جامعة ديالى

University of Diyala

وزارة التعليم العالي والبحث العلمي

Computers Principles
First Lecture/ Introduction of Computers

Civil Engineering Department
College of Engineering / Diyala University/ 2016-2017.

Dr. Qasim Adnan Aljanabi

What is Computer?

➢ **_Computer_** is a machine that performs tasks or calculations according to a set of instructions, or programs.

- The first fully electronic computers, introduced in the 1940s, were huge machines that required teams of people to operate.
- Computers work through an interaction of hardware and software.

➢ **_Hardware_** refers to the parts of a computer that you can see and touch, including the case and everything inside it. Hardware items such as your monitor, keyboard, mouse, printer, and other components are often called hardware devices, or devices.

➢ **Software** refers to the instructions, or programs, that tell the hardware what to do. A word-processing program that you can use to write letters on your computer is a type of software.

What can do with computers?

➢In the workplace, many people use computers to keep records, analyze data, do research, and manage projects.

➢At home, you can use computers to find information, store pictures and music, play games, and communicate with others—and those are just a few of the possibilities.

➢You can also use your computer to connect to the Internet, a network that links computers around the world. Here are some of the most popular things to do with computers: the web, E-mail, Instant messaging, Pictures, music, movies, and gaming.

TYPES OF COMPUTERS

1- Desktop computers

- Desktop computers are designed for use at a desk or table.

- They are typically larger and more powerful than other types of personal computers.

- Desktop computers are made up of separate components, called the system unit, the monitor, mouse, and keyboard, connect to the system unit.

2- Laptop computers and small notebook

Laptop computers are lightweight mobile PCs with a thin screen. Laptops can operate on batteries, so you can take them anywhere. The screen folds down onto the keyboard when not in use.

Small notebook PCs are small, affordable laptops that are designed to perform a limited number of tasks. They're usually less powerful than a laptop, so they're used mainly to browse the web and check e-mail.

3- Smart phones

➢Smart phones are mobile phones that have some of the same capabilities as a computer.

➢You can use a smart phone to make telephone calls, access the Internet, organize contact information, send e-mail and text messages, play games, and take pictures.

➢Smart phones usually have a keyboard and a large screen.

4- Handheld computers

➢Handheld computers, also called personal digital assistants (PDAs), are battery-powered computers small enough to carry almost anywhere.

➢Handheld computers are useful for scheduling appointments, storing addresses and phone numbers, and playing games.

➢ Instead of keyboards, handheld computers have touch screens that you use with your finger or a stylus (a pen-shaped pointing tool).
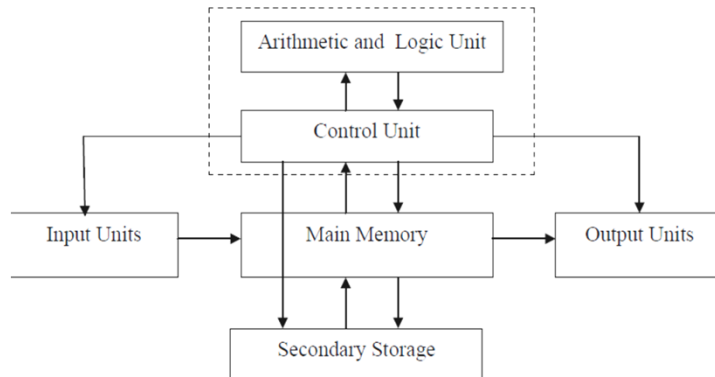

5- Tablet PCs

➢Tablet PCs are mobile PCs that combine features of laptops and handheld computers.

➢Like laptops, they're powerful and have a built-in screen.

➢Like handheld computers, they allow you to write notes or draw pictures on the screen, usually with a tablet pen (the pen that come with table and is used to interact with items in the screen).

Computers Operations

- Input data and instruction by input unit.
- Save and process data and instruction by memory unit and central processing unit.
- Output results and instruction by output unit.

| Arithmetic and Logic Unit |
| Control Unit |
| Input Units | Main Memory | Output Units |
| Secondary Storage |

Computer Hardware Diagram

Computer Hardware

➤If you use a desktop computer, you might already know that there isn't any single part called the "computer" .

➤A computer is really a system of many parts working together.

➤Your system might look a little different, but it probably has most of these parts.
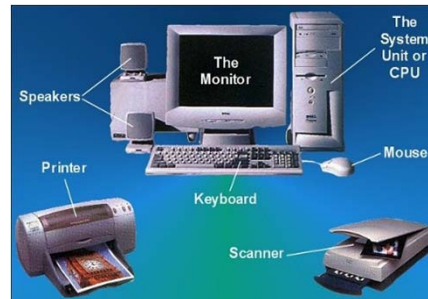
1- Mouse

- *A mouse* is a small device used to point to and select items on your computer screen.

- It's small, oblong, and connected to the system unit by a long wire that resembles a tail. Some newer mice are wireless.

- A mouse usually has two buttons: *A primary button (usually the left button) and a secondary button.*

- Many mice also have a wheel between the two buttons, which allows you to scroll smoothly through screens of information.

2- Keyboard

- A keyboard is used mainly for typing text into your computer. It has keys for letters and numbers, but it also has special keys:

- The function keys, found on the top row, perform different functions.

- The numeric keypad, located on the right side of most keyboards.

- The navigation keys, such as the arrow keys, allow you to move your position within a document or webpage.

3- Monitor

➢A monitor displays information in visual form, using text and graphics. The portion of the monitor that displays the information is called the screen.

➢There are two basic types of monitors: *CRT* (cathode ray tube) monitors and the newer *LCD* (liquid crystal display) monitors.

➢Both types produce sharp images, but LCD monitors have the advantage of being much thinner and lighter.

4- Printer

- A printer transfers data from a computer onto paper.
- The two main types of printers are inkjet printers and laser printers.
- Inkjet printers are the most popular printers for the home.
- They can print in black and white or in full color and can produce high-quality photographs when used with special paper.
- Laser printers are faster and generally better able to handle heavy use.

QUESTIONS - ?

جَامِعَةُ دِيَالَى

University of Diyala

Computers Principles

1-2 Lecture/ Introduction of Computers

Civil Engineering Department
*College of Engineering / Diyala University/ 2016-2017.*

Dr. Qasim Adnan Aljanabi

SYSTEM UNITS

➤ The system unit is the core of a computer system.

➤ Usually it's a rectangular box, inside this box are many electronic components that process information.

➤ The most important of these components is the **Central Processing Unit (CPU), or Microprocessor**.

➤ Another component is **Random Access Memory (RAM),** which temporarily stores information that the CPU uses while the computer is on.

CENTRAL PROCESSING UNIT - CPU

➤ _**CPU**_ is the main circuit chip in computer; it performs most of the calculations necessary to run computer.

➤ CPU speed measured by account of instructions that can execute in one secant, usually measured in (MHz).

➤ CPU contents two units:

1. Control Unit (CU).

2. Arithmetic and Logic Unit (ALU).
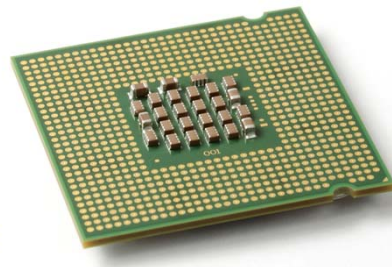
CENTRAL PROCESSING UNIT - CPU

1. Control Unit (CU).

This unit control or supervised to all parts of computers such as:

➢ Control operation of transfers data and instruction from input unit to memory and from memory to output unit.

➢ Control operation of account executable instructions on ALU.

➢ Basic work of CU is interpreter the instructions that is mean data oriented to specific location on ALU.

➢for example: if the instruction is (B+C) the B,C values transfers to (Adder) part, if the instruction is (BxC) the B,C values transfers to (Multiplier) part.

CENTRAL PROCESSING UNIT - CPU

2. Arithmetic and Logic Unit (ALU).

This unit executes the following operations:

➢ Mathematical operations such as: add (+), abstract (-), multiplier (×), divide (÷).

➢ Logical operations: this is basic to account comparisons to choose true or false specific case, such as >,< ,>=,<=,<>,= as a result of these comparisons specific instructions may be executable.

➢ Merge number of simple comparisons by specific tools such as: AND, OR, NOT.

MAIN MEMORY

➢ ***Random Access Memory*** (RAM) the temporary storage area the computer uses to run programs and store data.

➢Information store in RAM is temporary and is designed to be erased when computer turn off.

➢RAM is a general indication of performance that is measured either in megabytes (MB) or gigabytes (GB): the larger the number, the faster some programs will run.

➢Memory is set of electronic circuit named (Cells), each cell store 0 or 1, like (on or off),the single cell content named (BIT) which represent basic unit in process data, because all data transfer to set of bits in digital computers.(BYTE) term for eight Bit: 1 Byte = 8 Bit

MEMORY CAPACITY

➢ Memory capacity units measured in kilo Byte which abstract by (KB) where: $KB = 2^{10}$ Bytes = 1024 Bytes

➢ In memories has large capacity measured in Mega Byte which abstract by (MB) where: $1 MB = 2^{20}$ Bytes = 1048576 Bytes

➢ In larger memories capacity measured in Giga Byte which abstract by (GB) where: $1 GB = 2^{30}$ Bytes = 1073741824 Bytes

➢ In largest memories capacity measured in Tiara Byte which abstract by (TB) where: $1 TB = 2^{40}$ Bytes = 1099511627776 Bytes

MEMORY SPEED

➢ Memory speed measured in *WRITE* speed where write mean translate data operations from CPU to main memory.

➢ Also measured in *READ* speed where read mean translate data operations from main memory to CPU.

➢Read and write operations in memory named by Access.

➢Because read and write operations generated by CPU therefore memory speed equal almost CPU speed.

TYPES OF MEMORY

1- Random Access Memory (RAM):

➢ in this kind of memory can read and write on it generated by CPU.

➢This kind of memory used by user to store his programs on it.

➢This memory is temporary storage ends when the process is end or when split electric power.

2- Read Only Memory (ROM):

➢ in this kind of memory can read only from it generated by CPU,

➢but cannot write on it from this unit because store specific computer system software on this kinds of memories, such as: BIOS, Start up Routine, Input/ output routine, Interpreter.

➢This memory do not miss it is contents where split electric power.

SYSTEM BOARD

➢The important part on computer loading: the CPU, memories, and control circuit.

➢It is allows to computer parts to exchange data to perform the required work, and coordinate computer parts, and memory organization.

BIOS & CMOS

➢ *BIOS (Basic Input Output System):*is a software that is built into computers and that is run when the computer first turn on.

➢Among other things this software starts the operating system and support transfer information between hard ware devices.

➢BIOS is part of your computer's hardware and is separate from Windows.

➢*Complementary metal-oxide semiconductor, or CMOS,* typically refers to a battery-powered memory chip in your computer that stores start-up information.

➢Your computer's basic input/output system (BIOS) uses this information when starting your computer.

STORAGE UNITS

1- Hard Disk Drive

➢Your computer's hard disk drive stores information on a hard disk—a rigid platter or stack of platters with a magnetic surface.

➢The hard disk drive is normally located inside the system unit.

STORAGE UNITS

2- CD and DVD Drives

➢ *CD drives* use lasers to read (retrieve) data from a CD; many CD drives can also write (record) data onto CDs.

➢ If you have a recordable disk drive, you can store copies of your files on blank CDs.

➢ CD storage capacity less than 1GB.

➢ *DVD drives* (Digital Video Disk) can do everything that CD drives can, plus read DVDs.

➢ If you have a DVD drive, you can watch movies on your computer.

➢ Many DVD drives can record data onto blank DVDs.DVD storage capacity may be 17 GB.

STORAGE UNITS

3- Floppy Disk Drive

➢ Floppy disk drives store information on floppy disks, also called floppies or diskettes.

➢Compared to CDs and DVDs, floppy disks can store only a small amount of data. They also retrieve information more slowly and are more prone to damage.

➢For these reasons, floppy disk drives are less popular than they used to be, although some computers still include them.

COMPUTER SOFTWARE

➢ *Software* refers to the instructions, or programs, that tell the hardware what to do.

➢*Programs* set of instructions that a computer uses to perform specific task such as word processing accounting or data management also called an application.

➢ Software includes:

1. Low Level Language: this language includes:

• *Machine Language:* the instructions input to computer must be written in binary system i.e.by [0,1] the unique language that computer understand .it is very complex.

• *Assembly Language:* this language used simple words such as [Jumb,Add,Move, Sub] this lead to simplify computer using.

COMPUTER SOFTWARE

2. High Level Language:

➤ the data and instruction using symbols and numbers and words written in language similar to human language.

➤Each language has it is specific grammar.

➤Example of these language: BASIC,FORTRAN,COBOL, PASCAL, PL/1, ADA, RPG, LISP, FORTH, SNOBOL, APL, ALGOL, LOGO**.**

3. Translation Programs:

these programs transfer high level language or assembly language to machine language, these programs include:

• *Assembler:* program transfer the program written in assembly language to machine language.

COMPUTER SOFTWARE

• *Compiler:*

➤ program transfer high level language programs to machine language program,

➤ the program written in high level language named *Source Program*, after transfer it to machine language by compiler is named *Object Program*.

➤ When using compiler in transfer operation, cannot execute the program unless complier all program sentences end.

• *Interpreter:* program written in machine language and store in ROM memory, it is work similar to compiler but differ from it where is compiler program sentences immediately.

COMPUTER SOFTWARE

4. Operating System: program that manages all computer parts. The operating system allows you to use software programs, and coordinate the use of computer hardware (such as the keyboard and mouse).

Operating System Types:

1. *Single user Operating System:* by these systems can execute on program in one using one personal computer, MS.DOS example of this kind of operating system.

2. *Multi Tasking Operating Systems for Single User:* by these systems the user can use the personal computer to execute different types of programs in the same time, WINDOWS example of this kind of operating system.

3. *Multi user Operating Systems:* these operating system apply on many types of computers linked together, by these systems different users can use many computers in the same time, such as UNIX operating system.

FILES ORGANIZATION

➢ While you're working with a file in a program, you should save it frequently to avoid losing data unexpectedly due to a power failure or other problems.

➢Files typically have a three letter file name extension that helps to indicate type.

File type	Extension
Executable file	exe
Operating system file	sys
Text file	Doc / txt / Rtf
Picture file	Bmp/ jpg
Commands file	com
Program file	Prg
Backage file	Bat
Drawing file	Dwg/Gif
Help file	Hlp
Voice file	Mp3/wav

QUESTIONS - ?
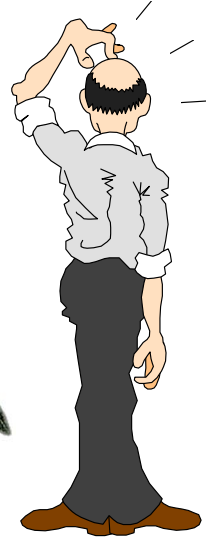
Thank You

Computers Principles

Third Lecture/ WINDOWS 7

Civil Engineering Department
College of Engineering / Diyala University/ 2015-2016.

Dr. Qasim Adnan Aljanabi

WINDOWS 7

The Desktop

➢ The windows 7 Desktop displays when first log on to windows 7.

➢The desktop is the main screen area that can see after turn on the computer and log on to Windows.

➢The desktop is sometimes defined more broadly to include the taskbar. The taskbar sits at the bottom of your screen.

➢It also contains the Start button, which you can use to access programs, folders, and computer settings.

Working with desktop icons

➢ **Icons** are small pictures that represent files, folders, programs, and other items.

➢When you first start Windows, you'll see at least one icon on your desktop.

➢Double-clicking a desktop icon starts or opens the item it represents.

Working with the Computer folder
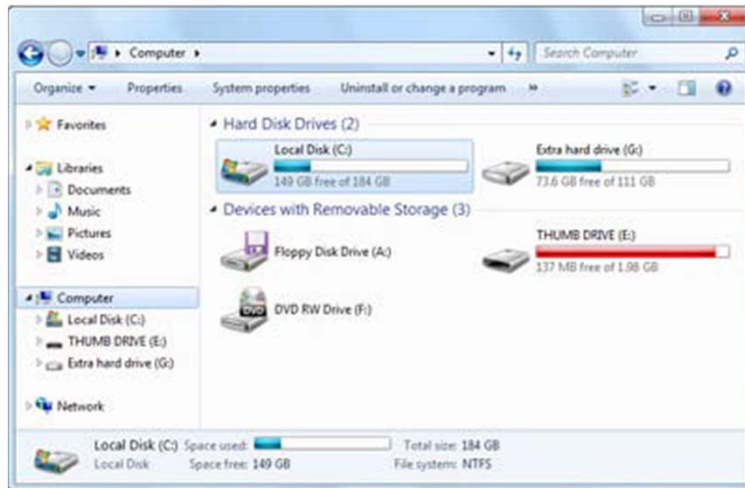
The Recycle Bin

The Recycle Bin when empty (left) and full (right)

➢ When you delete a file or folder, it doesn't actually get deleted right away—it goes to the Recycle Bin.

➢That's a good thing, because if you ever change your mind and decide you need a deleted file, you can get it back.

Task Bar

➢ The taskbar is the long horizontal bar at the bottom of screen. Unlike the desktop, which can get obscured by open windows, the taskbar is almost always visible.

➢It has three main sections:

- The Start button , which opens the Start menu.

- The middle section, which shows you which programs and files you have opened and allows you to quickly switch between them.

- The notification area, which includes a clock and icons (small pictures) that communicate the status of certain programs and computer settings.
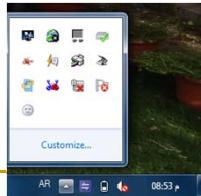
The start menu

➢The Start menu is the main gateway to your computer's programs, folders, and settings. It's called a menu because it provides a list of choices.

➢Use the Start menu to do these common activities:
- Start programs
- Open commonly used folders
- Search for files, folders, and programs
- Adjust computer settings
- Get help with the Windows operating system
- Turn off the computer
- Log off from Windows or switch to a different user account

➢The Start menu is divided into three basic parts:

- The large left pane shows a short list of programs on your computer.

- At the bottom of the left pane is the search box.

- The right pane provides access to commonly used folders, files, settings.

Using libraries to access files and folders

❖• Documents library. Use this library to organize and arrange word-processing documents, presentations, and other text-related files.

❖• Pictures library. Use this library to organize and arrange your digital pictures, whether you get them from your camera, scanner, or in e-mail from other people.

❖• Music library. Use this library to organize and arrange your digital music, such as songs that you rip from an audio CD or that you download from the Internet.

❖• Videos library. Use this library to organize and arrange your videos, such as clips from your digital camera or camcorder, or video files that you download from the Internet.

My Documents   My Music   My Pictures   My Videos
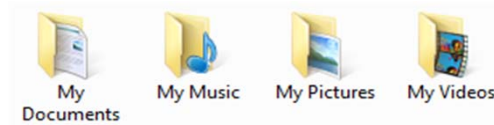
To open the Documents, Pictures, or Music libraries, click the Start button, and then click Documents, Pictures, or Music.

Parts of a Window
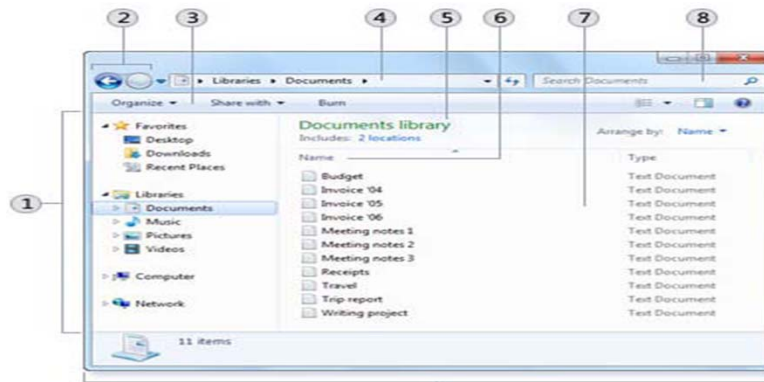
① Navigation pane   ⑥ Column headings
② Back and Forward buttons   ⑦ File list
③ Toolbar   ⑧ The search box
④ Address bar   ⑨ Details pane
⑤ Library pane

Viewing and arranging files and folders

❖ When you open a folder or library, you can change how the files look in the window.

❖To make these kinds of changes, use the Views button in the toolbar.

❖Each time you click the left side of the Views button, it changes the way your files and folders are displayed by cycling through five different views.

❖If you click the arrow on the right side of the Views button, you have more choices. Move the slider up or down to fine-tune the size of the file and folder icons. You can see the icons change size as you move the slider.
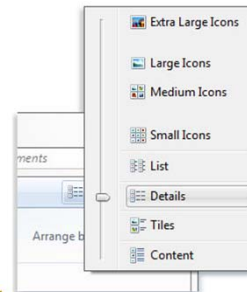
The Views options

Finding files

❖ Depending on how many files you have and how they are organized, finding a file might mean browsing through hundreds of files and subfolders—not an easy task.

❖ The search box filters the current view based on the text that you type.
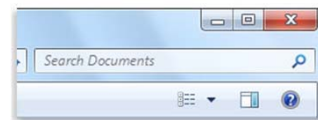
❖ Files are displayed as search results if your search term matches the file's name, tags or other properties, or even the text inside a text document.

The search box

❖ If you're searching for a file based on a property (such as the file's size), you can narrow the search before you start typing by clicking the search box, and then clicking one of the properties just below the search box. This adds a search filter(such as "size") to your search text, which will give you more accurate results.

Add a search filter
Date modified: Size:
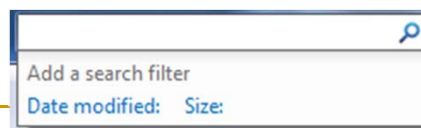
Copying and moving files and folders

➢ You might want to move files to a different folder.

➢ Most people copy and move files using a method called drag and drop.

➢ When using the drag-and-drop method, you might notice that sometimes the file or folder is copied, and at other times it's moved.

Press and drag   Release

To copy or move a file, drag it from one window to another
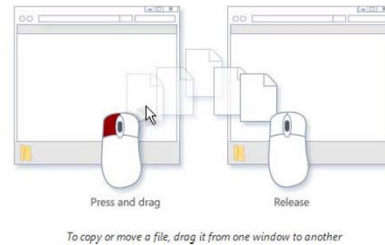
Tips

• The easiest way to arrange two windows on the desktop is to use Snap.

• If you copy or move a file or folder to a library, it will be stored in the library's default save location.

• Another way to copy or move a file is to drag it from the file list to a folder or

~~library in the navigation pane so you don't need to open two separate windows.~~

Creating and deleting files

➢ The most common way to create new files is by using a program.

➢By default, most programs save files in common folders like My Documents and My Pictures, which makes it easy to find the files again next time.

➢When you no longer need a file, you can remove it from your computer to save space and to keep your computer from getting cluttered with unwanted files.

➢When you delete a file, it's temporarily stored in the Recycle Bin. Think of the Recycle Bin as a safety net that allows you to recover files or folders that you might have accidentally deleted.

Create or delete a shortcut

➢ A shortcut is a link to an item (such as on the a file, folder, or program) on your computer.

➢You can create shortcuts and then place them in a convenient location, such as on the desktop or in the navigation pane(the left pane) of a folder .

➢Shortcuts can be distinguished from the original file by the arrow that appears icon.

Text file   Text file - Shortcut
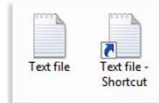
A typical file icon and the related shortcut icon

To create a shortcut

1. Open the location containing the item that you want to create a shortcut.

2. Right-click the item, and then click Create shortcut. The new shortcut appears in the same location as the original item.

3. Drag the new shortcut to the desired location.

Working with Control Panel

❖ You can use Control Panel to change settings for Windows.

❖ You can use two different methods to find the Control Panel item you are looking for:

1- Use Search. To find a setting you are interested in or a task you want to perform, enter a word or phrase in the search box.

2- Browse. You can explore Control Panel by clicking different categories (for example, System and Security, Programs, or Ease of Access).

THANK - YOU
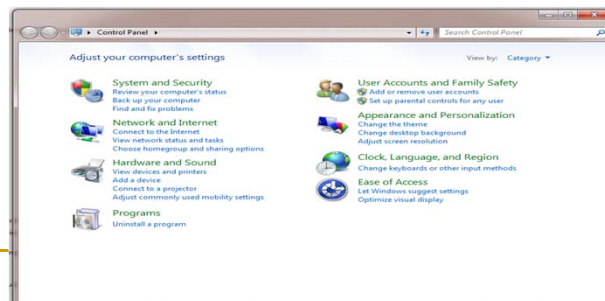
Computers Principles

Fourth Lecture/ Internet

Civil Engineering Department
College of Engineering / Diyala University/ 2015-2016.

Dr. Qasim Adnan Aljanabi

Internet

➢The word internet connect of two words , the first word is "inter" short of "international", and second word "net" short of "network". The whole word internet mean "international network".

The internet is a network, a group of connected computers. Each runs software to provide or serve information and/or access and view information. The internet is the transport vehicle for the information stored in the files or documents on another computer. It can be compared to an international communications utility servicing computers. It is sometimes compared to a giant plumbing system. The internet itself does not contain information. It is slight misstatement to say a 'document was found on the internet". It would be more correct to say it was found through or using the internet. What it is found in (or on) is one of the computers linked to the internet.

The internet provides many services such as:
1. Browsing.
2. Searching.
3. On – Line Business.
4. Electronic mail E- mail.
5. Chatting.
6. Shopping.

Types of Network

Network: A network is a group of computers (two or more) that are linked together to allow them to exchange information and share resources: There are two major types of networks:

1. Local Area Network (LAN)

      It connects a group of users in the same physical location (such in one building) so that they can share information and resource, like printers and internet connections, with each other.

2. Wide Area Network (WAN)

      It connects people in the same company or organization but in different physical location. Several different networks are connected even though they may be in different cities or even in different country. The WAN can be large and very expensive to build and maintain. With a WAN, the need to share resources is not the major consideration; instead, the need to share information is the major objective. A WAN allow member to share files, database, and e-mail. The internet is a prime example of a WAN.

Network Hardware

The physical media is the equipment that constitutes and supports a network:

1- Modem: A modem is a device that allows computers to exchange information via a telephone line .modem is short for modulator – demodulator .and it converts digital pulses to audio frequencies and back again to allow transmission over analogy phone circuits.

2- Network interface card (NIC): Sometimes called (Network Adapter) is a circuit board that was installed inside a computer. It controls the exchange of data between a computer and network.

3- Transmission media: It is simply something that allows computers and other devices to exchange information. it is basically a fancy way of describing cabling, though it includes technologies such as radio or infrared waves that are used on wireless networks. Cables such as twisted pair, coaxial, or fibre optic, connect network adapters to adapters on other computer or to other network equipment such as hubs, routers, or switchers. With computers it is possible to use the phone lines and even your power lines as your network wiring. But most networks are built using dedicated Ethernet cables, called CAT5 or category 5 coaxial cable

4- Hub: A hub is central connecting device in a network thus joins all the computers and other device together.
5- Switch: A switch is similar to hub but provides more intelligent through limited routing capabilities.
6- Bridge: A bridge is a device that connects two networks together.
7- Router: A router is a device that forwards data from one network to another.

Protocols

Protocol: is an analogous to a language, or a set of rules, that determines, how computers communicate with each other. The major types of protocols are:
1. Transmission Control Protocol / Internet (TCP/IP):
One of the earliest problems to be over come in the history of networking was how to get different type of computers to be able to talk to each other. This was done by creating Transmission Control Protocol / Internet Protocol (TCP/IP). TCP/IP is actually not just one protocol but a suits of protocols .TCP/IP allows computers with even totally different architectures to talk one to another. the TCP portion tell the computers how to talk to each others, and the IP portion acts as the "packaging" used to ship messages from one computer to another. Two computers establish communication with TCP and then exchange data within the package of IP.

2. File Transfer Protocol (FTP):
Allows your computer to rapidly retrieve complex files intact from a remote computer and view or save them on your computer.
3. Hyper Text Transfer Protocol (Http):
The method used to transmit the data for that page. On the web, its usually (http), in an address, the protocol is followed by: //

Important terms

Upload: to upload is to copy files from the computer to the internet.
Download files: to download is to copy a file from the internet to your computer.

Hyper Text Markup Language (HTML):
The files in web sites are building by using a programming language called HTML (Hyper Text Markup Language). This markup language specifies the content, formatting graphics, and navigation for the files called a Web page.

World Wide Web (WWW)

It is actually a subset of the internet, although most internet users deal almost exclusively with the World Wide Web. The web is a collection of servers and files. The files are created using HTML language.

The WWW incorporates all of the internet services and much more. When you log onto the internet using Netscape or another browser such as Microsoft internet explorer, you are viewing documents on the World Wide Web. The current foundation on which the WWW functions is Hypertext using HTML Language. This is what provides highlighted links to other documents on the web, and it is the feature which is unique and revolutionary about the web. URL"Uniform Resource Locations" are the unique addresses of documents on the web.

The internet and the World Wide Web are closely related but not the same.

- The internet is a decentralized global network of computers.
- The web is a collection of documents, or web sites, that you can access using the internet and your web browser software. The web comprises the vast majority (but not quite all) of the content available over the internet.

Browser

A browser is web pages are vied using an application called a browser, internet explorer being one example. The browser processes the HTML files to generate the display and manage your navigation.

Internet Explorer

Using the internet requires an internet connection, a modem plus an account with an internet service provider (ISP) once that connection is set up, we can lunch internet explorer.

To start internet explorer, double click the icon

Internet
Internet Explorer

once the connection is established, internet explorer open to your home page.

Domain name

It is the name of the web site. Domains divided Word wide Web sites into categories based on the nature of their owner, and they form part of a site's address, or uniform resource locator (URL), which is the address of an internet file.

Common top level domains are:

- ❖ .com- for commercial enterprises.
- ❖ .org – for nonprofit organization.
- ❖ .net – for networks.
- ❖ .edu- for educational institutes.
- ❖ .gov- for governmental organizations.
- ❖ .mil – for military services.
- ❖ .int – for organizations established by international treaty.

THANK - YOU

Computers Principles
## *Five Lecture/ MICROSOFT EXCEL 2007*

Dr. Qasim A. Aljanabi

Microsoft Excel 2007

Microsoft Excel is an electronic Spreadsheet program that enables you to store, manipulate, and chart numeric data .Researchers, statistician, and businesspeople use spread sheet to analyze and summarize mathematical, statistical , and financial data.

Excel enables you to create and modify worksheets, and chart sheets. A work sheet is divided into vertical columns and horizontal rows. The rows are numbered and the columns are labeled from A to Z, then AA to AZ and so on to column IV .the intersection of a columns and a row is called a cell. each cell is given a cell address, like a post office box number, consisting of its column letter followed by its row number ,for example,B4,F7,C9.

♀Starting Microsoft Excel

- Start ⇨all programs⇨Microsoft excel

- Desktop ⇨icon   [X] Microsoft Excel

- My computer⇨ C: ⇨Program files ⇨ Microsoft Office ⇨ office 10 ⇨ Microsoft Excel

The extension of worksheet files are (*.xls) and chart sheet files are (*.cls)
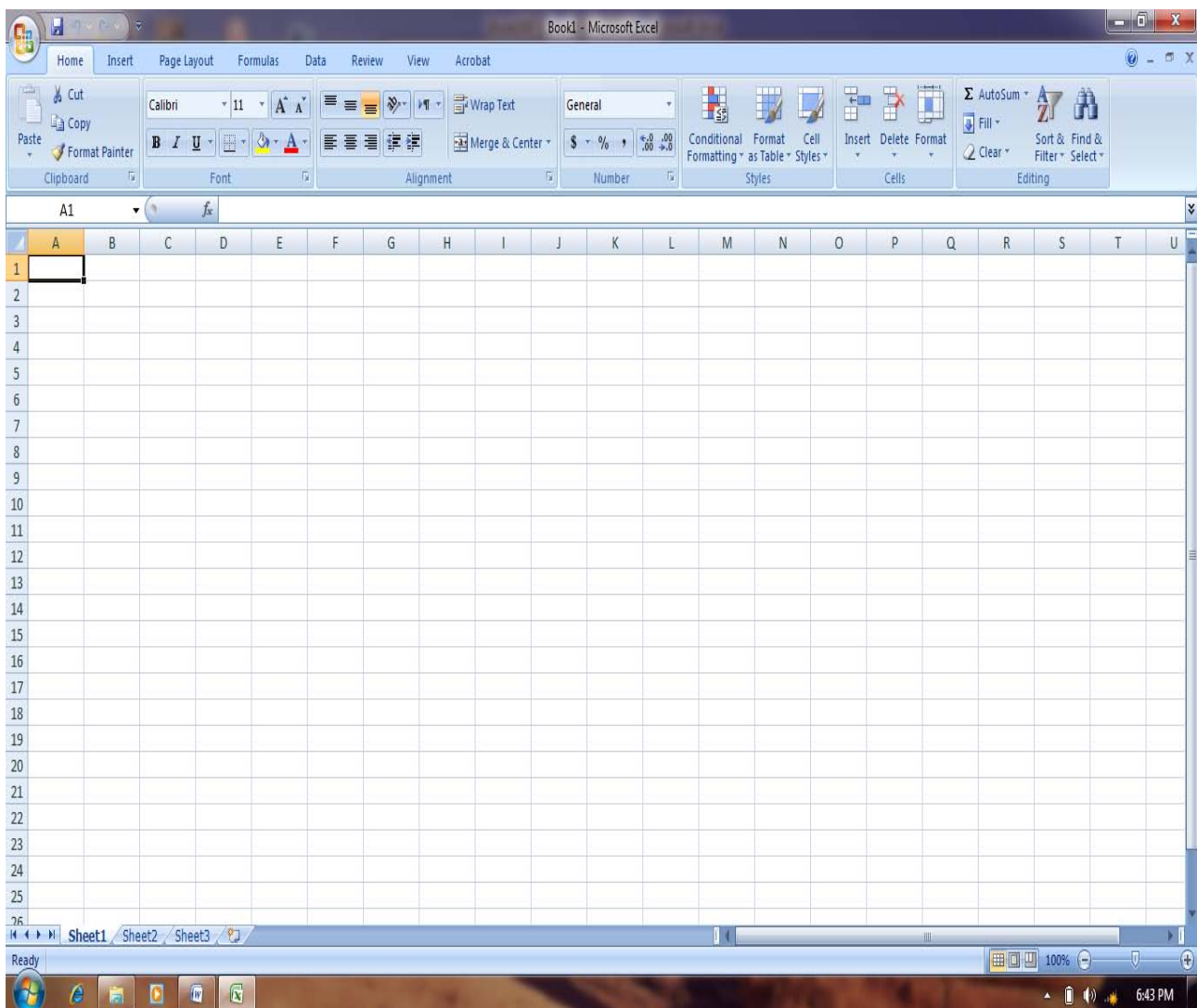
Office button

New: it is used to create new workbook.

Open: if you have a workbook you previously saved that you would like to work on, you must open the file first, before you can make any changes.

Opening an Existing Workbook

- Open the *Office Button* , and select *Open*, or click the open button . The open dialog box appears.
- If the file is not located in the current folder, open the *Look In* drop-down list box and select the correct drive and folder.
- Select the file you want to open in the files and folders list.
- Click *Open* to open the currently selected workbook.
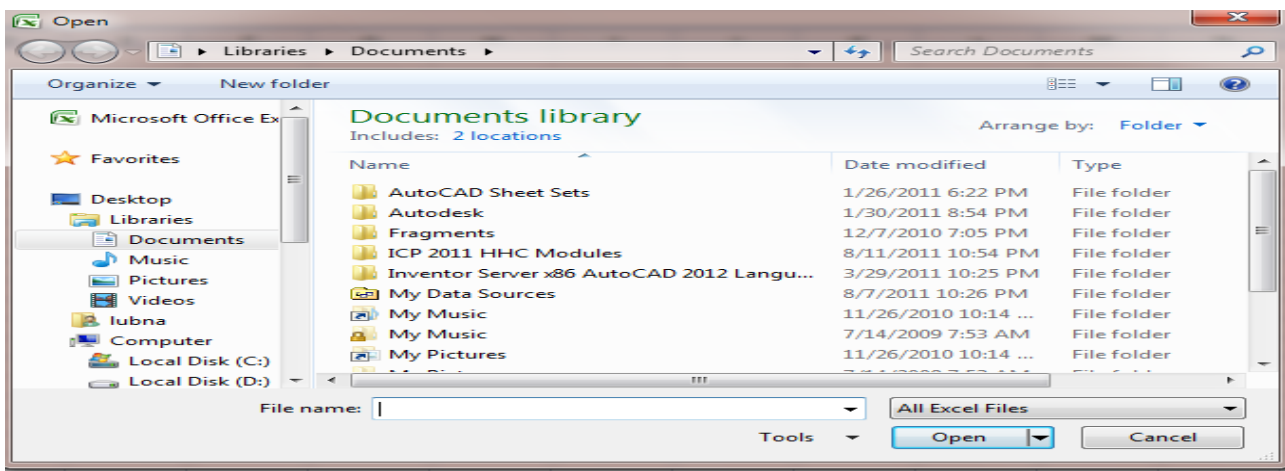
Save: the first time you save a workbook, you must name it and specify a location where it should be saved.

Saving workbook

- Open the **Office Button** and select *Save*, or click the save button on the title bar. The save as dialog box appears.
- Type the name you want to give the workbook in the *File Name* text box.
- To save the file to a folder or drive, select a location using the *Save in* list.
- Click *Save* to save your workbook.

Save as: it is used when you want to save a copy of workbook under a different name or different location.

Saving a Workbook under a new Name or Location

- Select the **Office Button** and select *Save as*. The save as dialog box opens, just as if you were saving the workbook or the first time.
- To save the workbook under a new name, type the new filename over the existing name in the *File Name* text box.
- To save the new file on a different drive or in a different folder, select the drive letter or the folder from the *Save In* list.
- Click the *Save* button or press *Enter.*

Print : to print the workbook, follow these steps:

Print Workbook
- To print a portion of the worksheet, select the range of cells you want to print, to print only a chart, click it.   - Select the **Office Button** and then select ***Print*** (or press Ctrl+P) .the print dialog box appears.   - Select the options you would like to use: 1. ***Print range***- enables to print one or more pages. 2. ***Print what***- enables you to print the currently selected cell, the selected worksheet, or the entire workbook. 3. ***Copies*** – enables you to print more than one copy of the selection, worksheet or workbook. 4. ***Collate***- enables you to print a complete copy of the selection, worksheet, or workbook before the first page of the next copy is printed.   - Click ***ok***

Print preview: to preview a print job, select the **Office Button** and then select ***Print*** overview, then click the print preview button . The workbook appears in the same format that it will be in when sent to the printer.
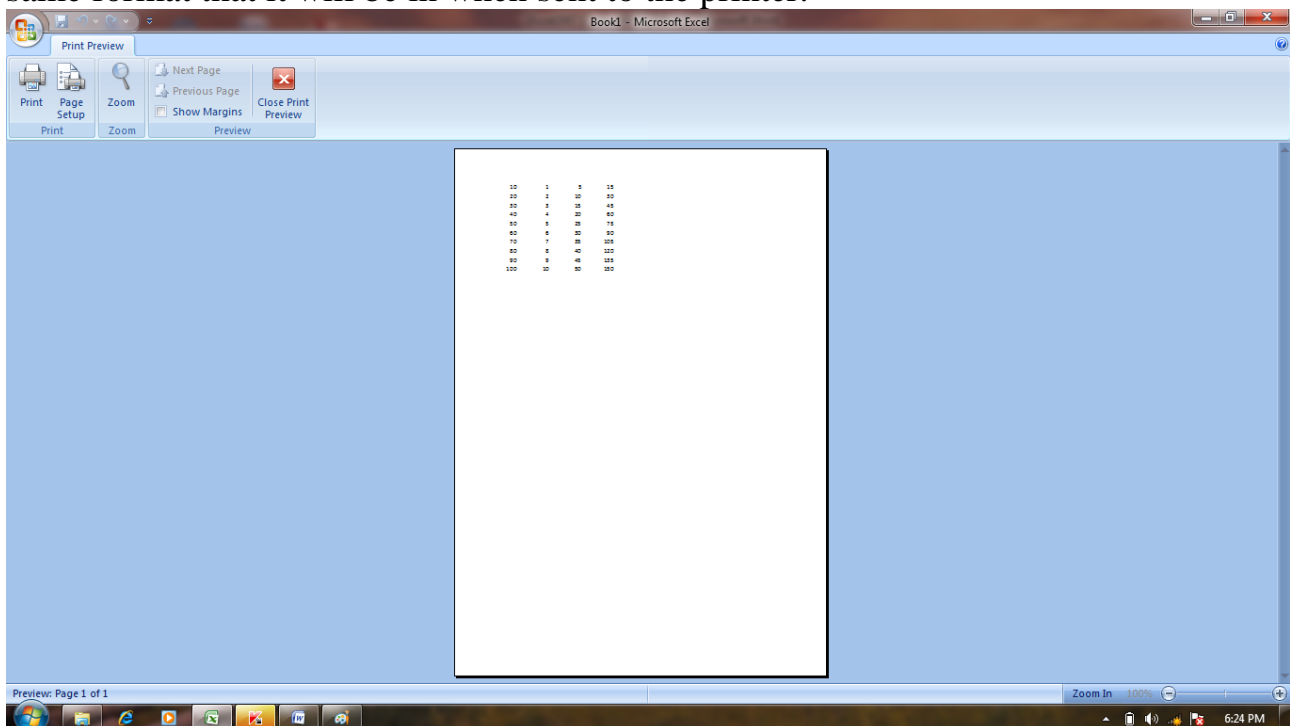

Close: you can easily close the current workbook. click Office button then select close or Click the close (X) button in the upper right corner of the workbook.

Undo: You can undo just about any action while working in Excel, including any changes you make to a cell's data. To undo a change, click the ***Undo*** button on the title bar. (Or press Ctrl+Z).

Redo :You can also undo an undo. just click the ***Redo*** button on the title bar .(or press Ctrl+Y).

4
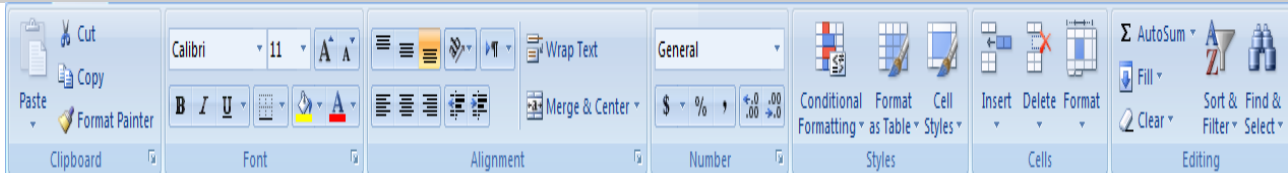
Clipboard: include

Cut: moving data is similar to copying except that the data is removed from its original place and placed into the new application.

Move Data

- Select the cell(s) you want to move.
- Click the Cut ✂ button, or (Ctrl +X) or (select **Home, Clipboard, Cut**).
- Select the first cell in the area where you want to place the data, to move the data to another worksheet, change to that worksheet.
- Click Paste 📋, or (Ctrl +V) or (select **Home, clipboard, Paste**).

Copy :when you copy data, you create a duplicate of data in a cell or range of cells.

Copy Data

- Select the cell(s) that you want to copy, you can select any range or several ranges if you want.
- Click the ***Copy*** 📄 button or (Ctrl +C) or (select **Home, Clipboard, Copy**) . The contents of the selected cell(s) are copied to the clipboard.
- Select the first cell in the area where you would like to place the copy.
- Click the ***Paste*** 📋 button or (Ctrl +V) or (select **Home , Clipboard, Paste**). Excel inserts the contents of the clipboard at the location of the insertion point.

Clipboard: you can use office clipboard to store multiple items that you cut or copy from an excel worksheet. You can then paste or move these items within Excel or to other office application.
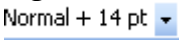
Using the Clipboard

- Select the **Home**, and then select ***Clipboard***. The Clipboard task pane appears. Any items that you have cut or copied appear on the clipboard.
- To paste an item that appears on the clipboard, click in a cell on the worksheet, and then click the item on the clipboard. It is then pasted into the selected cell.

Format Painter: copy formatting from one place and apply it to another.
Double – click this button to apply the same formatting to multiple places in document.

Font: include

Font : font enables you to choose from several font attributes, you can control the font, the font style, and other character attributes such as strikethrough, superscript, and shadow.

Working in the Font
- To change the font, click the *Font* drop-down box and select the new font by name. Normal + 14 pt ▾   - To change the *Font Style* to italic, or bold italic, make the appropriate selection in the font style box. **B** , *I*   - To change the size of the font, select the appropriate size in the *size* scroll box. 14 ▾ .use A͘ to increase the font size, and A͎ to decrease the font size.   - For underlining, click the *Underline Style* drop-down box and select an underlining style. U̲   - To change the color of the font, click the *Font Color* A̲ drop –down box and select a new color, and select 🖍 to change background of selection text.   - To add borders to the cells use ⊞ button.   - As you make the various selections in the font dialog box, a sample of what the text will look like appears in the preview box at the bottom of the dialog box. After you have made all your selections in the font dialog box click *ok*.

Border : you can add borders to selected cells or entire cell ranges.

Adding boarders to Cells
- Select the cells around which want a border to appear.   - Select the **Home**, Font and chose **Borders**. The format cells dialog box appears.   - Click the *Border* tab to see the boarder options.   - Select the desired position, style (thickness) and color for the border.   - Click *ok* or press *enter.*
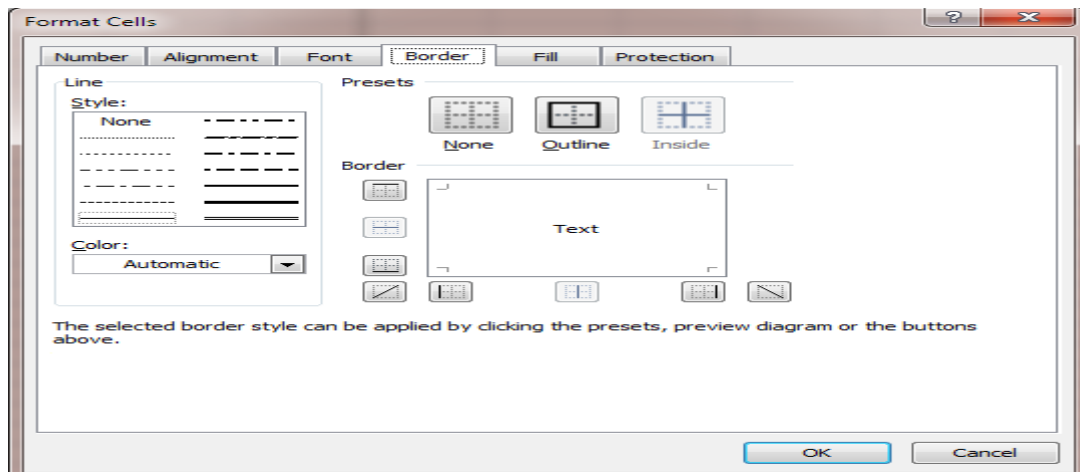
Alignment: include

Alignment: you can change both the vertical and the horizontal alignment of data in the cells.

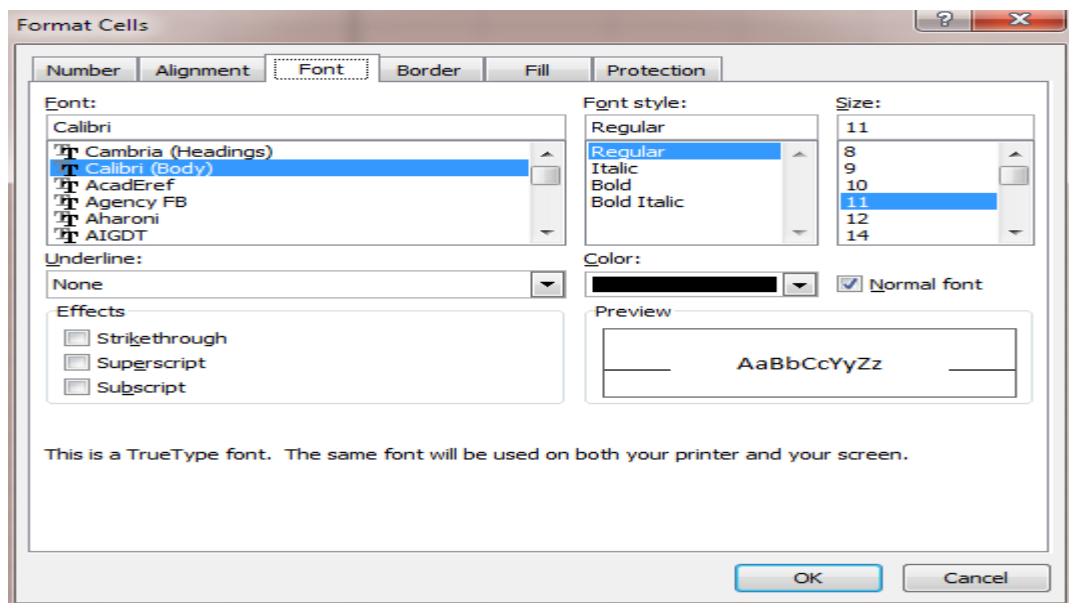| *Alignment text in Cells* |
|---|
| Select the cells or range you want to align. Select the **Home** and then select **Alignments.** The format cells dialog box appears. Click the *Alignment* tab. Choose one of the options (horizontal, vertical, orientation, wrap text, shrink to fit, merge cells) to set the alignment. Click *ok*. |
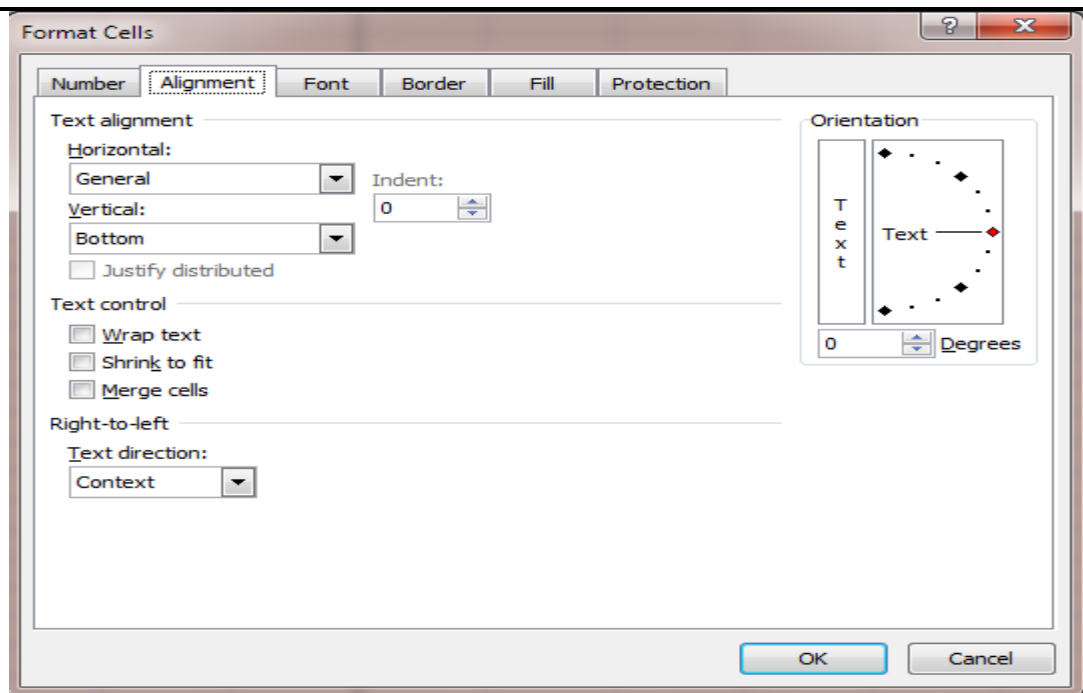
Wrap text: make all content visible within a cell by displaying it on multiple lines.

Merge & Center: Joins the selected cells into one larger cell and center the contents in the new cell.

7

Number: include

Number: the numeric values that you place in your Excel cells are more than just numbers. They often represent dollar amounts, a data, or a percentage. Excel format cells dialog ox offers a wide range of number formats and even allows you to create custom formats.

| *Numeric Formatting Options* |
| --- |
| Select the cell or range that contains the values you want to format. Select the **Home** and select **Number**. The format Cells dialog box appears. Click the *Number* tab. the different categories of numeric formats are displayed in a category list. In the Category list, select the numeric format category you want to use. Click *ok* to assign the numeric format to the elected cells |
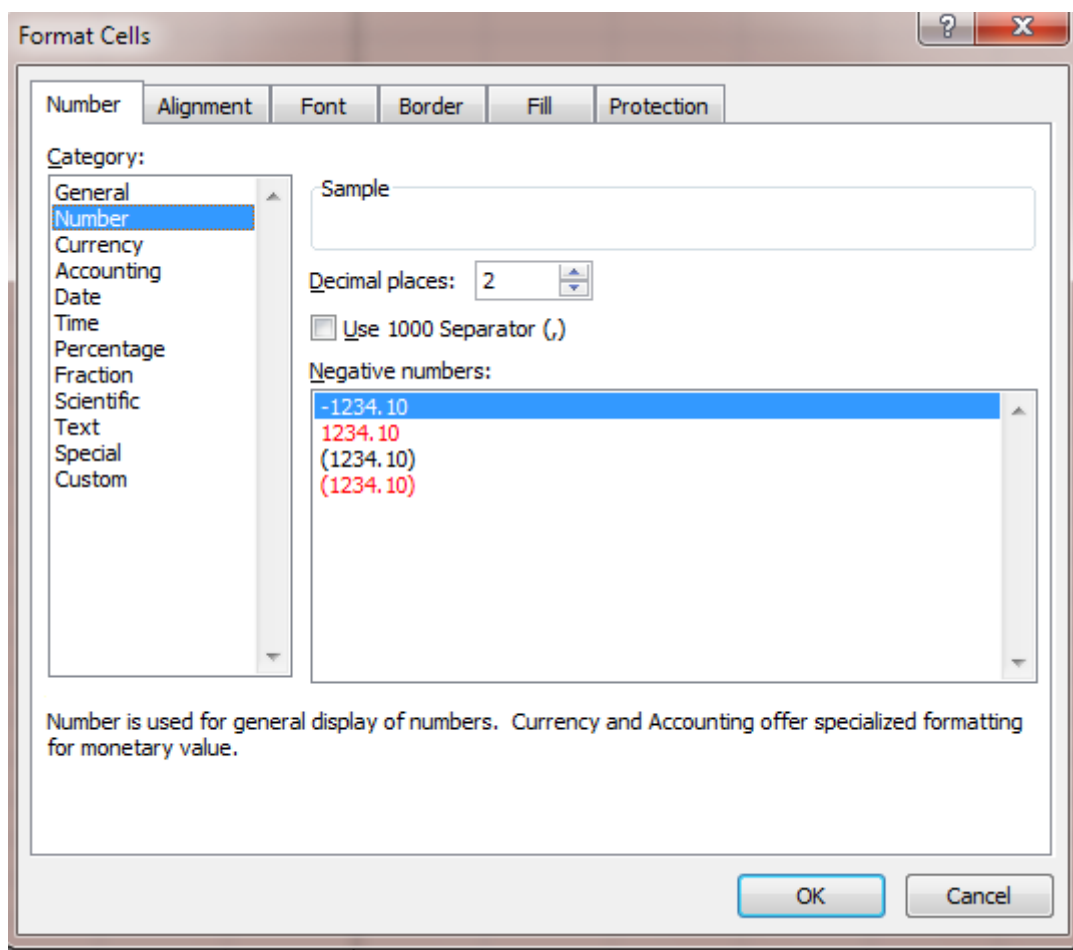
General: choose how the value in the cell are displayed: as percentage, as a currency, as a date and time, etc.

Accounting number format ($): choose an alternate currency format for the selected cell.

Percent Style (%): display the value of the cell as percentage.

Comma Style (,): display the value of the cell with a thousands separators.

Increase decimal : show more precise values by show more decimal places.

Decrease decimal: show less precise values by show fewer decimal places.

Styles: include:

Conditional formatting: its allows to specify that certain results in the worksheet be formatted so that they stand out from the other enters in the worksheet.

| *Apply Conditional formatting* |
|---|
| Select the cells to which you want to apply the conditional formatting. Select the **Home, style** and select *Conditional Formatting*; the conditional formatting dialog box appears. Be sure that *Cell Value is* selected in the condition 1drop – down box on the left of the dialog box. In the next drop down box to the right, you select the condition. The default is *between*. Other conditions include *equal to*, *greater than*, *less than*, and other possibilities. Use the drop – down box to select the appropriate condition. After selecting the condition, you must specify a cell or cells in the worksheet that excel can use as a reference for the conditional formatting. for example if you select less than as the condition, you must a cell in the worksheet that contains a value that can be used for comparison with the cells that you applying the conditional formatting to, click *the shrink* button on the conditional formatting dialog box, you are returned to the worksheet, select the reference cell for the condition. Click *the expand* button on the conditional formatting dialog box. Now you can set the formatting that will e applied to cells that meet your condition. Click the *Format* button in the conditional formatting dialog box and select the formatting options for your condition in the format cells dialog box then click *ok.* |
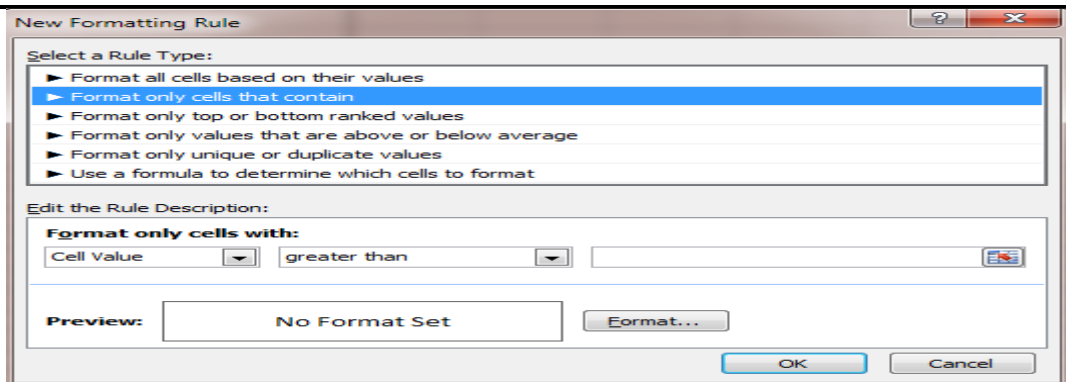
Format as table: quickly format a range of cells and convert it to table by choose pre defined table style.

Cell Styles: quickly format a cell by choosing from pre defined styles.
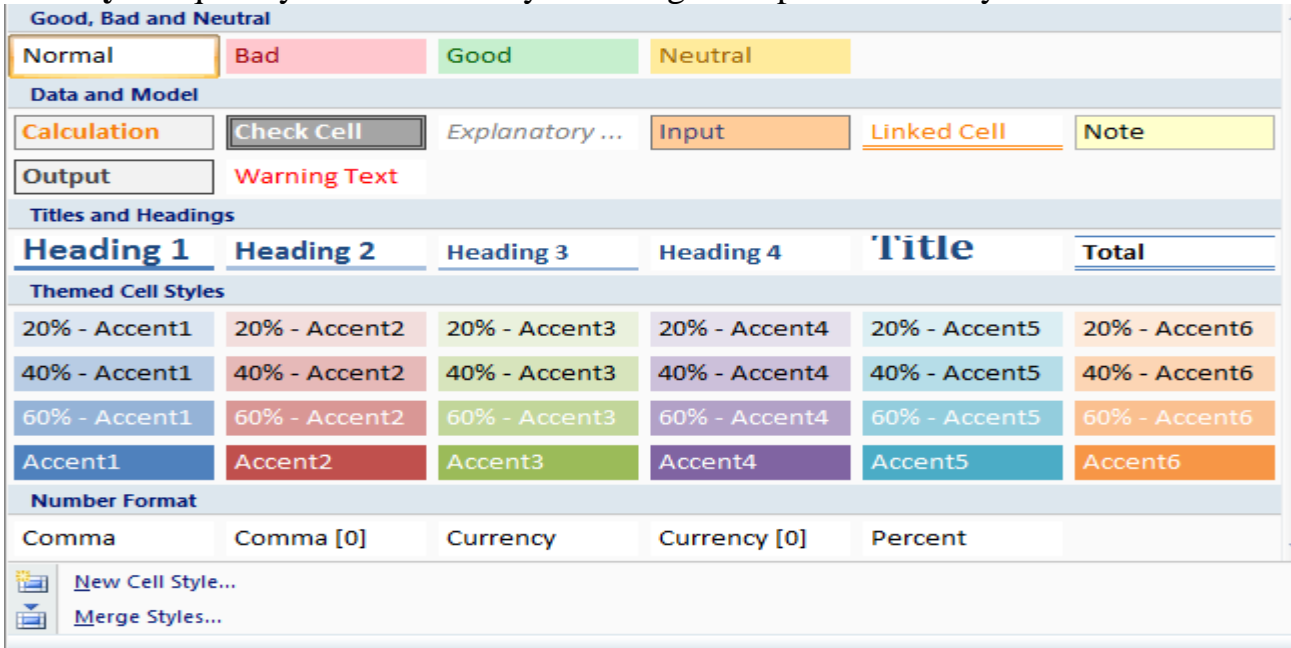
Cells: include

Insert: it is use to insert a single cell or a group of cells.

Inserting Cells
• Select the area where you want the new cells inserted. Excel inserts the same number of cells as you select. • Select the **Home** and then select *Cells,* choose *insert*. The insert dialog box appears. • Select *Shift Cells Right* or *Shift Cells Down.* • Click *OK*. Excel inserts the cells and shifts the adjacent cells in the direction you specify.

Rows and *Columns* :you might need to add rows or columns within the worksheet.

Inserting Rows and Columns
• To insert a single row or column, select a cell to the right where you want to insert a column or below where you want to inset a row. • To insert multiple columns or rows, select the number of columns or row you want to insert. To insert columns, drag over the column letters at the top of the worksheet. To insert rows, drag over the row numbers. For example, select three column letters or row numbers to insert three rows or columns. • Select the **Home, Cells**, and then select *Insert Rows or Columns*. Excel inserts rows above your selection and columns to the left of your selection. the inserted rows or columns contain the same formatting as the cells

Sheet: when you create a new workbook, it contains three work sheets. You an easily add additional sheets to a workbook.

Insert sheet
- Select the worksheet that you want to be to the right of the inserted worksheet.   - Select the **Home, Cells**, then choose **insert.**   - Select *sheet*. Excel inserts the new sheet to the right of the previously selected sheet.

Delete: you can remove cells and then shift surrounding cells over to take their place.

Delete data
- Select the cell or range of cells you want to remove.   - Select the **Home, cells** and choose *Delete*. The delete dialog box appears.   - Select *shift cells left* or *shift cells up* to specify how the remaining cells in the worksheet should move to fill the gap left by the deleted cells.   - Click *ok*. Surrounding cells are shifted to fill the gap left by the deleted cells.
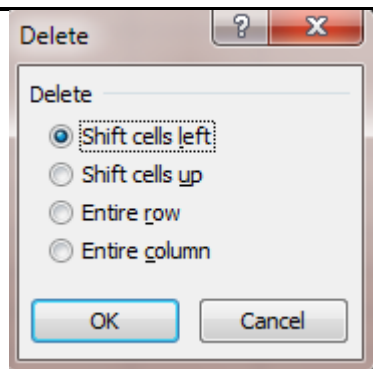
Format: change Row height or column width or protected sheet or hide sheet.
Row heights: adjusting row heights as fallow: select the row or rows and then select the **Home, Cells**, **Format** point at *Row Height* .in the row height dialog box appears type in the row height and the click *OK*.

Column width: adjusting column width as fallow: select the column or columns and then select the **Home, Cells**, **Format** point at *Column width* .in the column width dialog box appears type in the column width and the click *OK*.

Protection: it used to locking cells in a worksheet.

Hiding workbooks, worksheets, columns, and rows:

Hide Data
- To hide a row or column in a worksheet, click a row or column heading to select it ,the right click within the row or column and select *hide*, from the shortcut menu that appears. The row or column will be hidden. To unhide row or column, right click the border between the hidden item and rows or column that are visible, and then select *unhide* from the shortcut menu.   - To hide a worksheet, click its tab to select it. Then open the *Home, cells, format* menu, and select *hide sheet.* To unhide the worksheet, select *Home, cells, format, sheet*, and then *unhide*. Select the worksheet, to unhide n the unhide dialog box that appears and then click *ok*.

Editing: include

AutoSum: adding a group of cells is probably one of the most often used calculations in an Excel worksheet. Because of this fact, Excel makes it very easy to place the SUM function into a cell. Excel provides the Auto sum button Σ ▾ on the standard tool bar.

Using Auto Sum
• Select the cell where you want to place the SUM function. • Select **Home, Editing**, Click the **Auto sum** button Σ ▾ . • If the range of cell address that Auto sum selected is incorrect, use the mouse to drag and select the appropriate group of cells. • Press the enter key. Auto sum calculate the total for the selected range of cells.

Fill: to create a custom series using fill.

Entering a Custom Series
• Enter the first value in the series into a cell. • Enter the second value in the series into the next cell. For example, you might enter 10 into the first cell and then 20 into the second cell. This lets excel know that the increment for the series is 10. • Select both cells by clicking the first cell and dragging over the second cell. • Drag the fill handle of the second cell to the other cells that will be part of the series. excel analyzes the two cells, sees the incremental pattern, and recreates it in subsequent cells.

Clear: you can delete only the formatting of a cell without deleting its contents. The formatting of a cell includes the cell's color, border style, numeric format, font size, and so on.

| *Clear Data* |
|---|
| • Select the cells you want to clear.
• Open the ***Home, Editing***, and point at ***Clear***. The clear submenu appears.
• Select the desired Clear option:
All: Removes the cell contents and other attributes.
Formats: Removes the cell formatting only.
Contents: Removes the cell contents only
Comments: Removes the cell comments only**.** |

Sort: you can sort a list ascending (0 to 9, A to Z), or descending (Z to A, 9 to 0) orders.

Sorting a list
• Select a cell in the field you want sorted. • Click sort ascending ↕ or sort descending ↕ buttons from ***home, Editing, sort.***
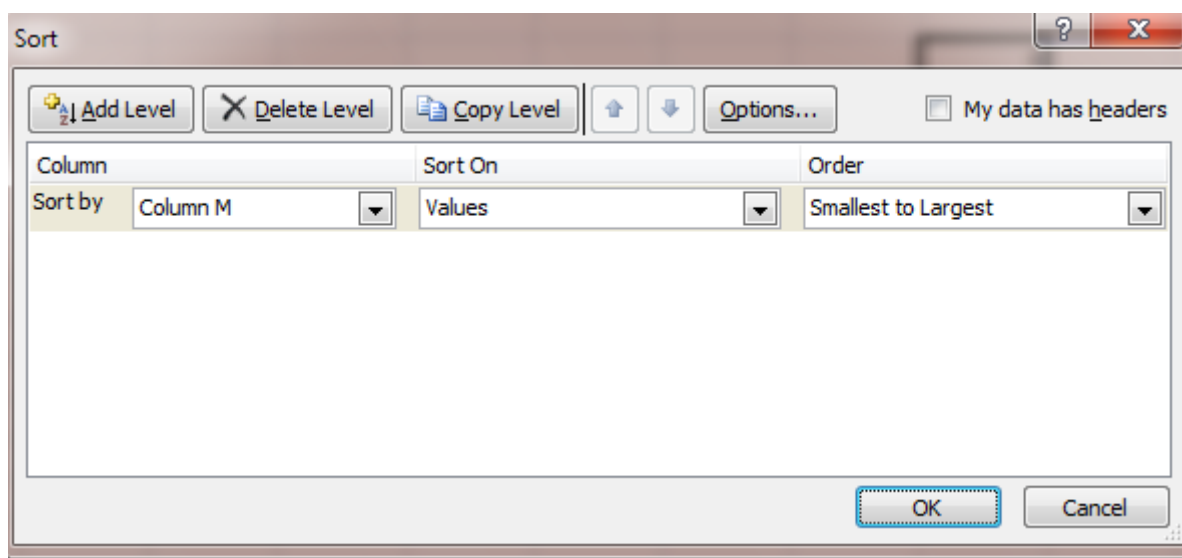
Filter: filtering is an excellent way to find a subset of records to work with that match a particular range of values.

Filtering a list

- Select a cell within the active worksheet list.
- Choose **Home, Editing, Filter.**
- Click down arrow beside the desired field name.
- Select a value or a custom filtering option.
- Choose, **Home , Editing, Filter, show all** to remove the filter.

Example: work sheet below includes student name and degree, to display only successful students execute the following:

	A	B
1	**student**	**grade**
2	iklas	74
3	zina	94
4	huda	73
5	maha	95
6	ieman	75
7	lyla	27
8	saba	33
9	nahla	51
10	swsan	20
11	asma	97

1. select the cells which we want to filtering it
2. Select **Home, Editing, Filter**, combo box appears beside the field.
3. click arrow beside degree ,subtotal appears, select customize from it , dialog box appears ,select appropriate conditions from it, in our example, the degree is greater than 50 then click or equal 50 ,then click ok.
4. Only records contain successful students is appears.
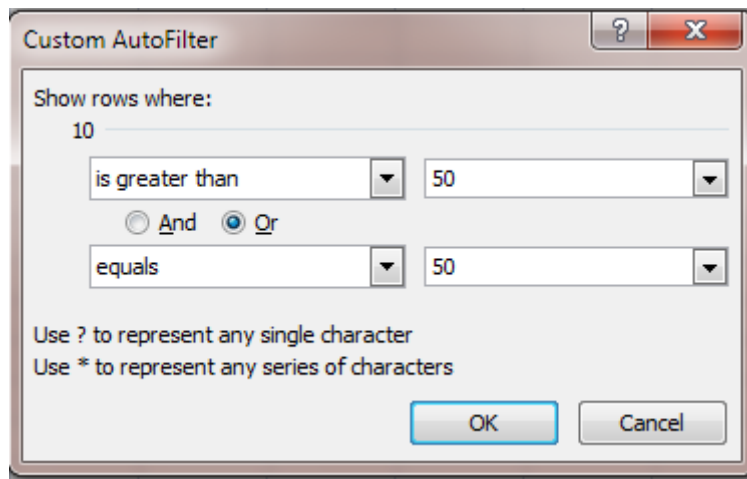
*Find and Select*: Suppose you've entered particular label or value into the worksheet and find that you have consistently entered it incorrectly. Great way to change multiple occurrences of a label or value is using Excel's Replace feature, you can locate data in the worksheet and replace it with new data.

Using the Find and Replace Feature
• Select the *Home, Editing*, and then select **Find.** The *Find and Replace* dialog box appears. • Type the text or value that you want to find into *Find What* text box. • Click in the *Replace With* text box and type the text you want to use as replacement text. • Click *Find Next* to find the first occurrence of your specified entry. • When an occurrence is found, it is highlighted. Click *Replace* to replace only this occurrence and then click *Find next* to find the next occurrence. • If you want to find all the occurrences, click *Find All*, you can also replace all the occurrences of the entry with *Replace All*. • Click OK.
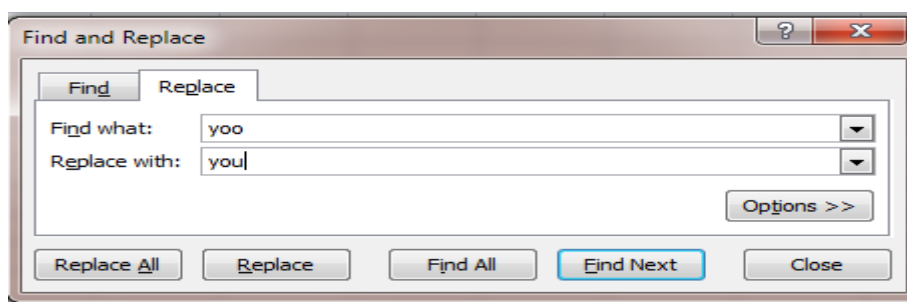
Go to: you can also quickly go to a specific cell address in a worksheet using the go to feature. Press ctrl+G or select *Home*, *Editing, Go To*. Type the cell address you want to go to into the reference box, and then click ok button.

Insert Commands
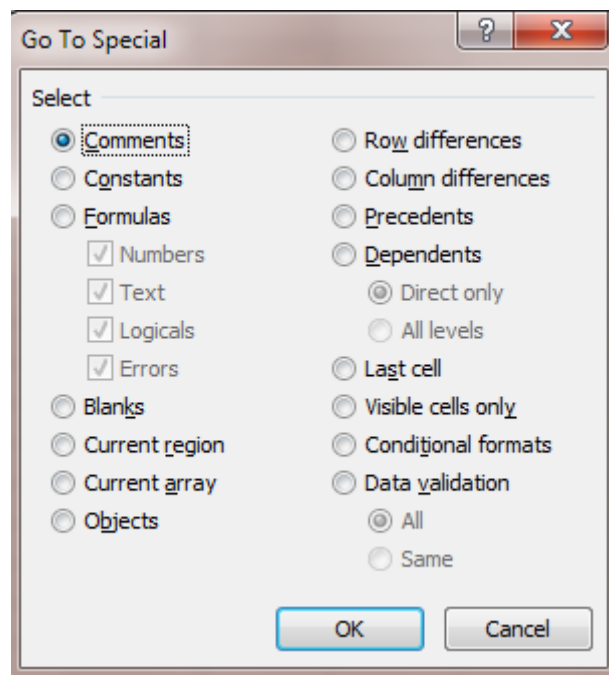
Tables: create a table to manage and analyze related data

Illustrations: it is used to insert picture or clipart or shapes or smart art into the worksheet.

Charts: charts enable you to create a graphical representation of data in a worksheet .you can use charts to make data more understandable to people who view your printed worksheets. The following are the major chart types and their purposes:

Column – similar to the bar chart, use this chart type to emphasizes the difference between items.

Line – use this chart type to emphasize tends and the change of values over time.

Pie –use this chart type to show the relationship among parts of a whole.

Bar - use this chart type to compare values at a given point in time.

Area – similar to the line chart, use this chart type to emphasize the amount of change in values over time.

Scatter – similar to a line chart, use this chart type to emphasize the difference between two sets of values.
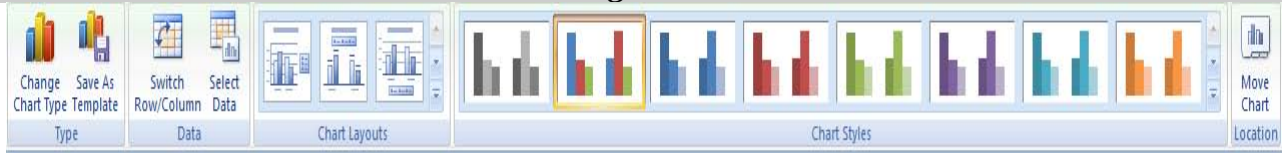
Type: to change chart type:
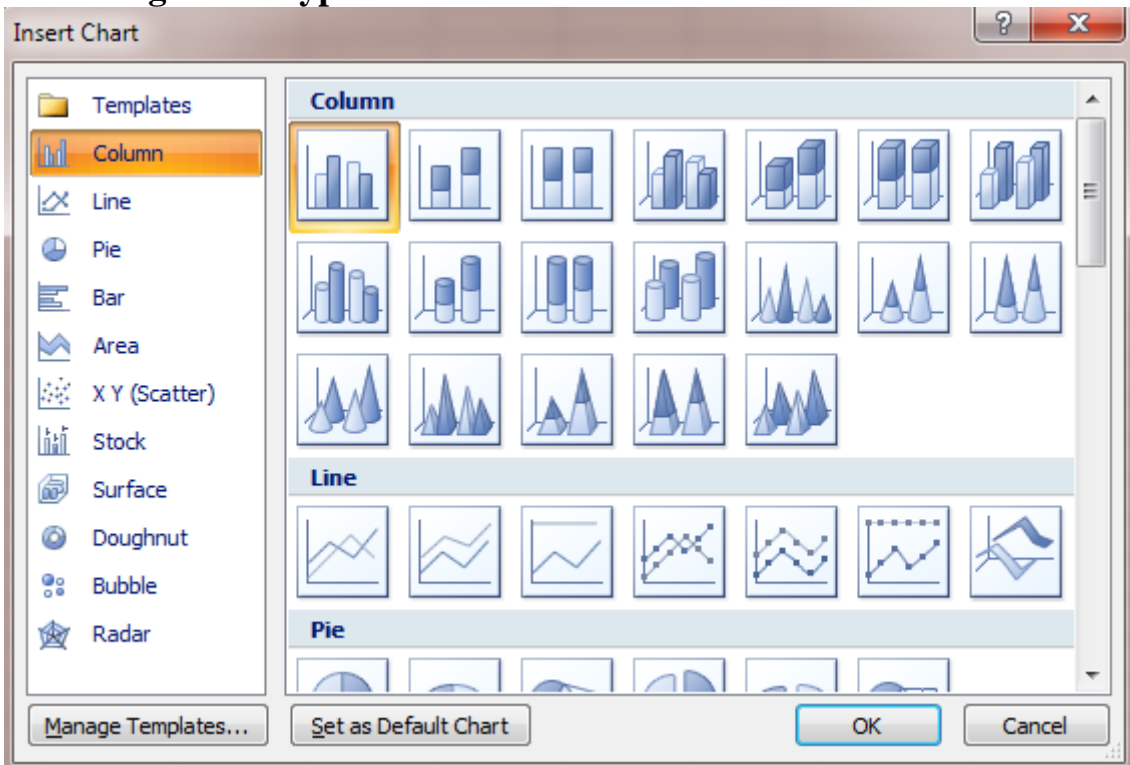
Data: include:

Switch row/column: By default Excel assumes that your different data series are stored in rows. You can change this to columns if necessary by clicking the *Switch row/column* option.

Select Data: next, Excel asks whether the selected range is correct (you can select the data you want to chart before click chart wizard). You can correct the range by typing a new range or by clicking the *shrink* button and selecting the range you want to use.
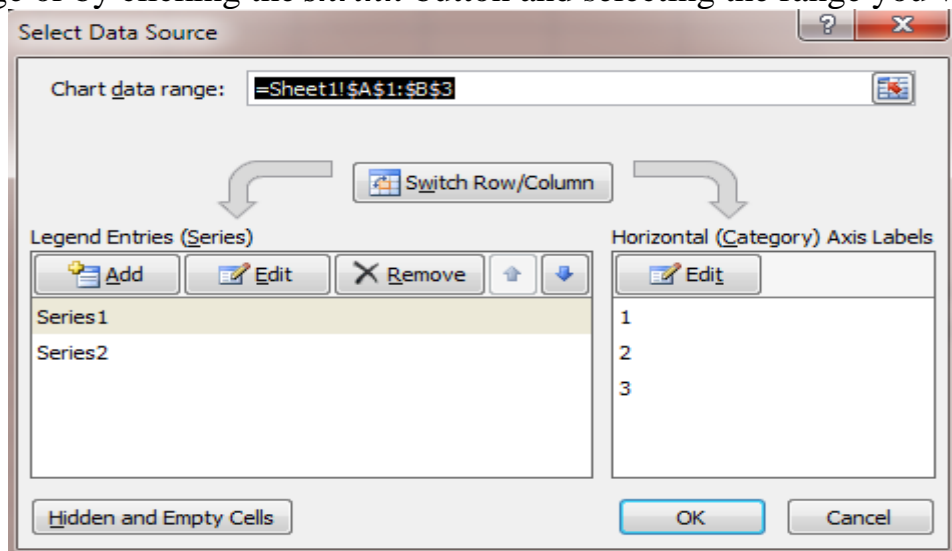
Chart layouts: to change options for the chart.
- *Titles:* you can add a chart title on the titles tab.
- *Axis:* display major and minor tick in x-axis and y- axis.
- *Gridline:* display horizontal and vertical lines on the chart.
- *Legend*: you can delete the legend by clicking the legend tab and deselecting show legend.
- *Data Label:* add data labels (labels that display the actual value being represented by each bar, line, and so on) by clicking the data labels tab.
- *Data Table:* to add data table to the chart.

Chart styles: to choose chart style.

Chart location: finally, Excel asks whether you want to embed the chart (as an object) in the current worksheet (or any other existing worksheet in the workbook) or if you want to create a new worksheet for it. Make your selection and click the finish button. Your completed chart appears.
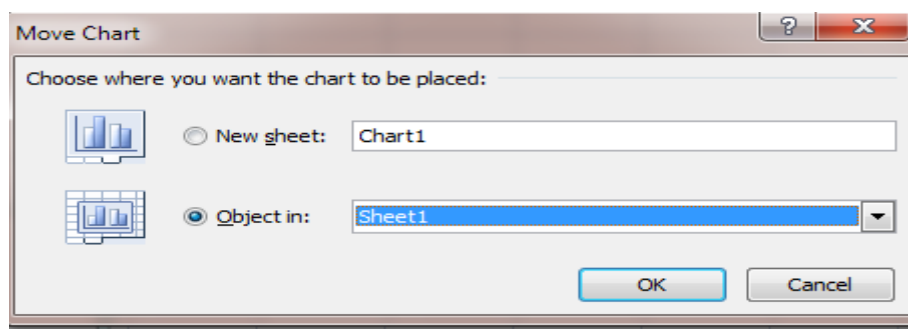
Current selection: include

Chart elements: select chart element so that you can formatted.

Format selection: lunch the format dialog box to fine tune formatting for the selected chart element.

Reset to match style: clear the custom formatting of the selected chart elements back to the overall visual style applied to the chart.

Insert: include:

Picture: insert a picture from file.

Shape: insert readymade shapes such as rectangles, circles, arrows, lines, flowchart symbols and callouts.

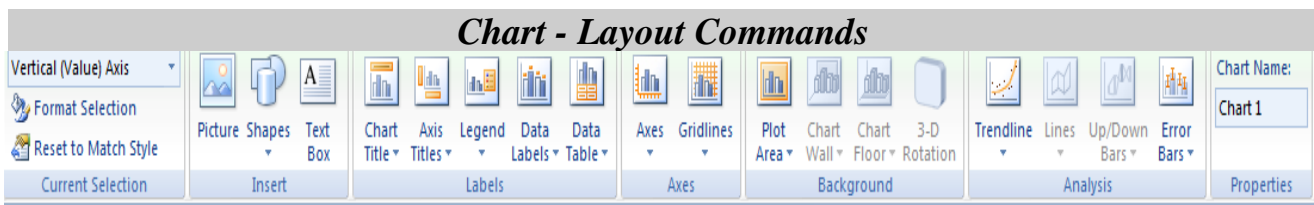**Text box:** A text box is a movable, resizable container for text or graphics. You can use text boxes position several blocks of text on a page or to give text a different orientation from other text in the document.

Labels: include:

- *Chart Titles:* add, remove or position the chart title.
- *Axis title:* Add, remove or position the text use to label axis.
- *Legend*: Add, remove or position the chart legend.
- *Data Label:* Add, remove or position the data label.
- *Data Table:* add data table to the chart.

Axes: include:

Axes: change the formatting and layout of each axis.

Gridlines: turn gridlines on or off.

Background: include

Plot area: turn the plot area on or off.

Chart wall: format the chart wall.

Chart floor: format the chart floor.

3-D rotation: change the 3-D viewpoint of the chart.

Analysis: include:

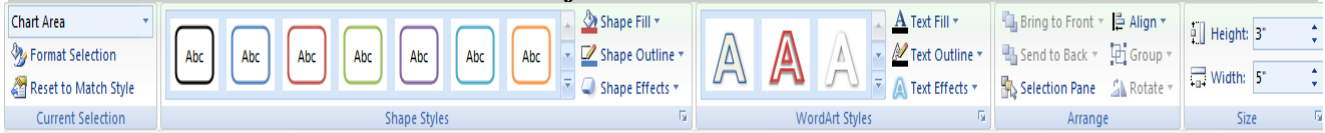**Trend line:** add a trend line to the chart.

Lines: add other lines to the chart, such as drop lines or high –low lines.

Up/down bars: add up /down bars to the chart.

Error bars: add errors bars to the chart.

Properties: give the chart friendly name to help you to refer to it when ordering objects on the sheet or writing VBA code.

Current selection: include

Chart elements: select chart element so that you can formatted.

Format selection: lunch the format dialog box to fine tune formatting for the selected chart element.

Reset to match style: clear the custom formatting of the selected chart elements back to the overall visual style applied to the chart.

Shape styles: include:

Shape Fill: fill the selected shape with solid color, gradient, picture, or texture.

Shape Outline: specify the color, width, and line style, for the outline of the selected shape.

Shape Effects: apply visual effects to the selected shape. Such as shadow, glow, reflection, or 3-D rotation.

Word art styles: include:

Text Fill: fill the text with solid color, gradient, picture, or texture.

Text Outline: specify the color, width, and line style, for the outline of the text.

Text Effects: apply visual effects to the text. Such as shadow, glow, reflection, or 3-D rotation.

Arrange: include:

Bring to front: bring the selected object in front of all other objects so that no part of it is hidden behind another object.

Send to back: send the selected object behind all other objects.

Selection pane: show the selection pane to help select individual object and to change their orders and visibility.

Align: align the edges of multiple selected objects.

Group: group objects together so that they can be treated as a single object.

Rotate: rotate or flip the selected object.

Size: include:

Shape height: change the height of the shape or picture.

Shape width: change the width of the shape or picture.

Example: Enter the following data

	A	B	C	D
1	Food Supplies			
2	Code	Product	Quantity	Price
3	A1	Apples	200	170
4	M2	Milk	400	280
5	B3	Butter	650	910
6	F4	Flour	780	250
7	S5	Suger	1000	230

- Draw the relation between Product and Quantity.
- Draw the relation between Product and Price.
- Draw the relation between Price and Quantity.
- Draw the relation between Product and Quantity and Price.

Example: Enter the following data, and then draw the expenses over three months.

	A	B	C	D
1		Expenses or overThree Months		
2		Jan	Feb	Mar
3	Hard Disk	60	40	20
4	Ram	15	20	40
5	Speakrs	30	55	45
6	Modem	55	25	60

Example: Enter the following data Powers=(50,100,………1000) and Cubes Side =(10,12………48) then calculate Reaction=Power/Cube Area and draw the relation between Power and Reaction.

	A	B	C	D
	Power	Cube Side	Cube Area	Reaction
2	50	10		
3	100	12		
4	150	14		
5	200	16		
6	250	18		
7	300	20		
8	350	22		
9	400	24		
10	450	26		
11	500	28		
12	550	30		
13	600	32		
14	650	34		
15	700	36		
16	750	38		
17	800	40		
18	850	42		
19	900	44		
20	950	46		
21	1000	48		

Example: enter the following data : X=(0,45,90,135,180,225,270,315,360) then calculate Sin(X),Cos(X),Tan(X).then draw Chart illustrate the relation between all variables.

	A	B	C	D
1	X	Sin(X)	Cos(X)	Tan(X)
2	0	=sin(a2*3.141592/180)		
3	45			
4	90			
5	135			
6	180			
7	225			
8	270			
9	315			
10	360			

Example: enter the following data: X= (5, 10 ….50) and calculate X^2, X^3 then draw the relation between variables.

20

Links: create a link to a web page, a picture, e-mail address, or a program.

Text: include

Text box: A text box is a movable, resizable container for text or graphics. You can use text boxes position several blocks of text on a page or to give text a different orientation from other text in the document.

Header / Footer: the contents of a header (at the op of the page) or footer (at the bottom of a page) repeat automatically for each page that is printed.
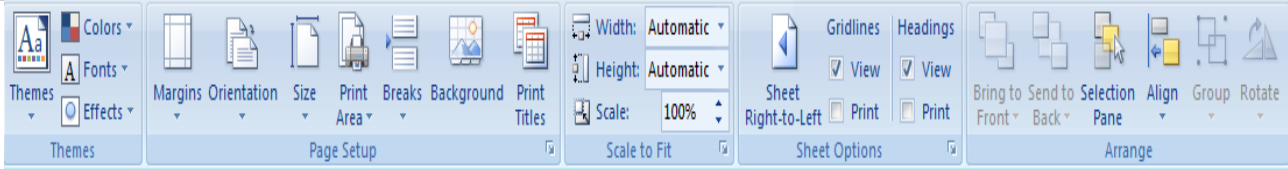
Word art: insert decorative text to the document.

Signature line: insert a signature line that specifies the individual who must sign.

Object: insert an embedded object.

Symbol: Special characters and symbols are characters that can't be found on keyboard and that are not part of what is considered to be the standard character set.
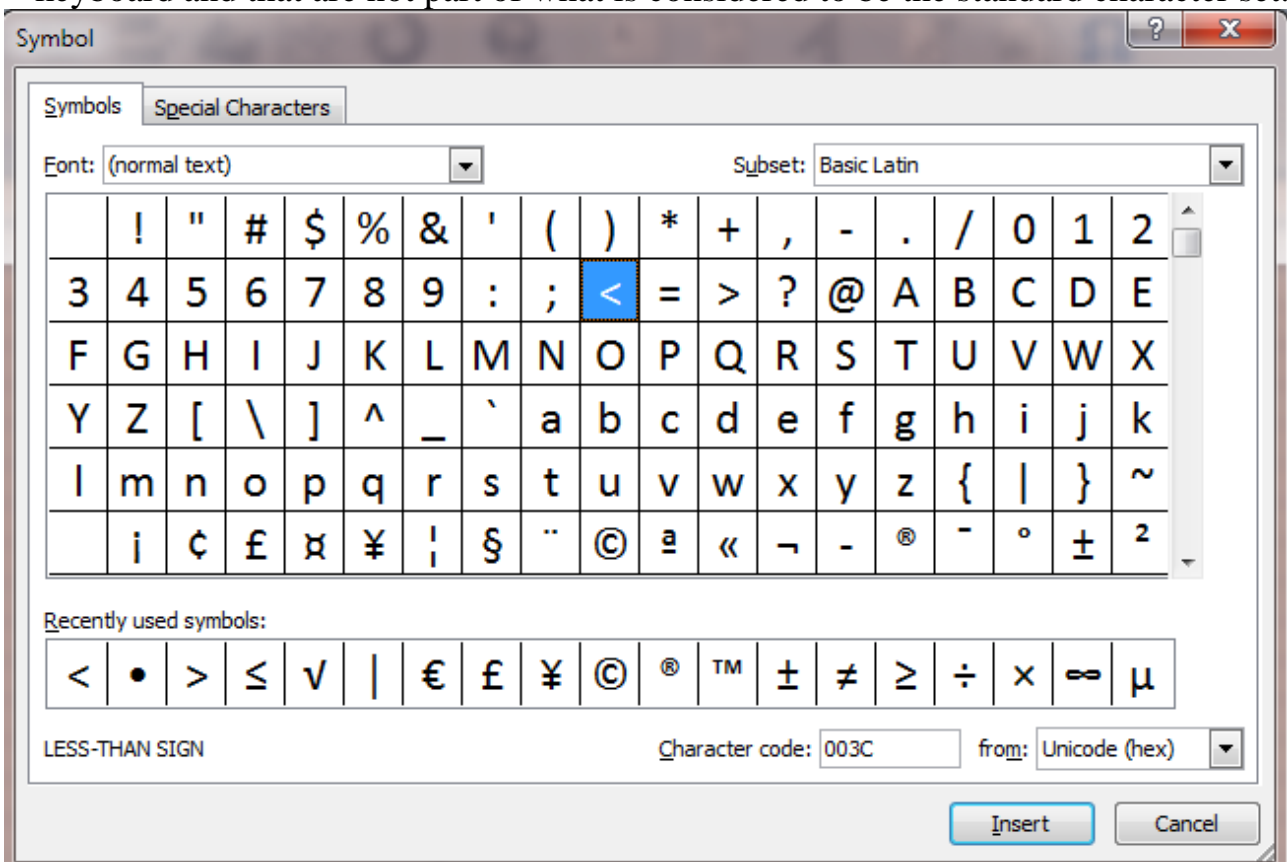
Themes: include:
Themes: change the overall design of the entire document include, colors, fonts, and effects
Colors: change the colors for the current theme.
Fonts: change the fonts for the current theme.
Effects: change the effects for the current theme.
Page setup: include
Margins- the margins tab allows to select the top, button, left, and right page margins, and to center the worksheet both horizontally and vertically on a page.
**Orientation:** Print orientations (prostrate or landscape).
Size: use to specify paper size.
Print area: you don't always have to print an entire worksheet; instead, you can easily tell excel what part of the worksheet you want to pint by selecting the point area.
Breaks: a page break is the point at which one page ends and another begins.
Background: choose an image to display as background of the sheet.
Print Titles: specify rows and columns to repeated at each printed page.
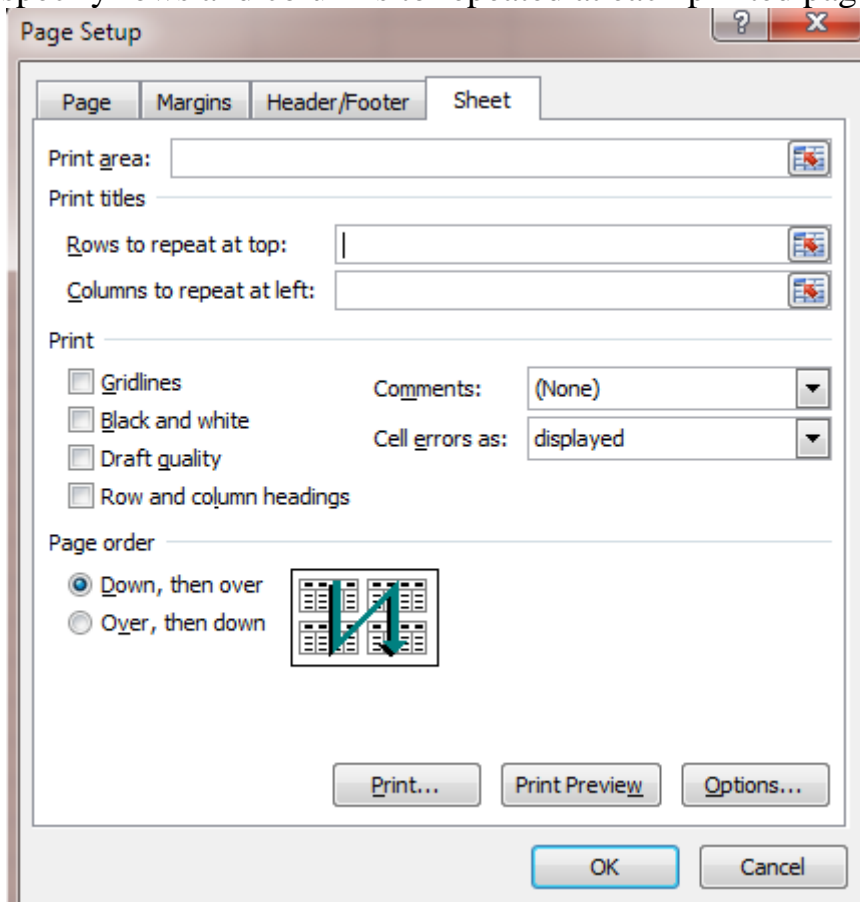
Scale to fit: include:
Width: shrink the width of printed output to fit a maximum number of pages.
Height: shrink the height of printed output to fit a maximum number of pages.
Scale: stretch or shrink the printed output to percentage of its actual size.

Sheet options:
Sheet right to left: switch the sheet direction so that the first column is on the right side.
Gridlines: show lines between rows and columns in the sheet to make editing and reading easer.
Headings: show rows and columns headings.

Arrange: include:
Bring to front: bring the selected object in front of all other objects so that no part of it is hidden behind another object.
Send to back: send the selected object behind all other objects.
Selection pane: show the selection pane to help select individual object and to change their orders and visibility.
Align: align the edges of multiple selected objects.
Group: group objects together so that they can be treated as a single object.
Rotate: rotate or flip the selected object.

Entering Formula: you can enter formulas in one of two type: by typing the enter formula, including the cell address, or by typing the formula operators and selecting the cell reference.

Type Formula
- Select the cell where you will place the formula.   - Type an equal sign"=" into the cell to begin the formula.   - Enter the appropriate cell references and operators for the formula the formula also appears in the formula bar as you type it. The cells that you specify in the formula are highlighted with a color board.   - press enter when you have finished the formula, and Excel calculate the results.

Enter formula by selecting cell address
- Click in the cell where you will place the formula.   - Type the equal sign"=" to begin the formula.   - Click the cell whose address you want to appear first in the formula. You can also click a cell in a different worksheet or workbook. The cell address appears in the cell and in the formula bar.   - Type a mathematical operator after the value to indicate the next operation you want to perform. The operator appears in the cell and in the formula bar.   - Continue clicking cells and typing operators until the formula is complete.   - Press enter to accept the formula and have Excel place its results into the cell.

Some of operators that you can use and how you would use them in simple formula.
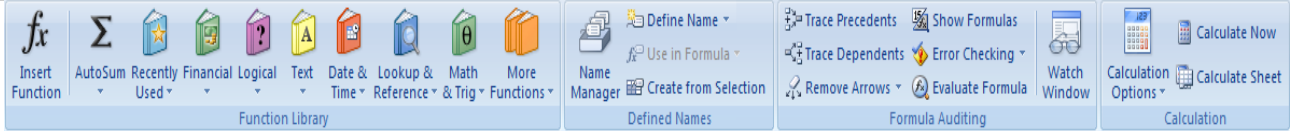Order of operators: the natural order of mathematic operators as follows:
1. Exponent (^) and calculations with parenthesis.
2. Multiplication (*) and division (/).
3. Addition (+) and subtraction (-).
You can force the precedence of an operation by using parentheses.

Operator	Simple formula
$A1^3$	=A1^3
A1+B1	= A1+B1
A1-B1	= A1-B1
A1×B1	=A1*B1
A1/B1	=A1/B1
A2+B2×C2	=A2+B2*C2
(A2+B2)×C2	=(A2+B2)*C2
$\dfrac{A1+B1}{C1-D1}$	=(A1+B1)/(C1-D1)
$A1+\dfrac{B1}{C1}-D1$	=A1+B1/C1-D1
A1×B1/2	=A1*B1/2
$\dfrac{A1\times B1}{C1\times D1}$	=A1*B1/(C1*D1)
$A1+B1+\dfrac{C1}{3}$	=A1+B1+C1/3
$\dfrac{A1+B1+C1}{3}$	=(A1+B1+C1)/3
B1 (1+C2)	= B1*(1+C2)
B1x1+C2	=B1*1+C2
$A1^2+B1^2+C1^2+D1^2$	=A1^2+B1^2+C1^2+D1^2
$(A1+B1+C1+D1)^2$	=(A1+B1+C1+D1)^2
$\dfrac{A1+B1}{C1}$	=(A1+B1)/C1
|A1|	=ABS(A1),example: abs(8)=8,abs(-9)=9
Integer (B1)	=INT(B1),example: int(7.1)=7, int(7.9)=7
Integer (C1)	=INT(C1),int(-9.2)=-10,int(-11.1)=-12
$\sqrt{D1}$	=D1^0.5 or D1^(1/2) or SQRT(D1)
$\dfrac{-b+\sqrt{b^2-4*a*c}}{2*a}$	=(- B1 + sqrt (B1^2-4*A1*C1))/(2*A1)
$\dfrac{-b-\sqrt{b^2-4*a*c}}{2*a}$	=(- B1- sqrt (B1^2-4*A1*C1))/(2*A1)
e^{A1}	=exp(A1)
$1-e^{a1}/1+e^{a1}$	= (1-exp(A1))/(1+exp(A1))
ln(A1)	=log (A1)
log(A1)	=log(A1)/log(10)
Sin(A1)	=Sin(A1*3.141592/180)
Cos(B2)	=Cos(B2*3.141592/180)
Tan (C3)	=tan(C3*3.141592/180)
Sec(A1)	=1/cos(A1*3.141592/180)
Csc(B2)	=1/Sin(B2*3.141592/180)
Tan^{-1}(B1)	=1/tan(B1*3.141592/180)
Log B1 –Sin A1 +C1 x D1	=Log(B1)/Log(10)- Sin (A1*3.14/180) +C1*D1

$\text{Ln } D1 - \text{Log } D1^2$	$= \text{Log(D1)- Log(D1^2)/Log(10)}$
Sin(C4)	$=\text{sin (C4*3.14/180)}$
$\text{Cos (A1}^2)$	$= \text{Cos((A1*3.141592/180)^2}$
$\text{Cos}^2\text{(A1)}$	$=\text{Cos (A1*3.141592/180)^2}$
$\text{Sin (A1)+Cos(B1)/Tan(C1)}$	$=\text{(Sin(A1*3.14/180)+Cos(B1*3.14/180))/Tan(C1*3.14/180)}$
Signature(A1)	$=\text{sign(A1), =1 if a is positive or -1 if a is negative}$
Signature(D1)	$=\text{sign(D1),example: sign(7)=1,sign(-7)= -1}$
random (A1)	$=\text{RAND(1) ,its return random value between 0,1,example:0.87965431}$
$\text{Ln } \dfrac{A + |A - 3|}{2A + 5}$	$=\text{log(((A1)+abs(A1-3))/(2*A1+5))}$
$\dfrac{\sqrt{A^2 +1} - 2A}{|A|}$	$=\text{(Sqrt(A1^2+1) - 2*A1)/abs(A1)}$
$\dfrac{A.\text{Tan}A}{(A + \text{Tan}A)^2}$	$=\text{A1*tan(A1*3.14/180)/(A1+tan(A1*3.14/180)^2}$
$\dfrac{\text{Log}A + \dfrac{1}{A} - A^3}{10 - A}$	$=\text{(log(A1)/log(10)+1/A1-A1^3)/(10-A1)}$
$\text{Ln} \dfrac{A + |A - 3|}{2A + 5}$	$=\text{log((A1+abs(A1-3))/(2*A1+5))}$
$\sqrt{\text{Cos} \dfrac{A^3}{5(A-1)}}$	$=\text{sqrt(cos(A1^3/(5*(A1-1))*3.141592/180))}$
$\dfrac{(|A - B| - 1/2)^2}{A + B}$	$=\text{(abs(A1-B1)-1/2)^2/(A1+B1)}$
$\dfrac{\sqrt{A+1} - \sqrt{3A}}{A^2 - 2}$	$=\text{(sqrt(A1+1)-sqrt(3*a1))/(A1^2-2)}$
$\sqrt{\dfrac{\text{Sin}A^3}{3(A-1)}}$	$=\text{sqrt(sin(A1*3.14/180)/(3*(A1-1)))}$
$Y = \sqrt{\dfrac{2 - x^2}{\sqrt{a + (b^2 -1)^5}}}$	$=\text{sqrt((2-X1^2)/sqrt(a1+(B1^2-1)^5))}$
$Y = \dfrac{\ln|3e^x - 9|}{\sqrt{3x^2}}$	$=\text{log(abs(3*exp(X1)-9))/sqrt(3*X1^2)}$
$Y = \log\left(\dfrac{1 - e^{-2x}}{1 + x}\right)$	$=\text{log((1-exp(-2X1))/(1+x1))/log(10)}$
$Y = x^2 + a|b - c^2| - e^x$	$=\text{X1^2+A1*abs(b1-c1^2)-Exp(X1)}$
$\text{Sin}^2(X) + \text{Cos}(X^3)$	$=\text{sin(x1*3.14/180)^2+cos((X1*3.14/180)^3)}$

fx Σ | Insert Function | AutoSum | Recently Used | Financial | Logical | Text | Date & Time | Lookup & Reference | Math & Trig | More Functions | Name Manager | Define Name | Use in Formula | Create from Selection | Trace Precedents | Trace Dependents | Remove Arrows | Show Formulas | Error Checking | Evaluate Formula | Watch Window | Calculation Options | Calculate Now | Calculate Sheet

Function Library | Defined Names | Formula Auditing | Calculation

Insert Function: Functions are ready made formulas that perform a series of operations on specified range of values .every function consists of the following three elements:

1. The "=" sign, which indicates that what follows is a function (formula).
2. The function name, such as sum, that indicates which operation will be performed.
3. A list of cell address, such as (A1:H1), which are to be acted upon by the function. Some functions can include by commas such as (A1, B1, and H1).

Some of Excel functions that probably used most often in worksheets:

Functions	*Example*
Average	=Average(B4:B9)
Count	=Count(A3:A7)
If	=if (A3>1000,"bonus",no bonus")
Max	=Max(B4:B10)
Min	=Min(B4:B10)
Sum	=Sum(A1:A10)

***Using the status bar Auto Calculate feature.***

Using feature that Excel calls, you can view the sum of the column of cells simply by selecting the cells and looking at the status bar. the values in the selected cells are added. You can also right – click the auto calculate area of the status bar and choose different formulas, such as average, minimum, maximum, and count.
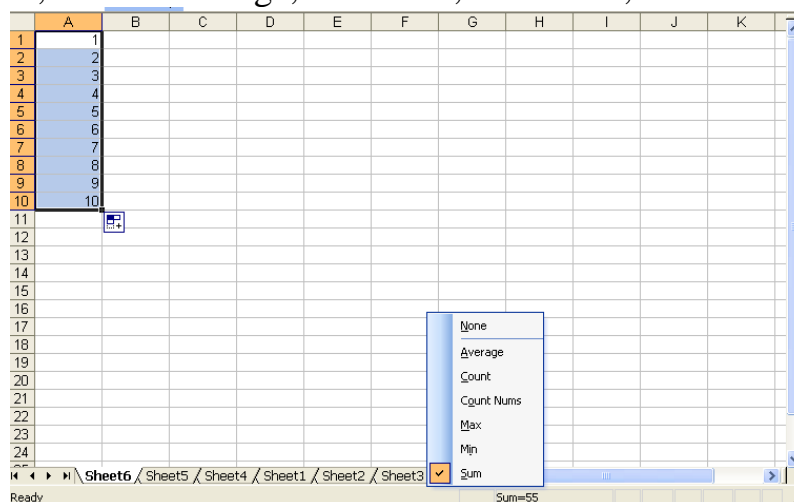
Using function feature: the insert function feature leads you to through the process of inserting a function and specifying the appropriate cell address in the function.

Use function feature
- Click in the cell where you want to pace the function.
- Click the arrow button next the auto sum button and select **more functions**. The insert function dialog box appears.
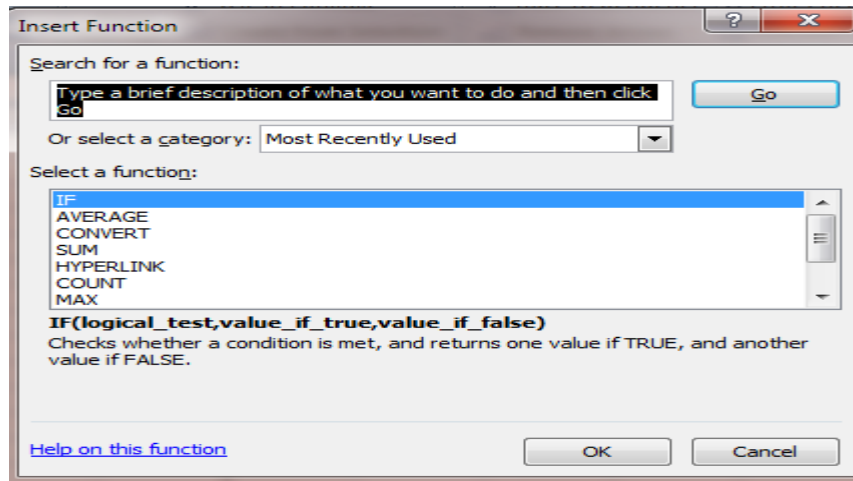
- To search for a particular function, type a brief description of what you wan to do in the search for a Function box. then click Go to conduct the search. you also can select a function category ,such as financial or statistical ,using the select a category drop – down box. in either case a list of functions is provided in the select function dialog box.
- From the functions list, select the function you want to insert. then click ok. the function Arguments dialog box appears. this dialog box allows you to specify the range of cells that the function acts upon .
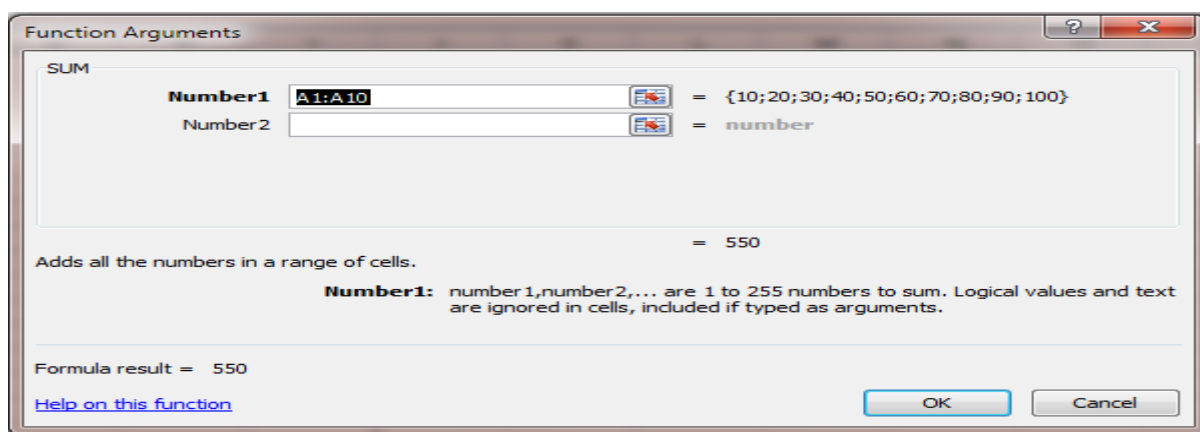
- Next you must enter the range of cells that will be acted upon by the function. Click the **collapse** button on the far right of the Number1 text box in the Function arguments dialog box, this return you to the worksheet.
- Use the mouse to select cells that you want to place in the function. Then click the **expand** button on the right of the function arguments dialog box.
- Click **ok**. Excel inserts the function and cell addresses for the function into he selected cell and displays the result.

Example: Enter the following data:

	A	B	C	D	E
1		Qtr1	Qtr2	Qtr3	Qtr4
2	Raw Materials	157	96	211	182
3	Packaging	256	202	128	96
4	Work inProcess	39	35	51	75
5	Finshed Products	82	48	76	106

- Calculate sum of columns B, C, D, and E.
- Calculate the Average of columns B, C, D, and E.
- Calculate the Max and Min value in each row.
- Calculate the sum and average of each row.
- In each columns, If the values >=100.print "Over", else print "Below".
- Count the number of values in each row.

Example: Enter the following data:

	A	B	C	D	E
1		Daily Production			
2		Rice	Tea	Sugar	Other
3	Sunday	4900	1580	2600	3300
4	Monday	4750	1725	2350	3150
5	Tuesday	3900	1565	2975	2590
6	Wednesday	2600	1520	2845	2810
7	Thursday	3375	1635	2100	3050
8	Friday	2600	1520	2100	2590
9	Saturday	4750	1725	2975	3300
10					
11	SUM	26875	11270	17945	20790
12	MIN	2600	1520	2100	2590
13	MAX	4900	1725	2975	3300
14	AVERAGE	3839.286	1610	2563.571	2970
15	COUNT	7	7	7	7
16					

- Calculate sum of columns Rice, Tea, Sugar.
- Calculate the Max and Min value in each column.
- Calculate the Average of columns Rice, Tea, Sugar.
- Count the number of values in each column.

Example: Enter the following data:

	A	B
1	student	grade
2	iklas	74
3	zina	94
4	huda	73
5	maha	95
6	ieman	75
7	lyla	27
8	saba	33
9	nahla	51
10	swsan	20
11	asma	97
12		
13	SUM	639
14	AVERAGE	63.9
15	COUNT	10
16	MIN	20
17	MAX	97

- Calculate sum of column grade.
- Calculate the Average of column grade.
- Calculate the Max and Min value in grade.
- In column grade, If the values >=50.print pass, else print poor.
- Count the number of values in grade.

28

Matrix Multiply: the condition to multiply matrices is number of columns of first matrix equal to the number of rows in second matrix.

Matrices Multiply
• Select the cells you want the result display on write "=" in first cell. • Click ***Insert Function*** from ***Formula***, choose ***MMULT***. • The dialog box appear, select the range of matrix by drag the mouse ,and select the range of second matrix in the same way. • Click ***Ctrl + Shift + Enter***, the result display in selected cells.

Example: to calculate the result of multiply two matrices, first size (2×2) and the second size (2×3).

	A	B	C	D	E	F	G	H	I	J
1	2	7		1	8	7		16	79	63
2	8	7		2	9	7		22	127	105

Matrices Inverse: to calculate matrix inverse fallow these steps:

Matrices Inverse
• Select the cells you want the result display on write "=" in first cell. • Click ***Insert Function*** from *formula* , choose ***MINVERSE*** • The dialog box appears; select the range of matrix by drag the mouse. • Click ***Ctrl + Shift + Enter***, the result display in selected cells.

Example: calculate the matrix inverse for the matrix size (2×2).

	A	B
1	2	7
2	8	7
3		
4	-0.16667	0.166667
5	0.190476	-0.04762

Function Library: include:

Auto sum: display the sum of the selected cells directly after the selected cells.

Recently used: brows and select from list of recently used function.

Financial: brows and select from list of financial functions.

Logical: brows and select from list of logical functions.

Text: brows and select from list of text functions.

Date &time: brows and select from list of date & time functions.

Lookup &references: brows and select from list of lookup &references functions.

Math & trig: brows and select from list of math &trigonometry functions.

More functions: brows and select from list of statistical, engineering, cube, information functions.

Define names: Create, edit, delete, and find all the names used in the workbook.

Formula Auditing Checking the formula:
- *Trace precedents*: we select the result, and want to know from where it is, rows appear to cells that caused the result.
- *Trace dependents*: we select the cells that special perform formula on it and Excel display row to cell contain this formula result.
- *Remove all rows*: to remove all rows that appears.
- *Show formulas*
- *Error checking:* formula errors caused error results, There is some tools help in define error such:
  ####: column is thin
  #value: can't convert string to value.
  #div/0: divided by zero.
  #name: names cannot define to it.
  #N/A: invalid formula.
  #ref: invalid reference.
- **Evaluate formulas:** lunch the evaluate formula dialog box to debug a formula by evaluating each part of formula individually.

Example: to know the reference of the value (30) we select A5and select trace precedents, arrow appears to four values caused the result.

	A
1	15
2	8
3	4
4	3
5	30

	A
1	15
2	8
3	4
4	3
5	30

Calculation: specify when formulas are calculated.

Data Commands

Get external date: import data from Microsoft access data base or from web pages or from text files, or from other data source.

Connections: display all data connections for the workbook.

Sort & filter: sort & filter a list of data.

Data tools: include:
Text to columns: separate the contents of one excel cell to into separate columns.

Remove duplicate: remove duplicate rows from the sheet.

Data Validation: it is used to check correction of data. For example ,we want enter data values between 0 and 100 ,when enter number out of data ,Excel display message , "the number you entered is not valid", that is the number is refused .or we want only positive data ,when enter negative number it s refused.
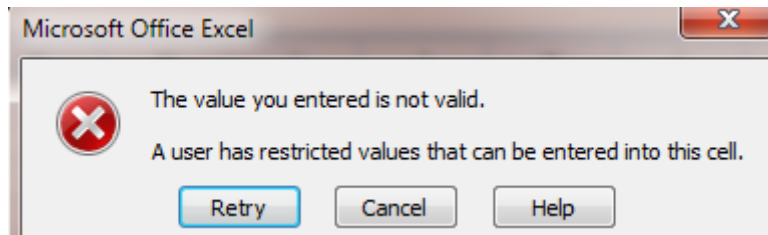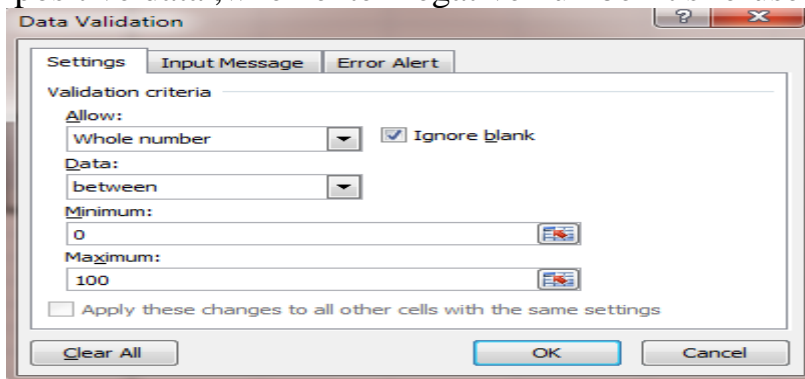
Consolidate: where you need to combine revenues from several regions or calculate productivity static's several departments. Excel consolidation tools allow you to better manage, organize, and present your information.

Goal Seek: also called backward solving, lets you begin at the finish line and then work backward to solve a problem.

Using Goal Seek

- Select Tools, Goal Seek.
- In the ***Set Cell*** text box, enter the cell containing the outcome formula.
- In the ***To Value*** text box, enter the desired target value.
- In the ***By Changing cell*** text box, enter the input cell that Excel may change to achieve the target value.
- Click ***ok***.

Example: to change the summation of four values from 20 to 30, In the set cells text enter the cell A5, in the to value text box, enter 30, in the by changing cell text box, enter A1.after using goal seek the value of A1 change to 15, the value of A5 change to 30.
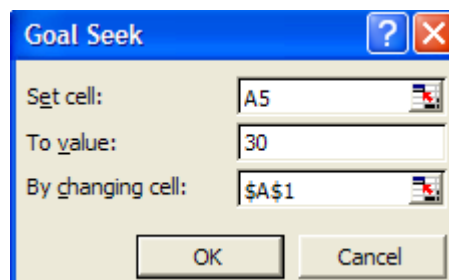
Out line: include:

Group: tie a range of cells together so that they can be collapsed or expanded.

Sub group: ungroup a range of cells that were previously grouped.

Subtotal: subtotaling describes the process of grouping records together in a worksheet list and inserting new rows for computing average ,sums, minimums, and maximums.

Create Subtotals

- Sort the list by the field for which you want to calculate subtotals.
- Select any cell in the worksheet list.
- Select **data, outline, and then subtotals**.
- Specify the sort field that contains the groupings, the deseed summery function to calculate, and the fields you want to subtotal.

Example: to create subtotals to sporting sales ,the first step is sorting the data rows by sport type ,then select subtotal ,dialog box appears , select appropriate function from it, the summation of columns which contain sports sales ,summation each type alone, then all summation.

	A	B
1	sports	sales
2	golf	10
3	golf	20
4	golf	10
5	golf	30
6	tenes	4
7	tenes	8
8	tenes	8
9	tenes	6

Subtotal [?][X]

At each change in:
| sports ▼ |

Use function:
| Sum ▼ |

Add subtotal to:
[ ] sports
[✓] sales

[✓] Replace current subtotals
[ ] Page break between groups
[✓] Summary below data

| Remove All | | OK | | Cancel |

1 2 3		A	B
	1	sports	sales
	2	golf	10
	3	golf	20
	4	golf	10
	5	golf	30
	6	**golf Total**	70
	7	tenes	4
	8	tenes	8
	9	tenes	8
	10	tenes	6
	11	**tenes Total**	26
	12	**Grand Total**	96

Proofing: include:

Spelling :Microsoft office provides several ways to check spelling and grammar.

Checking the spelling

- Click the Spelling button (or select *Review, Proofing*, *Spelling*), the spelling dialog box appears. Excel finds the first misspelled word and displays it at the top of the spelling dialog box, a suggested correction appears in the suggestions box.
- To accept the suggestion in the suggestion box, click *change,* or click *change all*, to change all occurrences of the misspelled word.
- Click *ok* to confirm that the spelling check is finished.

Research: open the research task pane to search through reference materials, such as dictionaries, encyclopedias, and translations services.

Thesaurus: Suggestions other words with a similar meaning to the word you have selected.

Translate: translate the selected text into a different language.

Comment: you can add comments to particular cells although the comments are not really considered cell content these comments allows you to associate information with a cell ,information that does not appear with the workbook when sent to the printer.

Adding Comments to Cells

- Click the cell in which you want to place the comment.
- Select *Review, Comments, new comment*. A comment box appears next to the cell.
- Type your information into the comment box.
- Click anywhere else in the worksheet to close the comment box.

Changes: include:

Protected sheet: prevent unwanted changes to the data in a sheet by specifying what information can be change.

Protected workbook: restrict access to the workbook by preventing new sheet from being created or by granting access only to specific people.

Share work book: allow multiple people to work in a workbook at the same time.

Workbook views: include:

Normal: In normal view ,page ,boundaries, headers and footers, backgrounds, drawing objects, and pictures that do not have the "in line with text" wrapping style do not appear.

Page Layout: view the document as it will appear in printed page.

Page break Preview: a page break is the point at which one page ends and another begins.

Custom views: save a set of display and print setting as a custom view.

Full screen: view the document in full screen mode.

Show /hide:
Ruler: show or hide ruler.
Grid lines: show or hide grid lines.
Message bar: show or hide message bar.
Formula Bar: show or hide formula bar.
Headings: show or hide headings.

Zoom: to enlarge or reduce the view of the current worksheet, use the zoom feature. Simply click the zoom button on the standard toolbar or click *View*, *Zoom* and select the zoom percentage. You want to use from the following: 25%, 50%, 75%, or 200%.

Window: open a new window containing view of the current document.

Micros: record a macro or access to other macro options.

Create adobe PDF: Create adobe PDF from current document.
Create and Email: Create adobe PDF and attach to new email.
Review and Comment: Create adobe PDF and imitate a shared review.

Example: Enter the following data:

	A	B	C	D	E
1	20	40	70	40	
2	10	30	50	60	
3	90	80	60	50	
4	10	90	200	50	
5	70	30	80	50	

- Calculate sum of columns A,B,C,D.
- Calculate the Average of columns A,B,C,D.
- Calculate the Max and Min value in each row.
- Calculate the sum and average of each row.
- In each columns, If the values >=50.print pass, else print poor.
- Count the number of values in each row.

Example: Enter the following data

	A	B	C	D	E	F
1	Name	Sex	Salary	Code	Collage	Work Date
2	iklas	female	600	1	Science	2000
3	zina	female	700	2	Engineering	2003
4	saad	male	650	3	Science	2000
5	maha	female	800	4	Engineering	2002
6	samir	male	730	2	Science	2001
7	lyla	female	910	2	Engineering	1995
8	saba	female	760	3	Engineering	1995
9	nahla	female	870	4	Science	1995
10	swsan	female	500	1	Engineering	1998
11	asma	female	700	2	Engineering	2000

- Display employee record they work in seines collage.
- Display the female employee only.
- Display all records.
- Display the two maximum salary.
- Display the five minimum salary.
- Display employee record they work before 2000.
- Display employee record in code 1,2.
- Display employee record they work between 2000 and 2003.

Example: Enter the following data

	A	B	C	D	E	F	G
1	no.	Product	Cost	Ordered	Total	Discount	Adjusted ToTal
2	1	Hard drive	100	2		10	
3	2	Ram	65	5		5	
4	3	Sound Card	85	8		2	
5	4	Modem	74	2		7	
6							
7						Sum	
8							

- Calculate the total of each product.(cost * ordered)
- Calculate the adjusted total of each product.(total – discount)
- Summation of adjusted total.
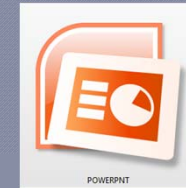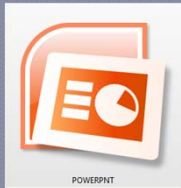
Starting
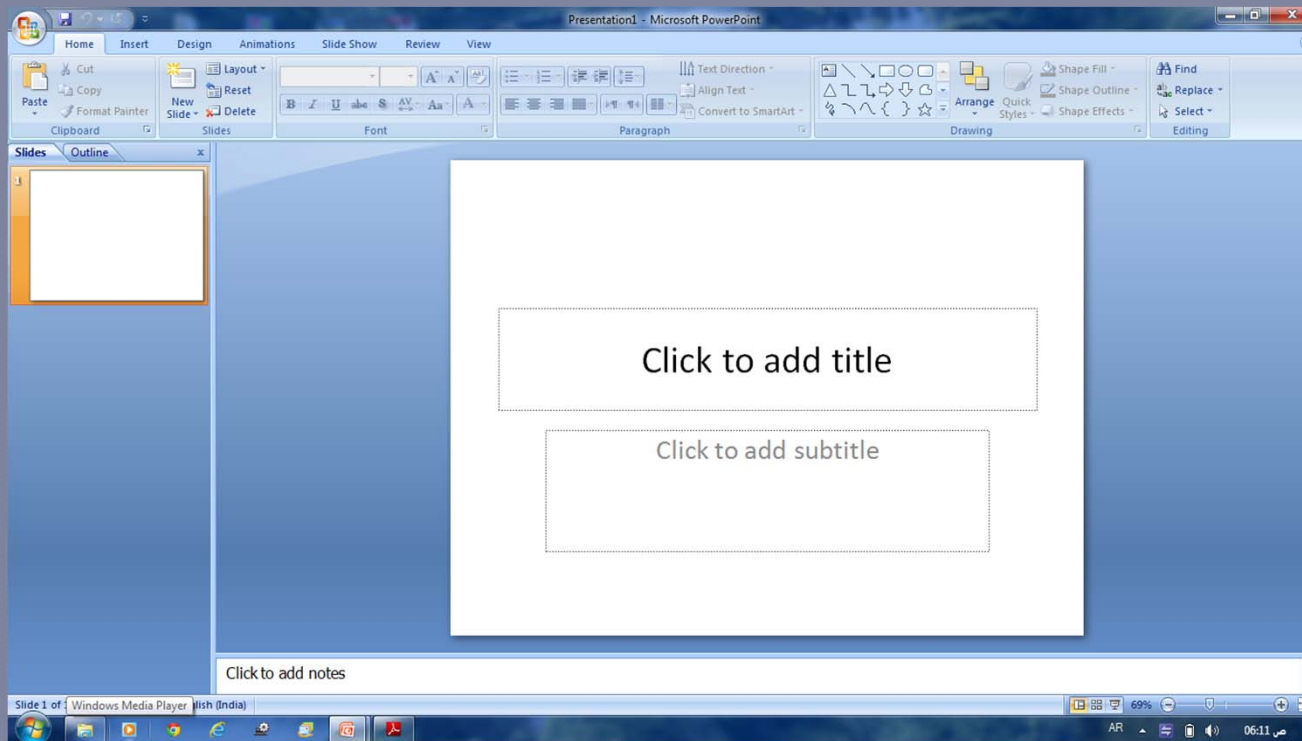
❖ Start ➡ all programs ➡ Microsoft office ➡ Microsoft Power Point

❖ My Computer ➡ C: ➡ Program files ➡ Microsoft Office ➡

office 10 ➡ Microsoft Power Point

❖Desktop ➡ icon

Home Commands

- ✓ **Clipboard :** Cut, Copy, Paste, Format Painter
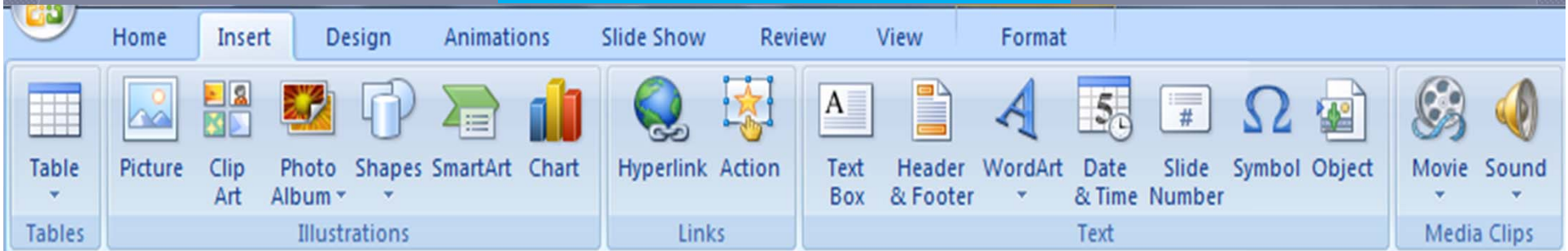
- ✓ **Slides :** New, Layout, Reset, Delete

- ✓ **Font :**

- ✓ **Paragraph :** Text Direction, Align Text, Convert to Smart Art

- ✓ **Drawing :** Shapes, Arrange, Quick Styles, Shape Fill, Shape

    Outline, Shape Effects

- ✓ **Editing :** Find, Replace, Select
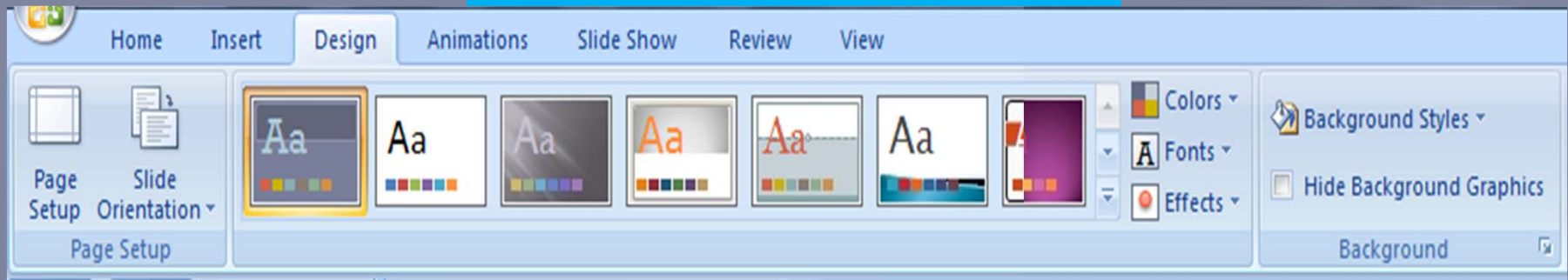
Insert Commands

✓ **Table :**

✓ **Illustrations :** Picture, Clip Art, Shapes, Smart Art, Chart

✓ **Links :** Hyperlink, Action

✓ **Text:** Text Box, Header&Footer, WordArt, Date&Time, Slide No, Symbol,

    Object.

✓ **Media Clips :** Movie, Sound

Design Commands

✓ **Page Setup :** Page Setup, Slide Orientation

✓**Themes :** Themes, Colors, Fonts, Effects

✓**Background :** Styles, Hide Graphics
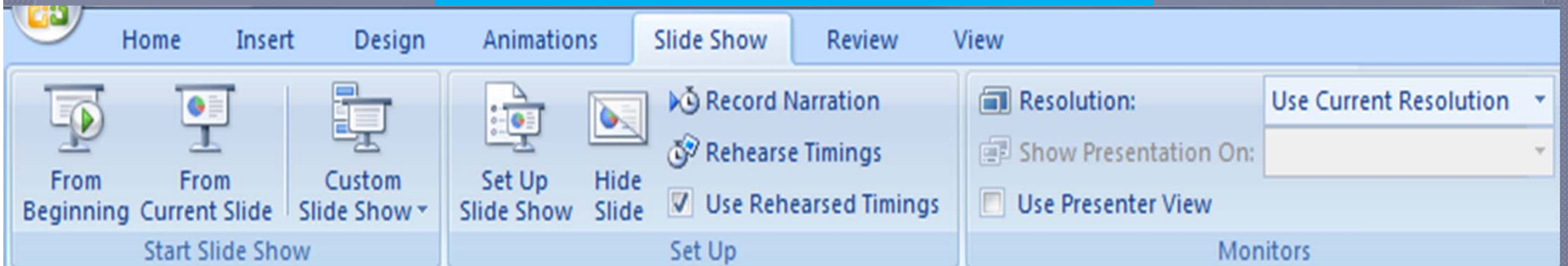
Animations Commands

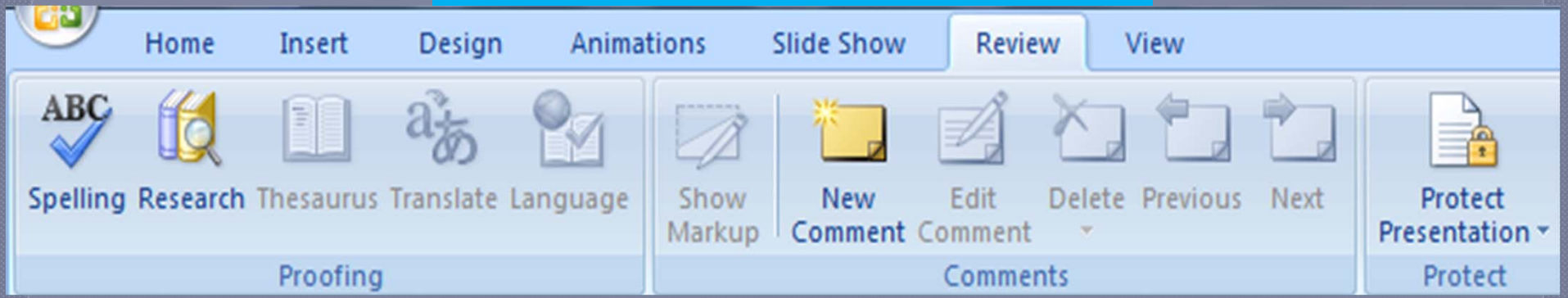✓ **Preview :**

✓ **Animations :** Animate, Custom Animation

✓ **Transition :** Style, Sound, Speed, Apply To All, Advance Slide
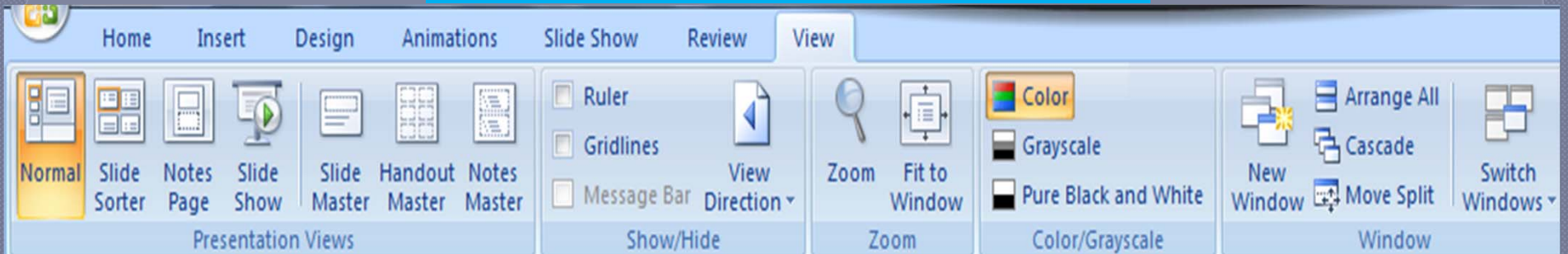
Slide Show Commands

- ✓ **Start Slide Show :** From Beginning, From Current Slide, Custom

- ✓ **Set Up :** Set Up, Hide Slide, Record Narration, Rehearse Timings

- ✓ **Monitors :** Resolution

Review Commands

✓ **Proofing:** Spelling, Research, Thesaurus, Translate, Language

✓ **Comments:** Show Markup, New, Edit, Delete, Previous, Next

✓ **Monitors :** Protect

Review Commands

- ✓ **Presentation Views :**

- ✓ **Show/Hide :**

- ✓ **Zoom :**

- ✓ **Color/Grayscale:**

- ✓ **Window:**

- ✓ **Macros:**

The End
Thank YOU