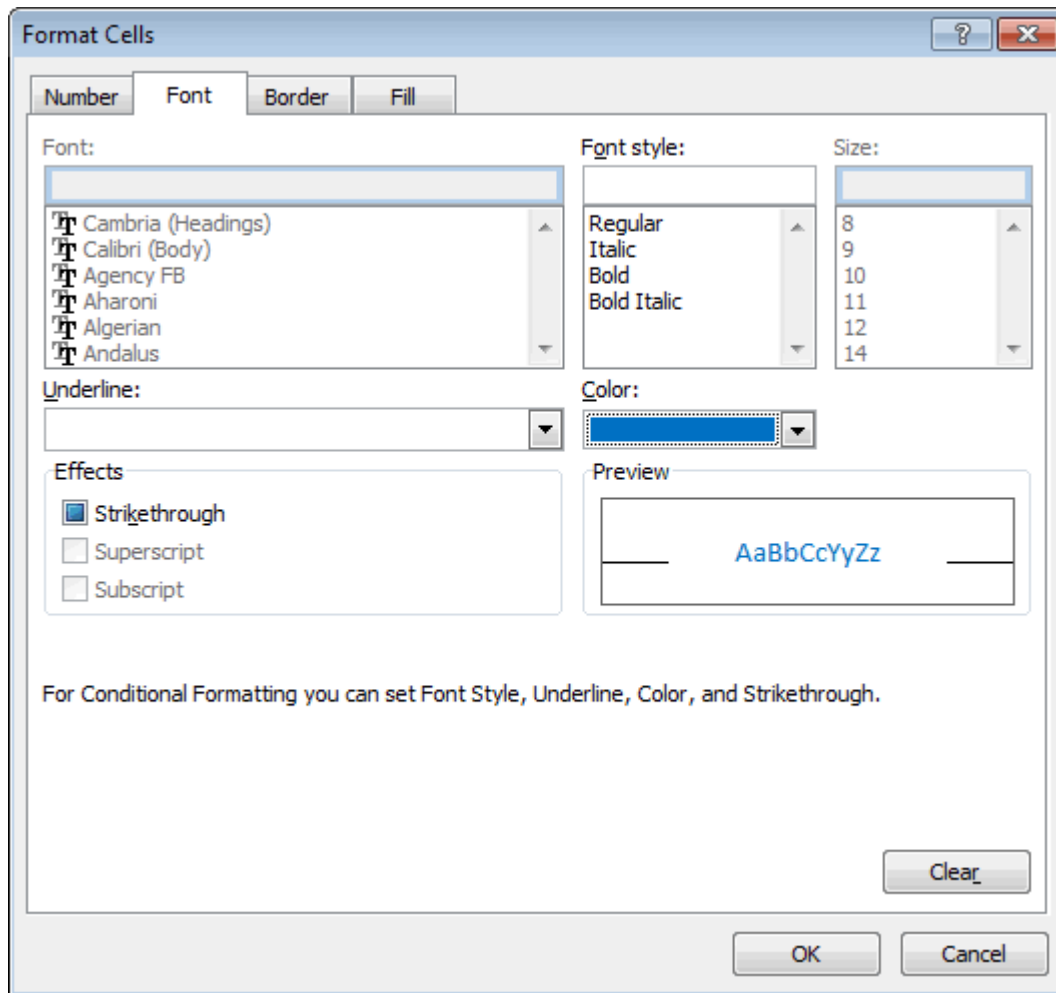
Select **Format only cells that contain** as the rule type.

Then select **Cell Value** in the first drop down, **less than** in the second drop down, and enter **10** in the final box. In our example, we've selected when the cell value is less than 10.

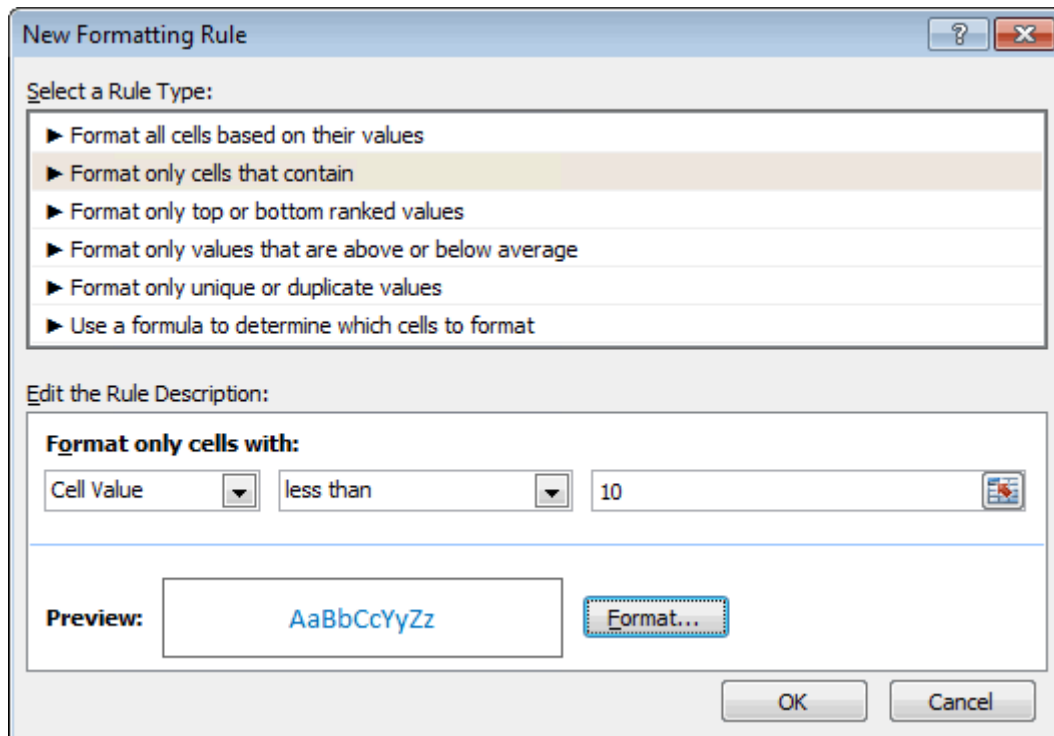
Next, we need to select what formatting to apply when this second condition is met. To do this, click on the Format button.



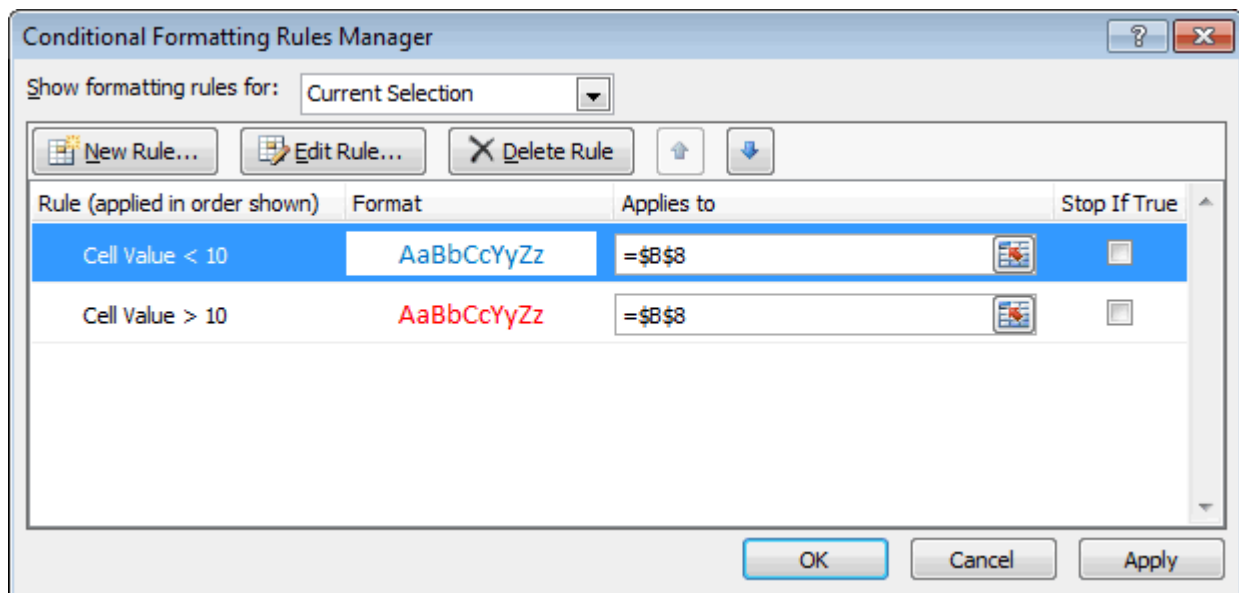
When the Format Cells window appears, select the formatting conditions that you wish to apply to the second condition. We've changed the Color to Blue. Then click on the OK button.



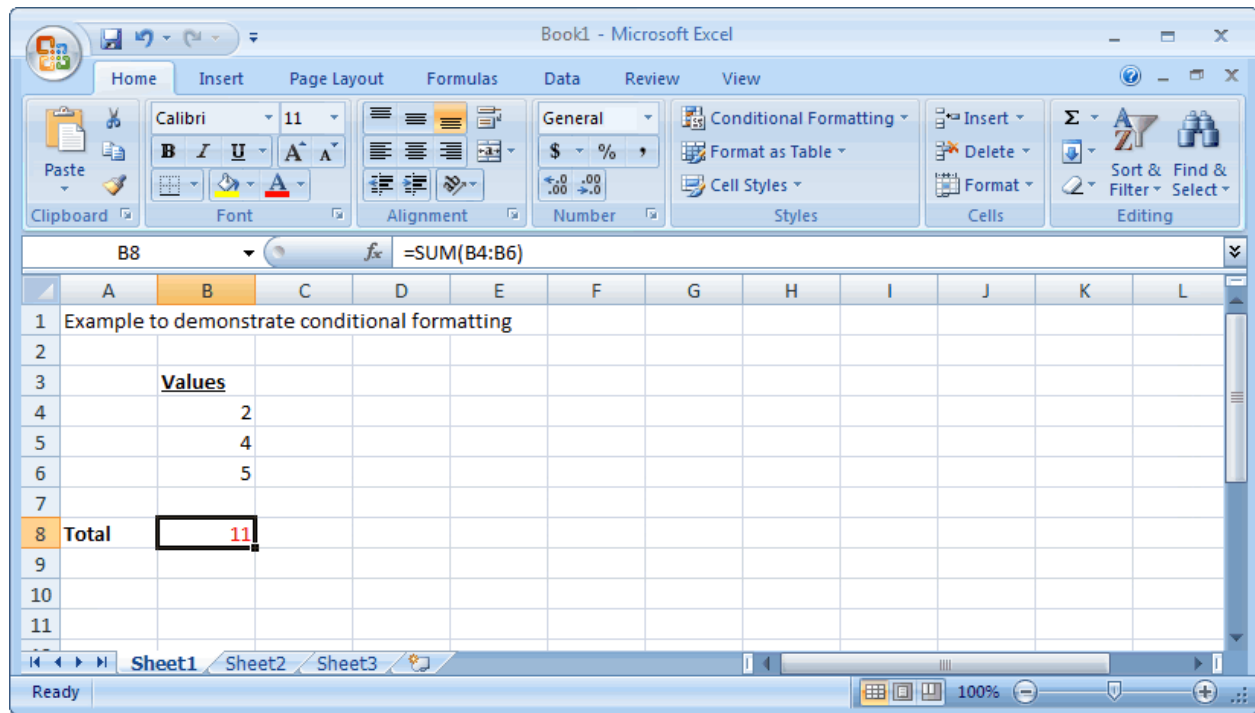
When you return to the New Formatting Rule window, you should see the preview of the formatting in the Preview box. In this example, the preview shows the text in blue. Next click on the OK button.



We've added two different conditions. When you're done, click on the OK button.



Now when you return to the spreadsheet, the conditional formatting will be applied. As you can see, the value in cell B8 appears in red.



Activity B

Differentiate between relative and absolute cell referencing techniques with the help of sample data.

This image shows a full page of primary-ruled paper. It features ten sets of horizontal lines across the page. Each set consists of three lines: a solid top line, a dashed middle line, and a solid bottom line. The lines are evenly spaced and extend across the entire width of the page, providing a guide for letter height and placement in handwriting practice.

8.14 Working with Macros in Excel

The macro recorder works by recording all keystrokes and clicks of the mouse. The macro created in this tutorial will apply a number of formatting options to a [worksheet](#) title. In Excel 2007 and 2010, all macro - related commands are located on the *Developer* tab of the [ribbon](#). Often, this tab needs to be added to the ribbon in order to access the macro commands.

8.14.1 Adding a Worksheet Title

Before we start recording our macro, we need to add the [worksheet](#) title we will be formatting. Since the title of each worksheet is usually unique to that worksheet, we don't want to include the title in the macro. Therefore we will add it to the worksheet, before starting the macro recorder.

- 1. Click on cell A1 in the worksheet.
- 2. Type the title: *Cookie Shop Expenses for June 2008*.
- 3. Press the **Enter** key on the keyboard.

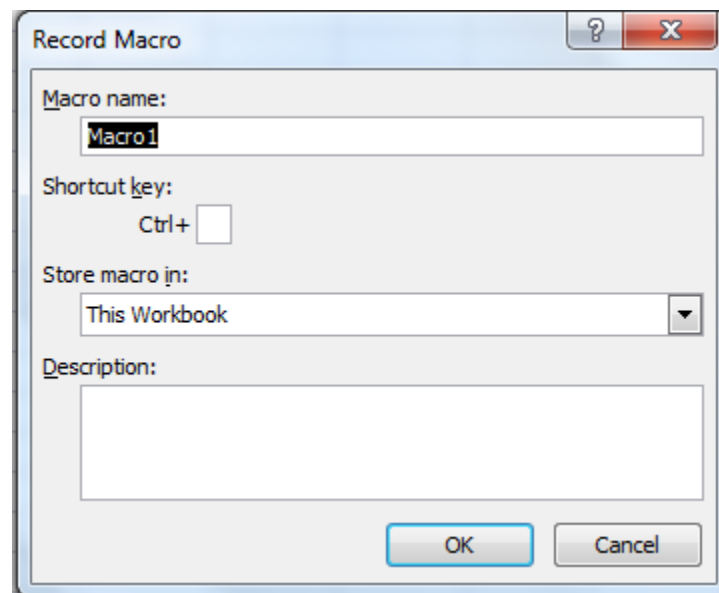
8.14.2 Excel Macro Recorder

The easiest way to create a macro in Excel is to use the macro recorder. To do so:

1. Click on the *Developers* tab.
2. Click on **Record Macro** in the [ribbon](#) to open the *Record Macro* dialog box.

8.14.2.1 Macro Recorder dialog box

There are 4 options to complete in this dialog box:



1. Macro name - give your macro a descriptive name. The name must begin with a letter and spaces are not allowed. Only letters, numbers and the underscore characters are permitted.
2. Shortcut key - (optional) fill in a letter, number, or other character in the available space. This will allow you to run the macro by holding down the CTRL key and pressing the chosen letter on the keyboard.
3. Store macro in:
 - *This [workbook](#)*: The macro is available only in this file.
 - *New workbook*: This option opens a new Excel file. The macro is available only in this new file.
 - *Personal macro workbook*: This option creates a hidden file *Personal.xls* which stores your macros and makes them available to you in all Excel files.
4. Description –It is optional to enter a description of the macro.

8.14.3 Recording the Macro

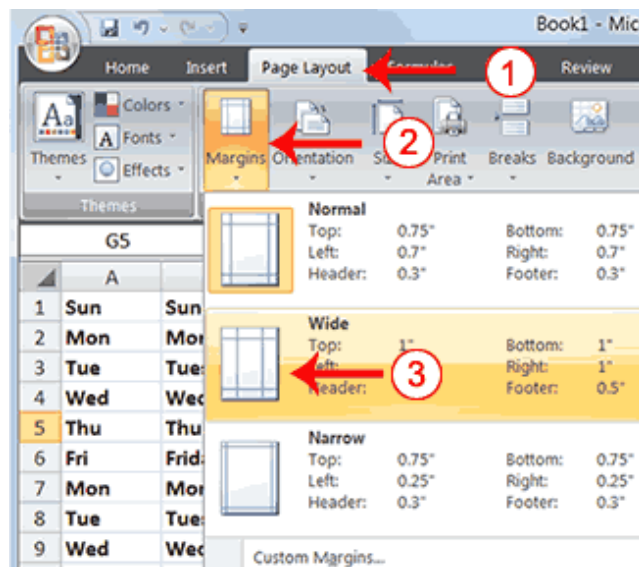
1. Click the OK button in the *Record Macro* dialog box to start the macro recorder.
2. Click on the *Home* tab of the ribbon.

3. [Drag select](#) cells A1 to F1 in the [worksheet](#) to highlight them.
4. Click on the *Merge and Center* icon to center the title between cells A1 and F1.
5. Click on the *Fill Color* icon (looks like a paint can) to open the fill color drop down list.
6. Choose *Blue, Accent 1* from the list to turn the background color of the selected cells to blue.
7. Click on the *Font Color* icon (it is a large letter "A") to open the font color drop down list.
8. Choose *White* from the list to turn the text in the selected cells to white.
9. Click on the *Font Size* icon (above the paint can icon) to open the font size drop down list.
10. Choose *16* from the list to change the size the text in the selected cells to 16 point.
11. Click on the *Developer* tab of the ribbon.
12. Click the *Stop Recording* button on the ribbon to stop the macro recording.

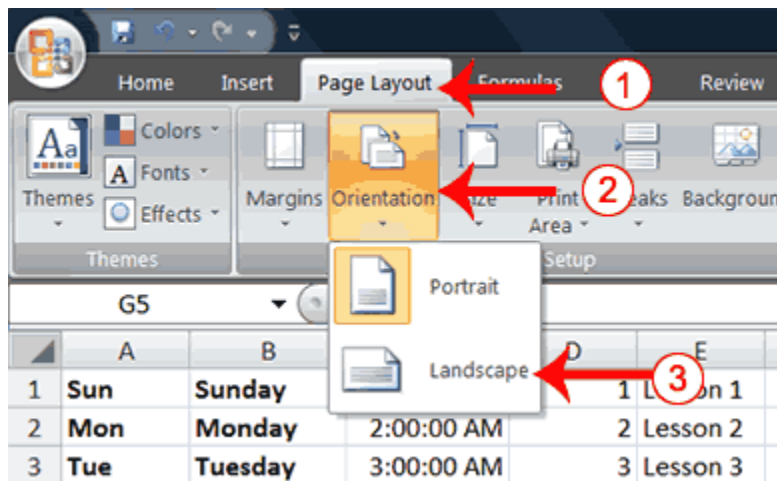
8.15 Page setup function

The page of spreadsheet in MS Excel can be setup using the Page Layout function in the program. The following steps are followed for setting margins of the spreadsheet.

1. Choose the Page Layout tab.
2. Click Margins in the Page Setup group. A menu appears.
3. Click Wide. Word sets your margins to the Wide settings.

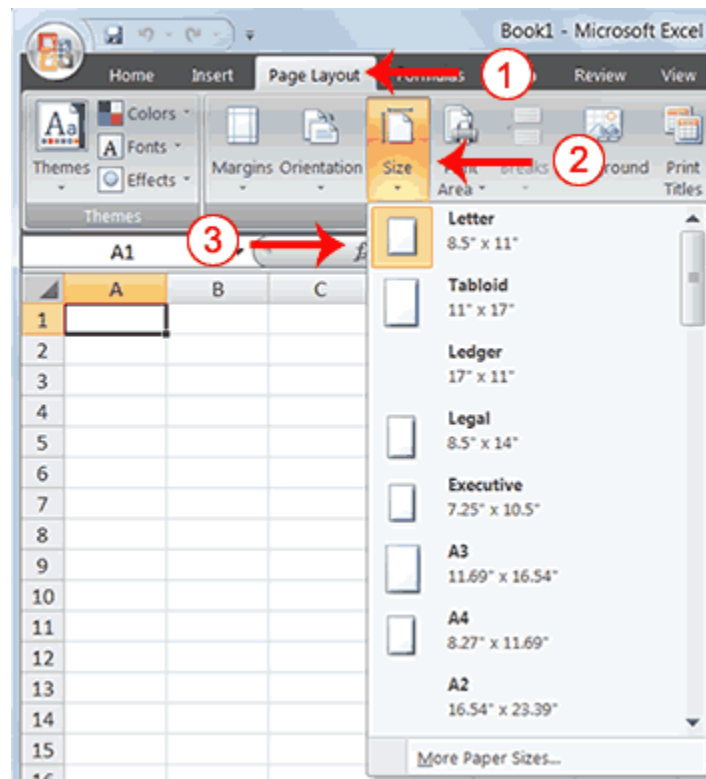


Set the Page Orientation



1. Choose the Page Layout tab.
2. Click Orientation in the Page Setup group. A menu appears.
3. Click Landscape. Excel sets your page orientation to landscape.

Set the Paper Size



1. Choose the Page Layout tab.
2. Click Size in the Page Setup group. A menu appears.
3. Click the paper size you are using. Excel sets your page size.

8.16 Save your workbook

1. Click the **Save** button on the **Quick Access Toolbar**, or press Ctrl+S.

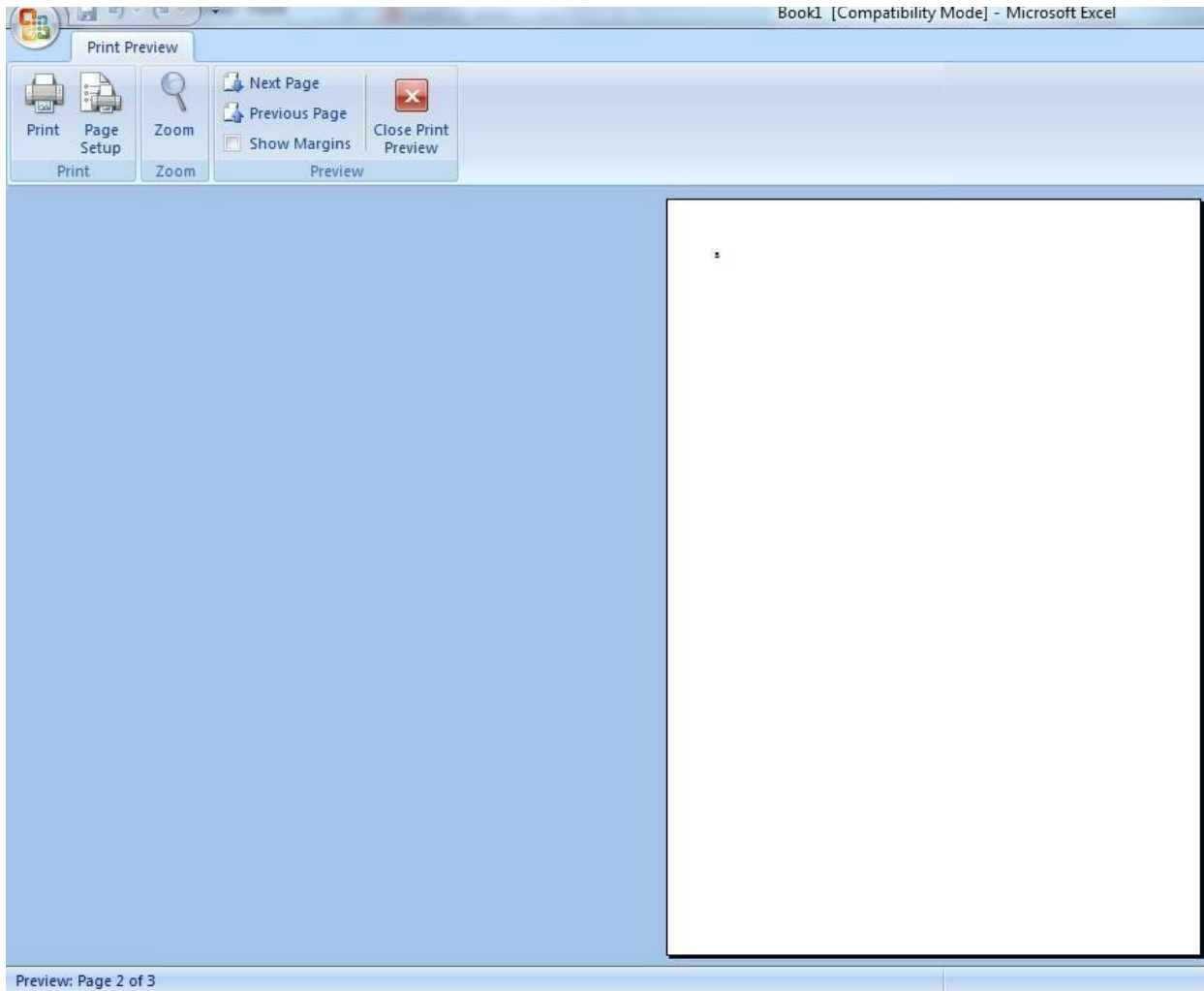


If you've saved your work before, you're done.

2. If this is the first time, go on to complete the next steps:
 1. Under **Save As**, pick where to save your workbook, and then browse to a folder.
 2. In the **File name** box, enter a name for your workbook.
 3. Click **Save** to finish.

8.17 Print your workbook

1. Click **File>Print**, or press Ctrl+P.
2. Preview the pages by clicking the **Next Page** and **Previous Page** arrows.



The preview window displays the pages in print range. If you don't like your printer settings for printouts, you can [change page margins](#) or [add page breaks](#).

3. Click **Print**.

8.18 Summary

In short, Microsoft Excel is an electronic spreadsheet which is used to organize the data into rows and columns. It is also used to perform mathematical calculations quickly. The program operates on data represented as cells of a table, organized in rows and columns. The business houses use spreadsheets for calculating taxes and revenues, making basic payrolls etc. Customized as well as statistical formulas can also be designed in the excel spreadsheet package.

8.19 Glossary

Active cell	The selected cell in which data is entered when we begin typing. Only one cell is active at a time. The active cell is bounded by a heavy black border.
Cell	A box formed by the intersection of a row and column in a worksheet or a table, in which you enter information
Chart area	The entire chart and all its elements
Column heading	The lettered or numbered gray area at the top of each column. Click the column heading to select an entire column. To increase or decrease the width of a column, drag the line to the right of the column heading.
Copy area	The cells that you copy when you want to paste data into another location. After you copy cells, a moving border appears around them to indicate that they've been copied.
Excel add-in	Components that can be installed on your computer to add commands and functions to Excel. These add-in programs are specific to Excel. Other add-in programs that are available for Excel or Office are Component Object Model (COM) add-ins.
Formula	A sequence of values, cell references, names, functions, or operators in a cell that together produce a new value. A formula always begins with an equal sign (=).
Formula bar	A bar at the top of the Excel window that you use to enter or edit values or formulas in cells or charts. Displays the constant value or formula stored in the active cell.
Input cell	The cell in which each input value from a data table is substituted. Any cell on a worksheet can be the input cell. Although the input cell does not need to be part of the data table, the formulas in data tables must refer to the input cell.
Insert row	In an Excel table, a special row that facilitates data entry. The Insert row is indicated by an asterisk.
Merged cell	A single cell that is created by combining two or more selected cells. The cell reference for a merged cell is the upper-left cell in the original selected range.
Print area	One or more ranges of cells that you designate to print when you don't want to print the entire worksheet. If a worksheet includes a print area, only the print area is printed.
Print titles	Row or column labels that are printed at the top of or on the left side of every page on a printed worksheet
Protect	To make settings for a worksheet or workbook that prevent users from viewing or gaining access to the specified worksheet or workbook elements.
Range	Two or more cells on a sheet. The cells in a range can be adjacent or nonadjacent.
Row heading	The numbered gray area to the left of each row. Click the row heading to select an entire row. To increase or decrease the height of a row, drag the line below the row heading.
Sort order	A way to arrange data based on value or data type. You can sort data alphabetically, numerically, or by date. Sort orders use an ascending (1 to 9, A to Z) or descending (9 to 1, Z to A) order.
Template	A workbook that you create and use as the basis for other similar workbooks. You can create templates for workbooks and worksheets. The default template

for workbooks is called Book.xlt. The default template for worksheets is called Sheet.xlt.

Workbook A spreadsheet program file that you create in Excel. A workbook contains worksheets of rows and columns in which you can enter and calculate data.

Worksheet The primary document that you use in Excel to store and work with data. Also called a spreadsheet. A worksheet consists of cells that are organized into columns and rows; a worksheet is always stored in a workbook.

Check your progress

1. Which of the following is the latest among these versions of Excel?

C. Excel ME

D. Excel 2010

2. What is the default extension of Excel files in Excel 2013?

A. XLSX

B. XLW

C. XLS

D. 123

3. Which of the following is a popular DOS based spreadsheet package?

A. Word

B. Smart Cell

C. Excel

D. Lotus 1-2-3

4. Which of the following is the oldest spreadsheet package?

A. VisiCalc

B. Lotus 1-2-3

C. Excel

D. StarCalc

5. Files created with Lotus 1-2-3 have an extension

A. DOC

B. XLS

C. 123

D. WKS

A. Excel 2013

B. Excel 2002

6. How many characters can be typed in a single cell in Excel?

A. 256

B. 1024

C. 32,000

D. 65,535

7. A Worksheet can have a maximum of ____ number of rows

A. 256

B. 1048576

C. 32,000

D. 65,536

8. A typical worksheet has ____ number of columns

A. 16384

B. 256

C. 512

D. 1024

9. Comments put in cells are called

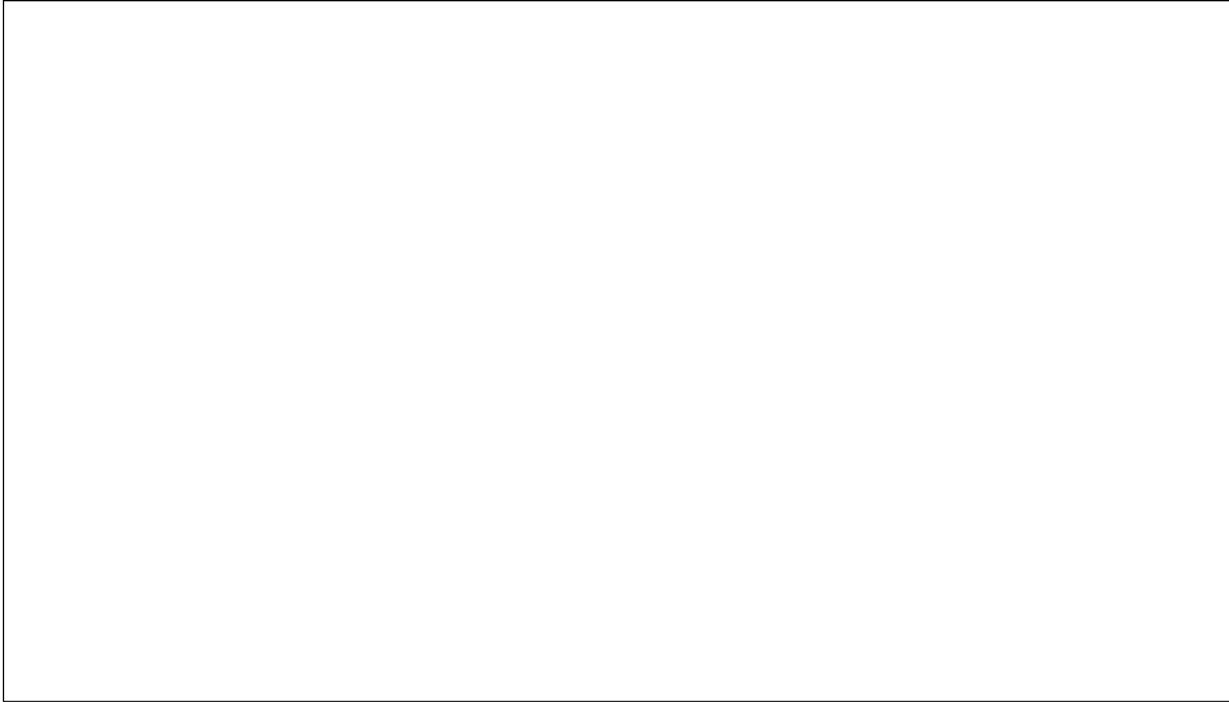
A. Smart Tip

B. Cell Tip

C. Web Tip

D. Soft Tip

10. Which Chart can be created in Excel?
A. Area
B. Line
C. Pie
D. All of the above
11. The number of rows in a worksheet is
A. 36500
B. 65536
C. 256
D. 64536
12. Getting data from a cell located in a different sheet is called....
A. Accessing
B. Referencing
C. Updating
D. Functioning
13. Which of the following is not a valid data type in Excel?
A. Number
B. Character
C. Label
D. Date/Time
14. Which elements of a worksheet can be protected from accidental modification?
A. Contents
B. Objects
C. Scenarios
D. All of the above
15. A numeric value can be treated as label value if precedes it.
A. Apostrophe (')
B. Exclamation (!)
C. Hash (#)
D. Tilde (~)
16. Concatenation of text can be done using
A. Apostrophe (')
B. Exclamation (!)
C. Hash (#)
D. Ampersand (&)
17. Data can be arranged in a worksheet in an easy to understand manner by
A. Auto Formatting
B. Applying Styles
C. Changing fonts
D. All of these
18. Which area in an Excel window allows entering values and formulas?
A. Title Bar
B. Menu Bar
C. Formula Bar
D. Standard Tool Bar
19. Multiple calculations can be made in a single formula using.....
A. Standard Formulas
B. Array Formula
C. Complex Formulas
D. Smart Formula
20. An Excel Workbook is a collection of
A. Workbooks
B. Worksheets
C. Charts
D. Worksheets and Charts



8.20 Answers to check your progress

- | | | | |
|------|-------|-------|-------|
| 1. A | 6. B | 11. B | 16. D |
| 2. A | 7. D | 12. B | 17. D |
| 3. D | 8. B | 13. C | 18. C |
| 4. A | 9. A | 14. D | 19. B |
| 5. D | 10. D | 15. A | 20. B |

8.21 References/ Suggested Readings

- Excel 2013 In Depth by Bill Jelen
- Microsoft Excel 2013 Step By Step by [Curtis Frye](#)
- www.bookboon.com/en/excel-ebooks
- www.freecomputerbooks.com/Microsoft_Office_Excel.html
- www.launchexcel.com

8.22 Terminal and Model Questions

- 1) Define a spreadsheet. What is its importance?
- 2) How a spreadsheet can be used to optimize the business?
- 3) Write down the syntax command of formulae that are commonly used in business?

4) Write a detailed note on MS Excel spreadsheet package.

9. Microsoft PowerPoint

Structure

9.0 Objectives

9.1 Introduction to Power Point

9.2 Features of PowerPoint

9.3 Starting with MS Power

9.3.1 Create a new Slide

9.3.2 Save the file first time

9.3.3 Save the presentation file in other formats

9.3.4 Printing the Power Point Presentation

9.4 Using Home Tab

9.4.1 Adding, Moving or Deleting a Slide

9.5 Using Insert Tab

9.6 Using Design Tab

9.7 Using Animation Tab

9.8 Using Slide Show Tab

9.9 Using Review Tab

9.10 Using View Tab

9.11 Summary

9.12 Glossary

9.13 Answers to check your progress

9.14 References / Suggested Readings

9.15 Terminal and Model Questions

9.0 Objectives

After reading this chapter, the students will be able to understand:

- The basics of MS PowerPoint
- Features of MS PowerPoint
- Designing the PowerPoint Presentation
- Adding Multimedia to the PowerPoint Presentation
- Advanced Features in MS PowerPoint

9.1 Introduction to PowerPoint

MS PowerPoint is a powerful tool which helps us to communicate our views and ideas effectively using diagrams, clips, arts, sounds, colors and animated effects. It is a software package designed to create electronic presentations consisting of a series of separate pages or slides. This [slide-based presentation program](#) developed by [Microsoft](#) Company and launched in 1990, is a part of the [Microsoft Office](#) suite. PowerPoint presentations consist of a number of individual pages commonly called "slides". The "slide" here refers to a page which can be displayed on LCD projector. Earlier the term slides were used for transparencies/plastic sheets that were shown with an [overhead projector](#), but now are less in use these days. Slides contain the contents like Text, Tables, Bulleted and numbered lists, Graphics, Audio, Video, Many other types of content.

9.2 Features of PowerPoint

- PowerPoint provides various features of flexibility and the ability to create a professional presentation.
- It also provides the ability to create a presentation that includes music or sound effects which can be played throughout the entire presentation.
- One can also add sound files, movies and graphics into slides
- PowerPoint allows the user to record the slide show with narration and a laser pointer.
- The slide shows can also be customized to show the slides in a different order than originally designed and to have slides appear multiple times.
- It also offers the ability to broadcast the presentation to specific users via a link.

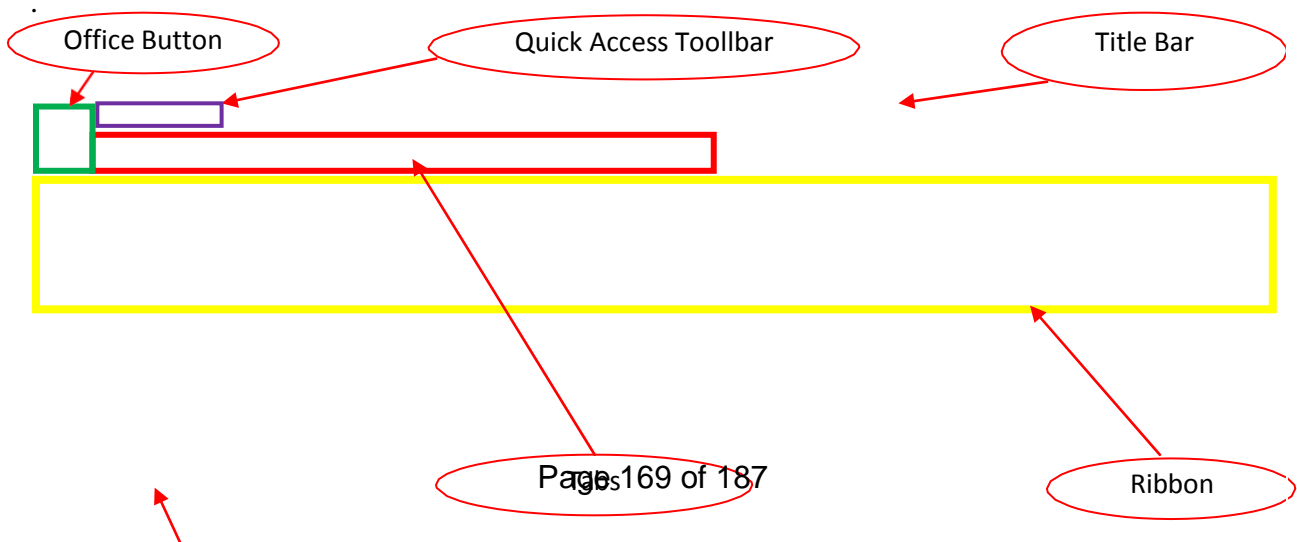
Activity A

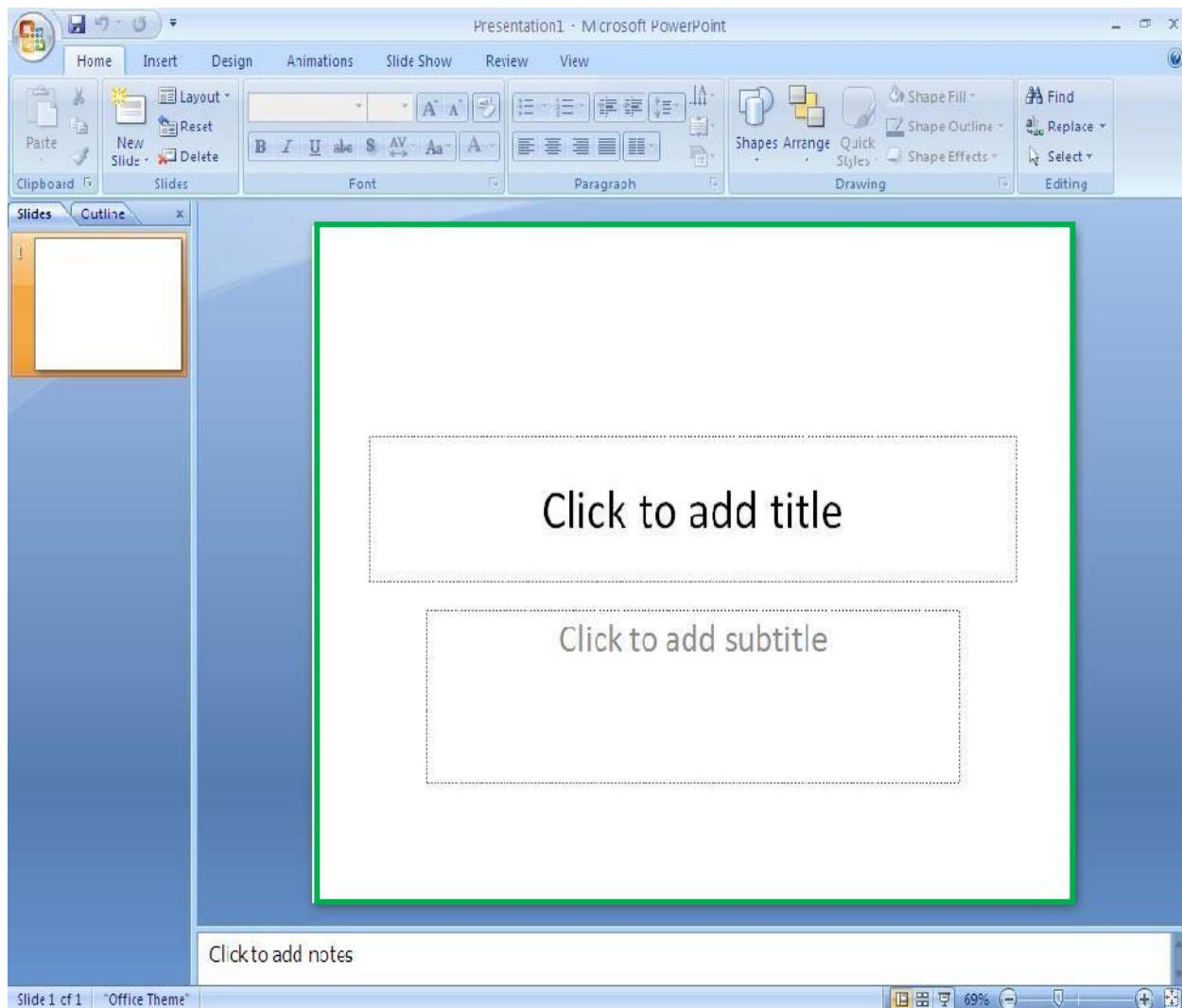
Explain importance of MS-Excel in business application?

[illegible]

9.3 Starting with MS PowerPoint:

On starting PowerPoint, a blank presentation named **presentation1** appear on the screen as follows





Above said window (named Presentation1) consists with following components:

Title Bar: It displays the name of the presentation on which you are currently working.

Quick Access Toolbar: It contains commands that are used frequently

MS Office Button: This button allows us to create a new presentation, open an existing presentation, save and save as, print, send or close the presentation.

Ribbon: The Ribbon is located at the top of the PowerPoint window. It has seven tabs- Home, Insert, Design, Animations, Slide Show, Review and view. Each tab contains arranged group of commands.

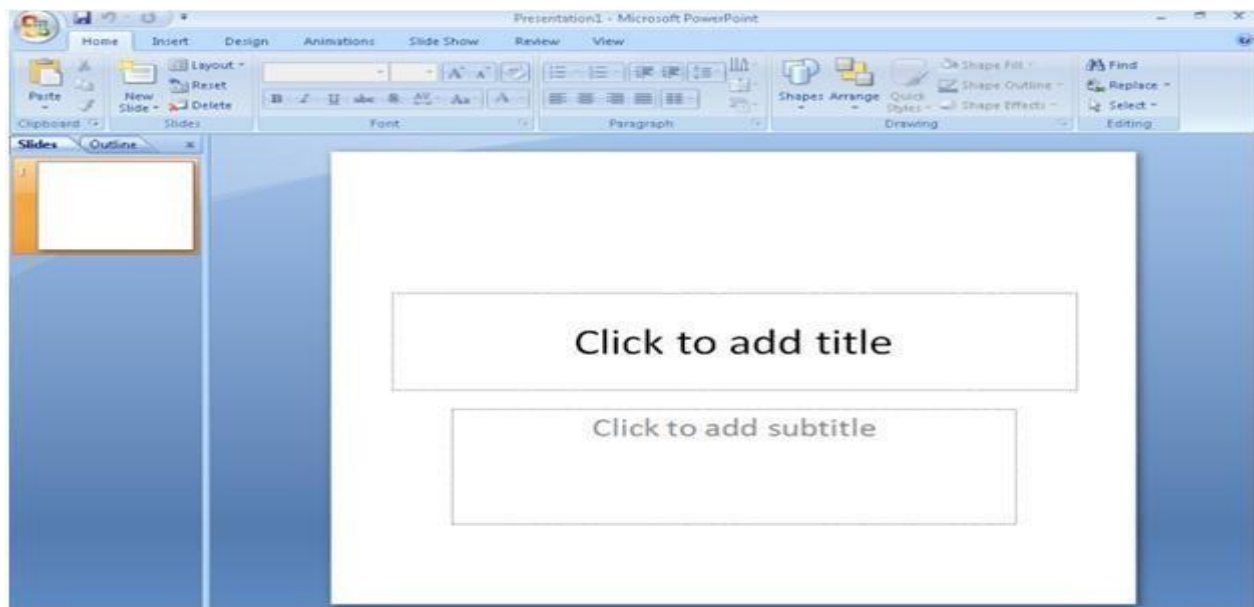
Slide Pane: In the slide pane, you can work directly on individual slides.

Status Bar: The status bar is located at the bottom of the MS PowerPoint window. It displays the current slide (See No. 1 in the above figure). View the document in different ways using the buttons to the right of the status bar (See No. 2 in the above figure): Normal, Slide Sorter and Slide Show. A slider allows you to zoom in or out of your document (See No. 3 in the above figure)


9.3.1 Create a new slide

The MS PowerPoint interface brings out all the functionality of the software using tabs rather than drop-down menus. You should get acquainted with the different parts of the main window:

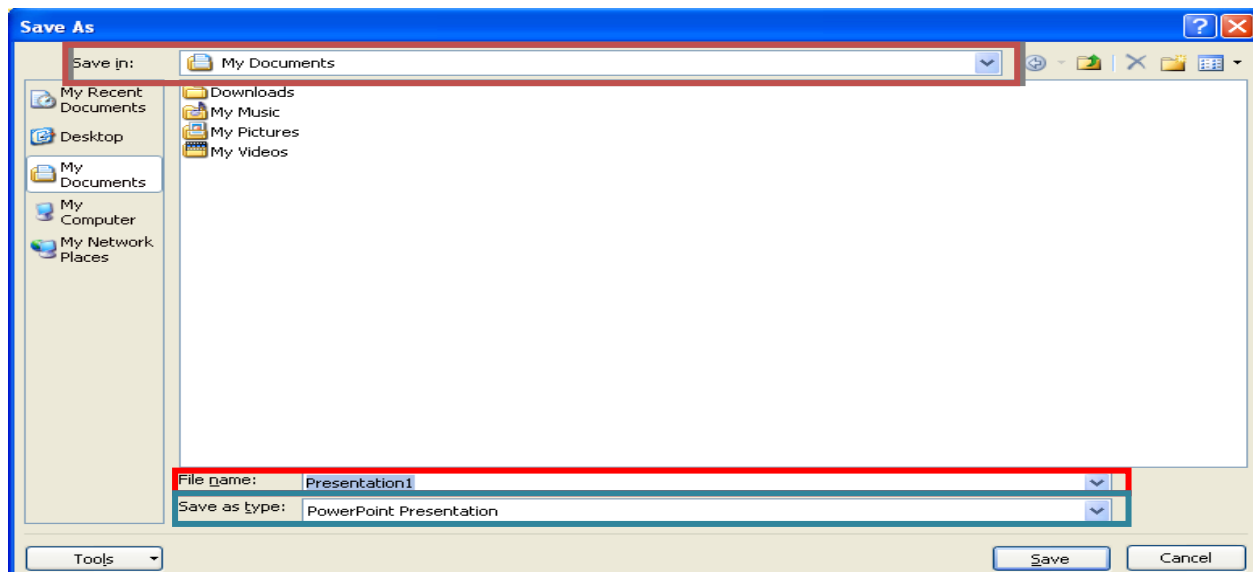
- Slide: A content holder for text and images. To insert additional slides click New Slide under the Slides section of the Home tab. The slide below is called the Title slide where you should enter the title of your presentation and information related to you, your organization, and colleagues.
- Text box: A box outlined by dotted lines is where you enter your textual content



9.3.2 Save the file first time:

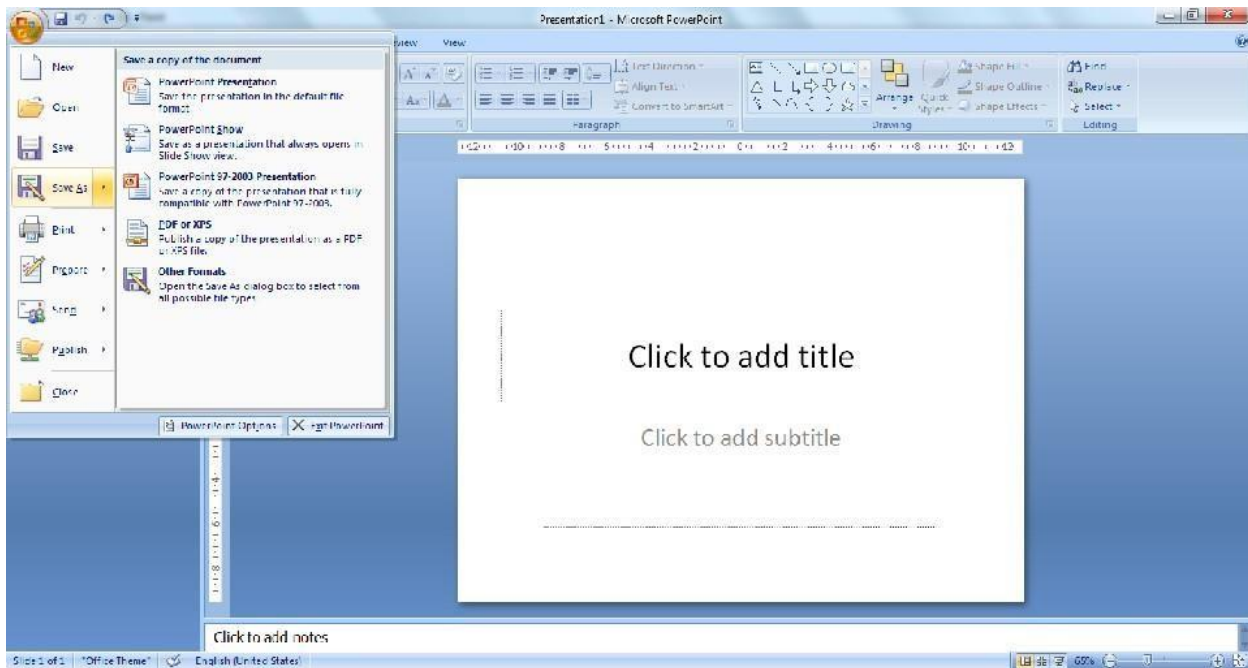
To save your document for the first time, click the Microsoft Office icon  located on the upper left side and then select the Save command. The duplicate copy can also be created

of existing file using Save As command of Microsoft icon. Following popup box will be open when any one click on Save As command



- **Save in:** Choose the location to place your file, i.e. to your desktop, a folder on the hard disk, Pen drive etc.
- **File name:** Give any name to your file. Note, do not include a file extension.
- **Save as type:** Make sure PowerPoint Presentation appears here. Otherwise, select it in the drop down menu. If not, choose, it may be stored in another format.

After saving first time, you will only need to select the Save menu choice for subsequent saves. An even faster way to do this is to use the hot button provided on the Quick Access Toolbar. Remember to save your document frequently. The Presentation can also be saved in pdf or xps format or any other format mentioned in the figure.



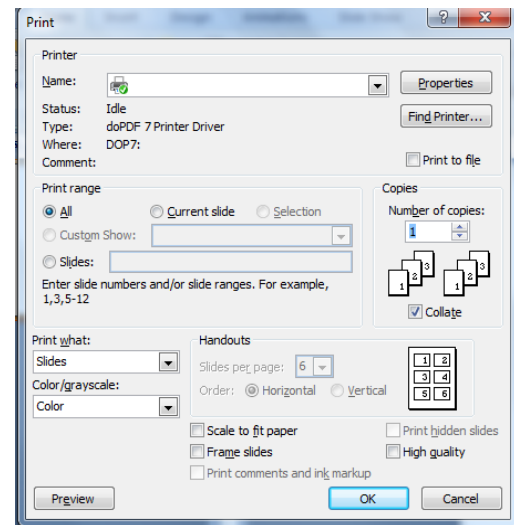
9.3.3 Saving the presentation file in other formats

A MS PowerPoint 2013 file can also be saved in MS PowerPoint 1997-2003 document format and vice versa using the Save As→ PowerPoint Presentation command (see next figure on the left).

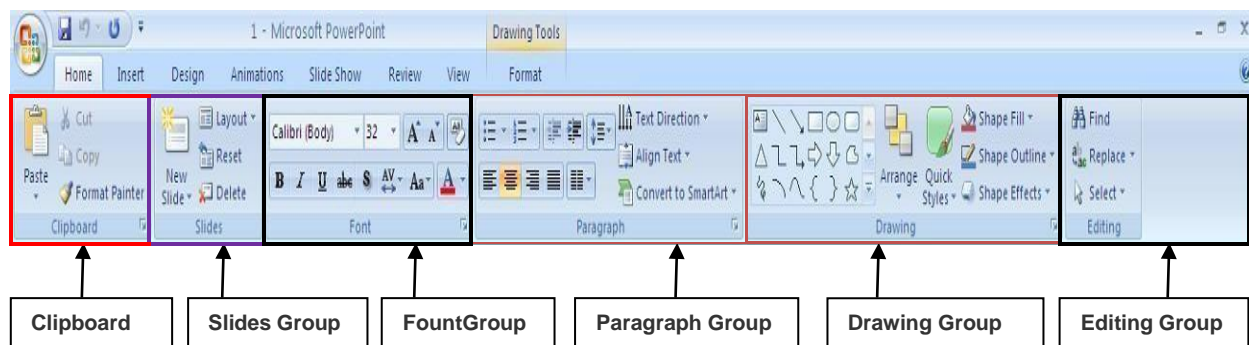


9.3.4 Printing the PowerPoint Presentation

- To print the slides, click on MS Office button and then click print.
- All the slides or the required slides can be printed using the print range.
- Write the number of copies of slides required.
- The handouts can be printed by selecting the option from 'Print'
- The handouts option will get active and asks for the number of slides to be printed on a sheet.
- The slides can be printed in color or in grayscale.



9.4. Using the Home Tab



Clipboard Group: This group contains various commands for editing the text such as Cut, Copy and Paste. The Format Painter command copies formatting rather than actual text or data. This group also contains a Dialog Box Launcher arrow in the lower-right.

Slides Group: The Slides group in the Home tab contains commands for inserting new slides into the presentation. In addition to this, the group contains commands for adjusting the slide layout and to delete the slides from the presentation.

Font Group: The Font group contains all the commands for different type of formatting for the given text in the presentation like Bold, Italic, & Underline as well as the font face and font size. You'll notice that things like Shadow, Font Color and Clear Formatting are also contained

in this group. This group contains a Dialog Box Launcher arrow in the lower-right corner that opens the Font dialog box when clicked.

Paragraph Group: Through this group one can set the formatting of text in the presentation. Data can be set in the Left, Right or Center of the slide. In addition to this, data can be justified or put into two or more columns. We can also use bullet numbering and increase or decrease the left and right indent levels. This group contains a Dialog Box Launcher arrow in the lower-right corner that opens the Paragraph dialog box when clicked.

Drawing Group: The **Drawing** group on the Home tab contains commands for creating and editing drawing shapes.

Editing Group: The **Editing** group is the last one on the Home tab and contains commands for finding and replacing data as well as to select the text.

Activity A

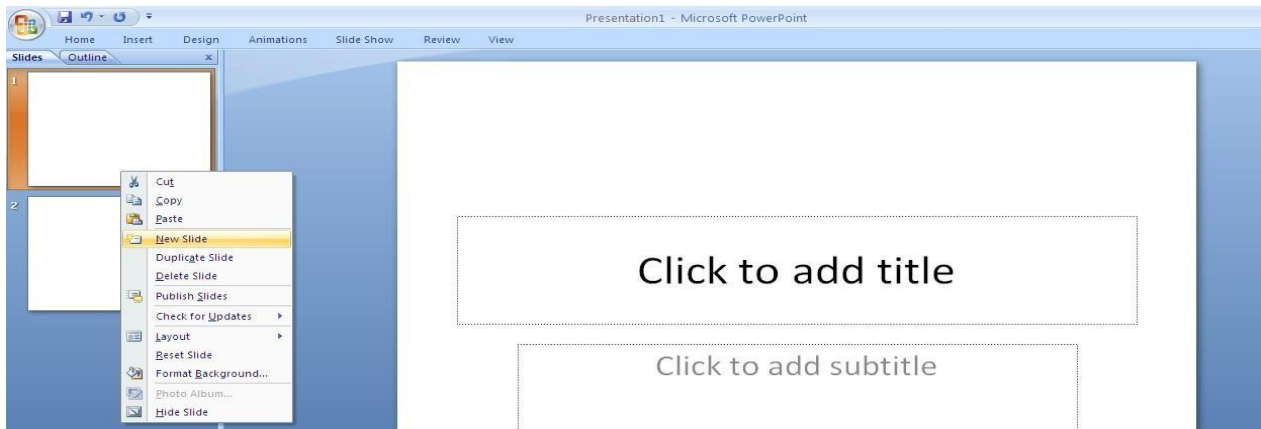
What is the best way to design the layout for your slides?

[illegible]

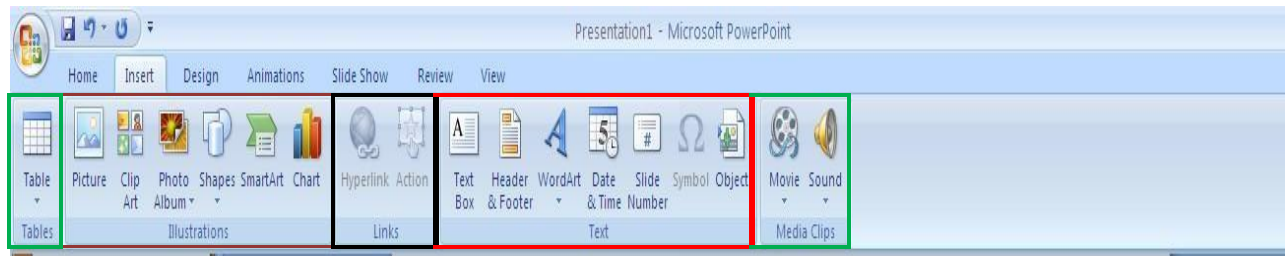
9.4.1 Adding, Moving or deleting a slide

A PowerPoint Presentation slide can be added at the beginning or in between the slides without any hassle. Right click mouse button and then left click on the new slide, the new slide appears

- In case, a slide needs to be moved, just drag the slide with the mouse and release the mouse button where it needs to be placed.
- If the user wants to delete the slide, he/she can click on the particular slide and then select the option delete.
- Following window is to be used to create new slide.



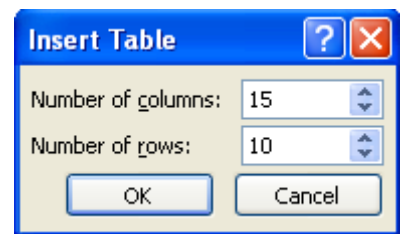
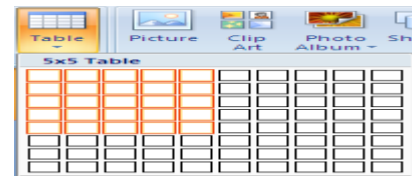
9.5 Using Insert Tab



Insert tab can be used to insert various types of objects including tables, images, illustrations, links, text, symbols, and media clips

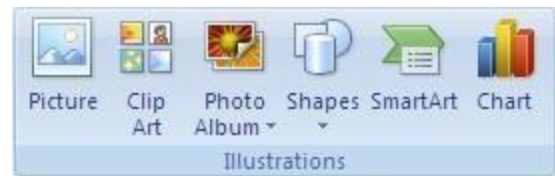
Table group:

- To create table on the slide, click on the **Table icon** from the **Tables group** and then select the number of cells for the table. Example to create 5 rows and 5 columns is shown in the given clip.
- If you need a table that is larger than 8 rows and 10 columns, click Insert Table. The Insert Table window will open up and number of columns and rows can be specified. The table will be created with specified rows and columns in the slide.



Illustrations Group: This group contains various type of commands for drawing pictures, ClipArt, Shapes and charts. Pictures, graphs, charts and shapes to make PowerPoint slides more impressive.

- Click on Insert function and the ribbon with various functions appear.
- Click on the table or picture, etc you want to insert in the slide.
- To insert WordArt, to make titles or headings attractive, click on WordArt option.



Links Group: This group contains two commands like hyperlink and action. Whenever we use the Web, we are using hyperlinks to navigate from one webpage to another. If we want to include a web address or email address in the PowerPoint presentation, we can choose to format them as hyperlinks. It's also possible to link to files and other slides within a presentation.

- Through hyperlink one can give link to other files, websites and email etc. from the slide.



- The action command will help you to build interactivity into the presentation

Text Group: Through this group one can put various type of components on the slide like text box, header and footer, date and time, slide number, symbols and objects

- A text box is an object that lets you put and type text anywhere in your file.
- Header and footer can also be inserted if required so that it appears on every slide.
- To insert slide numbers, click on 'Slide Number' option to number the slides consecutively.
- To insert WordArt, symbols and object on the slide, you just click on the respective icon.



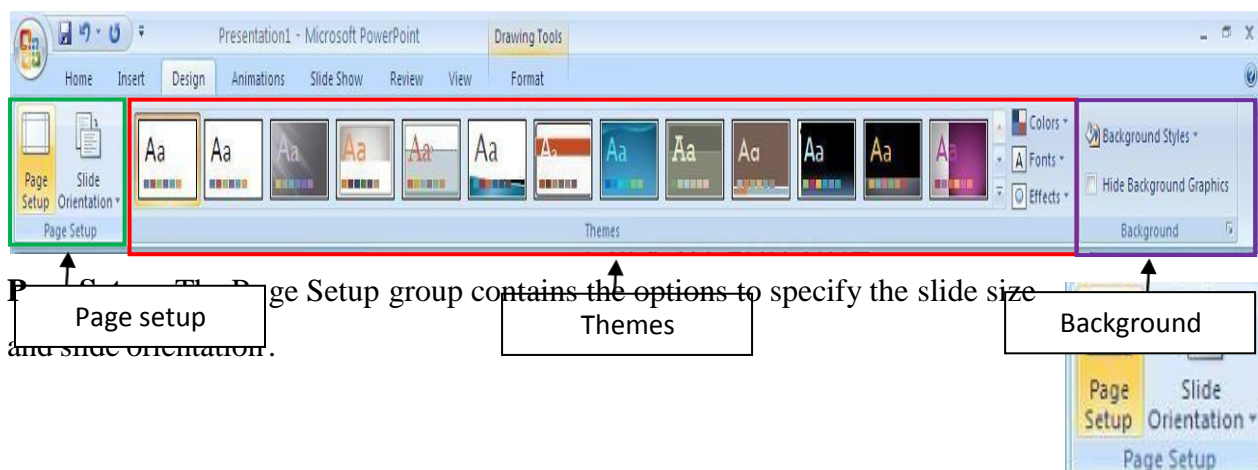
Media Clips Group: In PowerPoint slide, media clips (movie, sound) can also be inserted. Following procedure is to be used to insert media clips in the slide.

- To insert an audio clip in the PowerPoint slide, click on 'Sound' and browse for the audio file to be inserted
- The program also has an option to record the audio
- To insert a movie clip in the PowerPoint slide, click on 'Movie' and browse for the movie file to be inserted in the slide



9.6 Using Design Tab:

The Design tab contains the basic slide formatting tools. This tab consists with various commands related to the appearance of the slides like slide size and orientation (i.e. Landscape versus Portrait), add a preformatted theme or set a background color. Note that Themes and Background Color employ Live Preview to see what the theme or color would look like on the slide before applying it.



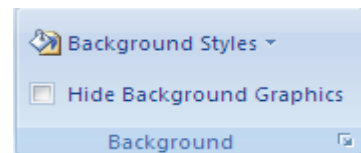
- Click Page Setup under the Page Setup group to make changes to your slide size and orientation.
- To only change the page orientation of your presentation, click Slide Orientation under the Page Setup group and then select Portrait or Landscape.

Themes: To set a theme for your presentation, select the theme you wish to use under the Themes group. For additional themes, select the more icons under the Themes group. More

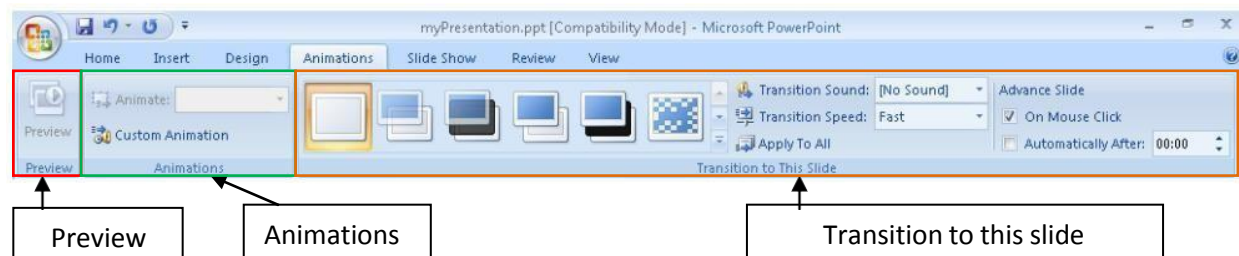


themes will be shown along with an option to download more themes from the Microsoft Office Online site. The theme colors, fonts, and effects can be changed by using the options to the right of the theme i.e. Color, font's, and effects.

Background: The background styles of the PowerPoint slides can be designed using the design function of the program. The background graphics can also be hidden if the option of 'hide background graphics' is checked.

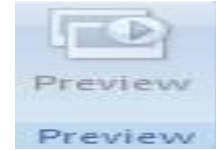


9.7 Using Animation Tab

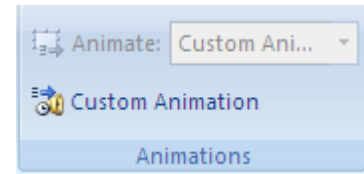


The Animation tab consists of three groups of controls like preview, animations and transition to this slide. It has ability to add various types of effects on individual slide in the presentation. An animation sets up the way you want text or an object to appear on the slide during a slide show presentation. In addition to this, it provides visual interest to the presentation and grab the audience's attention when you deliver presentation to others. The Transition to This Slide section allows you to define a variety of ways to transition between slides during the presentation. The Animations section allows you to animate text, illustrations, tables, etc. on a slide. The preview section is used to play the animation.

Preview Group:- It display a preview of the animation effects you selected for current slide. It allows you to preview how an actual change will look on the slide before you decide to accept or decline that change. It is also used to play the presentation.



Animation Group:- Through this group we can create animation effect on the slides. Predefined effects can be selected from the animate Drop Down list or can use custom animation for various types of effects on the slides.



Custom Animation: We can create custom animations to specify exactly what we want to animate and how it should be done.

- Select the slide which should be animated.
- Click on the custom animation button. **‘Custom Animation’** window appears on the right side of the screen.
- Select any object on the slide and click on **‘Add Effects’** button for animation.

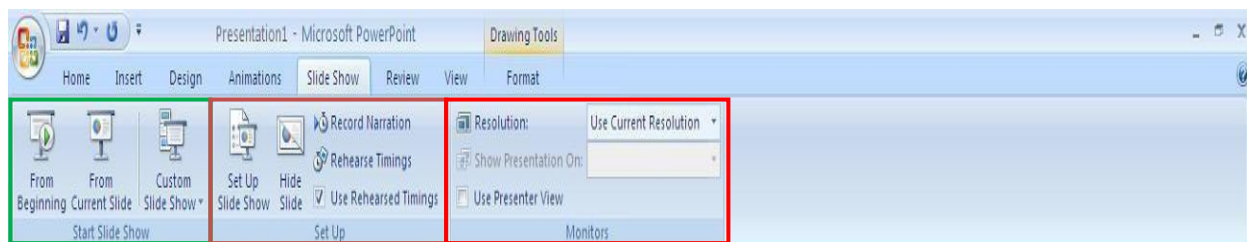
Transition Group:- This group sets the transition effects that is used when the slide is displayed.



If we do not add transitions, your presentation will move from slide to slide with a click of the mouse button or by pressing Enter or the right arrow key. If we want the presentation to play on its own, you must set slide transition.

9.8 Using Slide Show Tab

MS PowerPoint program also provides for slide shows where we can put the slides for presentation show. The slide show can be programmed or customized. For automated slide show, rehearsed timings can be adjusted so that the slides automatically change from one to another after a fixed time interval. It consist with three groups like start slide show, setup, monitors.



Start Slide Show Set Up Monitor See commands to play the presentation as follows.

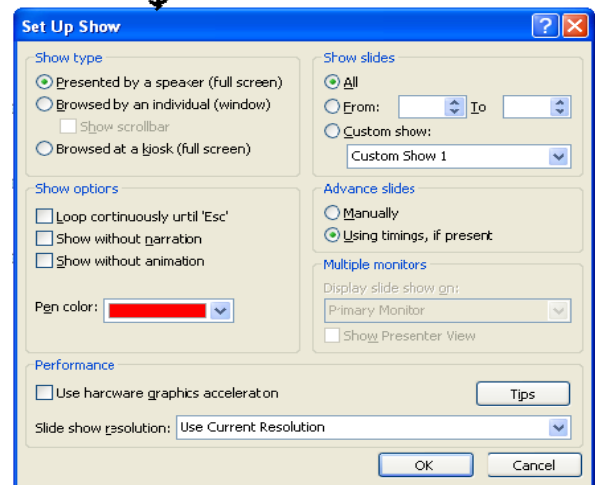
- From Beginning: To view your slide show from the beginning.
- From Current Slide: To view your slide show from the current slide
- Custom Slide Show: To create a slide show of a different order or including different slides



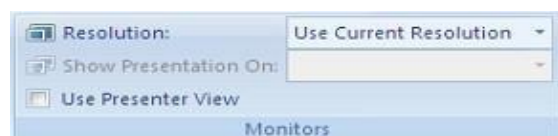
Set Up Group: It consists with various commands like Set Up slide Show, Hide Slide, Record Narration, Rehearse Timings, Use Rehearsed Timings, Set Up.



- **Set Up slide Show:** Through this command we can perform function like
 - Whether the presentation is given in a full screen.
 - Whether to loop continuously until 'Esc,' show with or without narration, or show with or without animation.
 - What the pen color will be.
 - Whether to show all slides or a selection.
 - Whether the slides are advanced manually or using timings.
 - In the instance that there is more than one monitor, whether or not to show the slide on the primary monitor.
- **Hide Slide:** This command is used to hide the selected slide.
- **Record Narration:** Once you click on Record a Narration, a window will pop up which will allow you to set your microphone level and record your sound.
- **Rehearse Timings:** This option allows you to insert automatic timings.



Monitors Group: Through this group one can change the resolution of the screen, click on the arrow next to Use Current Resolution and select the resolution you would like to use.



Using Presenter View is a great way to view your presentation with speaker notes on one computer, while your audience views the notes-free presentation on a second monitor (for example projected on a larger screen) in this way, you can spare your audience a text-filled presentation and spare yourself the juggling between class notes and your PowerPoint

9.9 Using Review Tab:



Proofing Group: It consists with following commands.

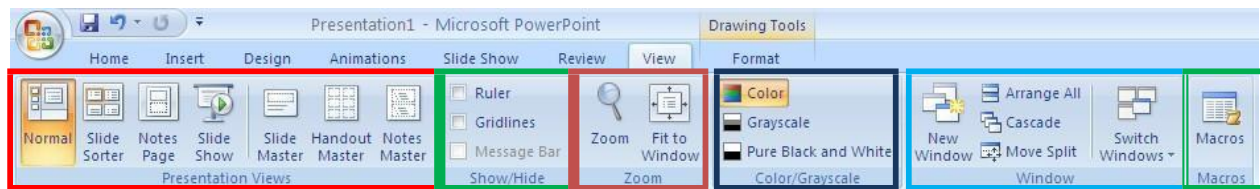
- **Spelling:** It perform a spell-check on your writing.
- **Research:** Tolook up any word in a dictionary, thesaurus, or encyclopedia.
- **Thesaurus:** Tolook up synonyms for any word.
- **Translate:** Tolook up translations for any word, in several different languages.
- **Language:** Tomark selected text as belonging to a certain language; this will allow for spell checking in that language.

Comments Group: Through this group one can give small comments related to inserting, deleting and navigating comments to the slide.

- **Show Markup:** If you don't want to view the comments that have been made, simply click on Show Markup. This willhide your comments from view. If you would like to view them, click this button again.
- **New Comment:** To give new comment.
- **Edit Comment:** To change existing contents of comment as desired by the user.
- **Delete:** To delete existing comments.
- **Previous and Next command:** To reviewing a presentation with someone else's comments, navigate through them by clicking on Previous or Next.

Protect Group: It contains only one command which is used to set password security on the current presentation

9.10 Using View Tab



Normal: This is the view that PowerPoint naturally begins with. It allows you to see the current slide in detail, outlines, slide thumbnails, and notes.

Slide Sorter: This view displays all the slides of the presentation in horizontally sequenced, thumbnail sized slides.

Notes Page: This view focuses on the Notes area. It allows to view, edit, or add notes to each of the slides, which can then be printed.

Masters: It is a way to set the same appearance for all slides. There are three types of Master on the View tab i.e. Slide Master, Notes Master, and Handout Master. On the **Slide Master**, anything you add or change will appear on all existing slides.

Slide Show: This starts the slide show.

Show/Hide: To make visible a ruler at the sides, or gridlines which help you align objects on a slide.

Zoom: To make the view of the slide larger or smaller.

Color/Grayscale: To view the slides in Color, Gray-Scale or Black & White

New Window: This command is used to open more than one presentation (with same contents) at the same time. After opening a windows, it can arranged, cascade them, or split the screen.

Macros: This is an advanced feature. A "Macro" is a kind of mini-program. You can tell your computer to remember a series of actions (menu commands, mouse clicks, etc.) and perform them automatically.

9.11 Summary

MS PowerPoint is a part of MS Office suite which has been developed primarily for preparing electronic presentation consisting of slides. The slides can be viewed on computer or projector and is used in meetings, academics, business or other purposes. MS PowerPoint provides flexibility to prepare the slide shows and audio/video can also be inserted in the presentation.

9.12 Glossary

- **Animation:** Any type of motion or movement that occurs.
- **Bold:** Text emphasis in which the text is darker than the surrounding text; used to emphasize key words.
- **Clip art:** A collection of predefined graphic images included with Microsoft Office or downloaded from the Web. Clip art is also available from several vendors and can be purchased as a CD-ROM collection or used on a royalty paid basis.
- **Crop:** The process of removing unwanted areas of a picture.
- **Font:** A set of letters, numbers, and punctuation marks with the same design, shape, and appearance.
- **Hyperlink:** A navigational element used in a document, presentation, or Web page that, when clicked, will link to, or take you to, another location. In a PowerPoint presentation, hyperlinks can also be used to link to a slide in the presentation, to a slide in a different presentation, or to a custom slide show.
- **Layout:** The placement of objects on a slide by using placeholders in a specific arrangement that can be customized.
- **Normal view:** The window is divided into three panes: the Slides/Outline pane, the Slide pane, and the Notes pane.
- **Notes pane:** Displays below the Slide pane and allows you to type notes regarding the active slide.
- **Print Preview:** Enables you to see how a presentation will look when printed using the print options that you select.
- **Quick Access:** Toolbar-Displays buttons to perform frequently used commands with a single click. Frequently used commands in PowerPoint include Save, Undo, Repeat, and Print. For commands that you use frequently, you can customize the Quick Access Toolbar by adding additional buttons.
- **Ribbon:** Organizes commands on tabs, and then groups the commands by topic for performing related presentation tasks.
- **Slide:** The individual page that includes any combination of text, graphics, images, video, or sound.
- **Slide pane:** Displays a large image of the active slide.

- **Slide show:** Slides display one at time and at the full height and width of the computer screen.
- **Template:** A predefined document that contains formatting information.
- **Theme:** A set of coordinated design elements, such as fonts, graphics, and colors, that provide a consistent look for your presentation.
- **Transition sound:** A prerecorded sound that can be applied and will play as a transition occurs.
- **Transition speed:** The timing of the transition-Slow, Medium, or Fast-between all slides or between the previous slide and the current slide.

Check your progress

1. Which of the following pane is not available in Task Pane?
 - a) Getting Started
 - b) Clip Art
 - c) Word Art
 - d) Search Results
2. Special effects used to introduce slides in a presentation are called
 - a) Effects
 - b) Custom animations
 - c) Transitions
 - d) Present animations
3. You can edit an embedded organization chart object by
 - a) Clicking edit object
 - b) Double clicking the organization chart object
 - c) Right clicking the chart object, then clicking edit MS-Organization Chart object
 - d) b and c both
4. Which of the following is the default page setup orientation of slide in PowerPoint
 - a) Vertical
 - b) Landscape
 - c) Portrait
 - d) None of above
5. Objects on the slide that hold text are called
 - a) Placeholders
 - b. Object holders
 - c) Auto layouts
 - d) Text holders
6. Which of the following is/are true about rulers and guides?
 - a) Rulers and guides can be turned on or off
 - b) Rulers and guides print on the slide
 - c) Rulers and guides help place objects on the slide
 - d) a and c

7. A cell is defined as

- a) Intersection of a column and a row b) An input box
c) A rectangular marker d) All of the above

8. Which menu provides you options like Animation Scheme, custom Animation, SlideTransition?

- a) Insert Menu b) Format Menu
c) Tools Menu d) Slide Show Menu

9. Which of the following statement is true?

- a) You can insert text boxes from drawing toolbar in PowerPoint
b) You cannot insert text boxes from drawing toolbar in PowerPoint
c) Text boxes are provided when you choose a layout and can't be inserted afterwards
d) None of above

10. The selected design template can be applied

- a) To current slide only b) To all the slides
c) To all the new presentation you create d) All of above

9.13 Answers to check your progress

Answers: 1 c. 2.c 3. d 4.b 5.a 6.d 7.a 8.d 9.a 10.d

9.14References / Suggested Readings

- Microsoft PowerPoint 2013 by Joan Lambert
- Microsoft PowerPoint 2013 Bible by Faithe Wempen
- www.wpi.edu
- <http://poza.net/fa07/powerpoint/ppt9.html>

9.15 Terminal and Model Questions

- 1) Define PowerPoint Presentation and its features.
- 2) What is the importance of PowerPoint Presentation in the modern business society?
- 3) How the PowerPoint slides are helpful to the students in their studies?

