**REPUBLIC OF RWANDA**

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# INTRODUCTION TO INFORMATION AND COMMUNICATION TECHNOLOGY

**Written by:**

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# MODULE DESCRIPTION

**1.** Module Code: **UCM102** School: Science and Technology

**2.** Module Title: **Introduction to Information and Communication Technology**

**3.** Year: 1 Semester: **1** Credits: **10**

**4.** First year of presentation: **2022-2023** Administering School: **Science and Technology**

**5.** Pre-requisite or Co-requisite module(s): None

**6.** Allocation of study and teaching hours

| Total student hours 100 | Student Hours | Lecture Teaching Hours |
|---|---|---|
| Lectures | 20 | 60 |
| Seminars/workshops | 9 | 18 |
| Practical classes/laboratory | 18 | 18 |
| Structured exercises | 8 | 14 |
| Set reading etc. | 5 | 10 |
| Self-directed study | 25 | - |
| Assignments – preparation and writing | 10 | 10 |
| Examination – revision and attendance | 5 | 10 |
| Other (Invigilation and Marking) | - | 139 |
| TOTAL | 100 | 279 |

**7. Brief description of aims and content**

The goal of this module is to educate students with information technology knowledge and skills that will enable them cope with an information-rich society and continue to learn throughout their lives. This course of study identifies the essential knowledge, abilities, and attitude that all students require to be engaged lifelong learners in an information technology-rich society. The curriculum is designed to form the foundation for continuous learning and to be applicable to ever changing innovations and emerging technologies such as collaborative tools, ICT fundamentals, advanced MS Office, and basic computer security. Students will be able to adapt to ever-changing technologies and use ICT skills to learn for the rest of their lives. The usual course of study for computer skills entails the gradual growth of skills. These abilities serve as building blocks for overcoming personal and professional problems.

**8. Learning Outcomes**

**A. <u>Knowledge and Understanding</u>**

Having successfully completed the module, students will be able to demonstrate knowledge and understanding of:

i. The concepts and fundamentals of Computer hardware
ii. The concepts and fundamentals of operating systems
iii. Ms-Windows Operating System and application software like Ms-Word, Ms-Excel, Ms-Power point, and Internet Explorer
iv. Operating System for Smart phones such as Android, IoS
v. Social Media like Facebook. Whatsapp, Twitter
vi. Methods and techniques in which computers can be used efficiently and effectively in the day-to-day applications

**B. Cognitive/Intellectual skills/Application of Knowledge**

Having successfully completed the module, students should be able to:

vii. Describe various input and output devices and their role in computer.
viii. Apply the knowledge of learnt application software in daily life activities by using word processing, worksheets, presentations, and Internet tools.

**C. Communication/ICT/Numeracy/Analytic Techniques/Practical Skills /Information Literacy**

Having successfully completed the module, students will be able to:

ix. Demonstrate theoretical and Practical skills in Computer Science.
x. Solve minor computer problems related to both hardware and software.
xi. Use computer in numerical and financial calculation of day-to-day life.
xii. Use techniques and approaches in teaching ICT

**D. General Transferable Skills**

*D1. Personal, Intellectual, and Professional Autonomy*

Having successfully completed this module, students should be able to:

xiii. Search study material using computers and internet.
xiv. Avoid and resolve cyber security issues.

*D2. Employability and career development*

Having successfully completed this module, students should be able to:

xv. Be self-contained to perform their assigned responsibility independently or with little guidance.
xvi. Be self-employed by applying learnt knowledge.

*D3. Global citizenship*

Having successfully completed this module, students should be able to:

xvii. Use ICT in mitigating global issues like climate change, conflict resolution, global peace building.

*D4. Lifelong learning*

Having successfully completed this module, students should be able to:

xviii. To adapt to new technologies

xix. Use ICT learning opportunities such as e-learning to foster knowledge and skills development.

*D5. Collaboration, Teamwork and Leadership*

Having successfully completed this module, students should be able to:

xx. Use ICT in social life for collaboration, teamwork, and peace building.

*D6. Research, Creativity and Innovation, Scholarship and Enquiry*

Having successfully completed this module, students should be able to:

xxi. Be self-employed by applying learnt knowledge.

*D7. Ethical, Social and Professional Understanding*

Having successfully completed this module, students should be able to:

xxii. Apply computer ethics, cybernetics, and use social media for good purposes,

*D8. Financial Literacy*

Having successfully completed this module, students should be able to:

xxiii. Be self-employed by applying learnt knowledge for financial self-reliance

xxiv. Apply knowledge and skills to manage one's financial resources effectively through online banking, e-commerce

## 9. Indicative Content

This module will give to the learners the **Introduction to computers**: Operating Systems for Desktops and Laptops-Windows, Operating Systems for Portable Devices, Tablets and Smart phones-Android, IoS. Learners will also go through **Microsoft Office package:** Word Processing: case of Microsoft Word, Spreadsheet Management: case of Microsoft Excel, Presentation Software: Case of Microsoft PowerPoint. **Internet applications:** Use of internet for research ( e-Resources, OERs & Moos Digital library, Ethics (plagiarism, copyright, and privacy), Webpages, web browser, Website, Search engines, Search strategies, Online searching techniques, Emails, Online libraries, OERs, MOOCs and Digital library, Accessing full text from electronic journals, Cyber-Ethics. The module will also give an **introduction to computer security** (User credentials; Setting of passwords; Computer virus and antivirus programs), **Collaborative tools** (Dig social bookmarks, Microsoft teams, other social media& cloud services).

## 9. Learning and Teaching Strategy

The lecturer will give clarifications so that students are able to go for research of more details.

In brief, the following strategies will be taken:

- Face to face teaching using a projector.
- Practical classes, laboratory on computer hardware.
- Practical exercises.
- Set readings and self-study.

Active participation in discussions, group work in case study discussions, and (written and oral) presentation of case study contributions in plenary sessions; Assignments

## 10. Assessment Strategy

**Formative and summative assessments will be organized.**

In-course assessment composed of:

- Group works
- Practical group work
- Individual practical course work
- Various assignment and final examination for the whole general module can be organized.
- Students must receive comments on their works and results where it is needed.

## 11. Assessment Pattern

| Component | Weighting (%) | Learning objectives covered |
|---|---|---|
| CATs | 60% | i-xix |
| Final Exam | 40% | i-xxiv |
| Total | 100 | |

## 12. Strategy for feedback and student support during module

Marking in class or in a computer laboratory of written in-course tests, assignment, exercises and laboratory exercises, discussion in group work for case studies given before to students allow them to be mastering the course very well.

## 13. Indicative Resources

**Core texts**


- Grahaman Brown, Brian Sergent, David Watson, [2015] ICT second edition,
- Champion Solution Group. (n.d.). OFFICE 2013 QUICK START GUIDE: All in one guide to help you quickly and navigate Outlook, Access, Excel, OneNote, PowerPoint, Project, Publisher, and Visio!
- Office 2019 All-in-One For Dummies, [1019] John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030-5774, www.wiley.com

**Background Texts**


- Office 2019 For Dummies, John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030-5774, www.wiley.com
- Cox, J., & Joan, L. (2013). Microsoft PowerPoint 2013. Washington: Microsoft Press.
- Office 2016 For Seniors For Dummies, John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030-5774, www.wiley.com
- Bucki, L., Walkenbach, J., Wempen, F., Alexander, M., & Kusleika, D. (2013). Microsoft Office 2013 Bible. Indianapolis: John Wiley & Sons, Inc.
- Joan, L., & Cox, J. (2013). Microsoft Word 2013. Washington: Microsoft Press.
- Melton , B., Dodge, M., Swinford, E., Couch, A., Legault, E., Schorr, B. M., & Rusen, C. A. (2013). Microsoft Office Professional 2013. Washington: Microsoft Press.
- Poole, J. (. (2013). ESSENTIAL MICROSOFT OFFICE 2013: Tutorials for Teachers. Johnstown: University of Pittsburgh at Johnstown.
- Schwartz, S. (2013). Microsoft Office 2013 . Peachpit Press.


**Journals**

- http://www.springerlink.com/ **online journal**
- http://ieeexplore.ieee.org/ online journal

**Key websites and on-line resources**

- https://www.washoecounty.us/repository/files/8/Computer%20Skills%202%20-%20Windows1%20-%207.pdf
- https://oer.avu.org/handle/123456789/802
- https://oer.avu.org/handle/123456789/768
- https://www.youtube.com/watch?v=Q6fT-ATfusc
- https://oer.avu.org/bitstream/handle/123456789/802/CSI%201100_EN%20INTRODUCTION%20TO%20COMPUTER%20SCIENCE1.pdf?sequence=1&isAllowed=y
- http://novaonline.nvcc.edu/Descriptions/ite115common/Office2013Tutorials/Word/W

ord_Basics/Word_Basics.html

- http://novaonline.nvcc.edu/Descriptions/ite115common/Office2013Tutorials/Word/Character_Formatting/Character_Formatting.html
- https://novaonline.nvcc.edu/Descriptions/ite115common/Office2013Tutorials/index.html
- https://saylordotorg.github.io/text_how-to-use-microsoft-excel-v1.1/index.html
- http://www.excel-lence.net/links.html
- https://www.youtube.com/watch?v=TyJDlgGhxDA
- https://www.youtube.com/watch?v=S0T3PHlhesY&t=576s
- https://www.youtube.com/watch?v=IdVUhCBhjps
- https://www.youtube.com/watch?v=F264FpBDX28
- https://library.loras.edu/powerpoint
- https://pressbooks.bccampus.ca/technicalwriting/chapter/developingpresentationskills/
- https://www.oerafrica.org/resource/information-web
- https://www.oerafrica.org/resource/ethics-and-integrity-data-use-and-management-ppt-slides
- http://ccti.colfinder.org/education/ict-international/knowledge-deepening/module-4-organization-and-administration/unit-4-ict-collaboration-tool

# Table of Contents

# CHAPTER 1: INTRODUCTION TO COMPUTERS

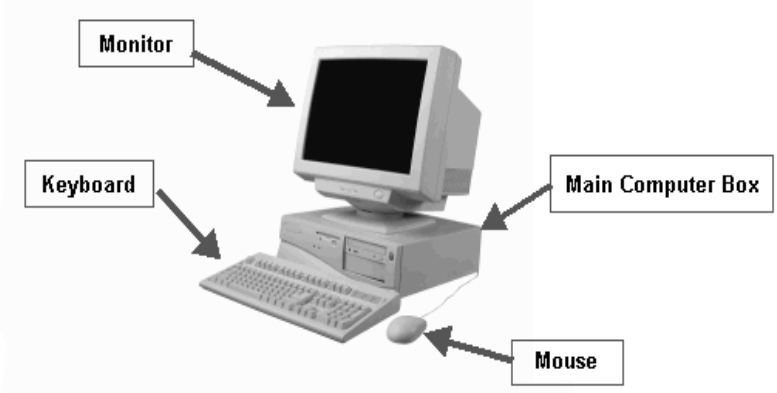
## What is a computer?

A computer is an electronic device which is capable of receiving the inputs (data from the user), storing it for a desired period of time, manipulating it according to the set of instructions (called program) and producing the output to the user in desired form. It performs a variety of operations in accordance to the set of instructions.

## Computer Hardware

The term computer hardware refers to the physical components of a computer – basically, the parts and pieces that can be touched or moved, whether inside or outside of the computer.

The following figure shows basic computer hardware components.



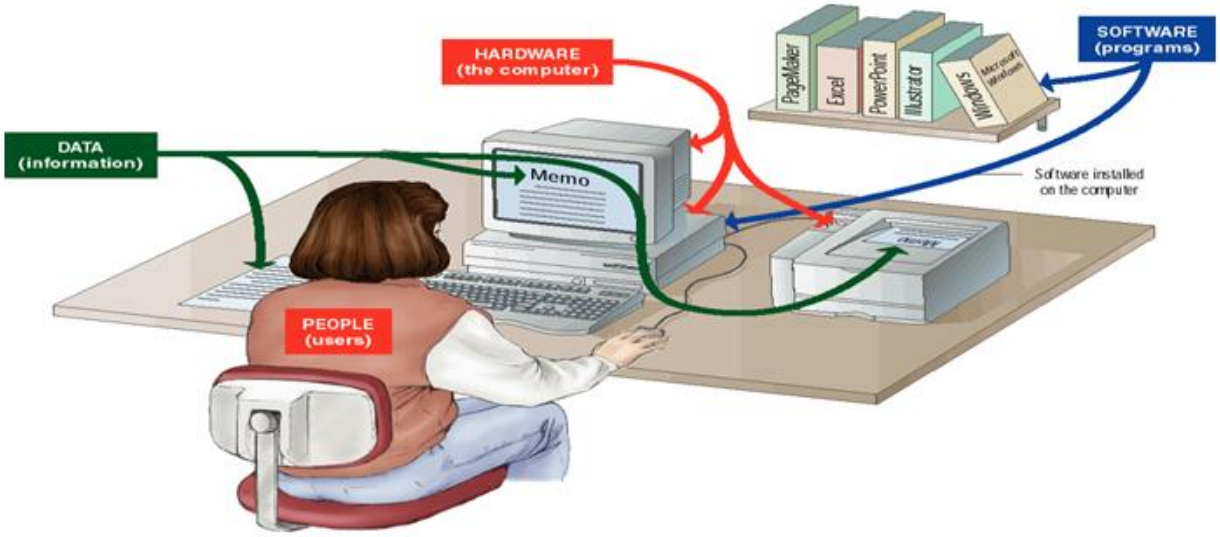

## *Computer System*

A computer system is an interconnected computers that share a central storage system and various peripheral devices such as a printers, scanners, or routers. Each computer connected to the system can operate independently but has the ability to communicate with other external devices and computers. In our case a computer system is an interconnection of central processing Unit and various peripheral devices such as monitor, keyboard, mouse, printer, and scanner.

A complete computer system includes four distinct parts:

- Hardware
- Software
- Data

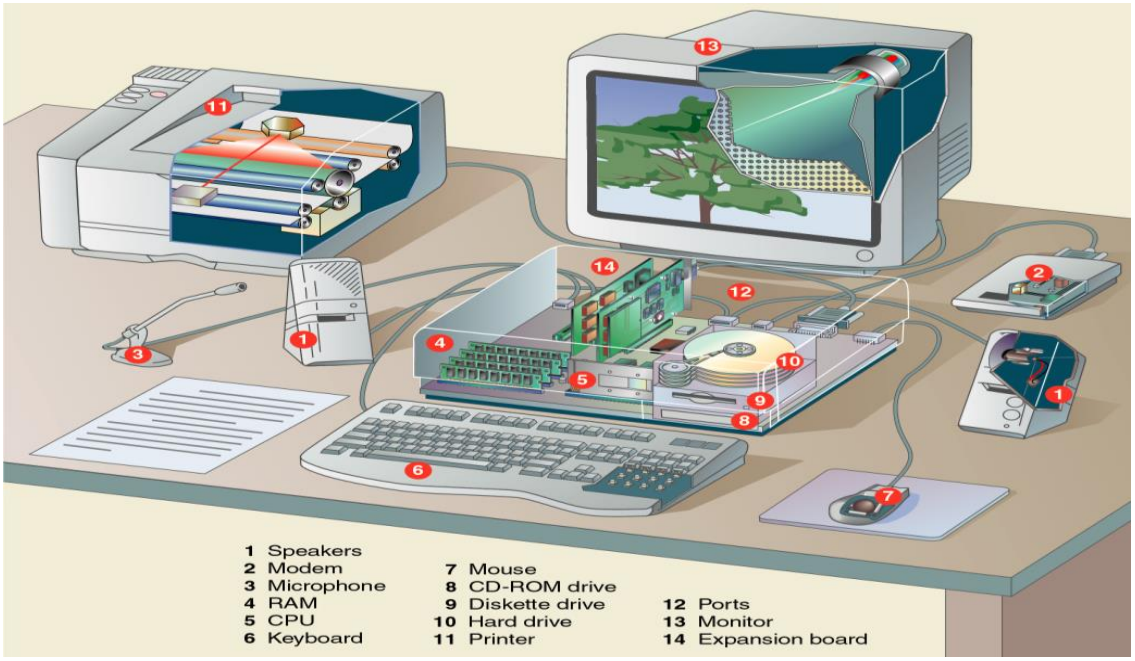
- User




**Hardware**

A computer's hardware consists of electronic devices; the parts you can see and touch. It consists of its processors, its storages, its input/output devices and its communication connections (i.e. the actual machinery: wires, transistors and circuits.)

The term "device" refers to any piece of hardware used by the computer, such as a keyboard, monitor, modem, mouse, etc.



**Software**

Software is general term used to describe all the various programs and it consists of organized sets of instructions for operating the computer system. Some programs exist for the computer's use, to help it manage its own tasks and devices; these operations may include identifying, accessing and processing information. Other programs exist for the user, and enable the computer to perform tasks for you, such as creating documents.

**Data and User**

Data is information that has been translated into a form that is more convenient to move or process while a user is human being who uses a computer.

**Central Processing Unit (CPU)**

**Central Processing Unit** (CPU) manages all devices and performs the actual processing of data.

The CPU consists of one or more chips attached to the computer's main circuit board (the motherboard). The CPU is one of the most important element of the personal computer. On personal computers and small workstations, the CPU is contained on a single integrated circuit called the microprocessor. The computer will not run without a CPU.

The CPU contains two basic components:

*The* **Arithmetic/Logic Unit (ALU)** performs both arithmetic and logical operations. Arithmetic operations are fundamental math operations like addition, subtraction, multiplication, and division. Logical operations such as the AND, OR, and XOR are used to make comparisons and decisions, and these determine how a program is executed. ALU is a *control unit. It* extracts instructions from memory and decodes and executes them when it is necessary.

*A* ***Control Unit*** extracts instructions from memory and decodes and executes them, calling on the ALU when necessary.

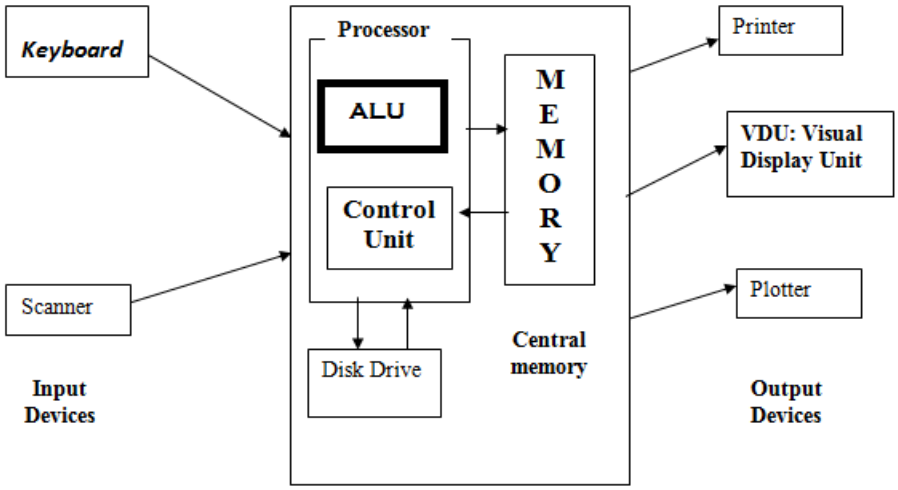



**Figure: Schematic Diagram of a computer**

## Memory

A memory is an electronic part of a computer in which data is stored for later use. A computer **memory** refers to the physical devices used to store programs (sequences of instructions) or data on a temporary or permanent basis for use in a computer or other digital electronic device. Memory is measured in bytes.

The term memory identifies data storage that comes in the form of chips attached to the motherboard, and the term storage is used for memory that exists on tapes or disks. Some computers also use virtual memory, which expands physical memory onto a hard disk.

Memory holds data and program instructions as the CPU works with them. This memory is called Random Access Memory (RAM) or Main Memory.

## Types of memory

There are several different types of memory:

- RAM (*Random Access Memory*): This is the main memory. RAM refers to *read and write memory which means* that you can both write data into RAM and read from RAM.

This is in contrast to ROM, which permits you only to read data.

There are two basic types of RAM:

- Dynamic RAM (DRAM)
- Static RAM (SRAM)

The two types differ in the technology they use to hold data, dynamic RAM being the more common type.

***Dynamic RAM*** needs to be refreshed thousands of times per second.

***Static RAM*** does not need to be refreshed, which makes it faster; but it is also more expensive than dynamic RAM. Both types of RAM are volatile, meaning they hold data only when the power is on. When the power is off, RAM's contents are lost.

- ROM (*Read Only Memory*): Computers almost contain a small amount (a few thousands of bytes) of ROM that holds instructions for starting up/ booting the computer and perform diagnostics. Unlike RAM, ROM cannot be written to. In fact, both types of memory (ROM and RAM) allow random access. To be precise, therefore, RAM should be referred to as *read/write* RAM and ROM as *read-only* RAM.
- PROM (*Programmable Read Only Memory*). A PROM is a memory chip on which you can store a program. But once the PROM has been used, you cannot clean and use it to store something else. Like ROMs, PROMs are non-volatile.
  The difference between a PROM and a ROM is that a PROM is manufactured as blank memory, whereas a ROM is programmed during the manufacturing process.

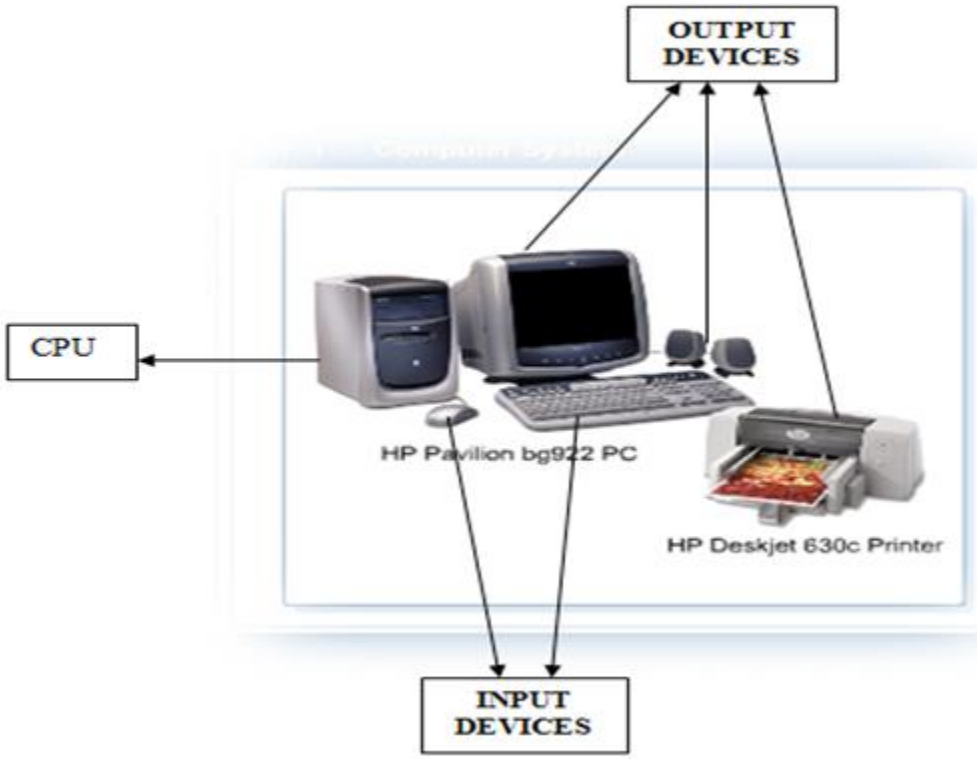
- EPROM (*Erasable Programmable Read Only Memory*). An EPROM is a special type of ROM that can be erased by exposing it to ultraviolet light.
  The ultraviolet light clears its contents, making it possible to reprogram the memory.

  An EPROM differs from a PROM in that a PROM can be written to only once and cannot be erased. EPROM's are used widely in personal computers because they enable the manufacturer to change the contents of the PROM before the computer is actually shipped.

- EEPROM (*Electrically Erasable Programmable Read Only Memory)*. An EEPROM is a special type of PROM that can be erased by exposing it to an electrical charge. Like other types of PROM, EEPROM retains its contents even when the power is turned off.

**Input and Output (I/O) devices**

The following figure shows you input and output of the computer.




**What is input?**

*Input* is any data or instructions provided to the computer by a person, the environment, or another computer. People have a variety of options available to input data and instructions into a computer.

*Input data* is a collection of unprocessed text, words and symbols; numbers; pictures; audio signals from a microphone; signals from another computer; temperature, speed, pressures and video. Once data is in memory, the computer interprets and executes instructions to process the data into information.

*Instructions* are the steps that tell the computer how to perform a particular task. Instructions entered into the computer can be in the form of *programs*, *commands* and *user responses*.

A *program* is a series of instructions that tells the computer what to do and how to do it. When a programmer writes a program, he or she inputs the program into the computer by using a keyboard, mouse or other input device. Programs respond to commands that a user issues.

A *command* is an instruction that causes a program to perform a specific action. A *user response* is an instruction a user issues by replying to a question displayed by a program. A response to the question instructs the program to perform certain actions.

**What are input devices?**

Input devices accept data and instructions from the user or from another computer system. An *input device* is any hardware component that allows users to enter data or instructions (programs, commands, and user response) into a computer.

Depending on the application and your particular requirements, the input devices selected may vary. Popular input devices include the *keyboard, mouse, scanner, microphone and digital camera. Storage devices such as disk drives serve as both input and output devices.*

***Keyboard***

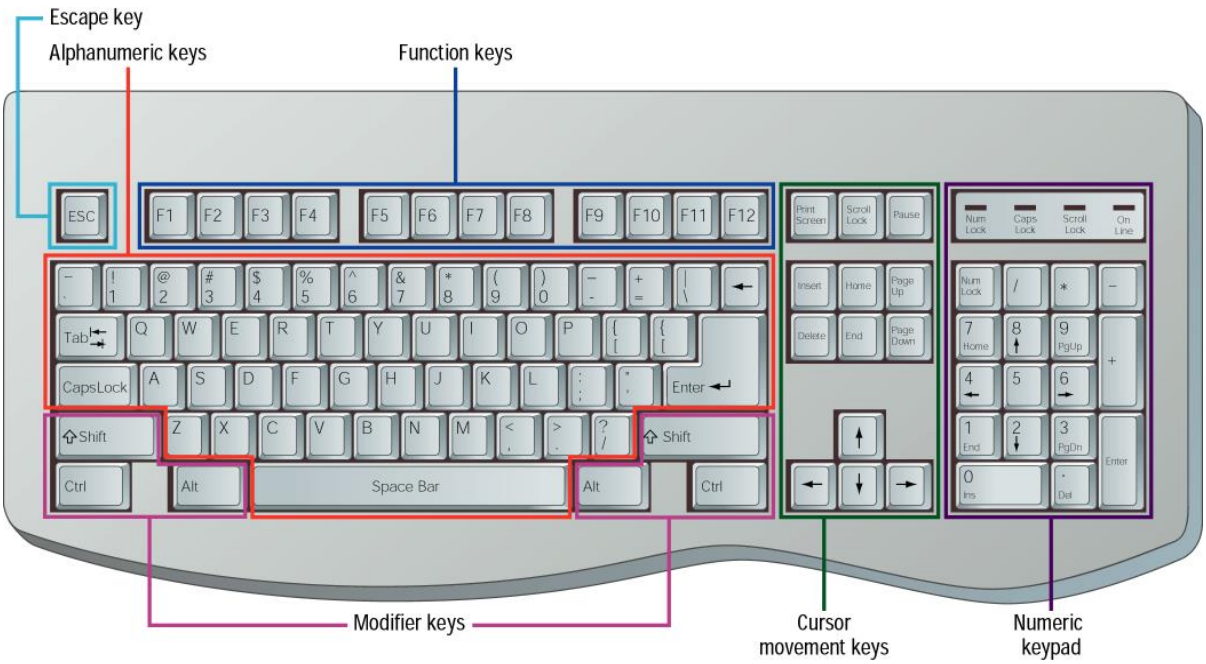
A *computer keyboard* is an input device that contains alpha-numeric keys you press to enter data into the computer. Desktop computer keyboards typically have from 101 to 105 keys.

Computer keyboard are similar to electric typewriter keyboard that contain additional keys.

The keys on computer keyboards are often classified as follows:

- *Alphanumeric keys*: letters of alphabet and numbers.
- *Numeric keypad*.
- *Special keys*: function keys, modifier keys and Cursor-movement keys

Most keyboards use the QWERTY layout, named for the first six keys in the top row of letters. The QWERTY keyboard was designed 1800s for mechanical typewriters and was actually designed to slow typists down to avoid jamming keys.





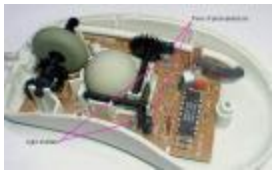
**Mouse**

A *mouse* is a pointing device that fits comfortably under the palm of your hand. The mouse is the most widely used pointing device on desktop computers. It is a small handheld device used to control the movement of a graphical *pointer* on the screen, often called a *mouse pointer* in this case. The mouse can be used to issue commands, draw, and perform other types of input tasks.

There are three basic types of mice:

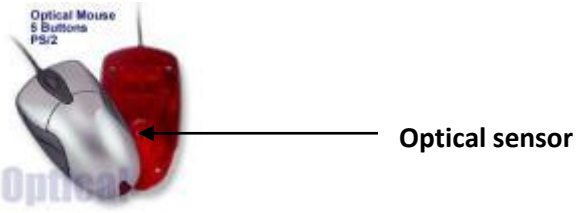
***Mechanical mouse***: It has a rubber or metal ball on its underside that can roll in all directions. Mechanical sensors within the mouse detect the direction and the distance the ball is rolling and move the screen pointer accordingly.

You should place a mechanical mouse on a *mouse pad*, which is a rectangular rubber of foam pad that provides better traction than the top of a desk.


***Optical mouse***: It has no moving mechanical parts inside. Instead, an optical mouse uses device that emit and sense light to detect mouse's movement. Some uses optical sensors and others laser. You can place an optical mouse that uses optical sensors on nearly all types of surfaces, eliminating the need for mouse pad. An optical mouse that uses a laser usually requires special mouse pad.

An optical mouse is more precise than a mechanical mouse and does not require cleaning as does a mechanical mouse, but it is also more expensive.

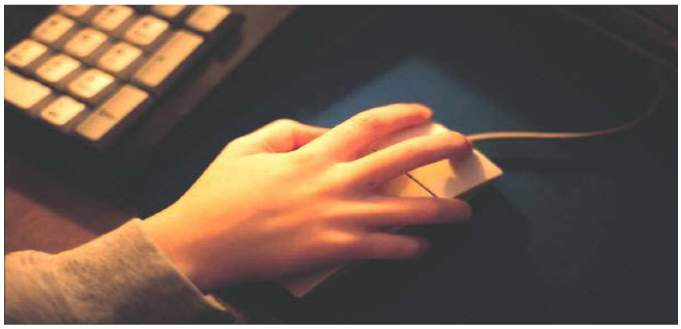



The above types of mice connect to PCs with a cable that attaches to a serial port, mouse port, or USB port on the system unit.

***Cordless mice*** aren't physically connected at all. They are battery-powered devices that transmit data using wireless technology, such as radio waves or infrared light waves. The wireless technology used for a cordless mouse is very similar to that of cordless keyboard discussed earlier.

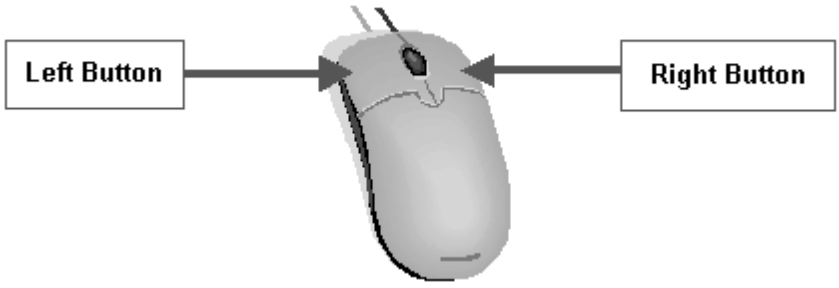
**Holding the mouse**

Holding a mouse as it is shown in the following figure.



To move the mouse, slowly slide the mouse left to right, keeping the mouse on the desk while sliding. Watch the monitor to see what is happening to the pointer – it is also moving left to right. The same will happen when sliding the mouse away from your body and back toward your body. There is no need to lift the mouse off of the desk unless you run out of room on the desk and need to reposition the mouse. Do not turn the mouse sideways.

You will see that the mouse has one or more buttons where your index and middle fingers are resting. If the mouse has two or more buttons, make sure you use the button on the left. See below for an example.




Press and release the left button with your index finger – this is called “clicking.” Clicking allows for communication with the computer and gives it instructions. Clicking quickly twice in succession is called “double-clicking.” This is an important skill to master, so practice is recommended.

There is no power button on a mouse. The mouse will be turn on when the main computer box is turned on.

## Definition of Output Devices and Examples

**Output devices** return processed data back to the user or to another computer system. An *output device* is any hardware component that displays, prints, or transmits the results of processing. It conveys information to one or more people. Commonly used output devices are: *display or monitor devices, printers, speakers, headsets* and so on.

### Monitor

The monitor looks like a television screen, except instead of watching television programs on it, the monitor allows for viewing of computer programs. It is connected to the main computer box. There are several types of monitors, but they all function in the same way. The power button is usually located on the front of the monitor, beneath the screen. Often, there will be a small light to indicate if the power is on. Here are two examples of different monitors:

### Main Computer Box or central processing Unit (CPU):

The main computer box is the "brain" of the whole system. The main computer box connects and allows all of the components to work together. It also contains all of the information the computer needs to function, as well programs, which tell the computer what to do. These programs can be very helpful to the user. Programs can store financial information, addresses, phone numbers, photos, recipes, etc. The programs can make it very easy to retrieve this stored information, make changes to the information, or add more information. Programs can also allow for communication with relatives and friends, as well explore the World Wide Web. All of this is just a click away.

All main computer boxes will have an on/off button. It will look similar to this:

There are some additional components on the main computer box you should be familiar with. These include one or more of the following:

"Floppy" Disk Drive – Uses a "Floppy" Diskette to store information

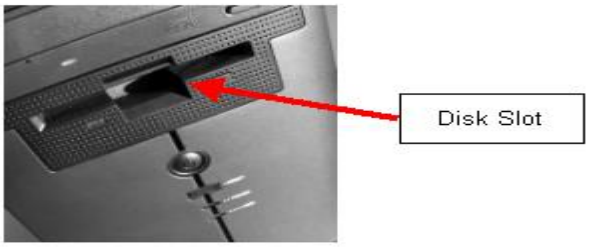
CD or DVD ROM Drive – Uses a CD or DVD to store information

Below are illustrations of a Floppy Diskette and a CD/DVD:

Floppy Diskette

CD or DVD

To access the information on the floppy diskette or disk, simply slide the disk into the slot. Below is an example of what this slot might look like:




The computer will be able to "read" the information on the disk and display the contents on the screen.

The CD or DVD ROM drive works in much the same way, except that CD's and DVD's can hold much more information. To insert a CD or DVD into the computer, first push the button to open the tray, and then place the CD or DVD in the tray and press the same button to close it. Below is an example of what the tray might look like:

CD's and DVD's, just like floppy disks, allow access to different programs and content that the computer may not have in its memory. This content is portable – it can be transferred from one computer to another.

## Definitions

CD stands as Compact Disk**.**

CD-RAM stands as Compact Disk- Random Access Memory.

CD-R stands as Compact Disk Recordable.

CD-RW stands as Compact Disk- rewritable.

CD-ROM stands as Compact Disk- Read Only Memory.

Digital Versatile Disc (Digital Video Disc) in short is DVD

DVD stands as digital versatile disc or Digital Versatile Disc. DVD is similar to an audio CD.

**DVD-R** stands as Digital Video Disc recordable.

DVD-RW stands as Digital Video Disc –rewritable.

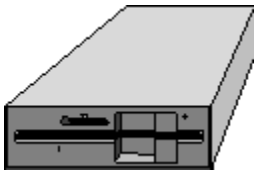
Data on a DVD-R cannot be changed, whereas a DVD-RW can be modified many times.

**DVD-RAM** stands as Digital Video Disc –Random Access Memory.

*VCD means* "vibrational CD"

## External Disk Drives

Another kind of accessory is an external disk drive. This is becoming more rare, as the computer manufacturers are building specialized disk drives, such as CD drives, into the computer's CPU Box and you don't have to attach them with lots of wires and extra plugs.



## External Modem

Unless you have a really old computer, the modem is almost certain to be built in, inside the CPU Box, although technical people persist in thinking of it as an accessory. However, in the old days, modems really were exotic accessories that had to be attached through lots of wires and plugs.

## Printer

Printers are still accessories, for now at least. They perform a process, transferring information onto paper that is truly external to the other functions of the computer. On a home computer, the printer is usually wired directly to the computer, but it is common to find printers in businesses where the printer is off away from the computer and performing printing operations for several computers, rather than just one.

**Definitions**

A file: is an organized collection of information.

A folder: is an electronic container in which files can be stored. Folder may contain both files and other folders.

A virus: is a software program written with the intention of causing inconvenience and disruption or even serious damage to data on a computer. This can involve destroying anything from individual files to whole operating systems and networks.

# CHAPTER 2: OPERATING SYSTEMS

An operating system (OS) is a set of programs that control the execution of application programs and act as an intermediary between a user of a computer and the computer hardware. OS is software that manages the computer hardware as well as providing an environment for application programs to run. This makes it the most important program that runs on a computer.

Operating systems are found on many devices that contain a computer – from cellular phones and video game consoles to web servers and supercomputers. In order to explore the role of an operating system in a modern computing environment, it is important first to understand the organization and architecture of computer hardware. This includes the CPU, memory, and I/O devices, as well as storage. A fundamental responsibility of an operating system is to allocate these resources to programs.

## *2.1 Types of Operating System*

Types of Operating Systems include Real-time Operating System, Multi-user Operating System, Single-user Operating System, Multi-tasking Operating System, Single-tasking Operating System, Distributed Operating System, Embedded Operating System.

**Real-Time**

A real-time operating system is a multitasking operating system that aims at executing real-time applications. It responds to input instantly. **Example**: Airline traffic control systems.

**Multi-user vs. Single user**

A multi-user operating system allows multiple users to access a computer system concurrently. Time-sharing system can be classified as multi-user systems as they enable a multiple user access to a computer through the sharing of time, **Examples:** Microsoft Windows Server 2008, LINUX. Single-user operating systems, as opposed to a multi-user operating system, are usable by a single user at a time, **Example:** Windows 10.

**Multi-tasking vs. Single tasking**

When a single program is allowed to run at a time, the system is grouped under a single-tasking system. While in case the operating system allows the execution of multiple tasks at one time, it is classified as a multi-tasking operating system.

**Distributed**

A distributed operating system manages a group of independent computers and makes them appear to be a single computer. The development of networked computers that could be linked and communicate with each other, gave rise to distributed computing.

**Embedded**

Embedded operating systems are designed to be used in embedded computer systems. They are designed to operate on small machines like Personal Digital Assistants (PDAs) with less autonomy. They are able to operate with a limited number of resources.

## *2.2 Types of User Interface*

The user interface provides means of: Input - allowing the users to manipulate a system and Output - allowing the system to indicate the effects of the users' manipulation. Types of User Interface include **Command line interface** and **Graphical user interface**.

**Command Line Interface (CLI)**

A command-line interface is a mechanism for interacting with a computer operating system or software by typing commands to perform specific tasks. This method of instructing a computer to perform a given task is referred to as "entering" a command. It accepts input via keyboard only and it is not suitable for beginners. The following table shows examples of command:

| **Command** | **Description** |
|---|---|
| DIR | To display list of files or folder |
| COPY | To copy file or folder |
| MD | To make new folder |
| CLS | To clear screen |
| Quit | To quit |

**LINUX is an example of Operating System based on Command Line Interface.**

**Graphical User Interface (GUI)**

It is a type of user interface which allows people to interact with computer with images rather than text commands. Accept input via keyboard and pointing devices. A GUI lets you use your mouse to click icons, buttons, and menus, and everything is clearly displayed on the screen using a combination of graphics and text. Each operating system's GUI has a different look and feel, so if you switch to a different operating system, it may seem unfamiliar at first. However, modern operating systems are designed to be easy to use, and most of the basic principles are the same.

Windows operating systems and Macintosh (Mac) operating systems are examples of operating systems based on Graphical User Interface.

**Microsoft Windows**

Microsoft created the Windows operating system in the mid-1980s. There have been many different versions of Windows, but the most recent ones are Windows 11 (released in 2021), Windows 10 (released in 2015), Windows 8 (2012), Windows 7 (2009), and Windows Vista

(2007). Windows comes pre-loaded on most new PCs, which helps to make it the most popular operating system in the world.

**Mac Operating Systems**

Mac OS (previously called OS X) is a line of operating systems created by Apple. It comes preloaded on all Macintosh computers, or Macs. Some of the specific versions include Mojave (released in 2018), High Sierra (2017), and Sierra (2016).

According to **StatCounter Global Stats**, Mac OS users account for less than 10% of global operating systems, which is much lower than the percentage of Windows users (more than 80%). One reason for this is that Apple computers tend to be more expensive. However, many people do prefer the look and feel of Mac OS over Windows.

**Linux Operating Systems**

Linux (pronounced LINN-ux) is a family of open-source operating systems, which means they can be modified and distributed by anyone around the world. This is different from proprietary software like Windows, which can only be modified by the company that owns it. The advantages of Linux are that it is free, and there are many different distributions or versions you can choose from.

According to StatCounter Global Stats, Linux users account for less than 2% of global operating systems. However, most servers run Linux because it's relatively easy to customize.

**Operating systems for mobile devices**

The operating systems we've been talking about so far were designed to run on desktop and laptop computers. Mobile devices such as phones, tablet computers, and MP3 players are different from desktop and laptop computers, so they run operating systems that are designed specifically for mobile devices. Examples of mobile operating systems include Apple iOS and Google Android. In the screenshot below, you can see iOS running on an iPad.

A mobile operating system, also called a mobile OS, is an operating system that is specifically designed to run on mobile devices such as mobile phones, smartphones, PDAs, tablet computers and other digital mobile devices.

Mobile OS is a mobile version of an operating system found on computers. Much like the Linux or windows operating system controls your desktop or laptop computer, a mobile operating system is the software platform on top of which other programs can run on mobile devices. Below is the list of most common operating systems (OS) found on smartphones and its manufacturers.

**Types of Mobile Operating Systems**

When a mobile device is purchased, the manufacturer will have chosen the operating system for that specific device. Often, you will want to learn about the mobile operating system before you purchase a device to ensure compatibility and support for the mobile applications you want to use.

The following are the common types of mobile operating systems.

**1. Android OS (Google Inc.)**

Android is a software stack for mobile devices that includes an operating system, middleware and key applications. Google Inc. purchased the initial developer of the software, Android Inc., in 2005. Android's mobile operating system is based on a modified version of the Linux kernel. Google and other members of the Open Handset Alliance collaborated on Android's development and release. The Android Open-Source Project (AOSP) is tasked with the maintenance and further development of Android. The Android operating system is the world's best-selling Smartphone platform.

Android has a large community of developers writing applications ("apps") that extend the functionality of the devices. There are currently over 150,000 apps available for Android. Android Market is the online app store run by Google, though apps can also be downloaded from third-party sites. Developers write primarily in the Java language, controlling the device via Google-developed Java libraries. The latest release of Android is the Android 2.3 codenamed Gingerbread for the smart phones and Android 3.0 code-named Honeycomb for Tablets.

**2. Bada (Samsung Electronics)**

Bada is a proprietary Samsung mobile OS that was first launched in 2010 for use on mobile phones and low-end smartphones and its latest version is 2. The Samsung Wave was the first smartphone to use this mobile OS. Bada provides mobile features such as multipoint-touch, 3D graphics and of course, application downloads and installation. It is designed to cover the range from lower-end feature phones to high-end smartphones. Samsung claims that Bada will rapidly replace its proprietary feature phone platform, effectively converting feature phones to smartphones.

**3. BlackBerry OS**

The BlackBerry OS is a proprietary mobile operating system developed by Research in Motion for use on the company's popular BlackBerry handheld devices. The BlackBerry platform is popular with corporate users as it offers synchronization with Microsoft Exchange, Lotus Domino, Novell GroupWise email and other business software, when used with the BlackBerry Enterprise Server.

**4. iPhone OS / iOS (Apple)**

Apple's iPhone OS was originally developed for use on its iPhone devices. Now, the mobile operating system is referred to as iOS and is supported on a number of Apple devices including the iPhone, iPad, iPad 2 and iPod Touch. The iOS mobile operating system is available only on Apple's own manufactured devices as the company does not license the OS for third-party hardware. Apple iOS is derived from Apple's Mac OS X operating system.

**5. Palm OS (Garnet OS)**

The Palm OS is a proprietary mobile operating system (PDA operating system) that was originally released in 1996 on the Pilot 1000 handheld. Newer versions of the Palm OS have added support for expansion ports, new processors, external memory cards, improved security and support for ARM processors and smartphones. Palm OS 5 was extended to provide support for a broad range of screen resolutions, wireless connections and enhanced multimedia capabilities and is called Garnet OS.

**6. Symbian OS (Nokia)**

Symbian is an open-source operating system (OS) and software platform designed for smartphones and currently maintained by Nokia. The symbian OS is divided into series 40, series 60, series 80, series 90. The latest release in symbian platform is the Symbian^3 OS. It was designed to be a more ‘next generation’ smartphone platform. The Symbian^3 release introduced new features like a new 2D and 3D graphics architecture, UI improvements, and support for external displays via HDMI.

**7. webOS (Palm/HP)**

WebOS is a mobile operating system that runs on the Linux kernel. WebOS was initially developed by Palm as the successor to its Palm OS mobile operating system. It is a proprietary Mobile OS which was eventually acquired by HP and now referred to as webOS (lower-case w) in HP literature. HP uses webOS in a number of devices including several smartphones and HP TouchPads. HP has pushed its webOS into the enterprise mobile market by focusing on improving security features and management with the release of webOS 3.x. HP has also announced plans for a version of webOS to run within the Microsoft Windows operating system and to be installed on all HP desktop and notebook computers in 2012.

# CHAPTER 3: BINARY AND DECIMAL SYSTEMS

## *3.1 Binary Numbers*

Computers only understand the **binary** number system based on the unit 2 denary.

**Bit**

A **bi**nary digi**t** is called a **bit**. Usually, 0 and 1 the two numbers of the binary numbering system. A bit is the smallest unit of information a computer can use. A 16 bit computer would process a series of 16 bits, such as 0100111101011000 in one go, repeating the process thousands or millions of times per second.

**Byte**

A group of **8 bits called a byte (B in short).** One byte can store one alphabetical letter, single digit, or a single character/symbol, such as #.
Large numbers of **bytes** can be expressed by **kilobyte** and **megabyte**

**Kilobyte**

The value of a kilobyte is 1024. Worked out as $2^{\wedge 10}$. Normally Kilo refers to 1000 but in computing kilobyte is 1024.

**Megabyte**

Likewise, 1024KB is referred to as a "Megabyte". Normally a Mega refers to a million. In computing 1 Mega byte is 1,048,576 bytes. Worked out as $2^{\wedge 20,\ or}$ 1024*1024.

1 byte of memory can normally hold one of the following:

- A single alphabetical letter (upper or lower case),
- A single number 0-9
- A symbol ( _ + £ # > etc)
- A further 127 alternative characters. These could be the letters used in foreign languages, lines to produce boxes etc.

## *3.2 Decimal System*

To learn binary system, we first need to understand how number systems operate. Let's take a look at the decimal system first, since it is simple and easier to think about. We can consider the number "1234" as,

| Thousands | Hundreds | Tens | Ones |
|---|---|---|---|
| 1 | 2 | 3 | 4 |

Which means, 1234 = 1x1000 + 2x100 + 3x10 + 4x1

Given,

1000 = 10^3 = 10x10x10

100 = 10^2 = 10x10

10 = 10^1 = 10

1 = 10^0 (any number to the exponent zero is one, except for zero).

The table above can be represented as,

| Thousands | Hundreds | Tens | Ones |
|---|---|---|---|
| 10^3 | 10^2 | 10^1 | 10^0 |
| 1 | 2 | 3 | 4 |

such that,

1234 = 1x1000 + 2x100 + 3x10 + 4x1
= 1x10^3 + 2x10^2 + 3x10^1 + 4x10^0

The decimal system, as with decimal math, operates in "base 10" (*dec* being the Latin prefix for ten) using the digits 0-9 to represent numbers, whereas the binary system, as well as its math, operates in "base 2" (*bi* being the Latin prefix for two) using the digits 0-1 to represent numbers. The base is also known as the radix. In other words, the table above can be represented as,

| | Thousands | Hundreds | Tens | Ones |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Decimal | 10^3 | 10^2 | 10^1 | 10^0 |
| Binary | 2^3 | 2^2 | 2^1 | 2^0 |

Let's use the number 256 as another example. The most important calculation to do is to work out the positional values for that system. The positional value is based on the powers of the number systems base value.

| | | | | | |
|---|---|---|---|---|---|
| Power of the base | $10^4$ | $10^3$ | $10^2$ | $10^1$ | $10^0$ |
| Calculation | 10x10x10x10 | 10x10x10 | 10x10 | The value of the base number | Any number to the power 0 is always 1 |
| = Position value | 10,000 | 1000 | 100 | 10 | 1 |

Write down the Positional values for the number system you are using so for Denary we would write.

| | | | | | |
|---|---|---|---|---|---|
| Position value | 10,000 | 1000 | 100 | 10 | 1 |

Underneath the correct positional value write in your number

| | | | | | |
|---|---|---|---|---|---|
| Position value | 10,000 | 1000 | 100 | 10 | 1 |
| **Enter Number** | | | **2** | **5** | **6** |

The calculation that is done

| | | | | | |
|---|---|---|---|---|---|
| Position value | 10,000 | 1000 | 100 | 10 | 1 |
| Enter Number | | | **2** | **5** | **6** |
| Required Calculation | | | **100x2** | **10x5** | **1x6** |
| This equals | | | **200** | **50** | **6** |

Add the 3 results 200 + 50 + 6

```
  200
   50
    6
-------

  256
```

## Converting Decimal number into Binary number

The **Decimal** or denary counting system uses the **Base-10** numbering system where each digit in a number takes on one of ten possible values from 0 to 9, eg **$213_{10}$** (Two Hundred and Thirteen). In a decimal system each digit has a value ten times greater than its previous number and this decimal numbering system uses a set of symbols, b, together with a base, q, to determine the weight of each digit. For example, the six in sixty has a lower weighting than the six in six hundred and in a binary system we need some way of converting decimal into binary.

Therefore, a numbering system can be summarized by the following relationship:

$$N = \Sigma\, b_i\, q^i$$

where: N is a real positive number
b is the symbol
q is the base value
and integer (i) can be positive, negative or zero

$$N = b_2\, q^2 + b_1\, q^1 + b_0\, q^0 + b_{-1}\, q^{-1} \text{ ... etc.}$$

For example: $N = 6163_{10}$ (Six Thousand One Hundred and Sixty Three) is equal to:

$(6\times10^3) + (1\times10^2) + (6\times10^1) + (3\times10^0) = 6163$

Unlike the decimal numbering system which uses the Base-10 system, digital logic uses just two values or states, logic level "1" or logic level "0", so each digit is considered as a single digit in a **Base-2** or **Binary** number. In the binary numbering system, each digit has a value twice that of the previous digit but can only have a value of either "1" or "0".

For example:

| **Decimal Digit Value** | 2^8 | 2^7 | 2^6 | 2^5 | 2^4 | 2^3 | 2^2 | 2^1 | 2^0 |
|---|---|---|---|---|---|---|---|---|---|
| | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
| **Binary Digit Value** | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |

Adding together the value of all the "1" s gives us: (256) + (64) + (32) + (4) + (1) = $357_{10}$

Then, the number $101100101_2$ in binary is equivalent to $357_{10}$ in decimal or denary.

Another method of converting decimal into binary number equivalents is to write down the decimal number and to continually divide by 2 (two) to give a result and a remainder of either a "1" or a "0" until the final result equals zero.

Example: Convert the decimal number $294_{10}$ into its binary number equivalent.

| | | | | |
|---|---|---|---|---|
| Number | 294 | | | |
| divide by 2 result | 147 | remainder | **0** (LSB) | |
| divide by 2 result | 73 | remainder | **1** | |
| divide by 2 result | 36 | remainder | **1** | Dividing each number by "2" gives a result plus a remainder. The binary result is obtained by placing the remainders in order with the Least Significant Bit (LSB) being at the top and the Most Significant Bit (MSB) being at the bottom. |
| divide by 2 result | 18 | remainder | **0** | |
| divide by 2 result | 9 | remainder | **0** | |
| divide by 2 result | 4 | remainder | **1** | |
| divide by 2 result | 2 | remainder | **0** | |
| divide by 2 result | 1 | remainder | **0** | |
| divide by 2 result | 0 | remainder | **1** (MSB) | |

Then, the Decimal number $294_{10}$ is equivalent to $100100110_2$ in Binary format.

Then the main characteristics of a **Binary Numbering System** is that each "digit" or "bit" has a value of either "1" or "0" with each digit having a weight or value double that of its previous bit starting from the lowest or least significant bit (LSB).

**Binary Number Names**

Binary numbers can be combined into one of several size ranges depending upon the number of bits being used and are generally referred to by the following more common names of:

| Number of Binary Digits **(bits)** | Common Name |
|---|---|
| 1 | Bit |
| 8 | Byte |
| 16 | Word |

Most computer hardware such as hard drives and memory modules commonly indicate their size in Megabytes or even Gigabytes.

| Number of Bytes | Common Name |
|---|---|
| $2^{10}$=1,024 | Kilobyte (KB) |
| $2^{20}$=1,048,576 | Megabyte (MB) |
| $2^{30}$ =1,073,741,824 | Gigabyte (GB) |
| $2^{40}$ which is a very long number! | Terabyte (TB) |

## *3.3 Arithmetic Operations of Binary Numbers*

**Binary Arithmetic:**

Binary arithmetic includes the basic arithmetic operations of addition, subtraction, multiplication and division. The following sections present the rules that apply to these operations when they are performed on binary numbers.

**Binary Addition:**

Binary addition is performed in the same way as addition in the decimal system and is, in fact, much easier to master. Binary addition obeys the following four basic rules:

$$\begin{array}{r} 0 \\ +0 \\ \hline 0 \end{array} \qquad \begin{array}{r} 0 \\ +1 \\ \hline 1 \end{array} \qquad \begin{array}{r} 1 \\ +0 \\ \hline 1 \end{array} \qquad \begin{array}{r} 1 \\ +1 \\ \hline 10 \end{array}$$

When adding more than single-digit binary number, carry into, higher order columns as is done when adding decimal numbers. For example, 11 and 10 are added as follows:

$$\begin{array}{r} 11 \\ +\,10 \\ \hline 101 \end{array}$$

**Example 1:**

$$\begin{array}{r} {\scriptstyle (1)\,(1)} \\ 1\,1\,1 \\ 1\,0\,1 \\ \hline 1\,1\,0\,0 \end{array}$$

**Example 2:**

$$\begin{array}{r} {\scriptstyle (2)(1)(1)(1)} \\ 1010 \\ 1001 \\ 1101 \\ \hline 10000 \end{array}$$

**Binary Subtraction:**

Binary subtraction is just as simple as addition subtraction of one bit from another obey the following four basic rules:

$0 - 0 = 0$
$1 - 1 = 0$
$1 - 0 = 1$
$10 - 1 = 1$ with a transfer (borrow) of 1.

When doing subtracting, it is sometimes necessary to borrow from the next higher-order column. The only it will be necessary to borrow is when we try to subtract a 1 from a 0. In this case a 1 is borrowed from the next higher-order column, which leaves a 0 in that column and creates a 10 i.e., 2 in the column being subtracted. The following examples illustrate binary subtraction.

**Example 3: Perform the following subtractions**:

(a) 11 - 01, (b) 11-10, (c) 100 – 011

**Solution:**

$$\text{(a)}\ \begin{array}{r} 11 \\ -\,01 \\ \hline 10 \end{array} \qquad \text{(b}\ \begin{array}{r} 11 \\ -\,10 \\ \hline 01 \end{array} \qquad \text{(c)}\ \begin{array}{r} 100 \\ -\,011 \\ \hline 001 \end{array}$$

Part (c) involves to borrows, which handled as follows. Since a 1 is to be subtracted from a 0 in the first column, a borrow is required from the next higher order column. However, it also contains a 0; therefore, the second column must borrow the 1 in the third column. This leaves a 0 in the third column and place a 10 in the second column. Borrowing a 1 from 10 leaves a 1 in the second column and places a 10 i.e, 2 in the first column:

When subtracting a larger number from a smaller number, the results will be negative. To perform this subtraction, one must subtract the smaller number from the larger and prefix the results with the sign of the larger number.

**Example 4:** Perform the following subtraction 101 – 111.

**Solution:**

Subtract the smaller number from the larger.

$$\begin{array}{r} 111 \\ -\,101 \\ \hline 010 \end{array}$$

Thus 1 0 1 – 1 1 1 = - 010 = - 10

**Binary multiplication:**

Binary multiplication is performed in the same manner as decimal multiplication. It is much easier, since there are only two possible results of multiplying two bits. The Binary multiplication obeys the four basic rules.

0 x 0 = 0
0 x 1 = 0
1 x 0 = 0
1 x 1 = 1

**Example 5: Multiply the following binary numbers.**

(a) 101 x 1 1

(b) 1101 x 10

(c) 1010 x l 0 1

(d) 1 0 1 l x 1 0 1 0

**Solution:**

**:** (a)
```
  101
x 1 1
  101
 101
1111
```

(b)
```
 11101
  x1 0
 0000
1101
11010
```

(c)
```
 1010
 x101
 1010
 0000
 1010
110010
```

(d)
```
 1011
x1010
  0000
 1011
 0000
 1011
1101110
```

**Binary Division:**

Division in the binary number system employees the same procedure as division in the decimal system, as will be seen in the following examples.

**Example 6: Perform the following binary division**.

(a) 110 ÷ 11

(b) 1100÷1 1

**Solution:**

(a)

```
  10
11|110
  11
  00
  00
  00
```

(b)

```
  100
11|11000
  11
  00
  00
   00
   00
    00
```

# CHAPTER 4: INTERNET APPLICATIONS

## *4.1 What is the Internet and How Does the Internet Work?*

The Internet is a worldwide collection of computer networks, cooperating with each other to exchange data using a common software standard. Through telephone wires and satellite links, Internet users can share information in a variety of forms. The size, scope and design of the Internet allow users to:

- connect easily through ordinary personal computers and local phone numbers;
- exchange electronic mail (E-mail) with friends and colleagues with accounts on the Internet;
- post information for others to access, and update it frequently;
- access multimedia information that includes sound, photographic images and even video;
- access diverse perspectives from around the world.

An additional attribute of the Internet is that it lacks a central authority that controls the Internet. Beyond the various governing boards that work to establish policies and standards, the Internet is bound by few rules and answers to no single organization.

Many different types of devices can connect to a network:

- Desktop computers
- Laptop computers
- Printers
- Scanners

**The History of the Internet**

Many people think that the Internet is a recent innovation, when in fact the essence of it has been around for over a quarter century. The Internet began as ARPAnet, a U.S. Department of Defense project to create a nationwide computer network that would continue to function even if a large portion of it were destroyed in a nuclear war or natural disaster.

During the next two decades, the network that evolved was used primarily by academic institutions, scientists and the government for research and communications. The appeal of the Internet to these bodies was obvious, as it allowed disparate institutions to connect to each others' computing systems and databases, as well as share data via E-mail.

The nature of the Internet changed abruptly in 1992, when the U.S. government began pulling out of network management, and commercial entities offered Internet access to the general public for the first time. This change in focus marked the beginning of the Internet's astonishing expansion.

**What Kinds of Information are Available?**

In addition to text documents, the Internet makes available graphics files (digitized photographs and artwork), and even files that contain digitized sound and video. Through the Internet, you can download software, participate in interactive forums where users post and respond to public messages, and even join "chats," in which you and other users type (and, in some cases, speak) messages that are received by the chat participants instantly.

**How Do People Use the Internet?**

Obviously, the Internet can bring you a whole host of capabilities. But how can they be put to practical use?

Among the ways that users like yourself are taking advantage of the Internet are:

- Sharing research and business data among colleagues and like-minded individuals.
- Communicating with others and transmitting files via E-mail.
- Requesting and providing assistance with problems and questions.
- Marketing and publicizing products and services.
- Gathering valuable feedback and suggestions from customers and business partners.

The Internet's potential is limited only by users' vision and creativity. And as the Internet grows, new and innovative uses will surely follow.

Individual users sitting at desktop computers 'log on' to an **ISP** to gain access to Internet services.

**URL:** An Internet address (stands for **U**niversal **R**esource **L**ocator): the place where some information is stored.

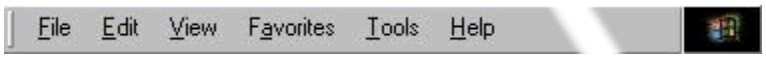
**ISP** (stands for **I**nternet **S**ervice **P**rovider): an organization which provides Internet services such as:

- electronic mail -- 'email'
- use groups -- electronic conferencing for groups of individuals with similar interests
- the **World Wide Web (www)**

## *4.2 Introducing Internet Explorer*

There are four main parts to your web browser, a **Menu Bar**, a **Navigation Bar**, a **Location Bar**, and a **Display Window**.

**The menu bar's options**




You can see this bar at the top of your current screen if you are using Internet explorer. All browsers will have most of these options, but they may have a different name.

**Options:**

**File:** Opens, saves, prints and exits files. This menu is similar to other office programs.

**Edit:** Allows you to cut, copy and paste some Web documents.

**View:** Gives you options for customizing your Web browser.

**Favorites:** Allows you to store links or go to your favorite Web pages.

**Tools:** Provides quick access to news and e-mail programs, as well as, option to personalize your browser.

**Help:** Gives you access to information and tips that are related to Internet Explorer.

**The navigation bar**


You can see this bar at the top of your current screen if you are using Internet explorer. All browsers will have most of these options, but they may have a different name.

**Options:**

**Back:** Shows you the last Web page you were on.

**Forward:** Sends you ahead to the next Web page. You are only able to use this button when you have previously used the Back Button.

**Stop:** Stops a Web site from loading. This is useful if you change your mind while waiting for a page to load.

**Refresh:** Reloads a page that is not being displayed or is being displayed improperly. Sometimes pages will run into problems when they are loading. Using the refresh button can help if pages are taking too long to load.

**Home:** This button returns you to your "home" Web page. Your "home" page is a Web page that is set to always show up when you first start your browser.

**Search:** Opens a search program that helps you find key words on the Internet.

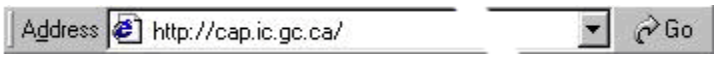
**Favorites:** Opens a list of Web site addresses saved by the user.

**History:** Lists the Web pages you have visited by date.

**Mail:** Opens the computers e-mail program.

**Print:** Prints the Web page you are currently looking at.

**The location bar**




**Address Line:** Holds the address of the Web site you are currently at. You can also type the address of a Web site you would like to go to in this box.

**Drop Down Arrow:** "Clicking" on this arrow will open a list of recently entered addresses.

**FAVORITES**

Web site addresses can be very long and difficult to remember. If you find a site that you know you will want to return to you can "bookmark" it. A "bookmark" is a saved link to a Web site.

**To create a bookmark:**

1. Make sure the Web site you want to save is open.
2. Click on the favorites on the menu bar.
3. Click on “Add to favorites...”
4. Click the “OK” button OR create a new folder to hold your Web site address.

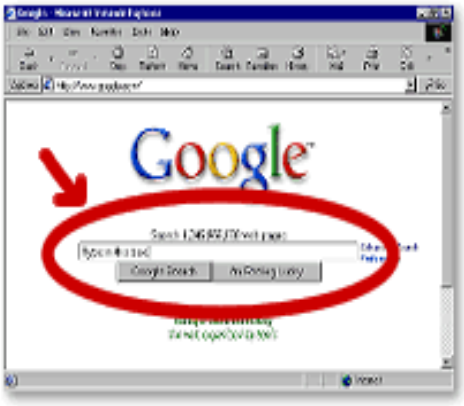
**Opening a book marked website:**

To open your saved Web site address click on the favorites button on the navigation bar. A list of saved Web sites will appear. Select your saved Web site.

**Introduction to Search Engines**

A search engine is a Web site that lets you search the Internet for Web sites on specific topics. Search engines turn the web into a powerful tool for finding information on any topic. The following tutorials will introduce you to search engines and help you learn how to use them effectively.

**How to search the Web**




Go to one of the search engine Web sites listed on the following page. Somewhere on the Web page there will be a box for you to type in. Type in the key words you are looking for (example: football ) Somewhere on the Web page there will be an image that looks like a button and has the word "search" on it. C*licking* on this image will start your search and bring up a new Web page with a list of Web sites related to your topic on it. *Clicking* on one of the titles in the list will take you to that Web site on your topic.

Many search engines also have **"Directories"** or lists of topics that are organized into categories. Browsing these Directories is also a very efficient way to find information on a given topic.

***Hint:*** *When using a search engine be as specific as possible and use the right spelling.*

***Important:*** *different search engines have different Web sites listed. Use many search engines to broaden your search.*

**Here are some of the most popular search engines:**

**Google** http://www.google.com

**AltaVista** http://www.altavista.com

**Yahoo** http://www.yahoo.com

**Hotbot** http://www.hotbot.com

**Lycos** http://www.lycos.com

**Excite** http://www.excite.com

**WebCrawler** http://www.webcrawler.com

**Advanced search strategies**

All search engines provide the user with the option of doing advanced searches. Advanced searches are useful because they give you the option of including and excluding words from a search. To do an advanced search look for a link on the search engines Web page that says "advanced search." *Clicking* on this link will take you to a page with advanced search options. The following chart also provides a number of methods for doing advanced searches on most search engines.

| **Operator** | **What it does** | **Example** |
|---|---|---|
| **" "** | Indicates a series of words that must appear next to each other. | **"Good day sunshine"** returns pages with this exact phrase. |
| + | Indicates that all the words must appear in the Web page. | **sports+hockey** will return pages that include both sports and hockey |
| - | Tells the search engine you do not want a word to appear in your search. | **Sport-hockey** Will return pages with sports but not on hockey |
| * | Use the wildcard (*) to search for plurals or variations of words. | *sing** finds sing*ing* and sing*s* *theat** finds theat*er* and theat*re* |
| **AND, OR and NOT** | Can be used in some search engines to specify your search | Sports AND hockey NOT (baseball OR basketball) |

## *4.3 E-mail*

**E-mail addresses**

Similar to Web pages all e-mail accounts have unique addresses indicating which computer to send mail to. For email, an address usually has two parts, your user ID (usually your name) and the identity of your e-mail service. These two parts are separated by the symbol @.

The following e-mail address demonstrates these parts:

**billy_the_kid@yahoo.com**

**Billy_the_kid** : This is called your user ID and is used when you sign in to your e-mail service. Notice how "_" is used to separate words in the name. Because e-mail names cannot contain spaces, the symbol "_" is used to connect many words into one long word. **@** This is an "at" sign. It separates the persons name from the name of the e-mail service they are using.

**yahoo.com:** This indicates which e-mail service you are using and its location on the web. This address if for Hotmail, Microsoft's free e-mail service.
The above e-mail address would be said like:

**billy_the_kid at yahoo.com**

**Setting up an e-mail account**
This page will guide you through the set up of a Hotmail account. Hotmail is a totally free e-mail service run by Microsoft that lets you send and receive e-mail from any computer that is connected to the Internet. Yahoo service is run through the Hotmail Web page which can be found at the Web address listed in "Step 2" below.

**Step 1:** Print this Web page for use as a guide.

**Step 2:** Go to http://www. @yahoo.Com

*(**Hint:** Bookmark this page for future reference. This is the page you will use to sign in every time you check your e-mail )*

**Step 3:** Click on the words “Sign up” as shown below.


**Step 4:** Fill in the registration form. Remember to write down the user name and password you pick. Submit the form.

**Note:** Because of the amount of people that use hotmail, picking a user name can sometimes take a couple of tries to find one that is available.

**Step 5:** There will be a Web Page that congratulates you on your new account. Somewhere on the Web Page there will be an image that looks like a button with the word "continue" on it. *Click* on this image to continue to the next screen.

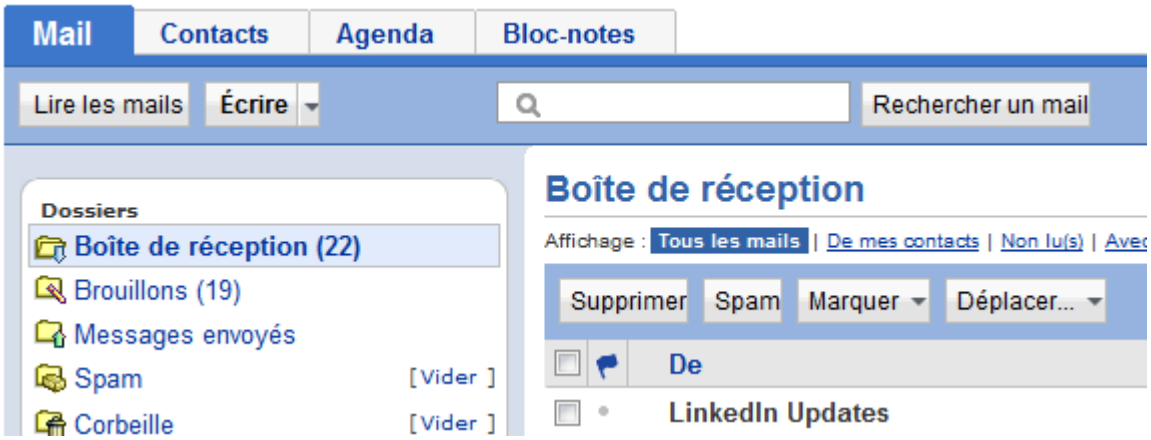
**Step 6:** You are taken to a screen with Hotmail's terms of use. Read through or scroll to the bottom of the page where there will be a button asking you to accept or decline the terms. Choose accept.


**Step7:** The next screen will ask if you wish to subscribe to various online publications. Subscribe if you wish, then press the "continue" button.

**Step 8:** The Hotmail working area then appears. You will be able to recognize it by the following tabs.

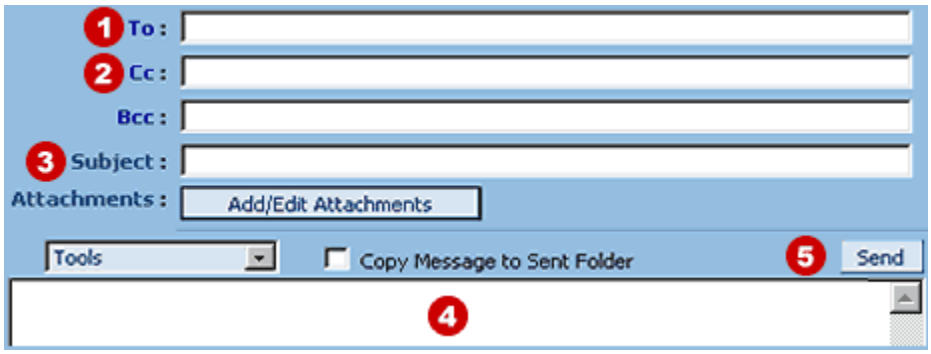

**Sending and receiving e-mail**

Just like regular mail you can either send or receive e-mail. In hotmail sending a message is done through the ***"Compose"*** option and messages that have been sent to you are stored in your ***"Inbox."***




**Sending an e-mail**

Click on "Compose" in the Hotmail menu bars. This will bring up a screen with the following on it:




**To send an e-mail follow these steps:** In the line marked ① ***"To:"*** type in the person's e-mail address that you want to send a message to. Be careful to spell the address right and use the right lower and upper case letters.
*(A good way to practice is to send yourself a message: your-name@yahoo.com).*

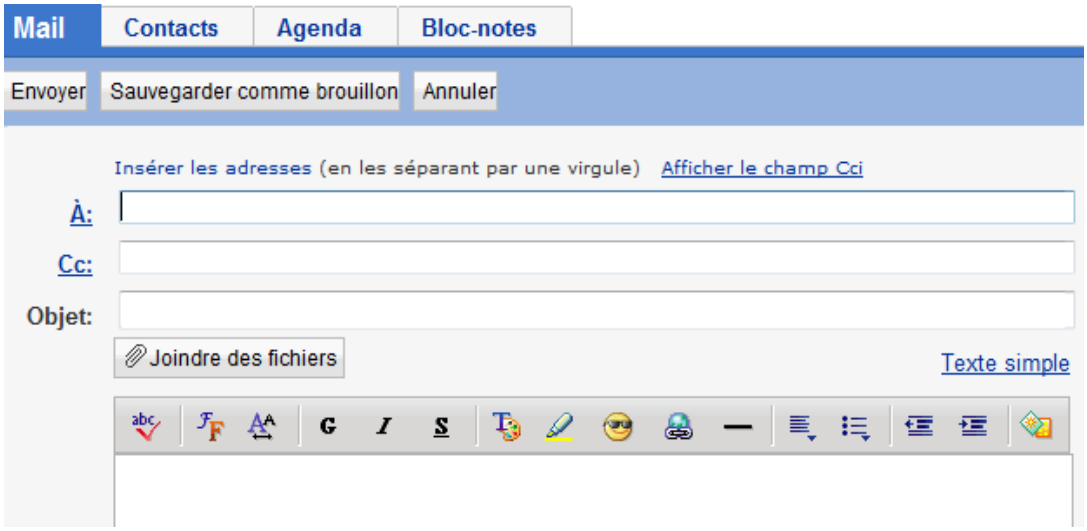
②The line marked ***"Cc:"*** is used when you want to send an exact copy of your message to other people. Simply enter the e-mail addresses of the other people you want to send a copy of your message to in this line.

③ In the ***"Subject:"*** line type something that describes what your message is about. The subject will be shown in the recipients' inbox, making it easier for them to sort through their e-mails. ④This is the area where you type your message. There is no limit to how much you can type in this space. ⑤ When you are done writing your message press the send button and your message will instantly be delivered.

**Receiving e-mail**

Click on ***"inbox"*** in the yahoo menu bars. This will bring up a screen with the following on it:

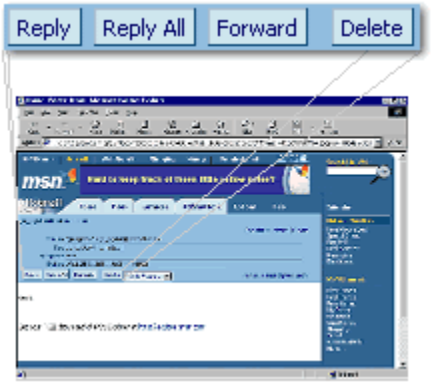

Or




To read your new messages *"click"* on the subject you want to read. In the example above the name is *"Hotmail Staff."* This will bring up a new screen with the content of the message. When you have finished reading the message you can *"click"* on the *"Inbox"* tab to see other new messages.

**Replying, forwarding and deleting e-mail**

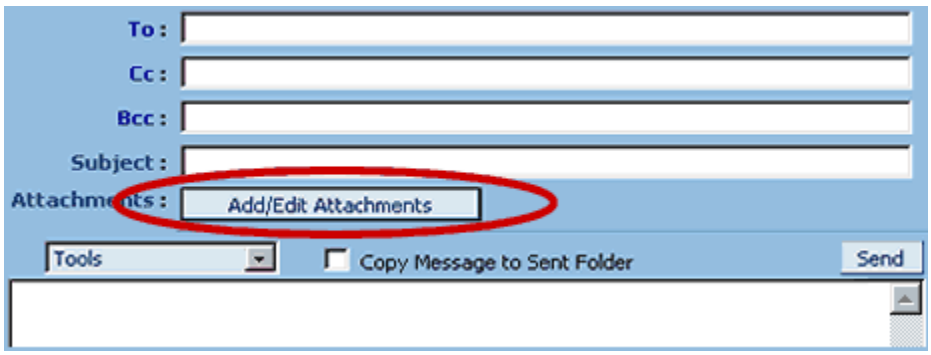
Once you have read a message there are a number of options hotmail gives you to make communicating more efficient.



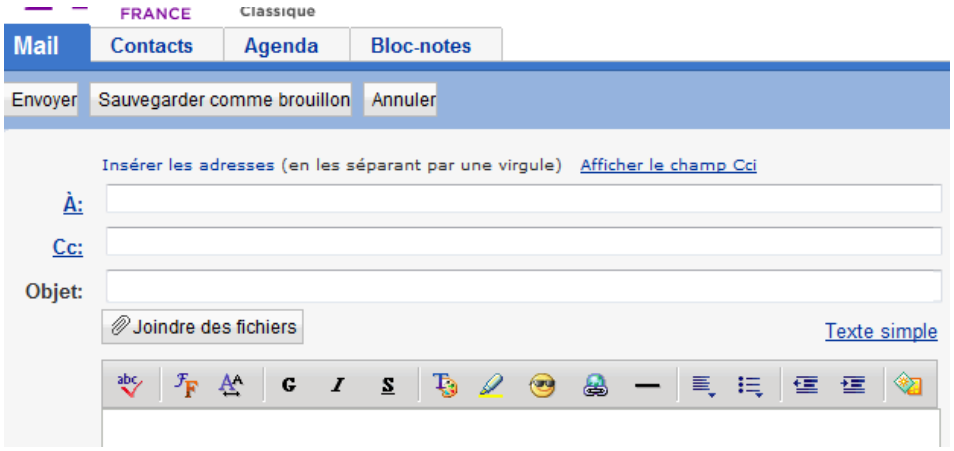

**Reply:** This option automatically opens a new message that is addressed to the person who sent you the message. In the body of the new message there will also be a copy of the message you are replying to. **Reply All:** This works similarly to "Reply" but replies to all the addresses in an e-mail not just the main one. **Forward**: This option lets you send to other people an exact copy of a message that was sent to you. **Delete:** This option erases messages that you have marked with a check mark from your *"Inbox."*

## E-mail attachments

E-mail gives you the ability to send or attach any kind of file to a message. For example you can attach a Word or WordPerfect file to your message. This is very useful for exchanging files between people over long or short distances. In the past you may have had to send a disk through the mail, which could have taken a couple of weeks. Now it's almost instant!

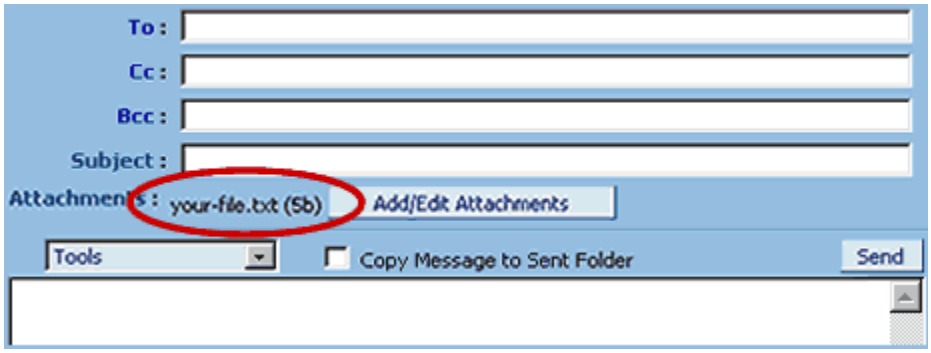



Or




***Attaching a file to an e-mail***

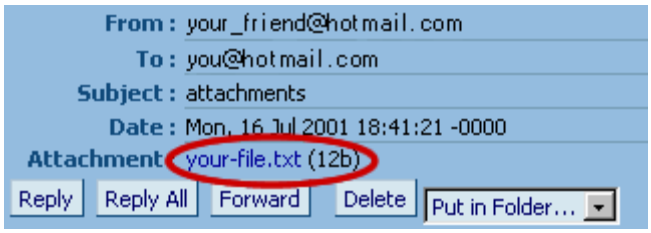
1. Press the **"Add/Edit Attachments"** button as shown above.
2. Type an e-mail message as described in the previous lessons.
3. A new Hotmail screen will appear.
4. Select your file using the **"Browse..."** button on the screen. A window will appear that will let you select a file from your computer.
5. Select the **"Attach "** button to the right of the **"Browse..."** button
6. Select Done. Your file is now attached to your message




7. Send your message

## Opening e-mail attachments

When you receive an email with an attachment in Hotmail the message will have an attachment heading. Simply *click* on the attachments file name and you will be taken to a new screen, where you will be asked to download the file to your computer.




*Click* on the "Download File" button to save the file to your own computer. Hotmail also scans the file for viruses.

**DESCRIBE IP ADDRESS**

An IP address is a number that is used to identify a device on the network. Each device on a network must have a **unique IP address** to communicate with other network devices. On a LAN, each host and network device must have an IP address within the same network to be able to communicate with each other.

On a host, the Media Access Control (MAC) address (explained below) is assigned to the host NIC and is known as the physical address. The physical address remains the same regardless of where the host is placed on the network.

The IP address is similar to the mailing address of a person. It is known as a logical address because it is logically assigned based on the host location. When a host is configured with an IP address, it is entered as a dotted decimal number, such as 192.168.1.5.

## *4.4 Massive Open Online Course (MOOC)*

**What Is a MOOC?**

A massive open online course (MOOC) is a model for delivering learning content online to any person who wants to take a course, with no limit on attendance.

In addition to traditional course materials, such as filmed lectures, readings, and problem sets, many MOOCs provide interactive courses with user forums or social media discussions to support community interactions among students, professors, and teaching assistants (TAs), as well as immediate feedback to quick quizzes and assignments. MOOCs are a widely researched development in distance education, first introduced in 2008, that emerged as a popular mode of learning in 2012, a year called the "Year of the MOOC".

Early MOOCs (cMOOCs: Connectivist MOOCs) often emphasized open-access features, such as open licensing of content, structure and learning goals, to promote the reuse and remixing of resources. Some later MOOCs (xMOOCs: extended MOOCs) use closed licenses for their course materials while maintaining free access for students.

## *4.5 Collaborative Tools for Students*

We are living in a digital age where students shuffle between learning apps and social and communication platforms constantly. We can now communicate with anyone, anywhere, anytime through the simple click of a button, and it is our job as educators to leverage these collaborative tools in the classroom. Many schools are finding creative ways to incorporate blended learning in their curriculums.

Due to our focus on blended learning and travel, it is imperative that we remain as paperless as possible. Technology can often make or break our experiences as we study in different countries around the world, so we must hit the ground running during our intensive lectures. And depending on how they are integrated into our teaching toolkits, the tools used for our blended learning units can either help or hinder our student learning experiences. The most common collaborative tools for students include the following:

**1. Dig social bookmarks (Diigo)**

This tool has become a crucial part of our school's approach to managing project-based learning resources. Since we are constantly on-the-move, a few books, let alone entire physical libraries, are impossible for us to reasonably transport. Diigo eliminates that concern and helps our students curate and build an ever-growing library of bookmarks for our modules year after year.

Countries and specific place- and project-based modules have their own groups for students to contribute to and annotate resources. When a guest speaker visits, we can quickly create a research group to curate a list of resources so that our entire student body is informed and attentive before the speaker arrives.

**2. Microsoft Teams**

Microsoft Teams is a proprietary business communication platform developed by Microsoft, as part of the Microsoft 365 family of products. Teams primarily competes with the similar service Slack, offering workspace chat and videoconferencing, file storage, and application integration. Teams replaced other Microsoft-operated business messaging and collaboration platforms, including Skype for Business and Microsoft Classroom. Throughout the COVID-19 pandemic, Teams gained much interest as many meetings moved to a virtual environment. As of 2022, it has about 270 million monthly users.

**3. Zoom**

Zoom, stylized as zoom or Zoom Meetings is a proprietary videotelephony software program developed by Zoom Video Communications. The free plan allows up to 100 concurrent participants, with a 40-minute time restriction. Users have the option to upgrade by subscribing

to a paid plan. The highest plan supports up to 1,000 concurrent participants for meetings lasting up to 30 hours.

During the COVID-19 pandemic, there was a major increase in the use of Zoom for remote work, distance education, and online social relations. The increase led to Zoom being one of the most downloaded mobile apps worldwide in 2020 with over 500 million downloads and over 300 million daily meeting participants.

**4. Google Meet**

Google Meet (formerly known as Hangouts Meet) is a video-communication service developed by Google. It is one of two apps that constitute the replacement for Google Hangouts, the other being Google Chat. It replaced the consumer-facing Google Duo in late 2022, with the Duo mobile app being renamed Meet and the original Meet app set to be phased out.

In the early months of the COVID-19 pandemic, Google announced Meet was to be made available to all users, not just Google Workspace users, in which it previously was. The use of Meet grew by a factor of 30 between January and April 2020, with 100 million users a day accessing Meet, compared to 200 million daily users for Zoom as of the last week of April 2020.

# CHAPTER 5: INTRODUCTION TO COMPUTER SECURITY

Computer security is the protection of computer systems and networks from attack by malicious actors that may result in unauthorized information disclosure, theft of, or damage to hardware, software, or data, as well as from the disruption or misdirection of the services they provide.

There are various types of computer security which is widely used to protect the valuable information of an organization.

## *5.1 Computer Security and its types*

One way to ascertain the similarities and differences among Computer Security is by asking what is being secured. For example,

**Information security** is securing information from unauthorized access, modification & deletion

**Application Security** is securing an application by building security features to prevent from Cyber Threats such as SQL injection, DoS attacks, data breaches and etc.

**Computer Security** means securing a standalone machine by keeping it updated and patched

**Network Security** is by securing both the software and hardware technologies

**Cybersecurity** is defined as protecting computer systems, which communicate over the computer networks.

## *5.2 Computer security threats*

Computer security threats are possible dangers that can possibly hamper the normal functioning of your computer. In the present age, cyber threats are constantly increasing as the world is going digital. The most harmful types of computer security are:

**Viruses**

A computer virus is a malicious program which is loaded into the user's computer without user's knowledge. It replicates itself and infects the files and programs on the user's PC. The ultimate goal of a virus is to ensure that the victim's computer will never be able to operate properly or even at all.

**Computer Worm**

A computer worm is a software program that can copy itself from one computer to another, without human interaction. The potential risk here is that it will use up your computer hard disk space because a worm can replicate in greate volume and with great speed.

**Phishing**

Disguising as a trustworthy person or business, phishers attempt to steal sensitive financial or personal information through fraudulent email or instant messages. Phishing in unfortunately very easy to execute. You are deluded into thinking it's the legitimate mail and you may enter your personal information.

## *5.3 Computer Virus and Antivirus Programs*

**Computer Virus**

A computer virus is a type of computer program that, when executed, replicates itself by modifying other computer programs and inserting its own code. If this replication succeeds, the affected areas are then said to be "infected" with a computer virus, a metaphor derived from biological viruses. A virus is malicious software that is attached to another program for the purpose of executing a particular unwanted function on a workstation.

A virus normally requires a delivery mechanism-a vector-such as a zip file or some other executable file attached to an e-mail, to carry the virus code from one system to another. The key element that distinguishes a computer worm from a computer virus is that human interaction is required to facilitate the spread of a virus.

These kinds of applications can be contained through the effective use of antivirus software at the user level, and potentially at the network level. Antivirus software can detect most viruses and prevent them from spreading in the network. Keeping up to date with the latest developments in these sorts of attacks can also lead to a more effective posture toward these attacks. As new virus is released, enterprises need to keep current with the latest versions of antivirus software.

**Antivirus software**

Antivirus software (abbreviated to AV software), also known as anti-malware, is a computer program used to prevent, detect, and remove malware.

Antivirus software was originally developed to detect and remove computer viruses, hence the name. However, with the proliferation of other malware, antivirus software started to protect from other computer threats.

Install host antivirus software to protect against known viruses. Antivirus software can detect most viruses and many Trojan horse applications and prevent them from spreading in the network.

Antivirus software does this in two ways:

- It scans files, comparing their contents to known viruses in a virus dictionary. Matches are flagged in a manner defined by the end user.
- It monitors suspicious processes running on a host that might indicate infection. This monitoring may include data captures, port monitoring, and other methods.

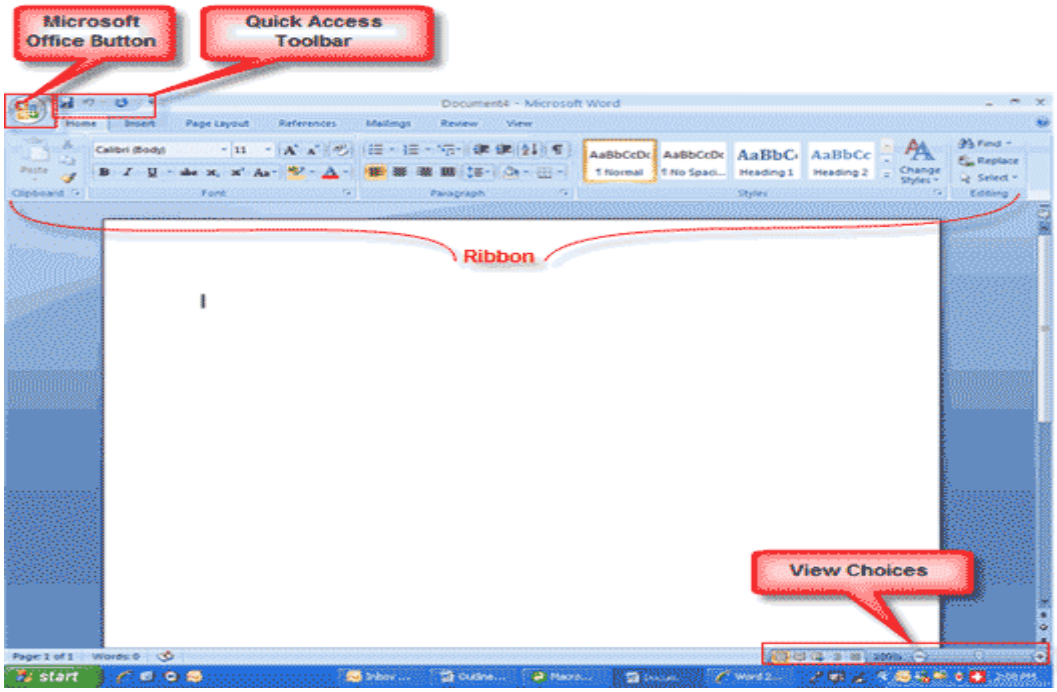
Most commercial antivirus software uses both of these approaches.

Examples of Antivirus software include Kaspersky, Norton, Avast, McAfee, AVG, Bitdefender Total Security, etc.

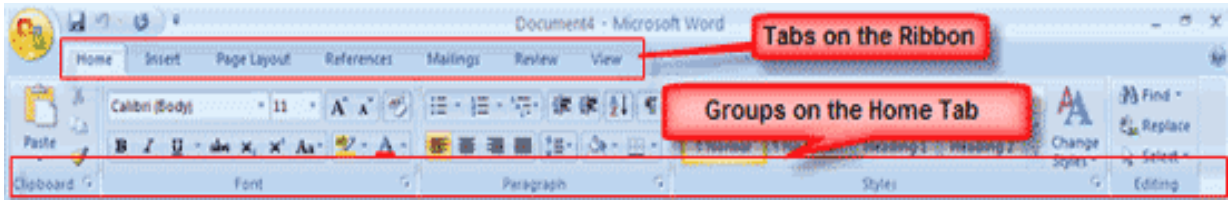
# CHAPTER 6: MICROSOFT WORD 2007

## Getting Started

### Screen Layout




### The Ribbon




The Ribbon is the panel at the top portion of the document. It has seven tabs: Home, Insert, Page Layout, References, Mailings, Review, and View that contain many new and existing features of Word. Each tab is divided into groups.

Each of the tabs contains the following tools:

**Home:** Clipboard, Fonts, Paragraph, Styles, and Editing.
**Insert:** Pages, Tables, Illustrations, Links, Header & Footer, Text, and Symbols

**Page Layout:** Themes, Page Setup, Page Background, Paragraph, Arrange
**References:** Table of Contents, Footnote, Citation & Bibliography, Captions, Index, and Table of Authorities
**Mailings:** Create, Start Mail Merge, Write & Insert Fields, Preview Results, Finish
**Review:** Proofing, Comments, Tracking, Changes, Compare, Protect
**View:** Document Views, Show/Hide, Zoom, Window, Macros

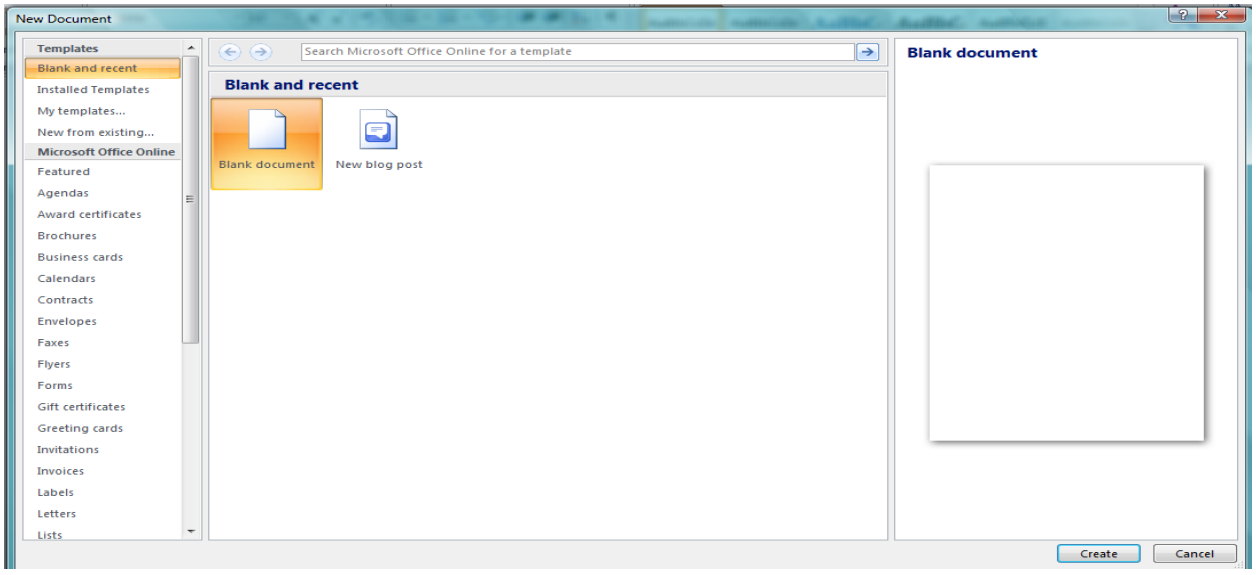
# *Working with documents*

## Create a New Document

There are several ways to create new documents, open existing documents, and save documents in Word:

- Click the **Microsoft Office Button**  and Click **New** or
- Press CTRL+N (Depress the CTRL key while pressing the "N") on the keyboard

You will notice that when you click on the Microsoft Office Button and Click **New**, you have many choices about the types of documents you can create. If you wish to start from a blank document, click **Blank** and click **Create.**

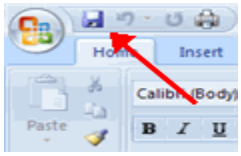



## Opening an Existing Document

- Click the **Microsoft Office Button** and Click **Open,** or
- Press CTRL+O (Depress the CTRL key while pressing the "O") on the keyboard, or
- If you have recently used the document you can click the **Microsoft Office Button** and click the name of the document in the **Recent Documents** section of the window.

Saving a Document

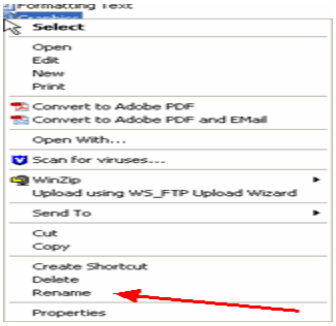
- Click the Microsoft Office Button and Click Save or Save As (remember, if you're sending the document to someone who does not have Office 2007, you will need to click the **Office Button**, click **Save As**, and Click **Word 97-2003 Document**), or
- Press CTRL+S (Depress the CTRL key while pressing the "S") on the keyboard.




## Renaming Documents

To rename a Word document while using the program:

- Find the file you want to rename.
- Right-click the document name with the mouse and select **Rename** from the shortcut menu.
- Type the new name for the file and press the **ENTER** key.



## Close a Document

To close a document:

- Click the **Office Button**
- Click **Close**

**Editing a Document**

## Typing and inserting Text

To enter text, just start typing! The text will appear where the blinking cursor is located. Move the cursor by using the arrow buttons on the keyboard or positioning the mouse and clicking the left button. The keyboard shortcuts listed below are also helpful when moving through the text of a document:

| **Move Action** | **Keystroke** |
|---|---|
| Beginning of the line | **HOME** |
| End of the line | **END** |
| Top of the document | **CTRL+HOME** |
| End of the document | **CTRL+END** |

## Selecting Text

To change any attributes of text it must be highlighted first. Select the text by dragging the mouse over the desired text while keeping the left mouse button depressed, or hold down the **SHIFT** key on the keyboard while using the arrow buttons to highlight the text. The following table contains shortcuts for selecting a portion of the text:

| **Selection** | **Technique** |
|---|---|
| Whole word | double-click within the word |
| Whole paragraph | triple-click within the paragraph |
| Several words or lines | drag the mouse over the words, or hold down **SHIFT** while using the arrow keys |
| Entire document | choose **Editing \| Select \| Select All** from the Ribbon, or press **CTRL+A** |

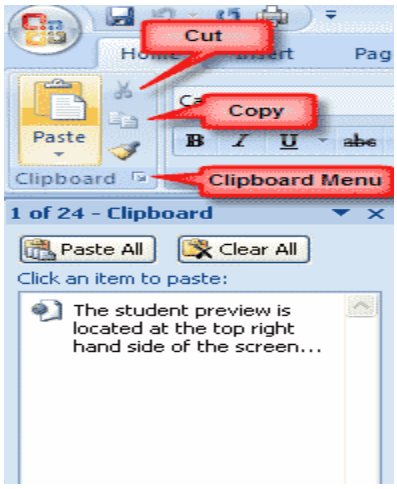
Deselect the text by clicking anywhere outside of the selection on the page or press an arrow key on the keyboard.

## Inserting Additional Text

Text can be inserted in a document at any point using any of the following methods:

- **Type Text**: Put your cursor where you want to add the text and begin typing
- **Copy and Paste Text**: Highlight the text you wish to copy and right click and click **Copy**, put your cursor where you want the text in the document and right click and click **Paste**.
- **Cut and Paste Text**: Highlight the text you wish to copy and right click and click **Cut**, put your cursor where you want the text in the document and right click and click **Paste**.
- **Drag Text**: Highlight the text you wish to move, click on it and drag it to the place where you want the text in the document.

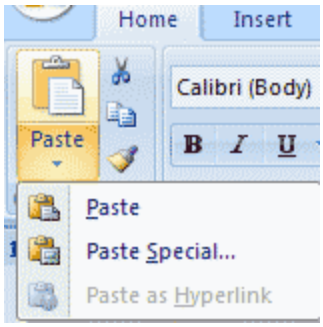
You will notice that you can also use the Clipboard group on the Ribbon.




## Rearranging Blocks of Text

To rearrange text within a document, you can utilize the **Clipboard Group** on the **Home Tab** of the Ribbon.
Insert picture of clipboard group labeled

- **Move text**: Cut and Paste or Drag as shown above
- **Copy Text**: Copy and Paste as above or use the Clipboard group on the Ribbon
- **Paste Text**: Ctrl + V (hold down the CTRL and the "V" key at the same time) or use the Clipboard group to Paste, Paste Special, or Paste as Hyperlink




## Deleting Blocks of Text

Use the **BACKSPACE** and **DELETE** keys on the keyboard to delete text. Backspace will delete text to the left of the cursor and Delete will erase text to the right. To delete a large selection of text, highlight it using any of the methods outlined above and press the **DELETE** key.

## Search and Replace Text

To find a particular word or phrase in a document:

- Click **Find** on the **Editing Group** on the Ribbon
- To find and replace a word or phrase in the document, click **Replace** on the **Editing Group** of the Ribbon.


## Undo Changes

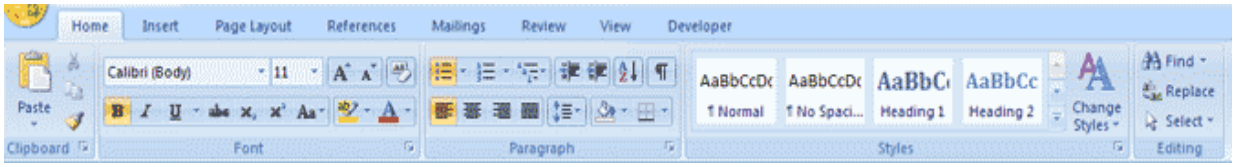
To undo changes:

- Click the **Undo Button** on the Quick Access Toolbar

# Formatting Text

## Styles

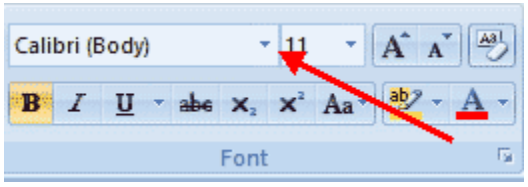
A style is a format enhancing tool that includes font typefaces, font size, effects (bold, italics, underline, etc.), colors and more. You will notice that on the Home Tab of the Ribbon, that you have several areas that will control the style of your document: Font, Paragraph, and Styles.



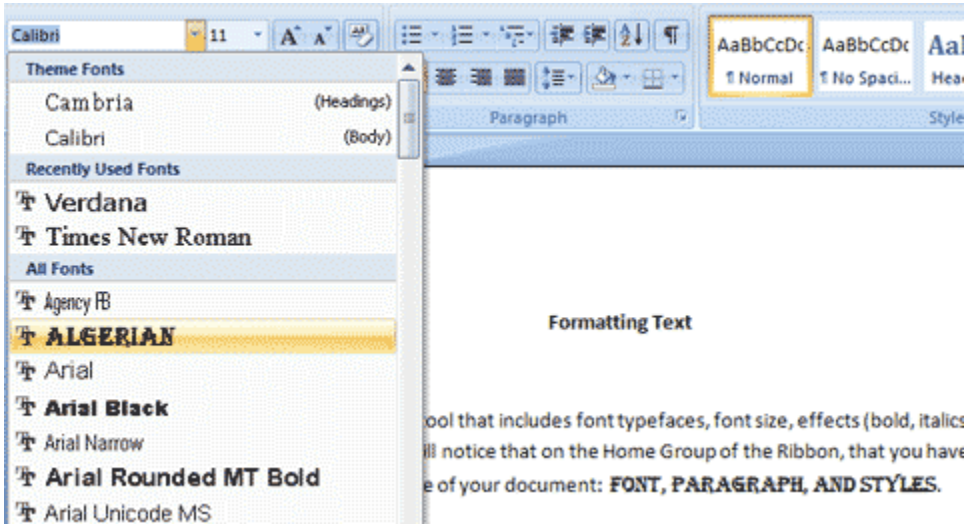

## Change Font Typeface and Size

**To change the font typeface:**

- Click the **arrow** next to the font name and choose a font.

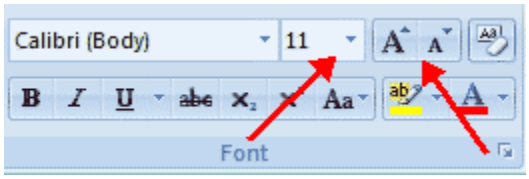



- Remember that you can preview how the new font will look by highlighting the text, and hovering over the new font typeface.



**To change the font size:**

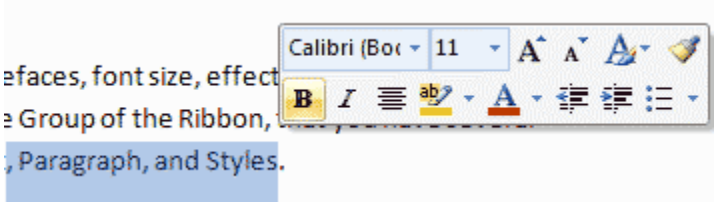
- Click the **arrow** next to the font size and choose the appropriate size, or
- Click the **increase** or **decrease** font size buttons.




## Font Styles and Effects

Font styles are predefined formatting options that are used to emphasize text. They include: Bold, Italic, and Underline. To add these to text:

- Select the text and click the **Font Styles** included on the Font Group of the Ribbon, or
- Select the text and right click to display the font tools




## Change Text Color

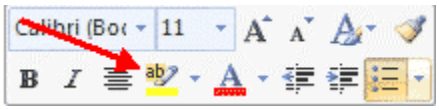
To change the text color:

- Select the text and click the **Colors** button included on the Font Group of the Ribbon, or
- Highlight the text and right click and choose the colors tool.
- Select the color by clicking the down arrow next to the font color button.

## Highlight Text

Highlighting text allows you to use emphasize text as you would if you had a marker. To highlight text:

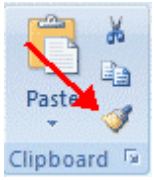
- Select the text
- Click the **Highlight Button** on the Font Group of the Ribbon, or
- Select the text and right click and select the highlight tool
- To change the color of the highlighter click on down arrow next to the highlight button.




## Copy Formatting

If you have already formatted text the way you want it and would like another portion of the document to have the same formatting, you can copy the formatting. To copy the formatting, do the following:

- Select the text with the formatting you want to copy.
- Copy the format of the text selected by clicking the **Format Painter** button on the Clipboard Group of the Home Tab
- Apply the copied format by selecting the text and clicking on it.




### Formatting Paragraphs

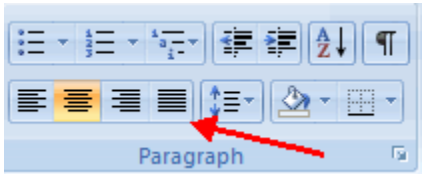
Formatting paragraphs allows you to change the look of the overall document. You can access many of the tools of paragraph formatting by clicking the **Page Layout** Tab of the Ribbon.

### *Change Paragraph Alignment*

*The paragraph alignment allows* you to set how you want text to appear. To change the alignment:

- Click the **Home Tab**

- Choose the appropriate button for alignment on the Paragraph Group.
  - **Align Left**: the text is aligned with your left margin
  - **Center**: The text is centered within your margins
  - **Align Right**: Aligns text with the right margin
  - **Justify**: Aligns text to both the left and right margins.



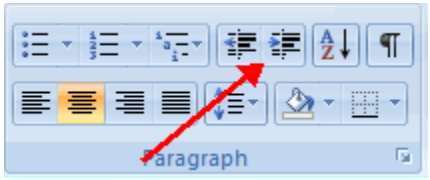

## Indent Paragraphs

Indenting paragraphs allows you set text within a paragraph at different margins. There are several options for indenting:

- **First Line**: Controls the left boundary for the first line of a paragraph
- **Hanging**: Controls the left boundary of every line in a paragraph except the first one
- **Left**: Controls the left boundary for every line in a paragraph
- **Right**: Controls the right boundary for every line in a paragraph

To indent paragraphs, you can do the following:

- Click the **Indent** buttons to control the indent.
- Click the I**ndent** button repeated times to increase the size of the indent.



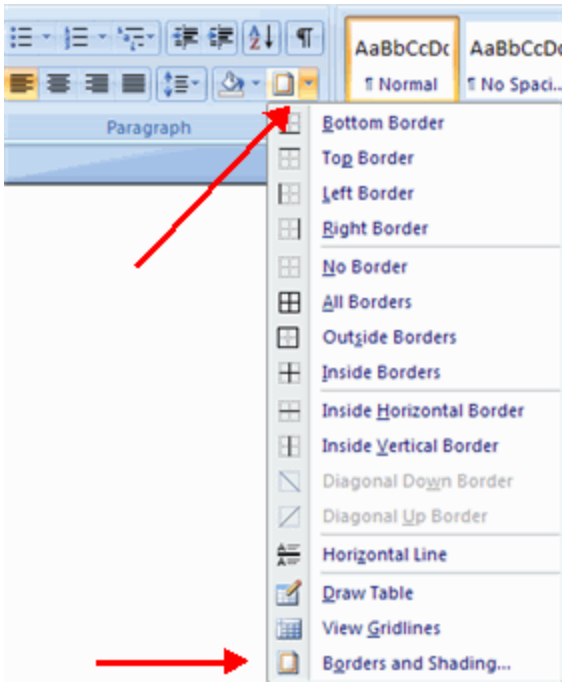

- Click the dialog box of the **Paragraph** Group
- Click the **Indents and Spacing** Tab
- Select your indents.

### Add Borders and Shading

You can add borders and shading to paragraphs and entire pages. To create a border around a paragraph or paragraphs:

- Select the area of text where you want the border or shading.

- Click the **Borders** Button on the Paragraph Group on the Home Tab
- Choose the **Border and Shading**
- Choose the appropriate options



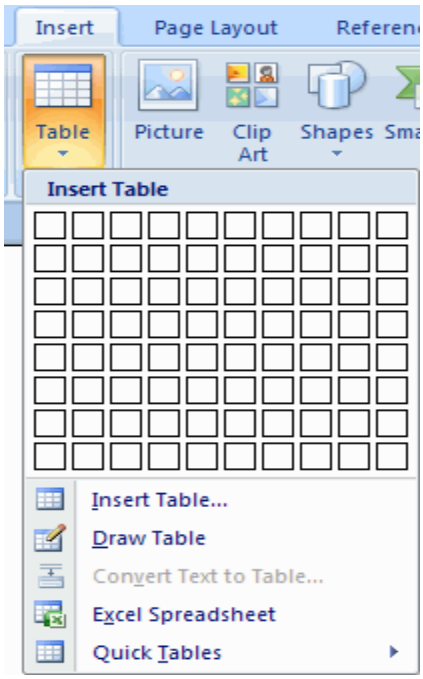

**Adding Tables**

Tables are used to display data in a table format.

## Create a Table

To create a table:

- Place the cursor on the page where you want the new table
- Click the **Insert** Tab of the Ribbon
- Click the **Tables** Button on the Tables Group. You can create a table one of four ways:
  - Highlight the number of row and columns
  - Click **Insert Table** and enter the number of rows and columns
  - Click the **Draw Table**, create your table by clicking and entering the rows and columns
  - Click **Quick Tables** and choose a table



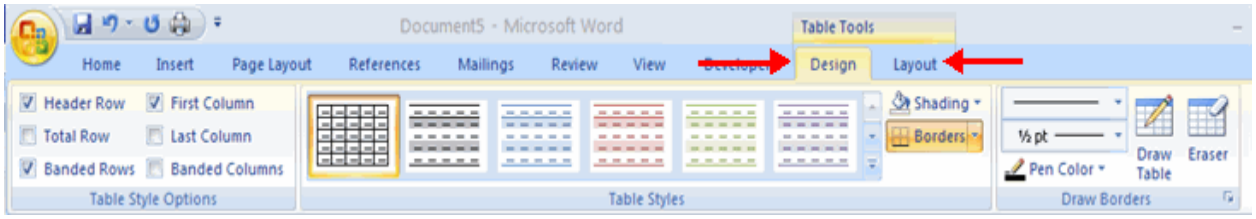

## Enter Data in a Table

Place the cursor in the cell where you wish to enter the information. Begin typing.

## Modify the Table Structure and Format a Table

To **modify** the structure of a table:

- Click the table and notice that you have two new tabs on the Ribbon: **Design and Layout**. These pertain to the table design and layout.

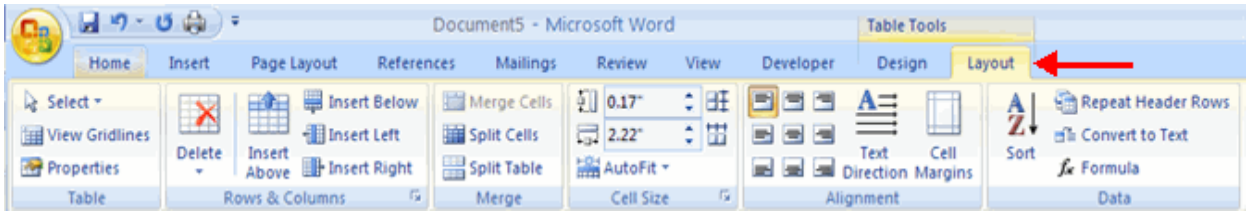



On the Design Tab, you can choose:

- **Table Style Options**
- **Table Styles**
- **Draw Borders**

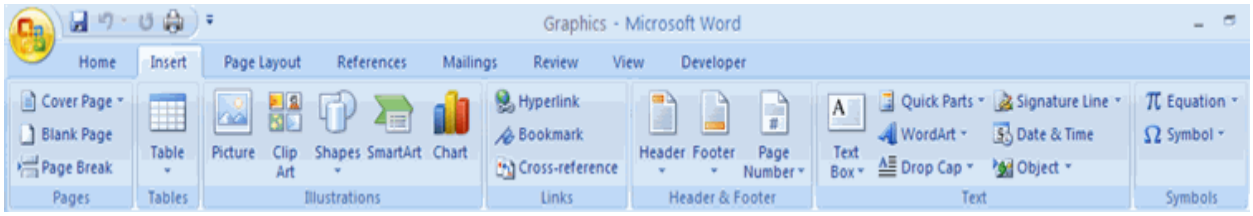
To **format** a table, click the table and then click the **Layout** Tab on the Ribbon. This Layout tab allows you to:

- **View Gridlines and Properties** (from the Table Group)
- **Insert Rows and Columns** (from the Rows & Columns Group)
- **Delete the Table, Rows and/or Columns** (from the Rows & Columns Group)
- **Merge or Split Cells** (from the Merge Group)
- **Increase and Decrease cell size** (Cell Size Group)
- **Align text within the cells and change text directions** (Alignment Group)




## Graphics

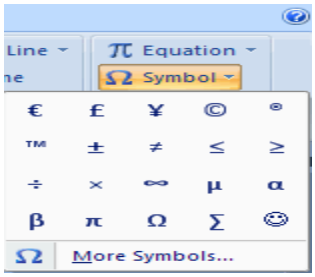
Word 2007 allows you to insert special characters, symbols, pictures, illustrations, and watermarks.




### Symbols and Special Characters

Special characters are punctuation, spacing, or typographical characters that are not generally available on the standard keyboard. To insert symbols and special characters:

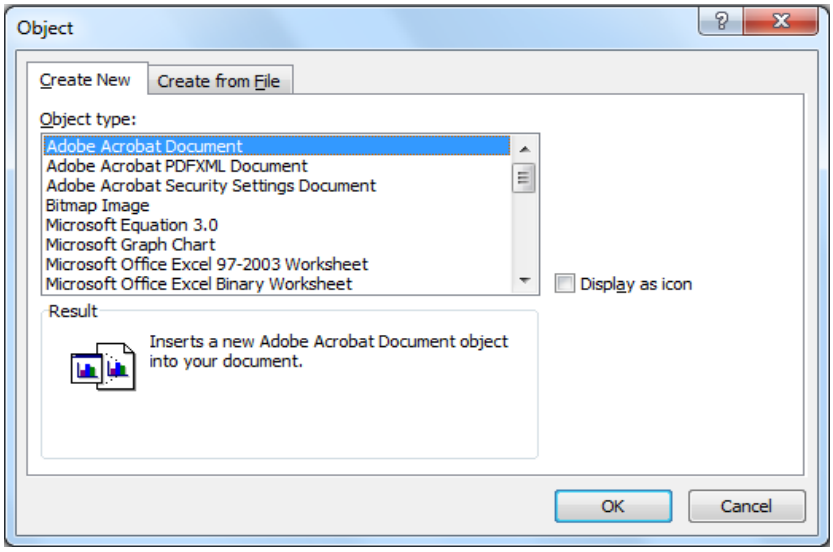
- Place your cursor in the document where you want the symbol
- Click the **Insert** Tab on the Ribbon
- Click the **Symbol** button on the Symbols Group
- Choose the appropriate symbol.



## Equations

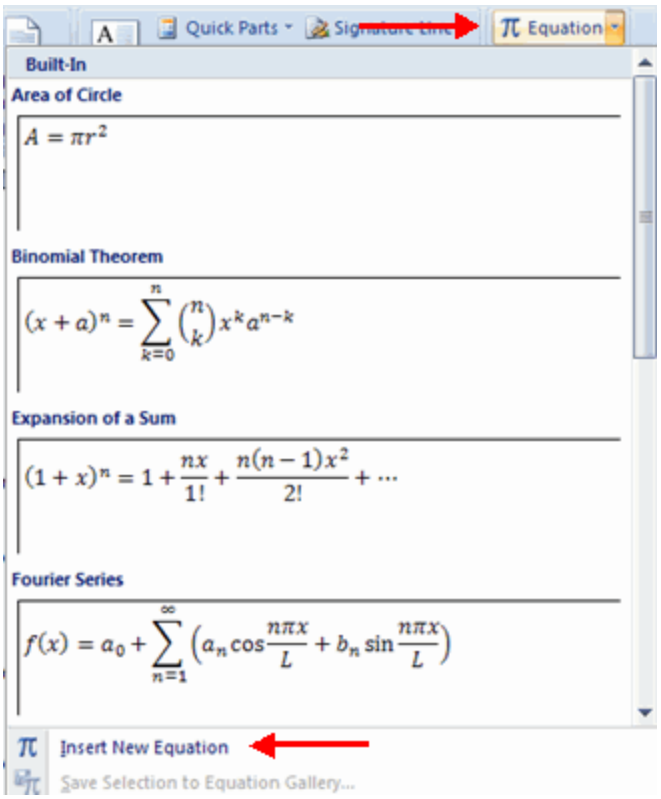
Word 2007 also allows you to insert mathematical equations. To access the mathematical equations tool:

- Place your cursor in the document where you want the symbol
- Click the **Insert** Tab on the Ribbon
- Click the **Object** Button on the text Group
- Choose **Microsoft Equation 3.0** type and click **ok.**

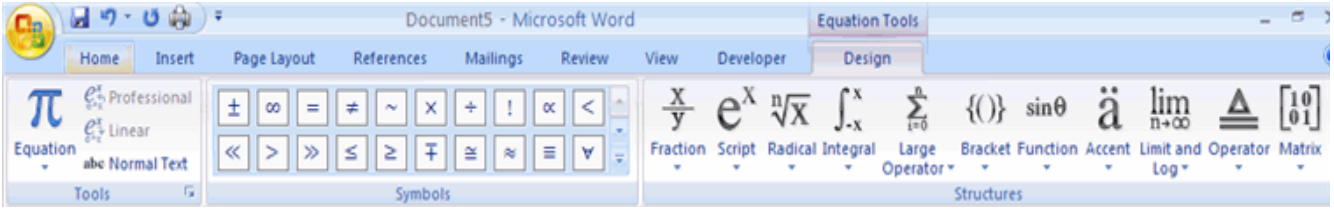



After clicking ok you will get the following table which will allow you to choose special characters to use.


There are other ways to edit equations.



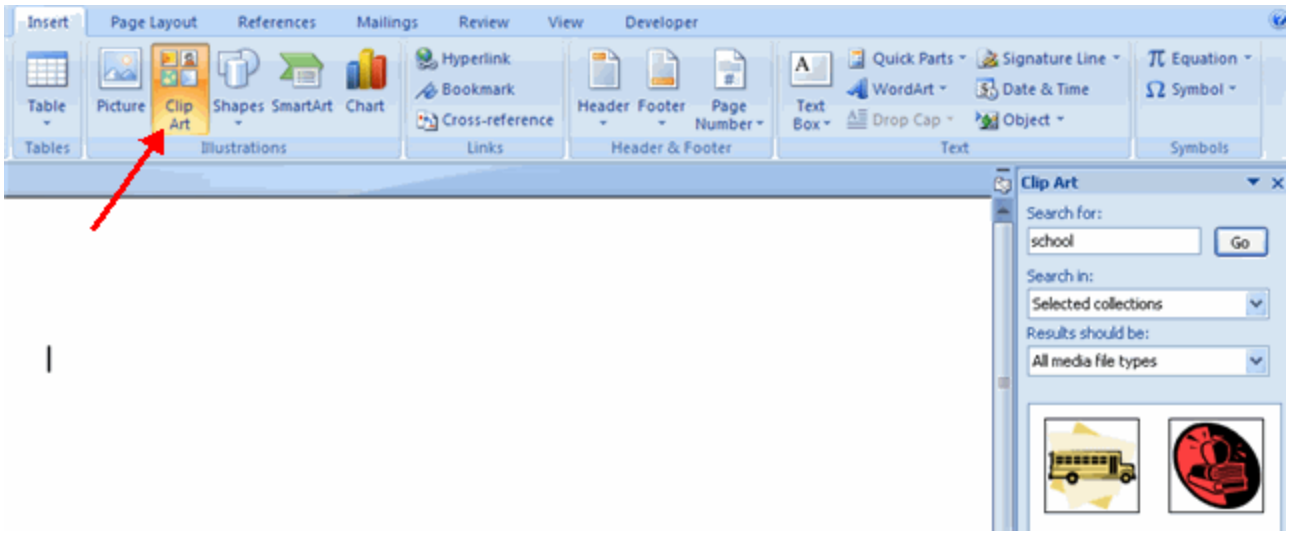

- To edit the equation click the equation and the **Design** Tab will be available in the Ribbon




## Illustrations, Pictures, and SmartArt

Word 2007 allows you to insert illustrations and pictures into a document. To insert **illustrations**:

- Place your cursor in the document where you want the illustration/picture
- Click the **Insert** Tab on the Ribbon
- Click the **Clip Art** Button
- The dialog box will open on the screen and you can search for clip art.
- Choose the illustration you wish to include

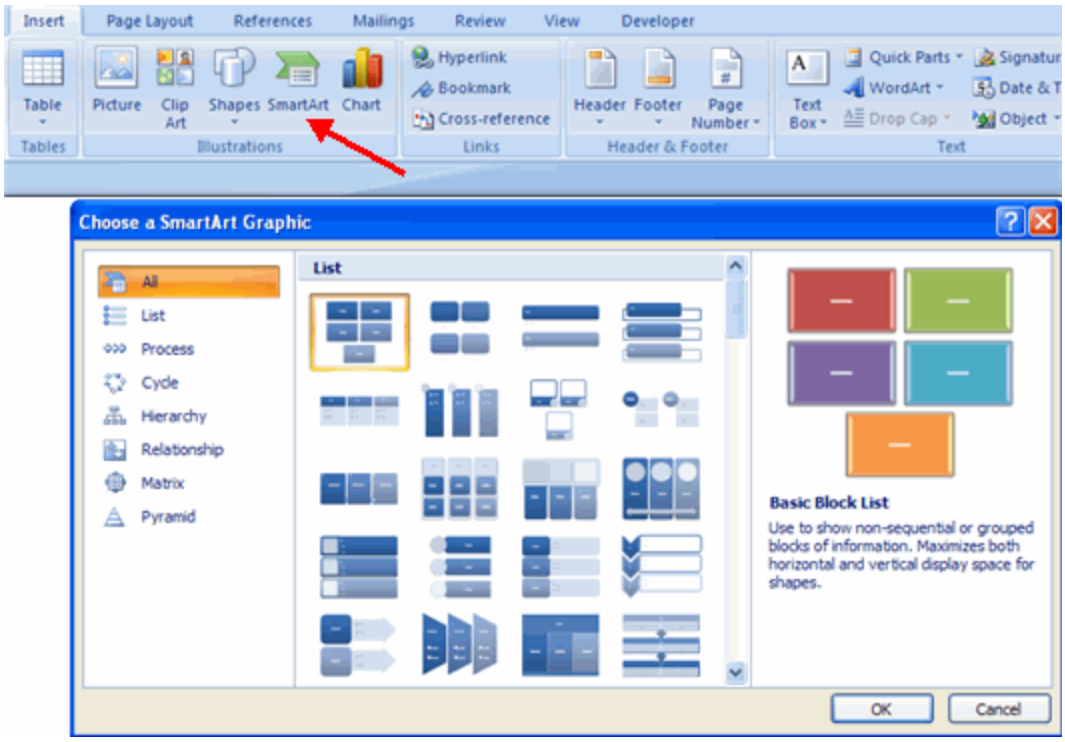



To insert a **picture**:

- Place your cursor in the document where you want the illustration/picture
- Click the **Insert** Tab on the Ribbon
- Click the **Picture** Button
- Browse to the picture you wish to include
- Click the **Picture**
- Click **Insert**

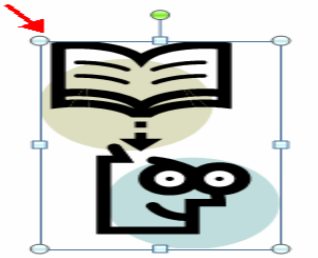
**Smart Art** is a collection of graphics you can utilize to organize information within your document. It includes timelines, processes, or workflow. To insert SmartArt.

- Place your cursor in the document where you want the illustration/picture
- Click the **Insert** Tab on the Ribbon
- Click the **SmartArt** button
- Click the **SmartArt** you wish to include in your document
- Click the arrow on the left side of the graphic to insert text or type the text in the graphic.




## Resize Graphics

All graphics can be resized by clicking the image and clicking one corner of the image and dragging the cursor to the size you want the picture.



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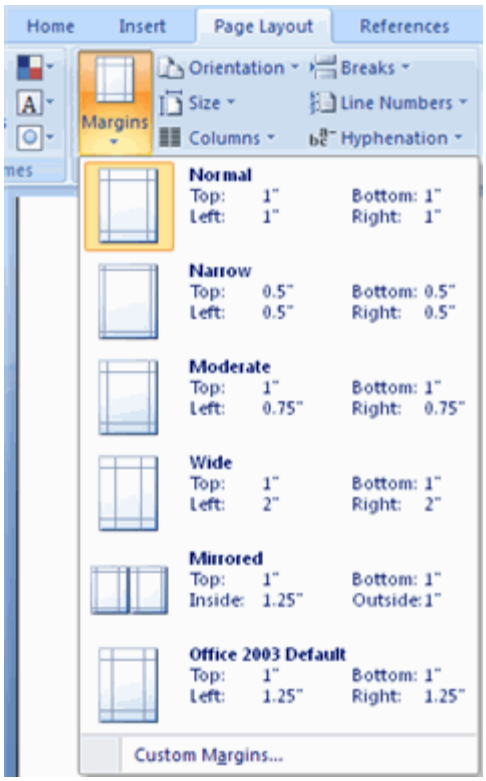
## Page Formatting

### Modify Page Margins and Orientations

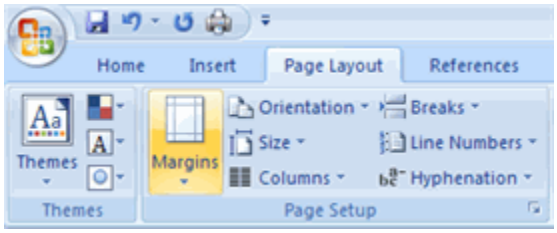
The page margins can be modified through the following steps:

- Click the **Page Layout** Tab on the Ribbon
- On the **Page Setup** Group, Click **Margins**
- Click a **Default Margin**, or
- Click **Custom Margins** and complete the dialog box.




To change the Orientation, Size of the Page, or Columns:

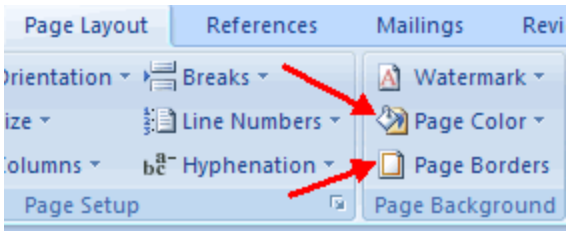
- Click the **Page Layout** Tab on the Ribbon
- On the Page Setup Group, Click the **Orientation**, **Size**, or **Columns** drop down menus
- Click the appropriate choice




## Apply a Page Border and Color

To apply a page border or color:

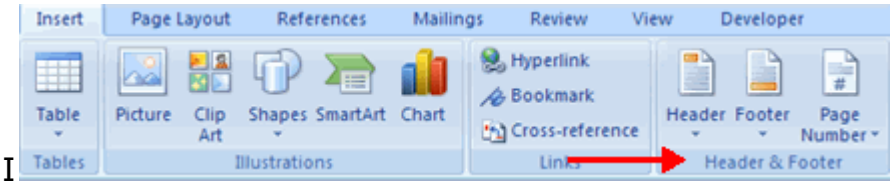
- Click the **Page Layout** Tab on the Ribbon
- On the Page Background Group, click the **Page Colors** or **Page Borders** drop down menus




## Insert Common Header and Footer Information

To insert Header and Footer information such as page numbers, date, or title, first, decide if you want the information in the header (at the top of the page) or in the Footer (at the bottom of the page), then:

- Click the **Insert** Tab on the Ribbon
- Click **Header or Footer**
- Choose a style




- The **Header/Footer Design** Tab will display on the Ribbon
- Choose the information that you would like to have in the header or footer (date, time, page numbers, etc.) or type in the information you would like to have in the header or footer

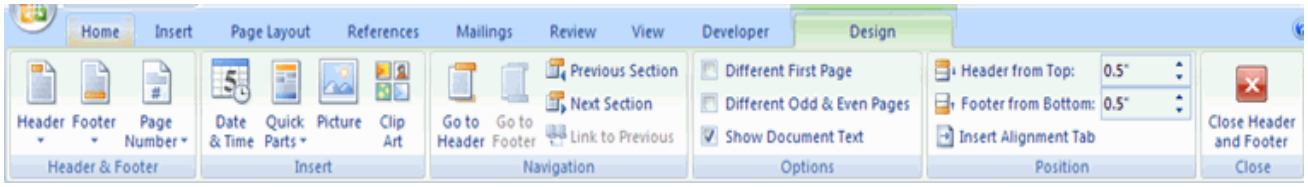



*Table of Contents*

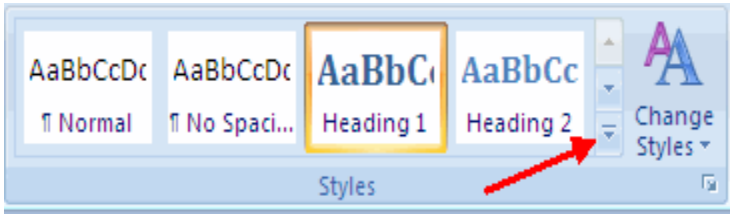
The easiest way to create a **Table of Contents** is to utilize the **Heading Styles** that you want to include in the Table of Contents. For example: Heading 1, Heading 2, etc. based on the content of your document. When you add or delete headings from your document, Word updates your **Table of Contents**. Word also updates the page number in the table of contents when information in the document is added or deleted. When you create a Table of Contents, the first thing you want to do is mark the entries in your document. The Table of Contents is formatted based on levels of headings. Level 1 will include any text identified with the style Heading 1.

## Mark Table of Contents Entries

You can mark the Table of Contents entries in one of two ways: by using built-in heading styles or by marking individual text entries.

### To Use Built-In Heading Styles

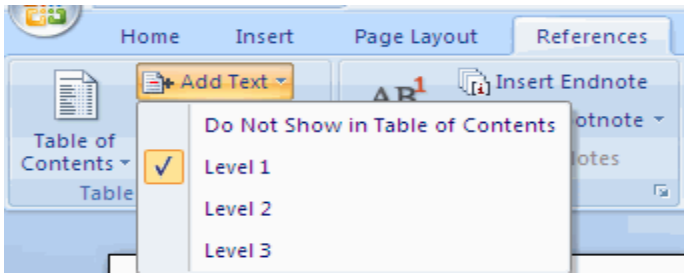
- Select the text that you wish to be the heading
- Click the **Home** Tab
- In the Styles Group, click **Heading 1** (or the appropriate heading)




- If you don't see the style you want, click the arrow to expand the **Quick Styles Gallery**
- If the style you want does not appear click **Save Selection** as New Quick Style


### To Mark Individual Entries:

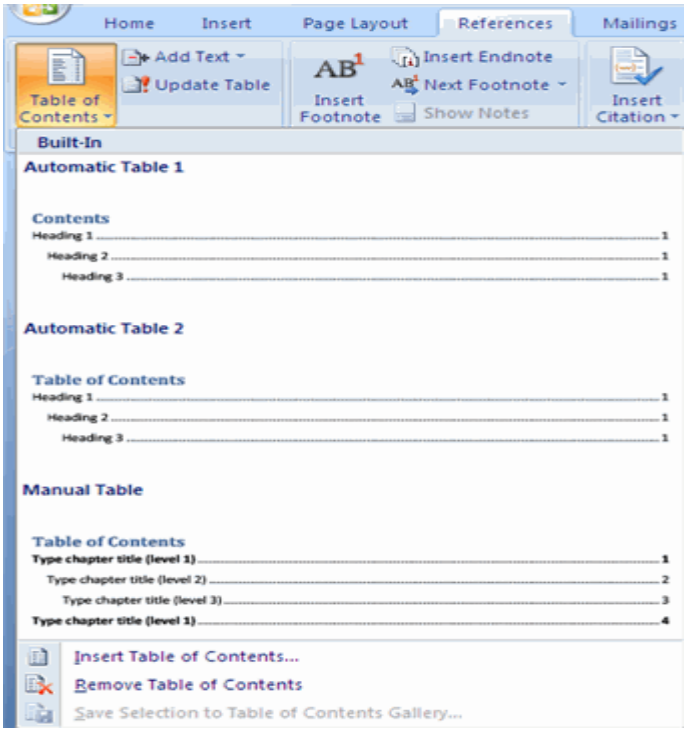
- Select the text you wish to make a heading
- Click the **References** Tab
- Click **Add Text** in the Table of Contents Group
- Click the **Level** that you want to label your selection




## Create a Table of Contents

To create the table of contents:

- Put your cursor in the document where you want the Table of Contents
- Click the **References** Tab
- Click the **Table of Contents** button

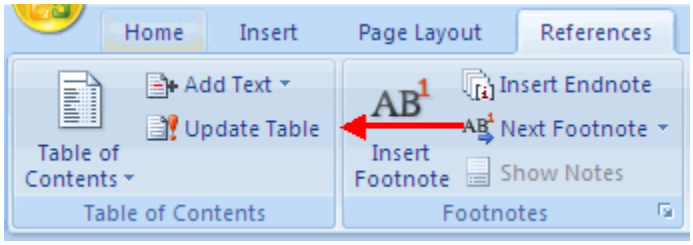



## Update Table of Contents

If you have added or removed headings or other table of contents entries you can update by:

- Apply headings or mark individual entries as directed above
- Click the **References** Tab in the Ribbon

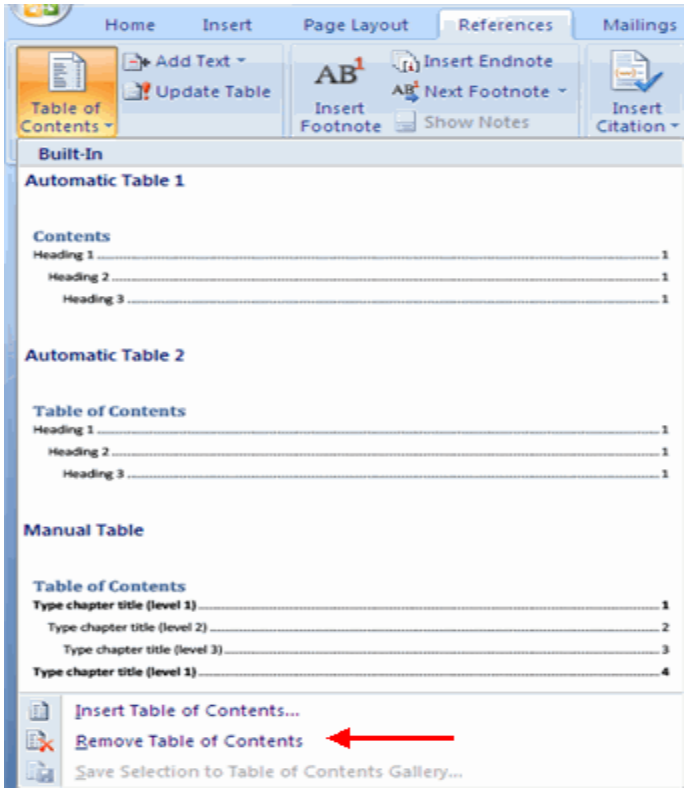
- Click **Update Table**




## Delete Table of Contents

To delete a table of contents:

- Click the **References** Tab on the Ribbon
- Click **Table of Contents**
- Click **Remove Table of Contents**




*Lists*

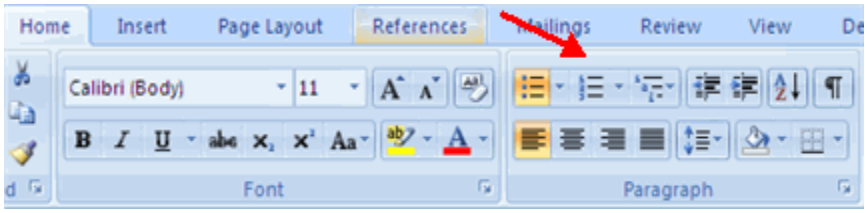
Lists allow you to format and organize text with numbers, bullets, or in an outline.

## Bulleted and Numbered Lists

Bulleted lists have bullet points, numbered lists have numbers, and outline lists combine numbers and letters depending on the organization of the list.

To **add** a list to existing text:

- Select the text you wish to make a list
- From the Paragraph Group on the Home Tab, Click the **Bulleted or Numbered Lists** button



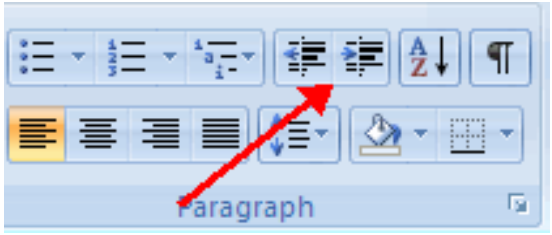

To **create** a new list:

- Place your cursor where you want the list in the document
- Click the **Bulleted or Numbered Lists** button
- Begin typing

## Nested Lists

A nested list is list with several levels of indented text. To create a nested list:

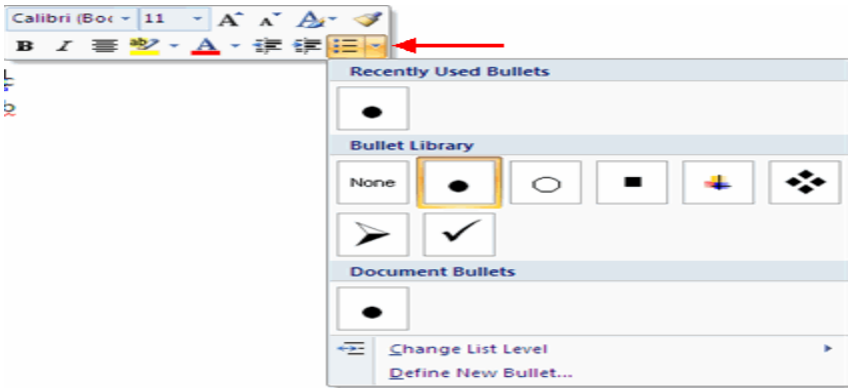
- Create your list following the directions above
- Click the **Increase or Decrease Indent** button




## Formatting Lists

The bullet image and numbering format can be changed by using the **Bullets or Numbering** dialog box.

- Select the entire list to change all the bullets or numbers, or Place the cursor on one line within the list to change a single bullet
- Right click
- Click the **arrow** next to the bulleted or numbered list and choose a bullet or numbering style.

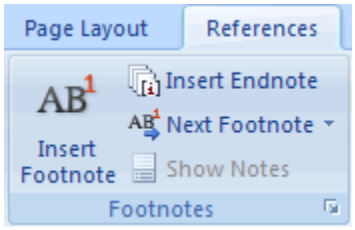



*Insert Footnote*

Some types of academic writing utilize footnotes. To insert a footnote:

- Click the **References** Tab on the Ribbon
- Click **Insert Footnote** (or Insert Endnote depending on your needs)
- Begin typing the footnote

**(ALT+CTRL+F= Insert Footnote**




## Comments

The New Comments icon also lets you add comments to the document. To add a new comment, put your cursor where you would like to add the comment and click on New Comment.

## WORD EXERCISES

### Exercise1: MAIL MERGE

Create a folder on a desktop and name it “Assignment”. However save your work on that created folder using a file name “assign”

**A.** Write an official letter to the Rector of ULK applying for the post of IT Manager.

Required:

**a)** Format your letter with font size 14, italic, justify

**b)** Using the **MAIL MERGE** feature, address the same letter to the following addresses:

- VRAC, ULK, B.P 2280, KIGALI, RWANDA
- VRAF, ULK, B.P 2280, KIGALI, RWANDA
- DIRECTOR (FINANCE), ULK, B.P 2280, KIGALI, RWANDA
- DEAN (FSEG), ULK, B.P 2280, KIGALI, RWANDA
- DEAN (FST), ULK, B.P 2280, KIGALI, RWANDA
- DIRECTOR (STUDENTS’AFFAIRS), ULK, B.P 2280, KIGALI, RWANDA

**EXERCISE 2: TABLES**

Make the following table in MS Word as shown below:

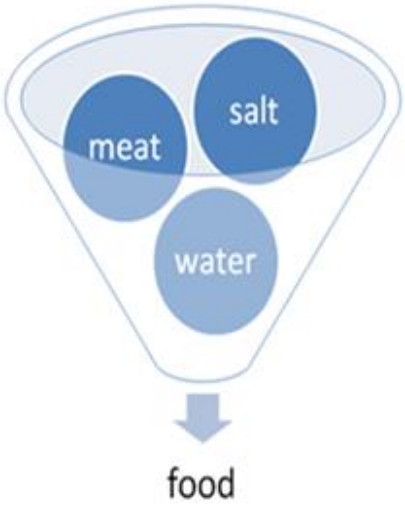
| **KIGALI INDEPENDENT UNIVERSITY (ULK)** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **ULK KIGALI CAMPUS** | | | **FACULTY OF SOCIAL SCIENCES** | | | | | |
| ***DEPARTMENT OF SOCIOLOGY*** | | | | | | | | |
| **STUDENTS** | **STUDENTS FIGURES BY CLASS** | | | | | | | |
| | **YEAR 1** | | **YEAR 2** | | **YEAR 3** | | **YEAR 4** | |
| | **D** | **E** | **D** | **E** | **D** | **E** | **D** | **E** |
| **FEMALE** | **50** | **100** | **70** | **80** | **80** | **110** | **20** | **90** |
| **MALE** | **40** | **140** | **25** | **160** | **20** | **80** | **40** | **85** |
| **TOTAL** | **90** | **240** | **95** | **240** | **100** | **190** | **60** | **175** |
| | **230** | | **335** | | **290** | | **235** | |

**EXERCISE 3**

Perform the following tasks /20 Marks

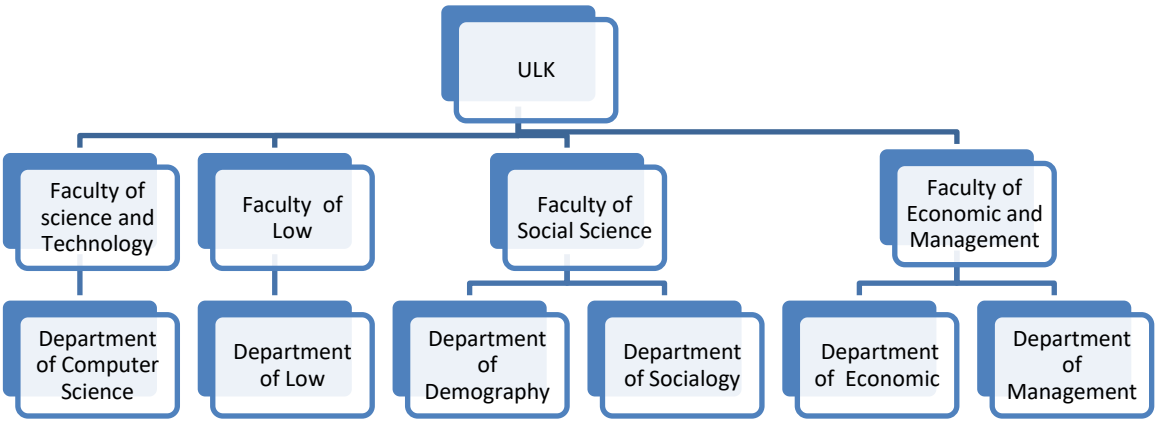
**Task 1/10 Marks**


**Task 2/ 10 Marks**




**EXERCISE 4**

Perform the following task



**EXERCISE 5**

Perform the following tasks (**10 Marks**):

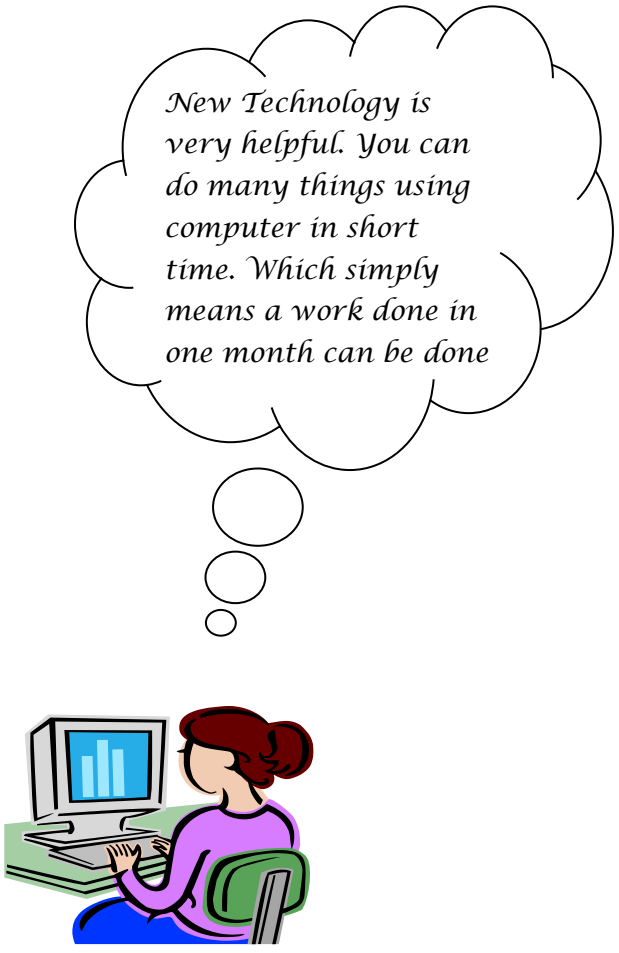
A)

B) $L_{Excess}(dB) = 11.7\alpha^2\sqrt{\frac{\pi r}{\lambda}}$

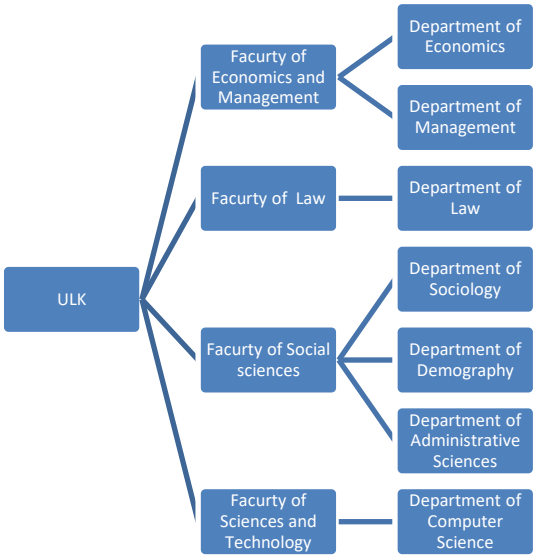
**EXERCISE 8**

Perform the following figures (**20 Marks**):

A)



B)




**EXERCISE 9**

*Make a dissertation of "**Right of the Girl in Rwandan society**".*

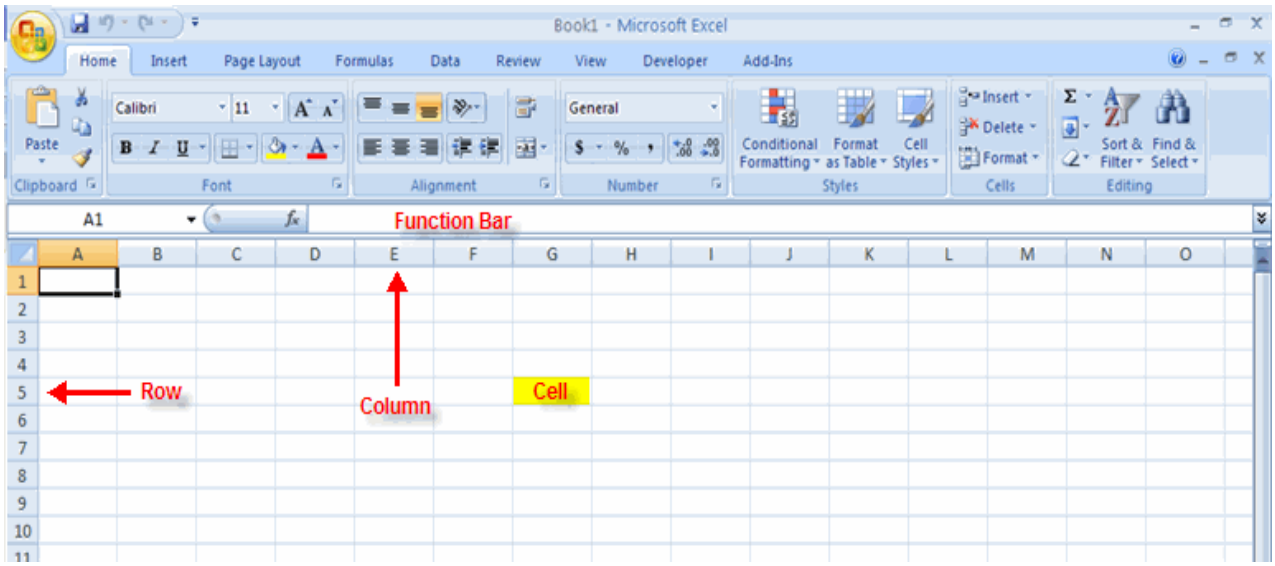
*Your dissertation has to respect the following points:*

1. *Having **three pictures** in your choice and **their names**;*
2. *Having **two tables**;*
3. *Font face must be "**Monotype Corsiva**";*
4. *Font size must be "**14**";*
5. *Line spacing must be "**2**";*
6. *Make automatic table of contents and list of tables.*

# CHAPTER 7: MICROSOFT EXCEL 2007

*Getting Started*

There are three features that you should remember as you work within Excel 2007: the Microsoft Office Button, the Quick Access Toolbar, and the Ribbon. The function of these features will be more fully explored below.

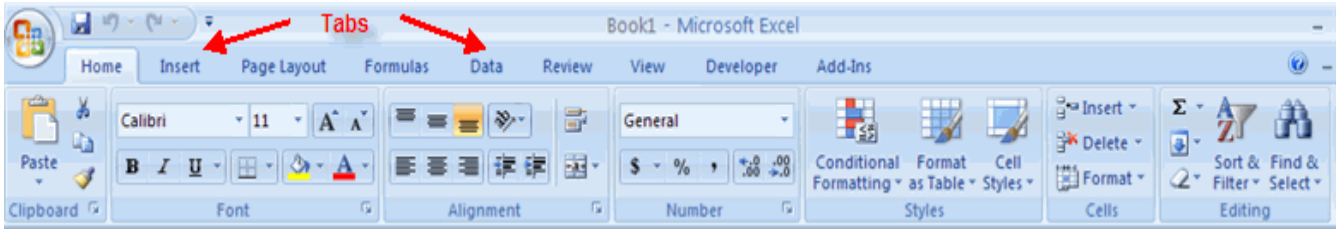



## Spreadsheets

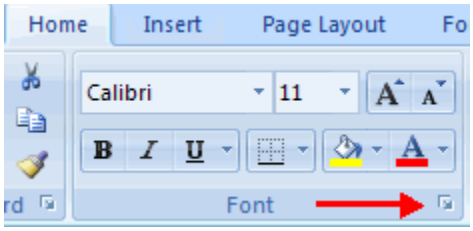
A spreadsheet is an electronic document that stores various types of data. There are vertical columns and horizontal rows. A cell is where the column and row intersect. A cell can contain data and can be used in calculations of data within the spreadsheet. An Excel spreadsheet can contain workbooks and worksheets. The workbook is the holder for related worksheets.

## Ribbon

The ribbon is the panel at the top portion of the document It has seven tabs: Home, Insert, Page Layouts, Formulas, Data, Review, and View. Each tab is divided into groups. The groups are logical collections of features designed to perform function that you will utilize in developing or editing your Excel spreadsheets.



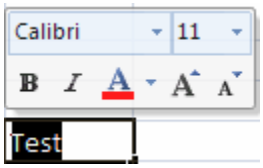

Commonly utilized features are displayed on the Ribbon. To view additional features within each group, click the arrow at the bottom right corner of each group.




**Home**: Clipboard, Fonts, Alignment, Number, Styles, Cells, Editing
**Insert**: Tables, Illustrations, Charts, Links, Text
**Page Layouts**: Themes, Page Setup, Scale to Fit, Sheet Options, Arrange
**Formulas**: Function Library, Defined Names, Formula Auditing, Calculation
**Data**: Get External Data, Connections, Sort & Filter, Data Tools, Outline
**Review**: Proofing, Comments, Changes
**View**: Workbook Views, Show/Hide, Zoom, Window, Macros

## Mini Toolbar

A new feature in Office 2007 is the Mini Toolbar. This is a floating toolbar that is displayed when you select text or right-click text. It displays common formatting tools, such as Bold, Italics, Fonts, Font Size and Font Color.

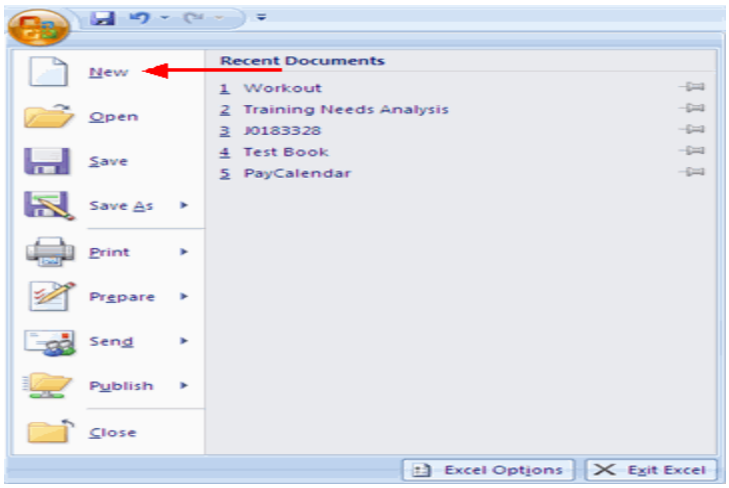


*Workbook*

## Create a Workbook

To create a new Workbook:

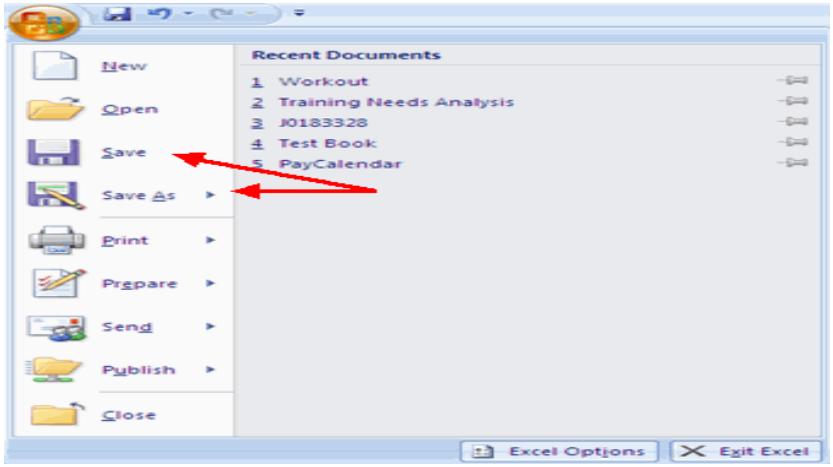
- Click the **Microsoft Office Toolbar**
- Click **New**
- Choose **Blank Document**
- Click **Create**




## Save a Workbook

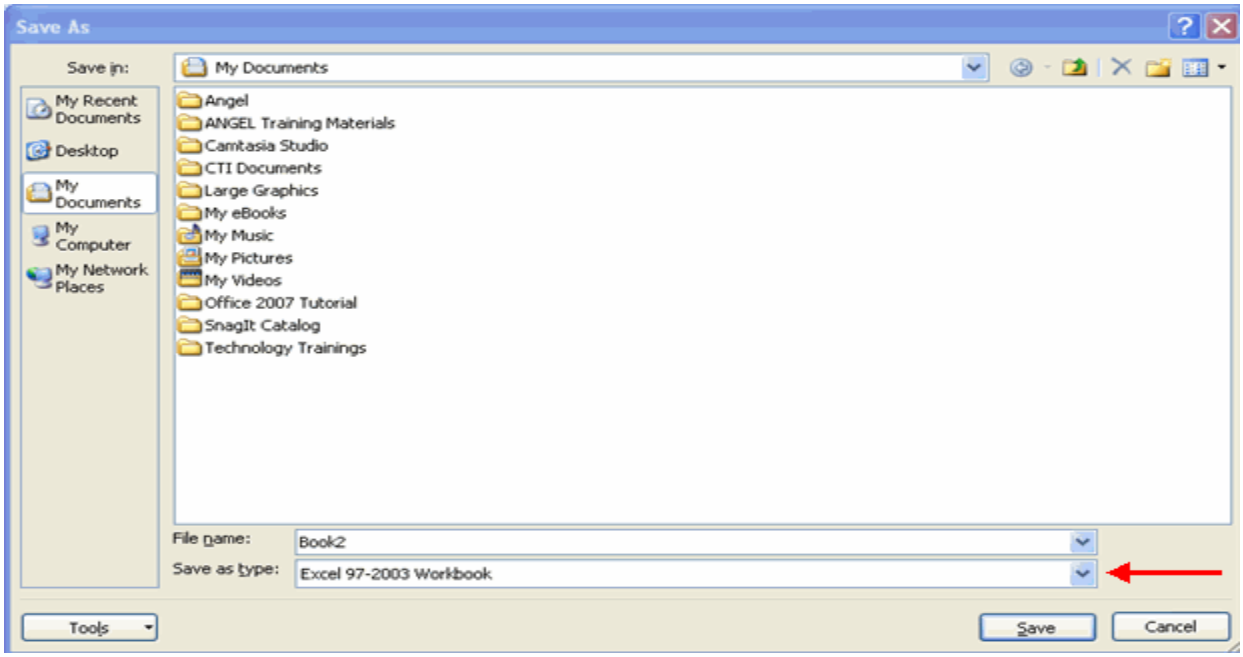
When you save a workbook, you have two choices: **Save** or **Save As**. To save a document:

- Click the **Microsoft Office Button**
- Click **Save**



You may need to use the **Save As** feature when you need to save a workbook under a different name or to save it for earlier versions of Excel. Remember that older versions of Excel will not be able to open an Excel 2007 worksheet unless you save it as an Excel 97-2003 Format. To use the **Save As** feature:

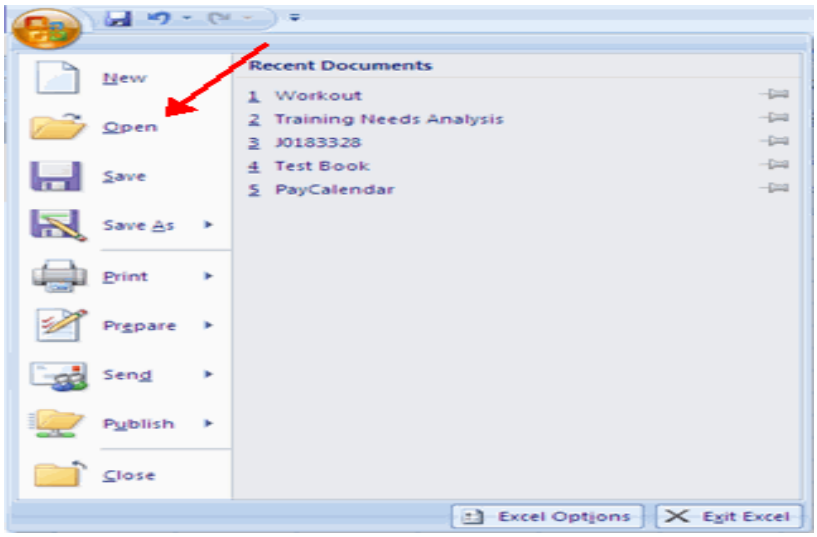
- Click the **Microsoft Office Button**
- Click **Save As**
- Type in the name for the Workbook
- In the **Save as Type** box, choose **Excel 97-2003 Workbook**




## Open a Workbook

To open an existing workbook:

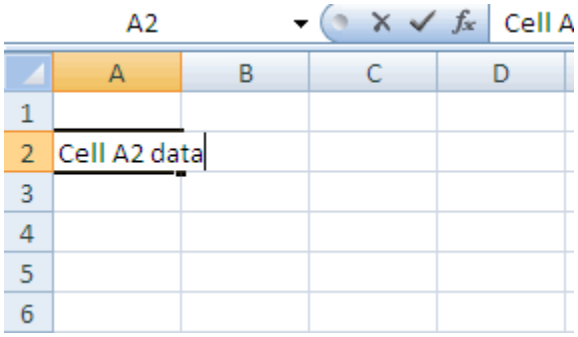
- Click the **Microsoft Office Button**
- Click **Open**
- Browse to the workbook
- Click the title of the workbook
- Click **Open**




## *Entering Data*

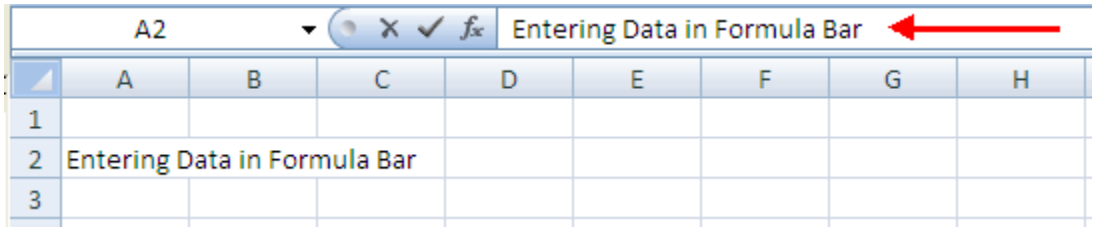
There are different ways to enter data in Excel: in an active cell or in the formula bar. To enter data in an active cell:

- Click in the **cell** where you want the data
- Begin typing




To enter data into the **formula bar:**

- Click the cell where you would like the data
- Place the cursor in the **Formula Bar**
- Type in the data



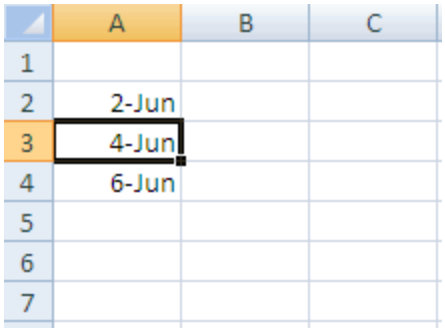
## Data

Excel allows you to move, copy, and paste cells and cell content through cutting and pasting and copying and pasting.

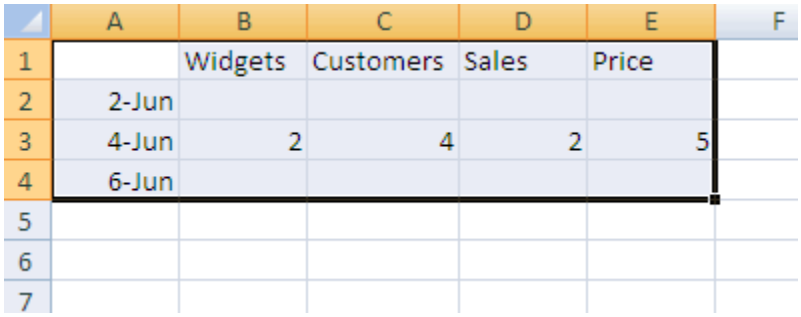
### Select Data

To select a cell or data to be copied or cut:

- Click the **cell**

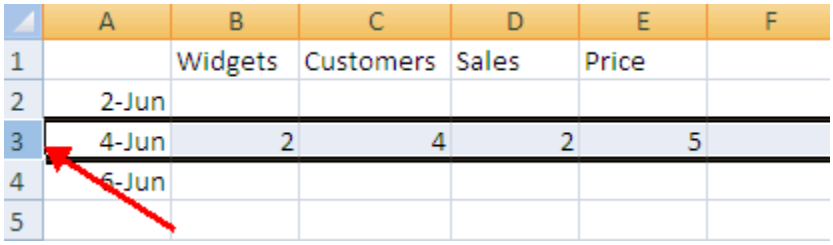



- Click and drag the cursor to select many cells in a range




### Select a Row or Column

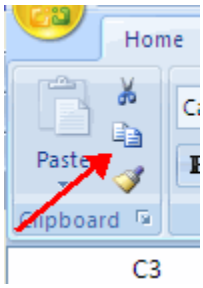
To select a row or column click on the **row** or **column header**.



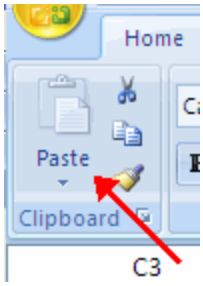
## Copy and Paste

To copy and paste data:

- Select the cell(s) that you wish to copy
- On the **Clipboard** group of the **Home** tab, click **Copy**



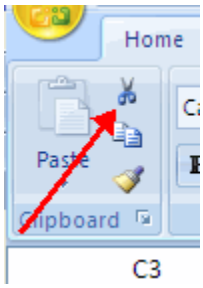

- Select the cell(s) where you would like to copy the data
- On the **Clipboard** group of the **Home** tab, click **Paste**




## Cut and Paste

To cut and paste data:

- Select the cell(s) that you wish to copy
- On the **Clipboard** group of the **Home** tab, click **Cut**




- Select the cell(s) where you would like to copy the data
- On the **Clipboard** group of the **Home** tab, click **Paste**

## Undo and Redo

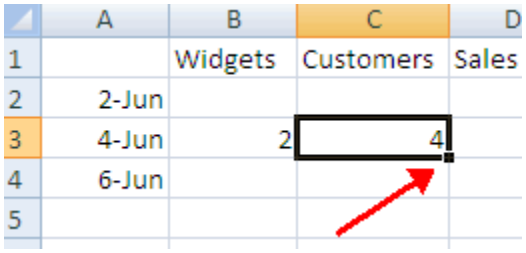
To undo or redo your most recent actions:

- On the **Quick Access Toolbar**
- Click **Undo** or **Redo**


## Auto Fill

The Auto Fill feature fills cell data or series of data in a worksheet into a selected range of cells. If you want the same data copied into the other cells, you only need to complete one cell. If you want to have a series of data (for example, days of the week) fill in the first two cells in the series and then use the auto fill feature. To use the Auto Fill feature:

- **Click** the **Fill Handle**
- **Drag** the **Fill Handle** to complete the cells

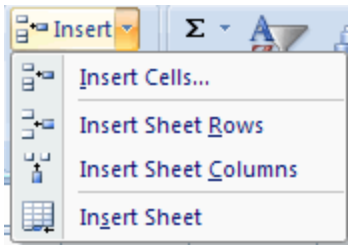



## Modifying a Worksheet

## Insert Cells, Rows, and Columns

To insert cells, rows, and columns in Excel:

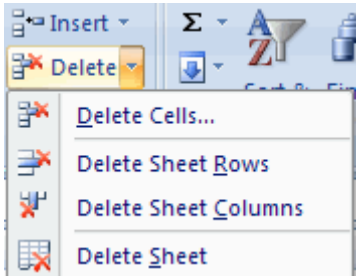
- Place the cursor in the row below where you want the new row, or in the column to the left of where you want the new column
- Click the **Insert** button on the **Cells** group of the **Home** tab
- Click the appropriate choice: **Cell, Row, or Column**




## Delete Cells, Rows and Columns

To delete cells, rows, and columns:

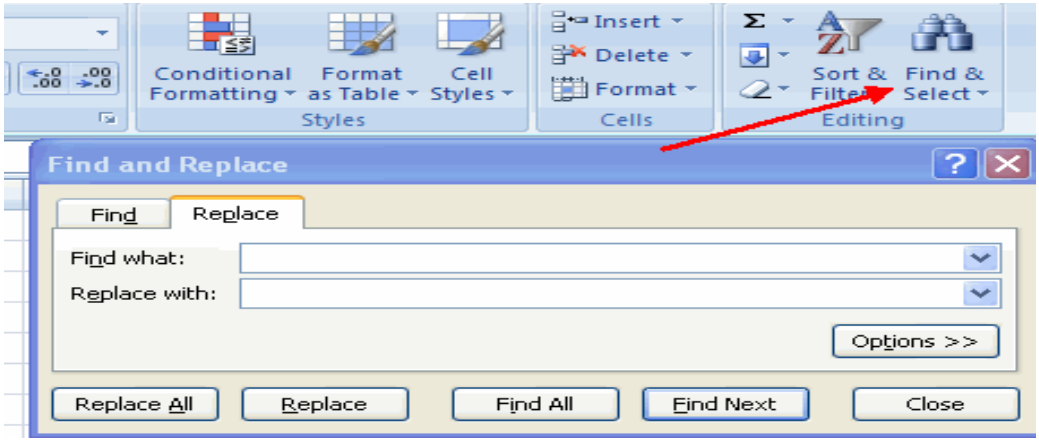
- Place the cursor in the cell, row, or column that you want to delete
- Click the **Delete** button on the **Cells** group of the **Home** tab
- Click the appropriate choice: **Cell, Row, or Column**




## Find and Replace

To find data or find and replace data:

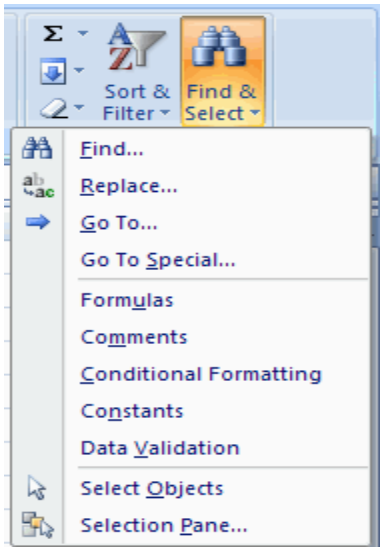
- Click the **Find & Select** button on the **Editing** group of the **Home** tab
- Choose **Find** or **Replace**
- Complete the **Find What** text box
- Click on **Options** for more search options



## Go To Command

The "Go To command" takes you to a specific cell either by cell reference (the Column Letter and the Row Number) or cell name.

- Click the **Find & Select** button on the **Editing** group of the **Home** tab
- Click **Go To**




## Spell Check

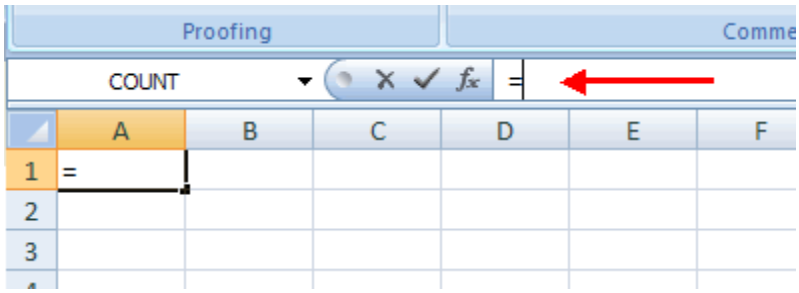
To check the spelling:

- On the **Review** tab click the **Spelling** button


## Calculations

### *Excel Formulas*

A formula is a set of mathematical instructions that can be used in Excel to perform calculations. Formals are started in the formula box with an = sign.

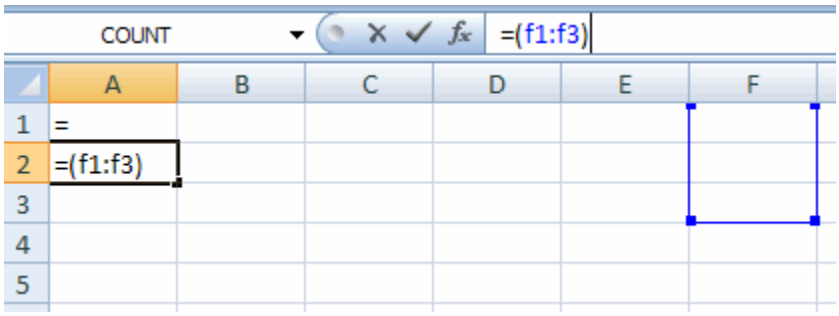



There are many elements to learn in excel formula.

**References:** The cell or range of cells that you want to use in your calculation
**Operators**: Symbols (+, -, *, /, etc.) that specify the calculation to be performed
**Constants**: Numbers or text values that do not change
**Functions**: Predefined formulas in Excel

To create a basic formula in Excel:

- Select the **cell** for the formula
- Type **=** (the equal sign) and the **formula**
- Click **Enter**




## Definition

**F($A_2$ :$A_5$)** means to apply the function from $A_2$ to $A_5$.

**F($A_2$ :$H_2$)** means to apply the function from $A_2$ to $H_2$.

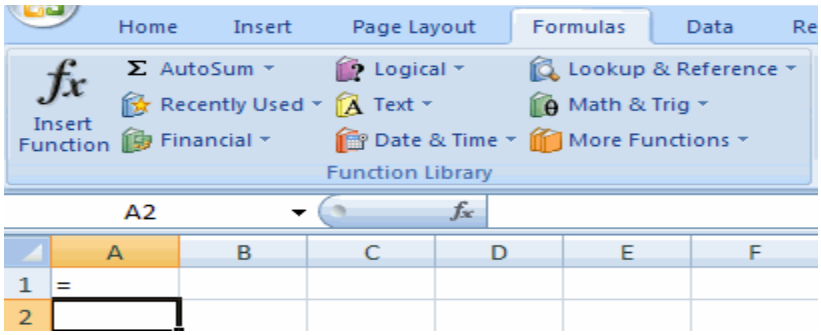
## *Calculate with Functions*

A function is a built in formula in Excel. A function has a name and arguments (the mathematical function) in parentheses. Common functions in Excel:

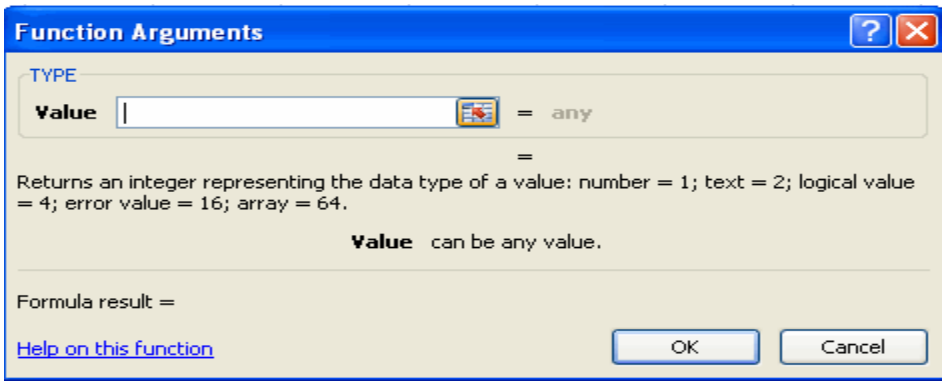
**Sum**: Adds all cells in the argument
**Average**: Calculates the average of the cells in the argument
**Min**: Finds the minimum value
**Max**: Finds the maximum value
**Count**: Finds the number of cells that contain a numerical value within a range of the argument

To calculate a function:

- Click the **cell** where you want the function applied
- Click the **Insert Function** button
- Choose the function
- Click **OK**




- Complete the Number 1 box with the first cell in the range that you want calculated
- Complete the Number 2 box with the last cell in the range that you want calculated



## IF function

Returns one value if a condition you specify evaluates to TRUE and another value if it evaluates to FALSE.

**Syntax**

**IF**(**logical_test**,**value_if_true**,value_if_false)

**Logical_test** is any value or expression that can be evaluated to TRUE or FALSE.

**Value_if_true** is the value that is returned if logical_test is TRUE. For example, if this argument is the text string "Within budget" and the logical_test argument evaluates to TRUE, then the IF function displays the text "Within budget". If logical_test is TRUE and value_if_true is blank, this argument returns 0 (zero). To display the word TRUE, use the logical value TRUE for this argument. Value_if_true can be another formula.

**Value_if_false** is the value that is returned if logical_test is FALSE. For example, if this argument is the text string "Over budget" and the logical_test argument evaluates to FALSE, then the IF function displays the text "Over budget". If logical_test is FALSE and value_if_false is omitted, (that is, after value_if_true, there is no comma), then the logical value FALSE is returned. If logical_test is FALSE and value_if_false is blank (that is, after value_if_true, there is a comma followed by the closing parenthesis), then the value 0 (zero) is returned. Value_if_false can be another formula.

**Example 1**

1. The example may be easier to understand if you copy it to a blank worksheet.

| | A |
|---|---|
| 1 | Data |
| 2 | 50 |

| Formula | Description (Result) |
|---|---|
| =IF(A2<=100,"Within budget","Over budget") | If the number above is less than or equal to 100, then the formula displays "Within budget". Otherwise, the function displays "Over budget" (Within budget) |
| =IF(A2=100,SUM(B5:B15),"") | If the number above is 100, then the range B5:B15 is calculated. Otherwise, empty text ("") is returned () |

### Example 2

The example may be easier to understand if you copy it to a blank worksheet.

| | A | B |
|---|---|---|
| 1 | Actual Expenses | Predicted Expenses |
| 2 | 1500 | 900 |
| 3 | 500 | 900 |
| 4 | 500 | 925 |

| Formula | Description (Result) |
|---|---|
| =IF(A2>B2,"Over Budget","OK") | Checks whether the first row is over budget (Over Budget) |
| =IF(A3>B3,"Over Budget","OK") | Checks whether the second row is over budget (OK) |

### Example 3

The example may be easier to understand if you copy it to a blank worksheet.

| | A |
|---|---|
| 1 | Score |
| 2 | 45 |
| 3 | 90 |
| 4 | 78 |

| Formula | Description (Result) |
|---|---|
| =IF(A2>89,"A",IF(A2>79,"B", IF (A2>69,"C",IF(A2>59,"D","F")))) | Assigns a letter grade to the first score (F) |
| =IF(A3>89,"A",IF(A3>79,"B", IF (A3>69,"C",IF(A3>59,"D","F")))) | Assigns a letter grade to the second score (A) |
| =IF(A4>89,"A",IF(A4>79,"B", IF (A4>69,"C",IF(A4>59,"D","F")))) | Assigns a letter grade to the third score (C) |

## Relative, Absolute and Mixed References

Calling cells by just their column and row labels (such as "A1") is called **relative referencing**. When a formula contains relative referencing and it is copied from one cell to another, Excel does not create an exact copy of the formula. It will change cell addresses relative to the row and column they are moved to. For example, if a simple addition formula in cell C1 "=(A1+B1)" is copied to cell C2, the formula would change to "=(A2+B2)" to reflect the new row. To prevent this change, cells must be called by **absolute referencing** and this is accomplished by placing dollar signs "$" within the cell addresses in the formula. Continuing the previous example, the formula in cell C1 would read "=($A$1+$B$1)" if the value of cell C2 should be the sum of cells A1 and B1. Both the column and row of both cells are absolute and will not change when copied. **Mixed referencing** can also be used where only the row OR column fixed. For example, in the formula "=(A$1+$B2)", the row of cell A1 is fixed and the column of cell B2 is fixed.

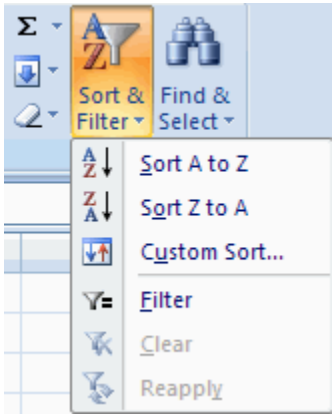
## Sort and Filter

Sorting and Filtering allow you to manipulate data in a worksheet based on given set of criteria.

### Basic Sorts

To execute a basic descending or ascending sort based on one column:

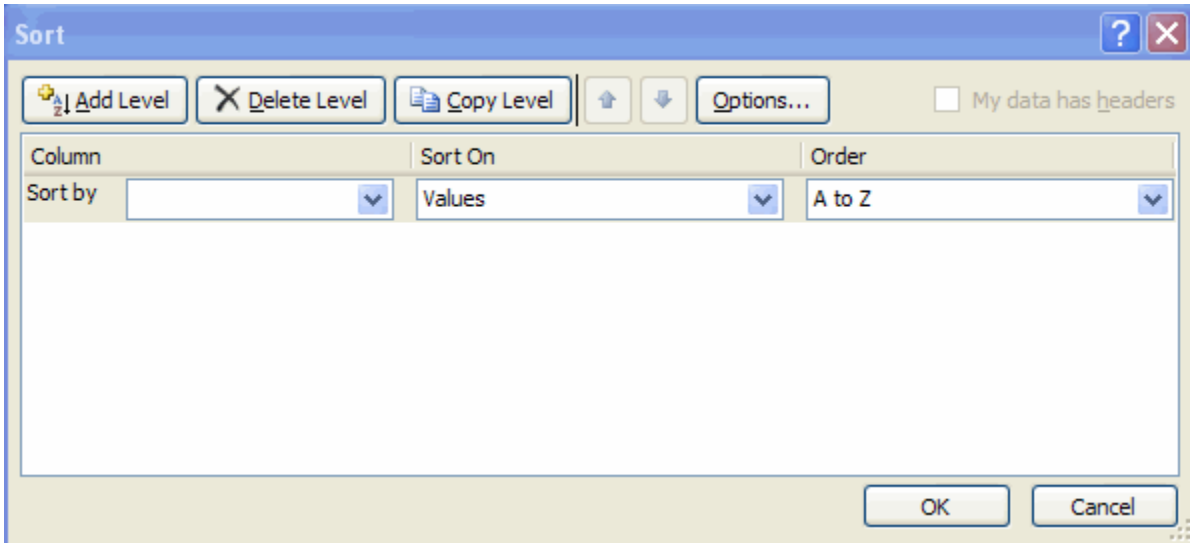
- Highlight the cells that will be sorted
- Click the **Sort & Filter** button on the **Home** tab
- Click the **Sort Ascending** (A-Z) button or **Sort Descending** (Z-A) button



## Custom Sorts

To sort on the basis of more than one column:

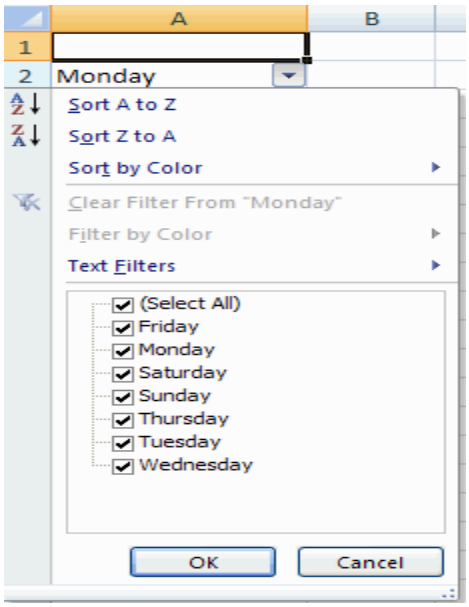
- Click the **Sort & Filter** button on the **Home** tab
- Choose which column you want to sort by first
- Click **Add Level**
- Choose the next column you want to sort
- Click **OK**



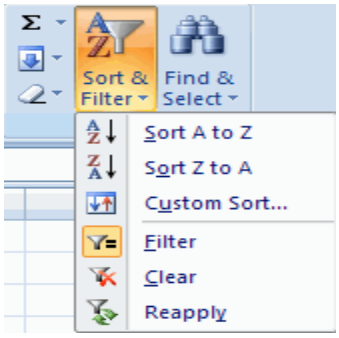

## Filtering

Filtering allows you to display only data that meets certain criteria. To filter:

- Click the column or columns that contain the data you wish to filter
- On the **Home** tab, click on **Sort & Filter**
- Click **Filter** button
- Click the **Arrow** at the bottom of the first cell
- Click the **Text Filter**
- Click the **Words** you wish to Filter




- To clear the filter click the **Sort & Filter** button
- Click **Clear**




## Charts or Graphics

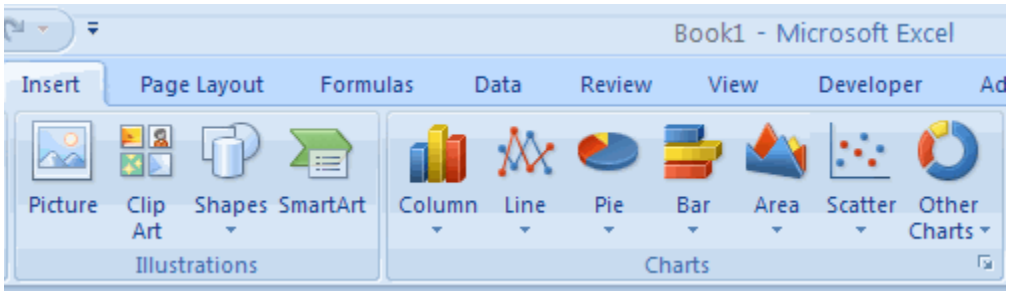
Charts allow you to present information contained in the worksheet in a graphic format. Excel offers many types of charts including: Column, Line, Pie, Bar, Area, Scatter and more. To view the charts available click the Insert Tab on the Ribbon.

### Create a Chart

To create a chart:

- Select the **cells** that contain the data you want to use in the chart
- Click the **Insert** tab on the Ribbon

- Click the type of **Chart** you want to create

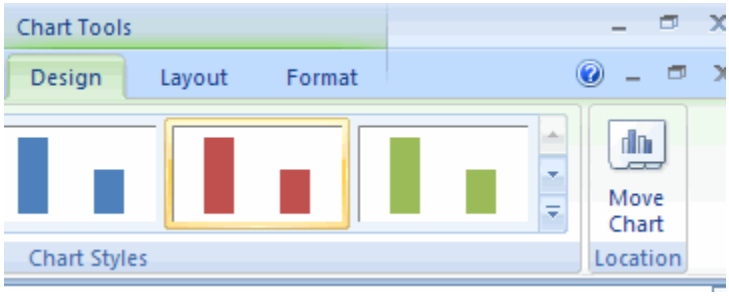



## Modify a Chart

Once you have created a chart you can do several things to modify the chart.

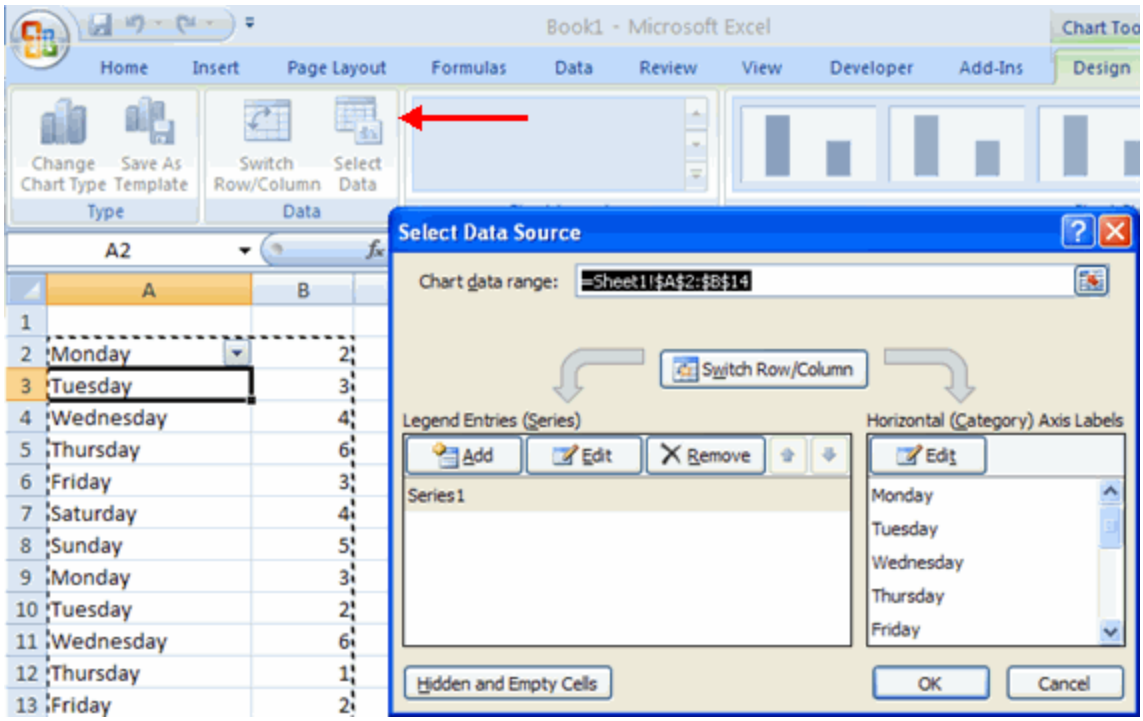
To move the chart:

- Click the **Chart** and **Drag** it another location on the same worksheet, or
- Click the **Move Chart** button on the **Design** tab
- Choose the desired location (either a new sheet or a current sheet in the workbook)



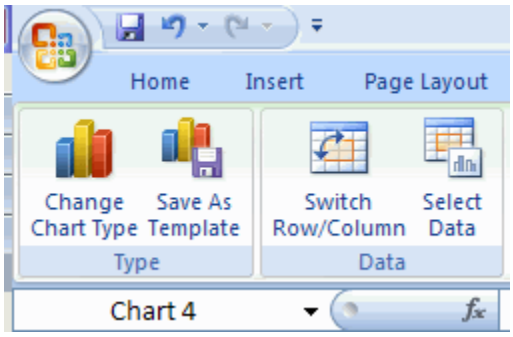

To change the data included in the chart:

- Click the **Chart**
- Click the **Select Data** button on the **Design** tab



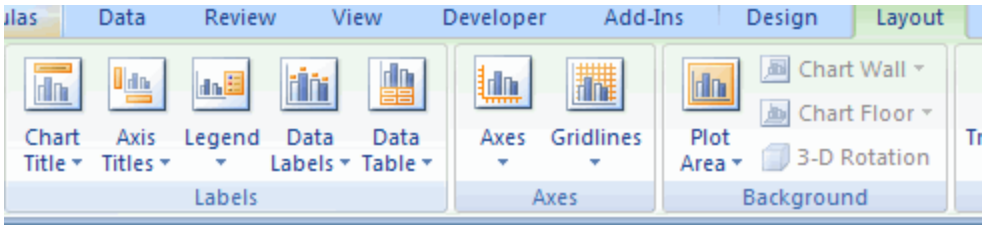

To reverse which data are displayed in the rows and columns:

- Click the **Chart**
- Click the **Switch Row/Column** button on the **Design** tab




To modify the labels and titles:

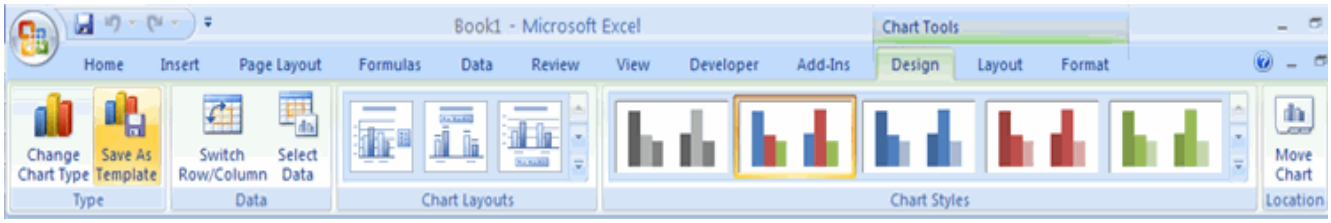
- Click the **Chart**
- On the **Layout** tab, click the **Chart Title** or the **Data Labels** button
- Change the **Title** and click **Enter**



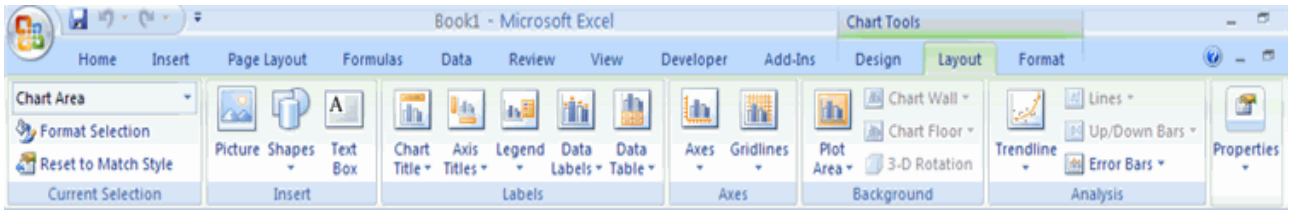

## Chart Tools

The Chart Tools appear on the Ribbon when you click on the chart. The tools are located on three tabs: Design, Layout, and Format.

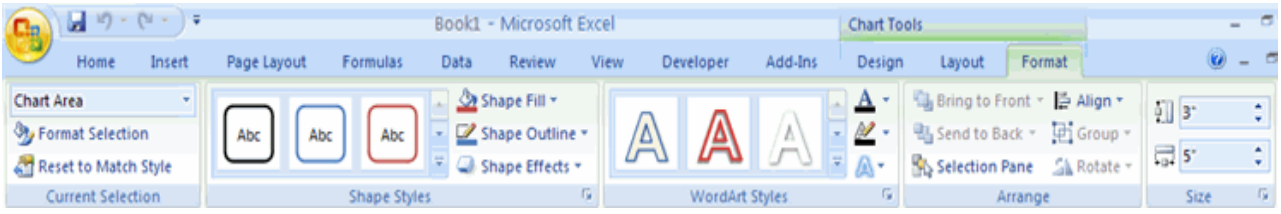
Within the **Design** tab you can control the chart type, layout, styles, and location.




Within the **Layout** tab you can control inserting pictures, shapes and text boxes, labels, axes, background, and analysis.



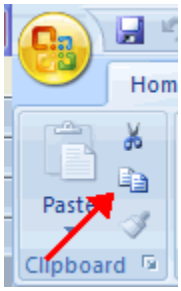

Within the **Format** tab you can modify shape styles, word styles and size of the chart.




## Copy a Chart to Word

- Select the **chart**
- Click **Copy** on the **Home** tab

- Go to the **Word** document where you want the chart located
- Click **Paste** on the **Home** tab

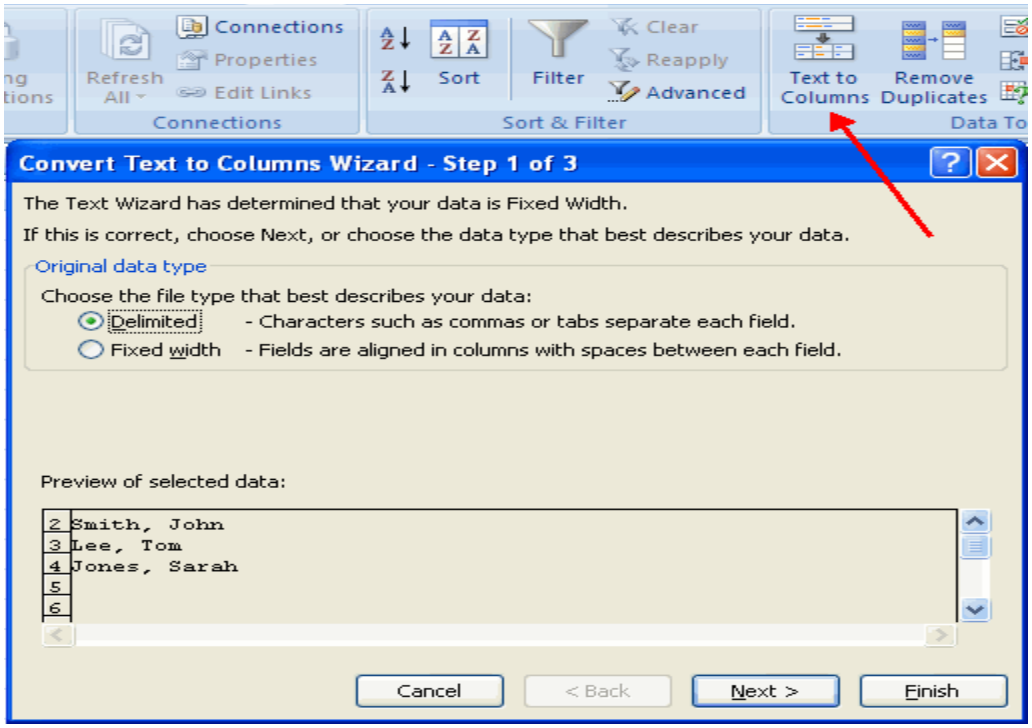



**Format Worksheet**

## Convert Text to Columns

Sometimes you will want to split data in one cell into two or more cells. You can do this easily by utilizing the Convert Text to Columns Wizard.

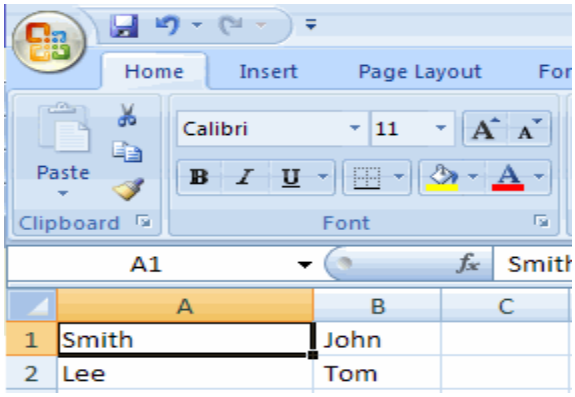
- Highlight the column in which you wish to split the data
- Click the **Text to Columns** button on the **Data** tab
- Click **Delimited** if you have a comma or tab separating the data, or click fixed widths to set the data separation at a specific size.



## Modify Fonts

Modifying fonts in Excel will allow you to emphasize titles and headings. To modify a font:

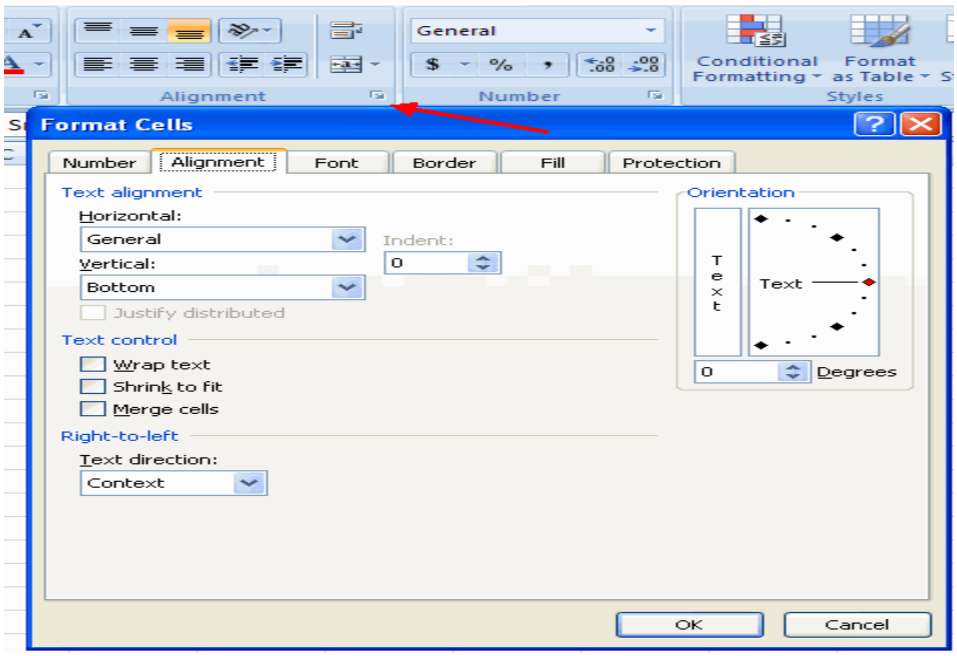
- Select the cell or cells that you would like the font applied
- On the **Font** group on the **Home** tab, choose the font type, size, bold, italics, underline, or color




## Format Cells Dialog Box

In Excel, you can also apply specific formatting to a cell. To apply formatting to a cell or group of cells:

- Select the cell or cells that will have the formatting
- Click the **Dialog Box** arrow on the **Alignment** group of the **Home** tab



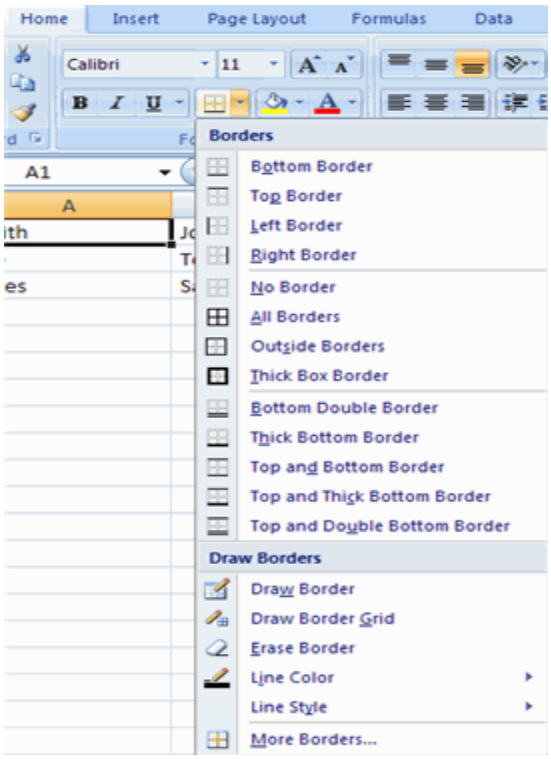

There are several tabs on this dialog box that allow you to modify properties of the cell or cells.

**Number**: Allows for the display of different number types and decimal places
**Alignment**: Allows for the horizontal and vertical alignment of text, wrap text, shrink text, merge cells and the direction of the text.
**Font**: Allows for control of font, font style, size, color, and additional features
**Border**: Border styles and colors
**Fill**: Cell fills colors and styles

## Add Borders and Colors to Cells

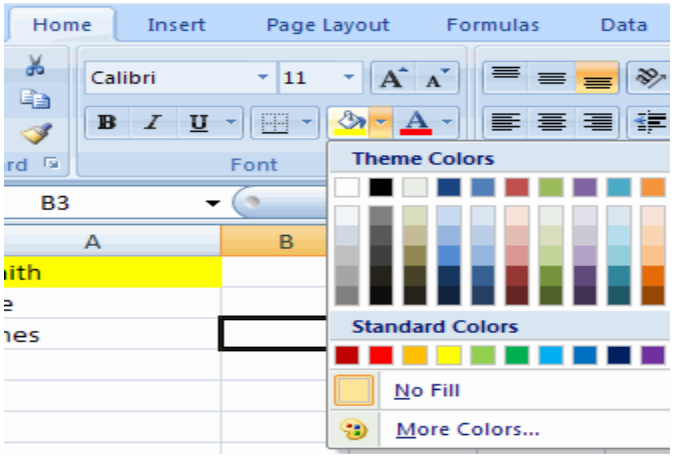
Borders and colors can be added to cells manually or through the use of styles. To add borders manually:

- Click the **Borders** drop down menu on the **Font** group of the **Home** tab
- Choose the appropriate border



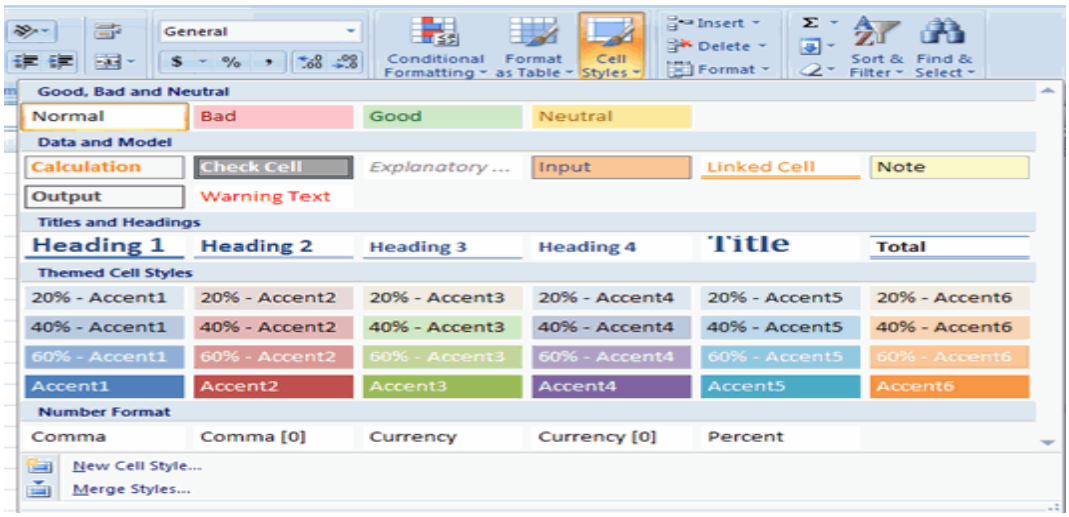

To apply colors manually:

- Click the **Fill** drop down menu on the **Font** group of the **Home** tab
- Choose the appropriate color




To apply borders and colors using styles:

- Click **Cell** Styles on the **Home** tab
- Choose a style or click **New Cell Style**




## Change Column Width and Row Height

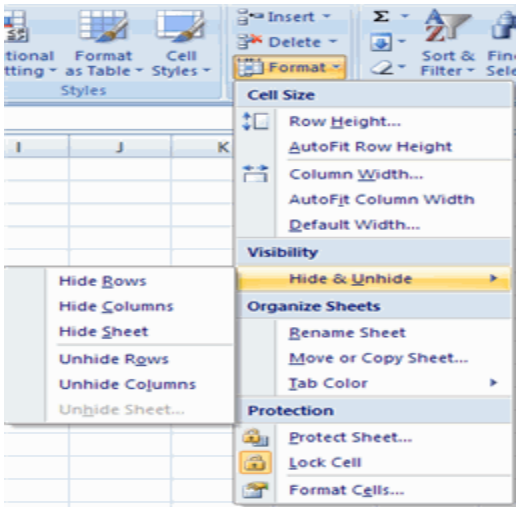
To change the width of a column or the height of a row:

- Click the **Format** button on the **Cells** group of the **Home** tab
- Manually adjust the height and width by clicking **Row Height** or **Column Width**
- To use **AutoFit** click **AutoFit Row Height** or **AutoFit Column Width**

## Hide or Unhide Rows or Columns

To hide or unhide rows or columns:

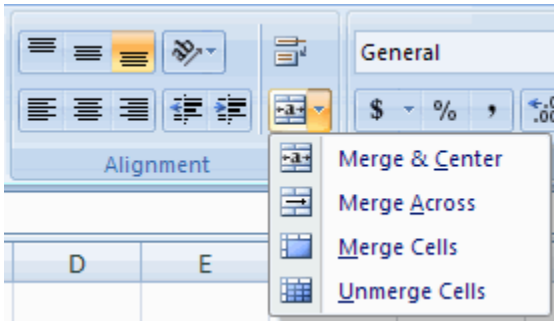
- Select the row or column you wish to hide or unhide
- Click the **Format** button on the **Cells** group of the **Home** tab
- Click **Hide & Unhide**




## Merge Cells

To merge cells select the cells you want to merge and click the **Merge & Center** button on the **Alignment** group of the **Home** tab. The four choices for merging cells are:

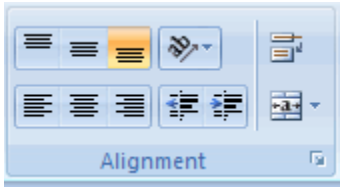
**Merge & Center**: Combines the cells and centers the contents in the new, larger cell.
**Merge Across**: Combines the cells across columns without centering data
**Merge Cells**: Combines the cells in a range without centering
**Unmerge Cells**: Splits the cell that has been merged



## Align Cell Contents

To align cell contents, click the cell or cells you want to align and click on the options within the **Alignment** group on the **Home** tab. There are several options for alignment of cell contents:

**Top Align**: Aligns text to the top of the cell
**Middle Align**: Aligns text between the top and bottom of the cell
**Bottom Align**: Aligns text to the bottom of the cell
**Align Text Left**: Aligns text to the left of the cell
**Center**: Centers the text from left to right in the cell
**Align Text Right**: Aligns text to the right of the cell
**Decrease Indent**: Decreases the indent between the left border and the text
**Increase Indent**: Increase the indent between the left border and the text
**Orientation**: Rotate the text diagonally or vertically

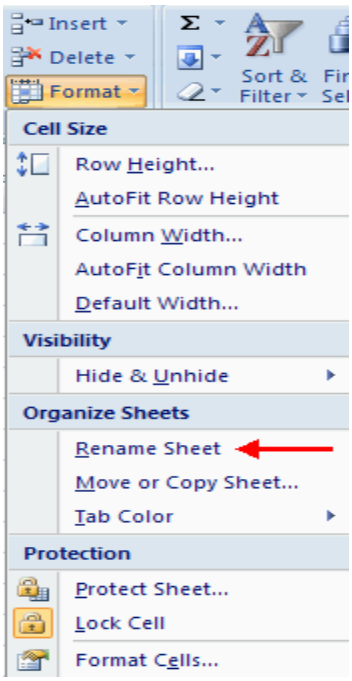



**Developing a Workbook**

## Format Worksheet Tab

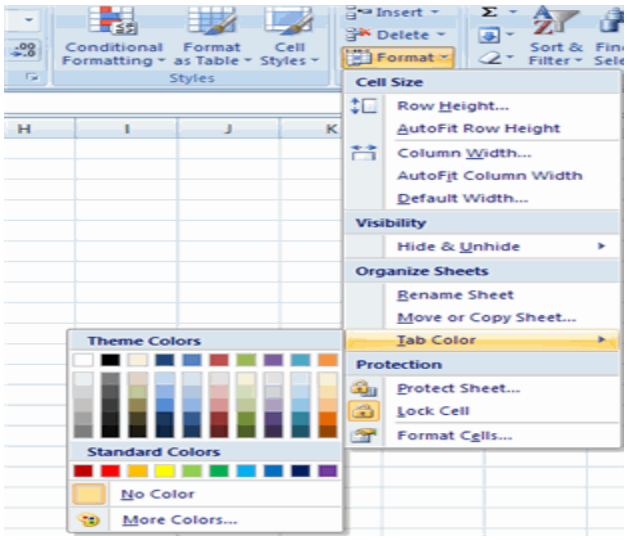
You can rename a worksheet or change the color of the tabs to meet your needs.
To rename a worksheet:

- Open the sheet to be renamed
- Click the **Format** button on the **Home** tab
- Click **Rename** sheet
- Type in a new name
- Press **Enter**




To change the color of a worksheet tab:

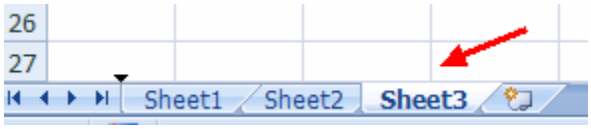
- Open the sheet to be renamed
- Click the **Format** button on the **Home** tab
- Click **Tab** Color
- Click the color



## Reposition Worksheets in a Workbook

To move worksheets in a workbook:

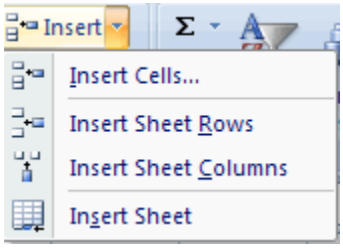
- Open the workbook that contains the sheets you want to rearrange
- **Click and hold** the worksheet tab that will be moved until an arrow appears in the left corner of the sheet
- **Drag** the worksheet to the desired location




## Insert and Delete Worksheets

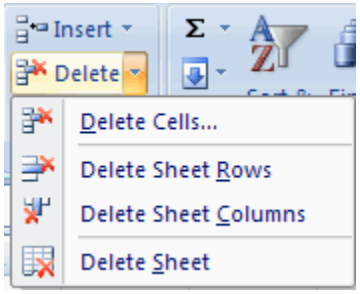
To insert a worksheet

- Open the workbook
- Click the **Insert** button on the **Cells** group of the **Home** tab
- Click **Insert Sheet**




To delete a worksheet

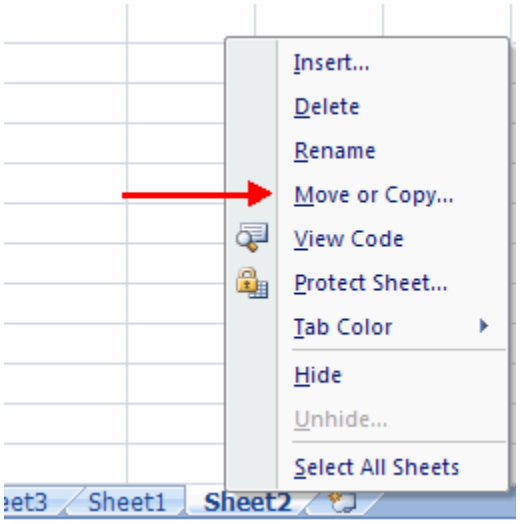
- Open the workbook
- Click the **Delete** button on the **Cells** group of the **Home** tab
- Click **Delete Sheet**



## Copy and Paste Worksheets:

To copy and paste a worksheet:

- Click the tab of the worksheet to be copied
- **Right click** and choose **Move** or **Copy**
- Choose the desired position of the sheet
- Click the check box next to **Create a Copy**
- Click **OK**

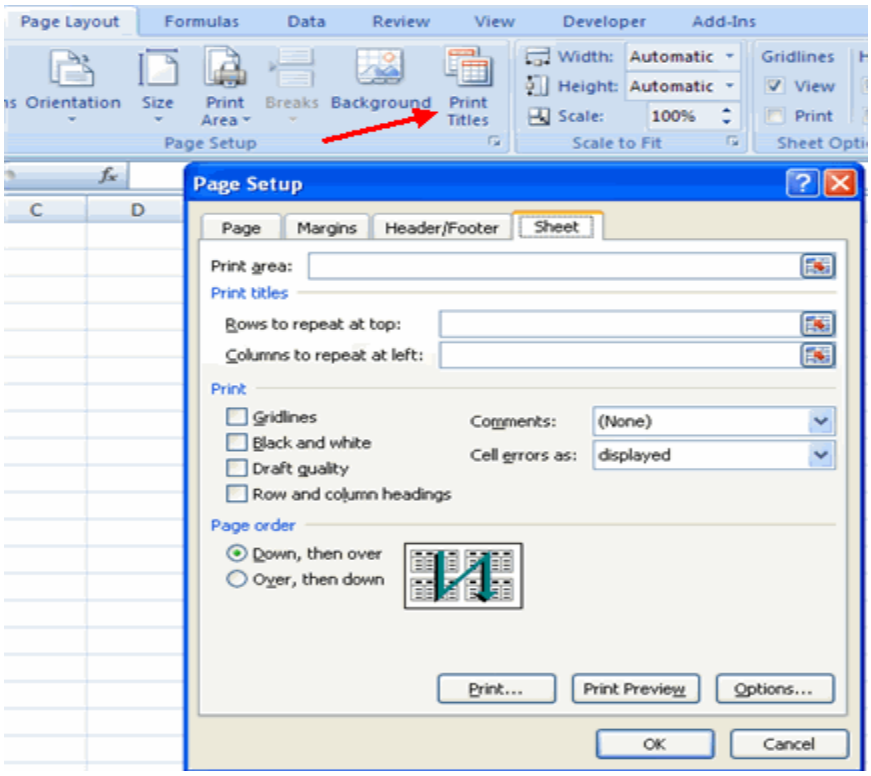



**Page Properties and Printing**

## Set Print Titles

The print titles function allows you to repeat the column and row headings at the beginning of each new page to make reading a multiple page sheet easier to read when printed. To Print Titles:

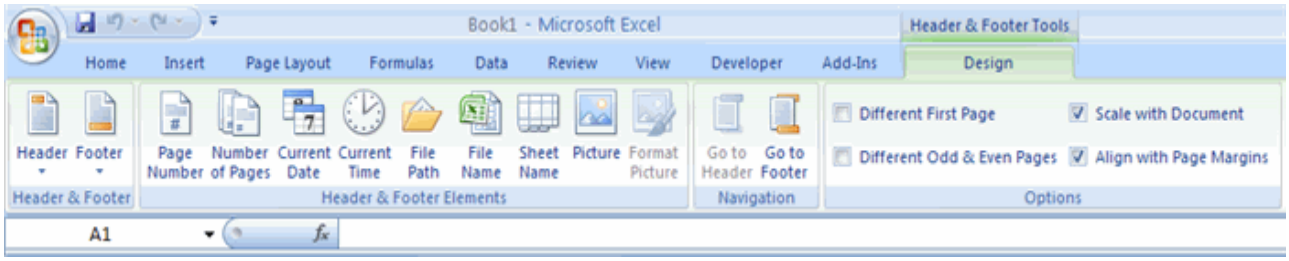
- Click the **Page Layout** tab on the Ribbon
- Click the **Print Titles** button
- In the **Print Titles** section, click the box to select the rows/columns to be repeated
- Select the row or column
- Click the **Select Row/Column Button**
- Click OK



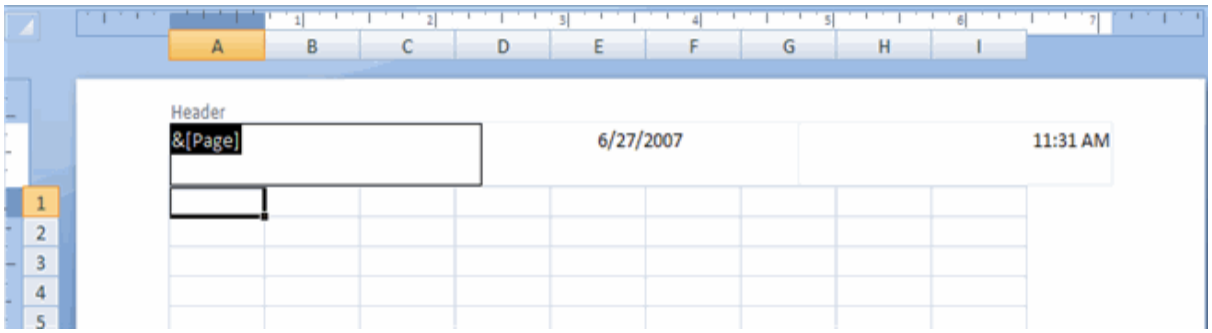

## Create a Header or Footer

To create a header or footer:

- Click the **Header & Footer** button on the **Insert** tab
- This will display the **Header & Footer Design Tools Tab**
- To switch between the Header and Footer, click the **Go to Header** or **Go to Footer** button



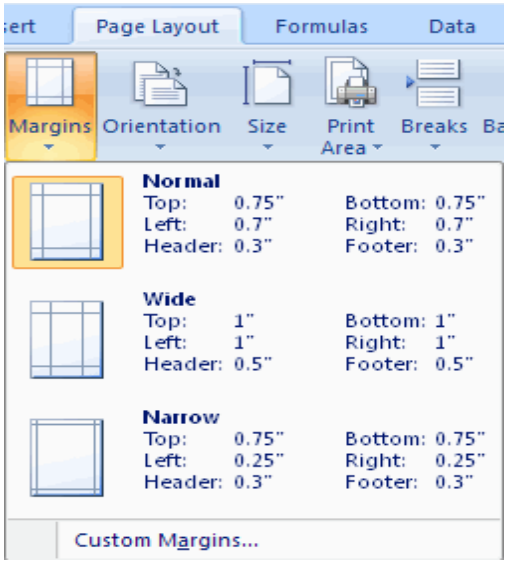

- To insert text, enter the text in the header or footer
- To enter preprogrammed data such as page numbers, date, time, file name or sheet name, click the appropriate button
- To change the location of data, click the desired cell



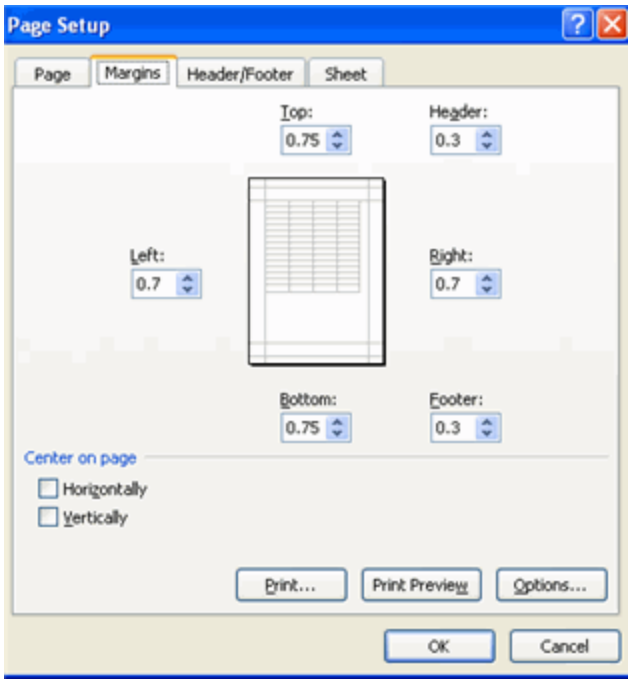

## Set Page Margins

To set the page margins:

- Click the **Margins** button on the **Page Layout** tab
- Select one of the give choices, or



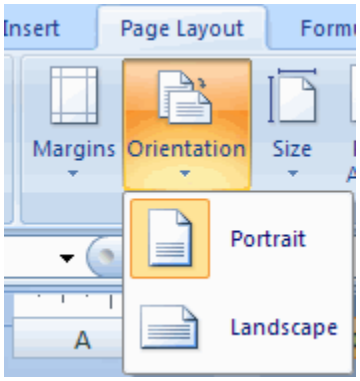

- Click **Custom Margins**
- Complete the boxes to set margins
- Click **Ok**




## Change Page Orientation

To change the page orientation from portrait to landscape:

- Click the **Orientation** button on the **Page Layout** tab
- Choose **Portrait** or **Landscape.**

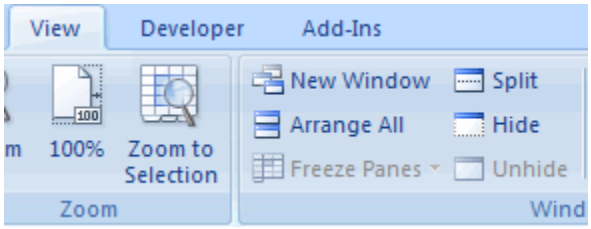


## Layout

### Split a Worksheet

You can split a worksheet into multiple resizable panes for easier viewing of parts of a worksheet. To split a worksheet:

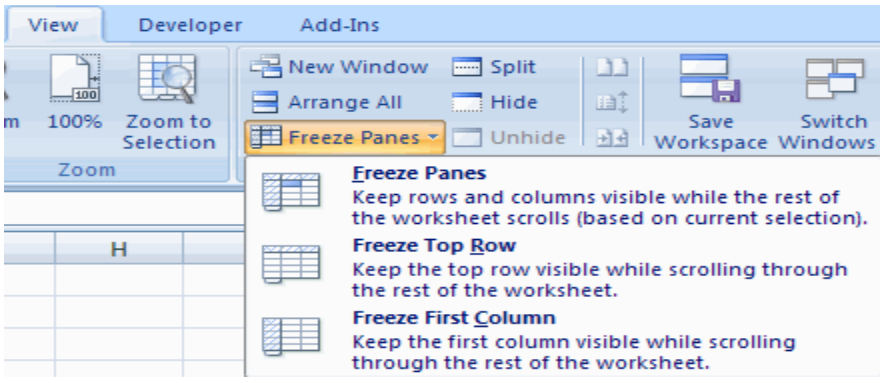
- Select any cell in center of the worksheet you want to split
- Click the **Split** button on the **View** tab
- Notice the split in the screen, you can manipulate each part separately




### Freeze Rows and Columns

You can select a particular portion of a worksheet to stay static while you work on other parts of the sheet. This is accomplished through the Freeze Rows and Columns Function. To Freeze a row or column:

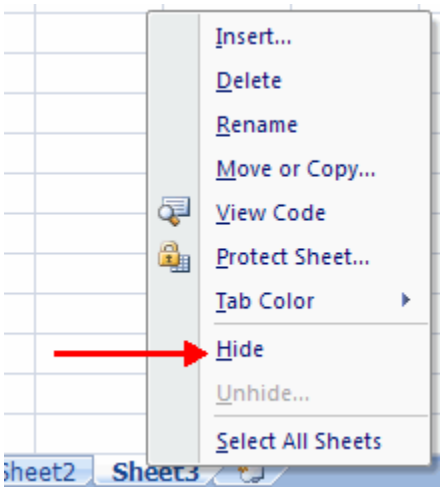
- Click the **Freeze Panes** button on the **View** tab
- Either select a section to be frozen or click the defaults of top row or left column
- To unfreeze, click the **Freeze Panes** button
- Click **Unfreeze**



## Hide Worksheets

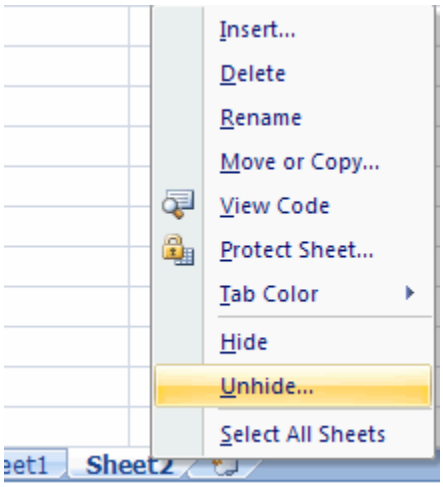
To hide a worksheet:

- Select the tab of the sheet you wish to hide
- **Right-click** on the tab
- Click **Hide**




To unhide a worksheet:

- **Right-click** on any worksheet tab
- Click **Unhide**
- Choose the worksheet to unhide



## EXCEL EXERCISES

**Question 1**

A. Use formula to find the summation of the students in the following table. However use function to find the average in the same table.

| No. | Names | IT/20 | Programming/20 | Visual basic/20 | Sum/60 | Average | Grade |
|---|---|---|---|---|---|---|---|
| **1** | **Kaka** | **13** | **7** | **16** | | | |
| **2** | **Rona** | **19** | **10** | **2** | | | |
| **3** | **Eto** | **15** | **11** | **13** | | | |
| **4** | **Diego** | **4** | **12** | **17** | | | |
| **5** | **Drogba** | **17** | **5** | **2** | | | |

**B**. Use IF function to find students' grade basing on the criteria below

16 – 20 = "Grande distinction"

13 – 15.9 = "Distinction"

10 – 12.9 = "Pass"

0 – 9.9 = "Fail"

**Question 2**

a) Use formula to find the summation of the students in the following table. However use function to find the average in the same table.

| No. | Names | IT/20 | Programming/20 | Visual basic/20 | Sum/60 | Average | Grade |
|---|---|---|---|---|---|---|---|
| 1 | Kaka | 13 | 7 | 16 | | | |
| 2 | Rona | 19 | 10 | 2 | | | |
| 3 | Eto | 15 | 11 | 13 | | | |
| 4 | Diego | 4 | 12 | 17 | | | |
| 5 | Drogba | 17 | 5 | 2 | | | |

b) Use **IF** function to find students' grade basing on the criteria below:

16 – 20 = "High Distinction"

13 – 15.9 = "Distinction"

10 – 12.9 = "Pass"

0 – 9.9 = "Fail"

**Question 3**

Complete the table below according to the following assumptions:

- Professional tax: 22% of the gross salary;
- RAMA: 5% of the gross salary;
- FARG: 2% of the gross salary;
- Allowance of 3% of the gross salary if this one is less than 300,000, otherwise it will be 1.5% 0f the gross salary (Please, use "**IF function"** here.).

| Employees' name | Gross Salary | Professional. Tax | RAMA | FARG | allowance | Net Sal |
|---|---|---|---|---|---|---|
| Piter | 300000 | | | | | |
| John | 280000 | | | | | |
| Andrew | 375000 | | | | | |
| Merry | 450000 | | | | | |
| Sifa | 228000 | | | | | |

**Question5:**

The following table shows the results of five students in three courses.

| NAME | MATH/20 | FRENCH/20 | ENGLISH/20 |
|---|---|---|---|
| KIREZI | 17 | 18 | 19 |
| RITA | 10 | 12 | 13 |
| BENDA | 9 | 10 | 14 |
| SARA | 11 | 12 | 10 |
| AKANA | 8 | 10 | 7 |

a) Computing the average and the total of each student;

b) Compute the total over one hundred;

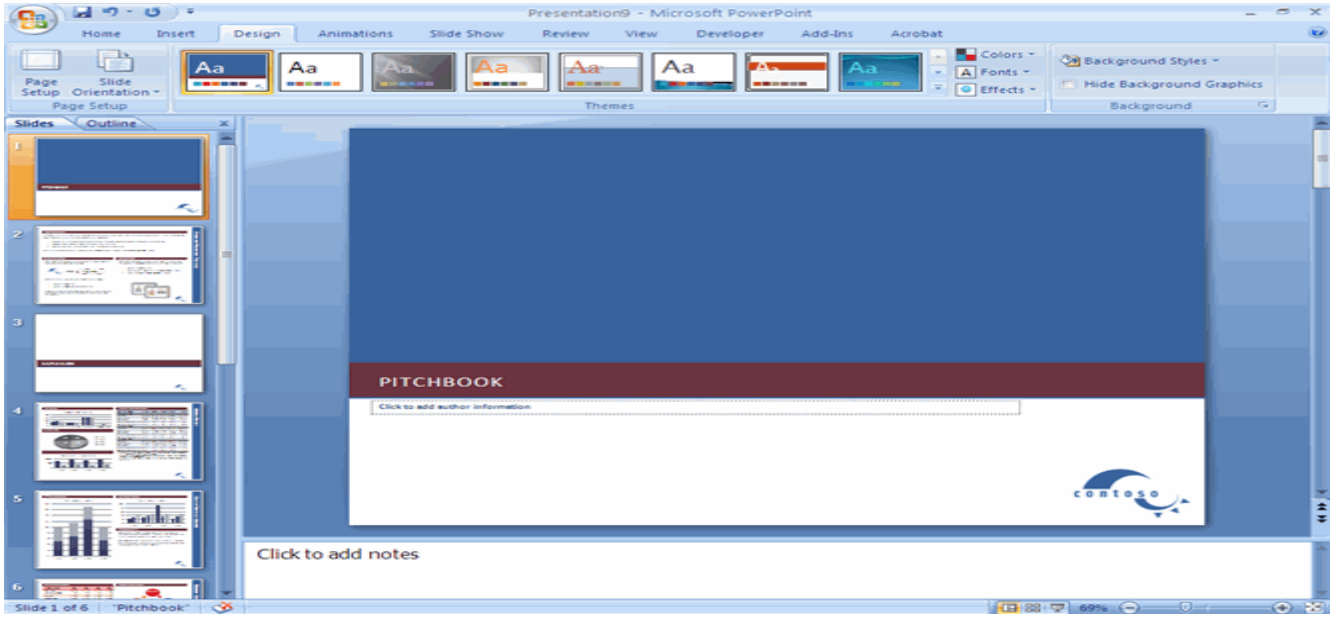
c) Use **IF** function to find students' grade basing on the following criteria:

| SCORE | GRADE |
|---|---|
| Greater than 89 | A |
| From 80 to 89 | B |
| From 70 to 79 | C |
| From 60 to 69 | D |
| Less than 60 | F |

# CHAPTER 8: MICROSOFT POWER POINT2007

*Getting Started*

There are three features that you should remember as you work within PowerPoint 2007: the Microsoft Office Button, the Quick Access Toolbar, and the Ribbon. The function of these features will be more fully explored below.



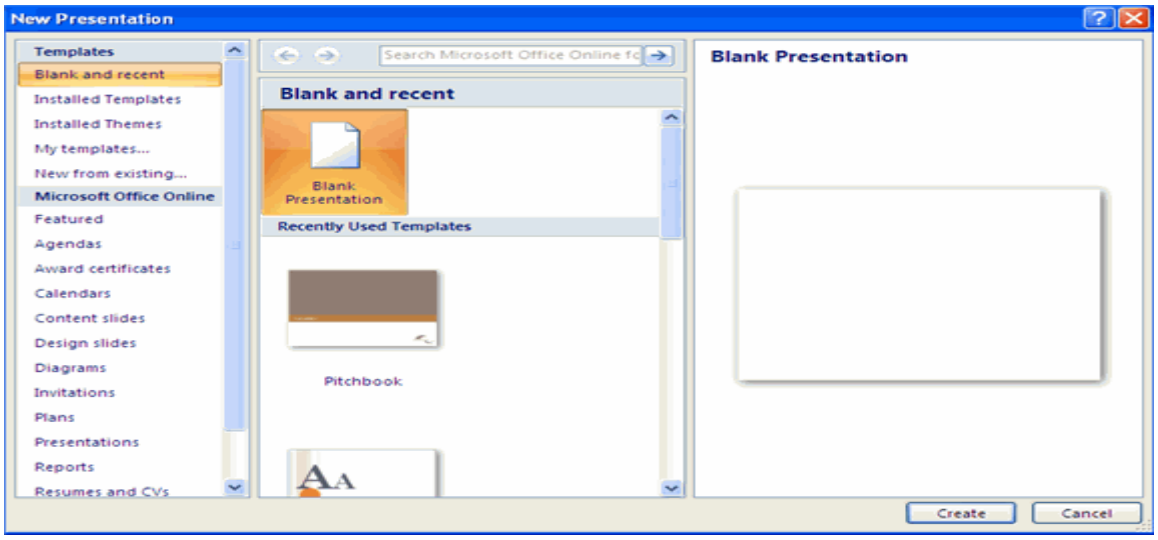

## Presentations

A presentation is a collection of data and information that is to be delivered to a specific audience. A PowerPoint presentation is a collection of electronic slides that can have text, pictures, graphics, tables, sound and video.

### *New Presentation*

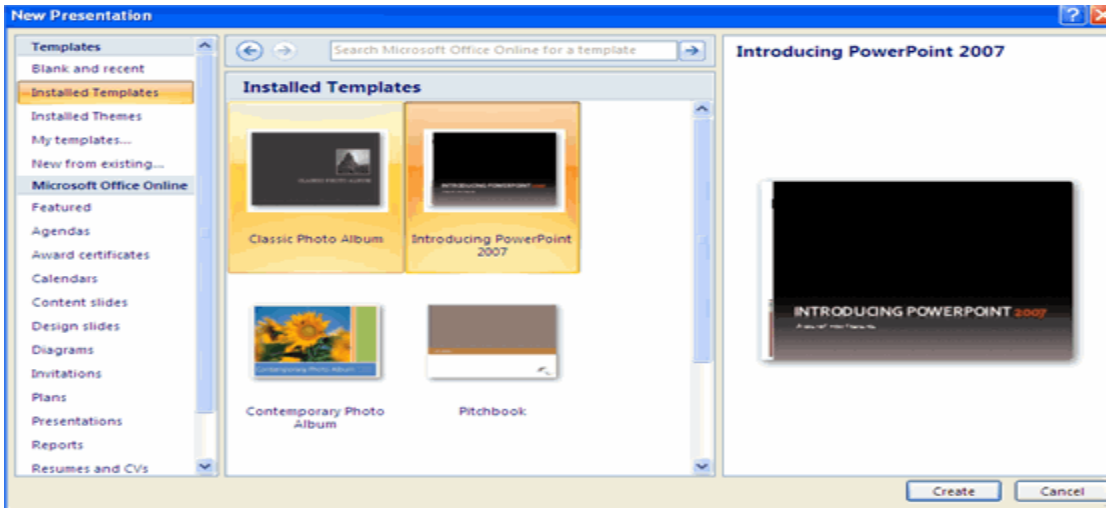
You can start a new presentation from a blank slide, and template. To create a new presentation from a blank slide:

- Click the **Microsoft Office Button**
- Click **New**
- Click **Blank Presentation**




To create a new presentation from a template:

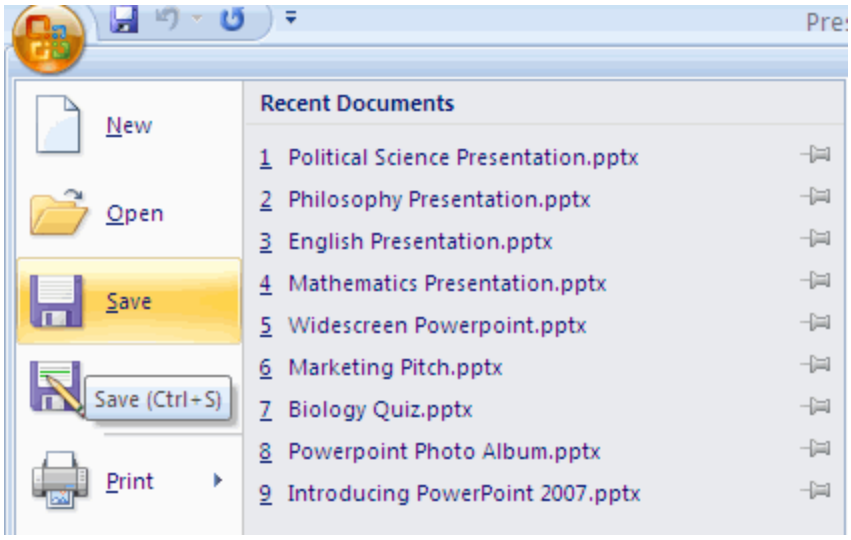
- Click the **Microsoft Office Button**
- Click **New**
- Click **Installed Templates** or **Browse through Microsoft Office Online Templates**
- Click the template you choose




## Save a Presentation

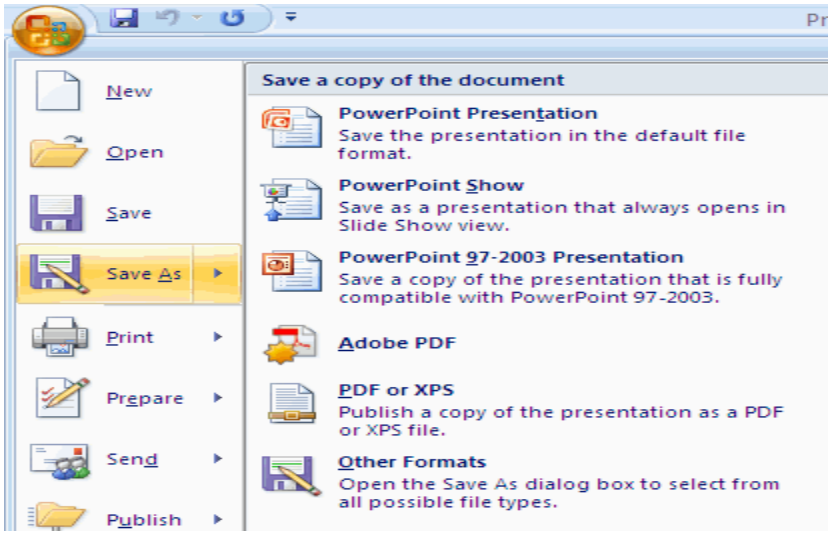
When you save a presentation, you have two choices: **Save** or **Save As**. To save a document:

- Click the **Microsoft Office Button**
- Click **Save**




You may need to use the **Save As** feature when you need to save a presentation under a different name or to save it for earlier versions of PowerPoint. Remember that older versions of PowerPoint will not be able to open PowerPoint 2007 presentation unless you save it as a PowerPoint 97-2003 Format. To use the **Save As** feature:

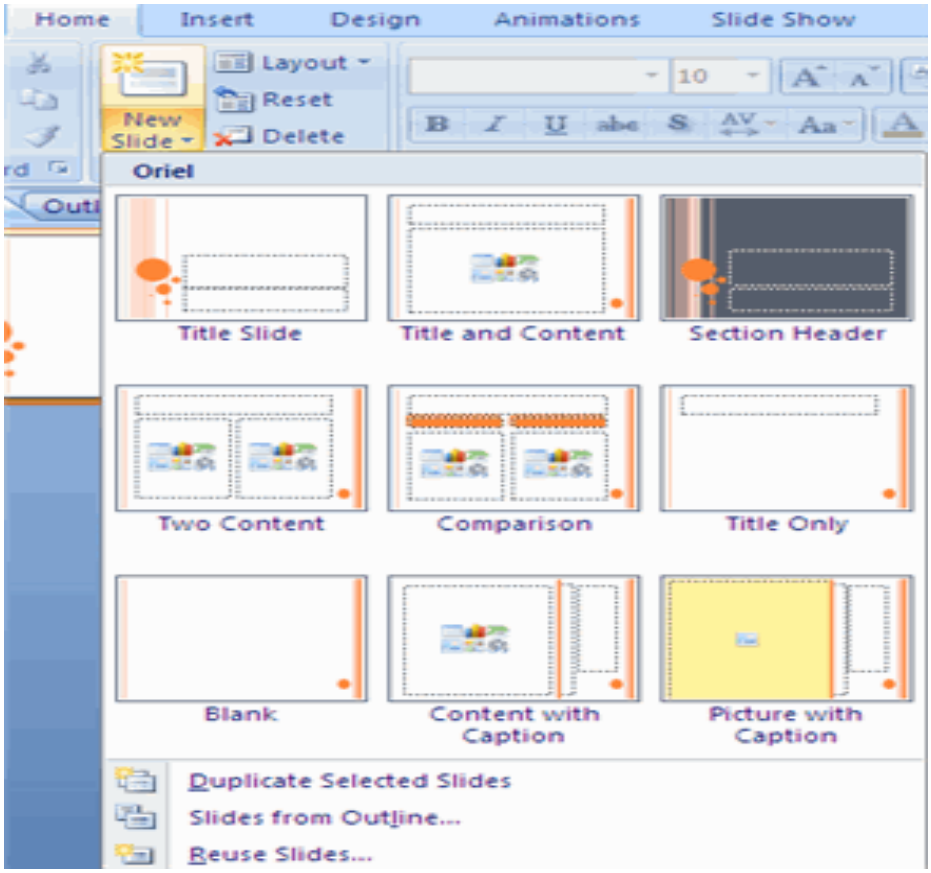
- Click the **Microsoft Office Button**
- Click **Save As**
- Type in the name for the Presentation
- In the **Save as Type** box, choose **Excel 97-2003 Presentation**



## *Add Slides*

There are several choices when you want to add a new slide to the presentation: Office Themes, Duplicate Selected Slide, or Reuse Slides. To create a new slide from Office Themes:

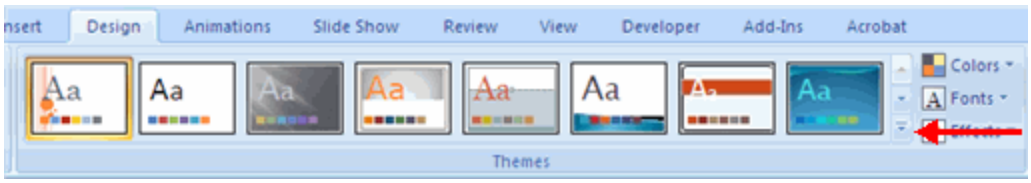
- Select the slide immediately **BEFORE** where you want the new slide
- Click the **New Slide** button on the **Home** tab
- Click the slide choice that fits your material




## Themes

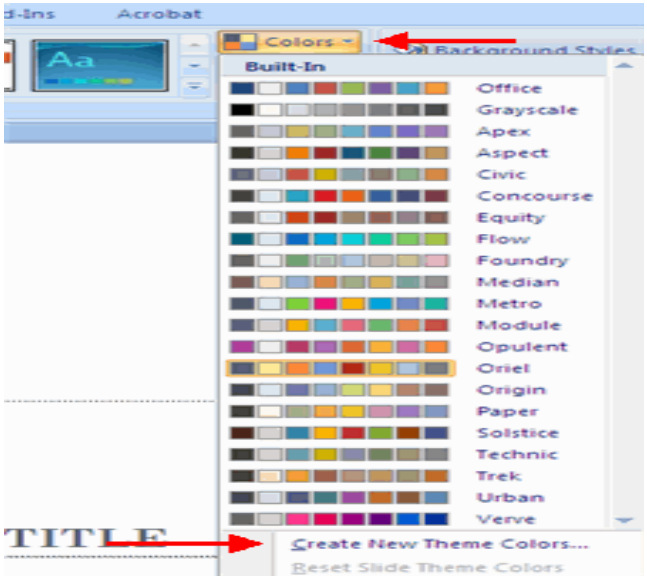
Themes are design templates that can be applied to an entire presentation that allows for consistency throughout the presentation. To add a theme to a presentation:

- Click the **Design** tab
- Choose one of the displayed **Themes** or click the **Galleries** button.



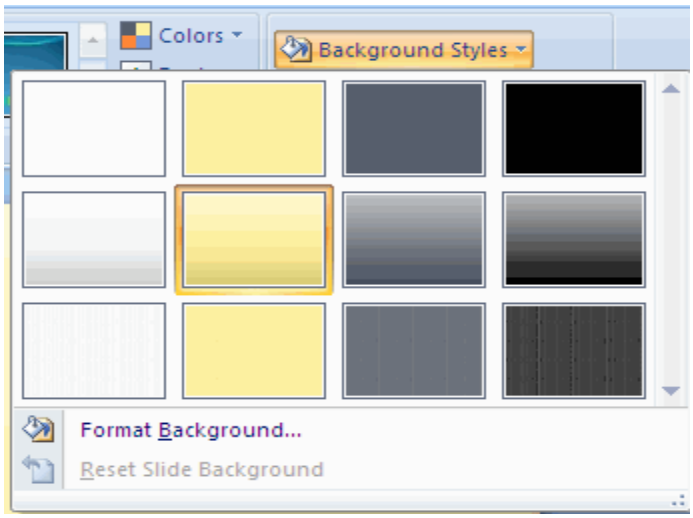

To apply new colors to a theme:

- Click the **Colors** drop down arrow
- Choose a color set or click **Create New Theme Colors**




To change the background style of a theme

- Click the **Background Styles** button on the **Design** tab

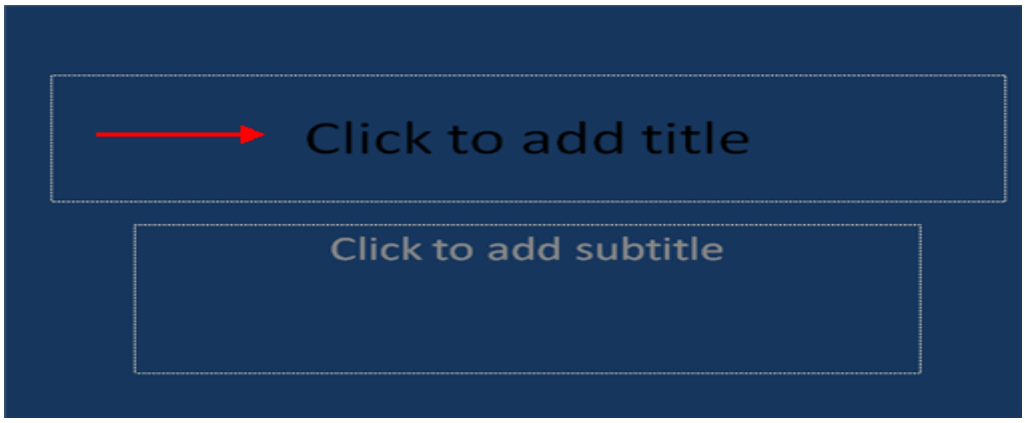


***Working with Content***

## Enter Text

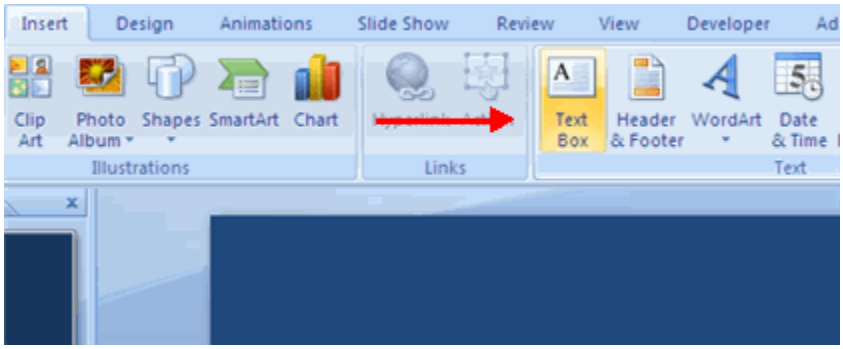
To enter text:

- Select the **slide** where you want the text
- Click in a **Textbox** to add text




To add a text box:

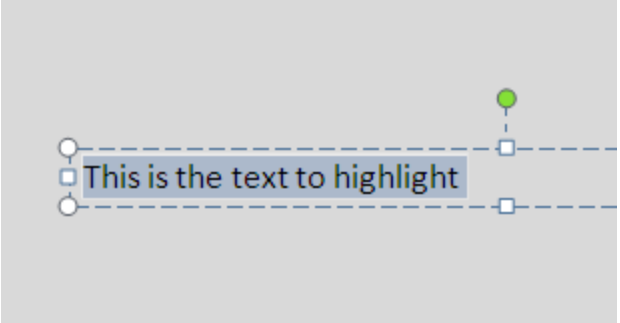
- Select the **slide** where you want to place the text box
- On the **Insert** tab, click **Text Box**
- Click on the slide and drag the cursor to expand the text box
- Type in the text




## Select Text

To select the text:

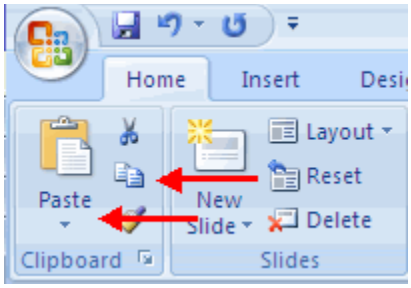
- Highlight the text




## Copy and Paste

To copy and paste data:

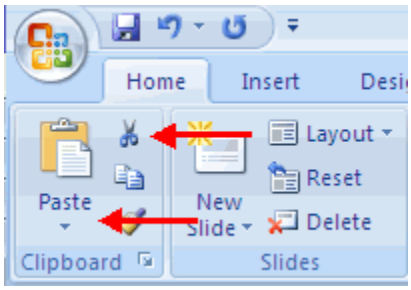
- Select the item(s) that you wish to copy
- On the **Clipboard Group** of the **Home Tab**, click **Copy**
- Select the item(s) where you would like to copy the data
- On the **Clipboard Group** of the **Home Tab**, click **Paste**




## Cut and Paste

To cut and paste data:

- Select the item(s) that you wish to copy
- On the **Clipboard Group** of the **Home Tab**, click **Cut**
- Select the items(s) where you would like to copy the data
- On the **Clipboard Group** of the **Home Tab**, click **Paste**



## Undo and Redo

To undo or redo you're most recent actions:

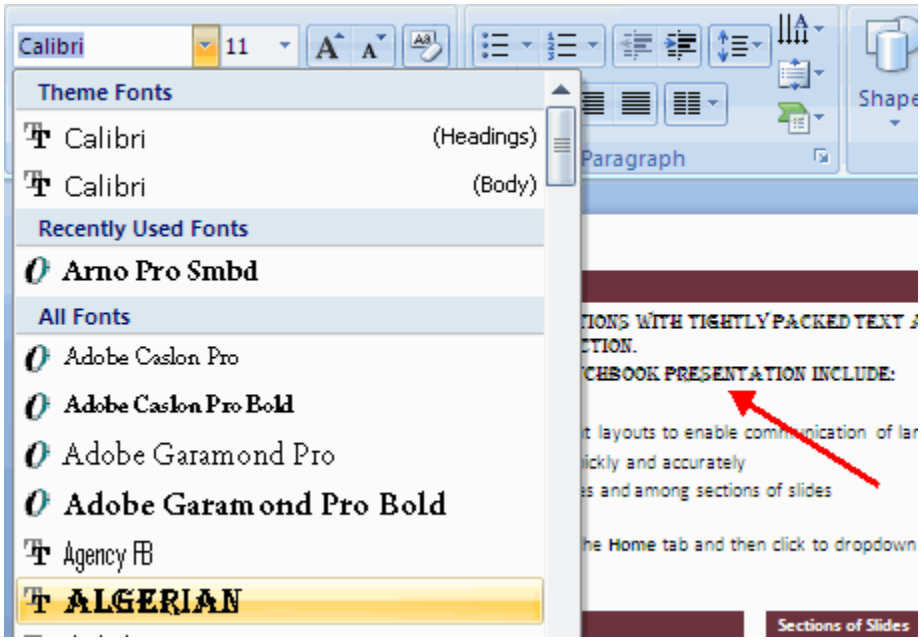
- On the **Quick Access Toolbar**
- Click **Undo** or **Redo**


## Formatting Text

### *Change Font Typeface and Size*

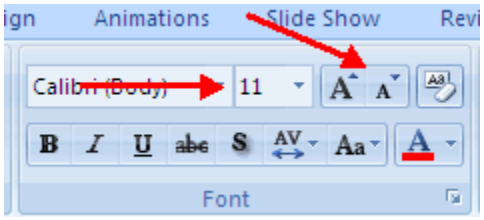
To change the font typeface:

- Click the **arrow** next to the font name and choose a font.
- Remember that you can preview how the new font will look by highlighting the text, and hovering over the new font typeface.



To change the font size:

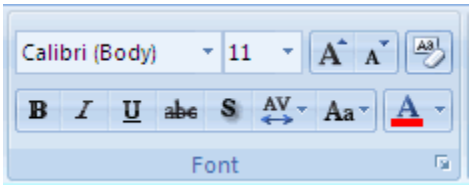
- Click the **arrow** next to the font size and choose the appropriate size, or
- Click the **increase or decrease** font size buttons.




## Font Styles and Effects

Font styles are predefined formatting options that are used to emphasize text. They include: Bold, Italic, and Underline. To add these to text:

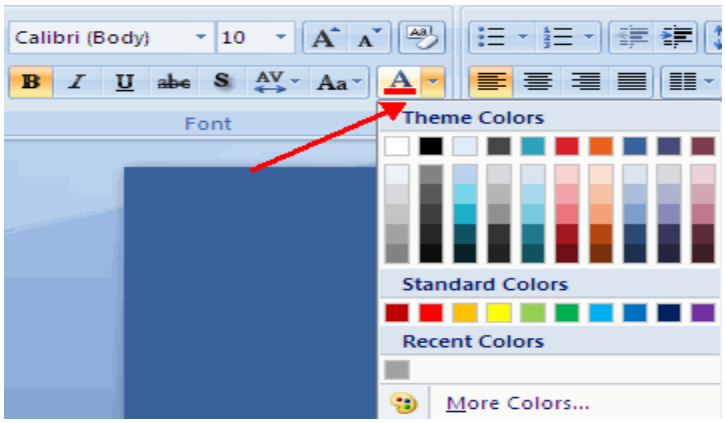
- Select the text and click the **Font Styles** included on the Font group of the Home tab or
- Select the text and right click to display the font tools




## Change Text Color

To change the text color:

- Select the text and click the **Colors** button included on the Font Group of the Ribbon, or
- Highlight the text and right click and choose the colors tool.
- Select the color by clicking the down arrow next to the font color button.



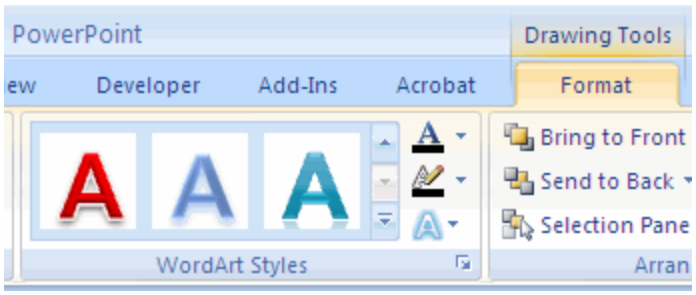

## WordArt

WordArt are styles that can be applied to text to create a visual effect. To apply Word Art:

- Select the text
- Click the **Insert** tab
- Click the **WordArt** button
- Choose the **WordArt**


To modify the styles of WordArt

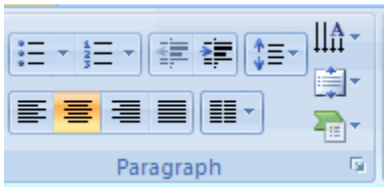
- Select the WordArt
- Click the Format tab for the Drawing Tools
- Click the **WordArt Fill** button, the **WordArt Outline** button, or the **Text Effects** button




## Change Paragraph Alignment

The paragraph alignment allows you to set how you want text to appear. To change the alignment:

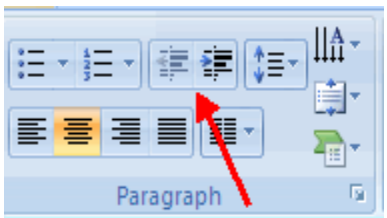
- Click the **Home Tab**
- Choose the appropriate button for alignment on the Paragraph Group.
  - **Align Left**: the text is aligned with your left margin
  - **Center**: The text is centered within your margins
  - **Align Right**: Aligns text with the right margin
  - **Justify**: Aligns text to both the left and right margins.




## Indent Paragraphs

To indent paragraphs, you can do the following:

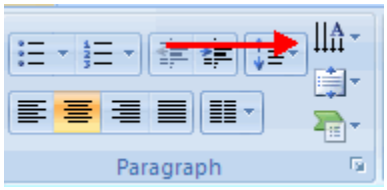
- Click the **Indent** buttons to control the indent.
- Click the I**ndent** button repeated times to increase the size of the indent.



## Text Direction

To change the text direction:

- Select the text
- Click the Text Direction button on the Home tab
- Click the selection

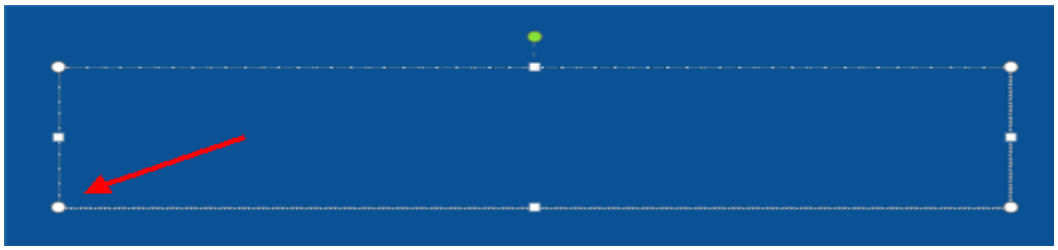



**Adding Content**

## Resize a Textbox

To resize a textbox:

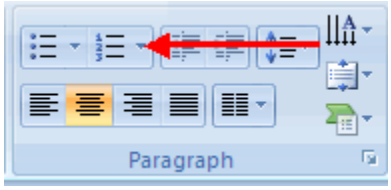
- Click on the **textbox**
- Click the corner of the box and drag the cursor to the desired size



## Bulleted and Numbered Lists

Bulleted lists have bullet points, numbered lists have numbers, and outline lists combine numbers and letters depending on the organization of the list. To add a list to existing text:

- Select the text you wish to make a list
- Click the **Bulleted or Numbered Lists** button



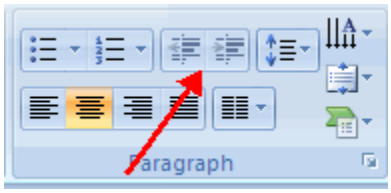
To create a new list:

- Place your cursor where you want the list in the document
- Click the **Bulleted or Numbered Lists** button
- Begin typing

## Nested Lists

A nested list is list with several levels of indented text. To create a nested list:

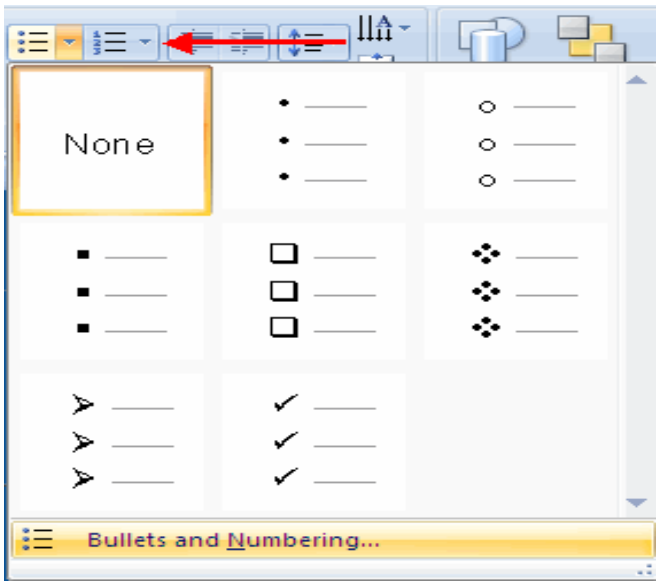
- Create your list following the directions above
- Click the **Increase or Decrease Indent** button




## Formatting Lists

The bullet image and numbering format can be changed by using the **Bullets or Numbering** dialog box.

- Select the entire list to change all the bullets or numbers, or Place the cursor on one line within the list to change a single bullet.
- Click the **arrow** next to the bulleted or numbered list and choose a bullet or numbering style.

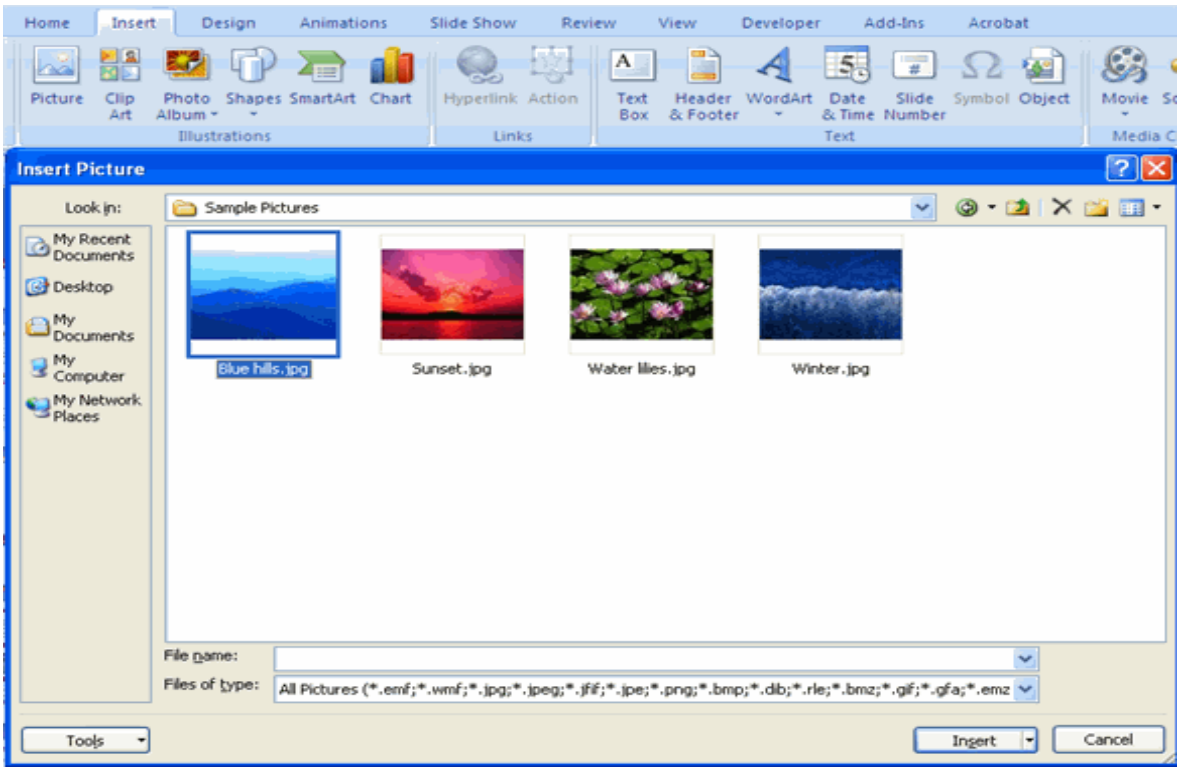



## Graphics

### Adding Picture

To add a picture:

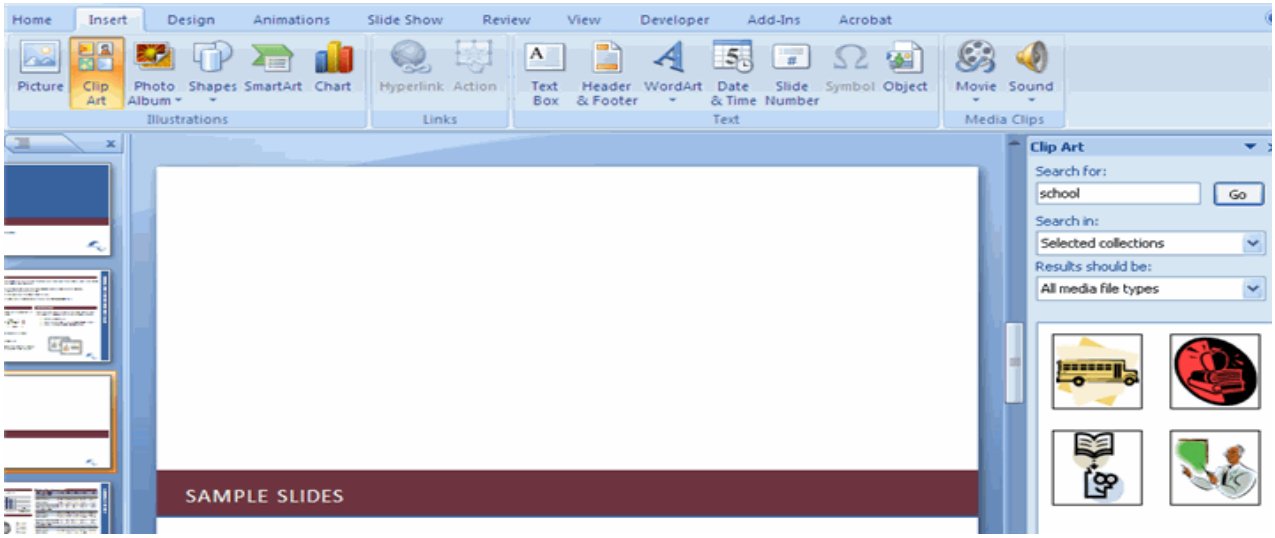
- Click the **Insert** Tab
- Click the **Picture** Button
- Browse to the picture from your files
- Click the **name** of the picture
- Click **insert**
- To move the graphic, click it and drag it to where you want it




## Adding Clip Art

To add Clip Art:

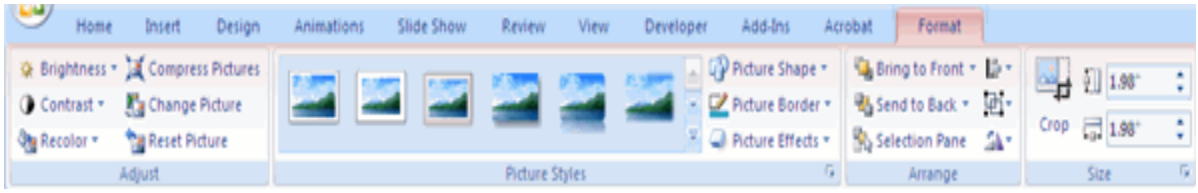
- Click the **Insert** Tab
- Click the **Clip Art** Button
- Search for the clip art using the search Clip Art dialog box
- Click the **clip art**
- To move the graphic, click it and drag it to where you want it



## Editing Pictures and Clip Art

When you add a graphic to the presentation, an additional Tab appears on the Ribbon. The Format Tab allows you to format the pictures and graphics. This tab has four groups:

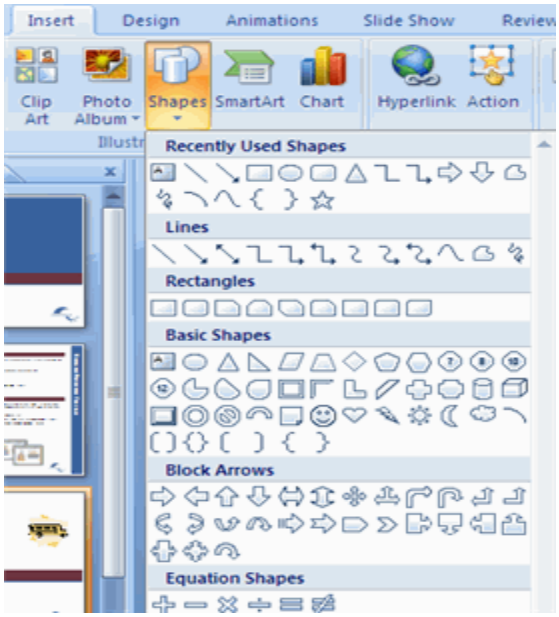
**Adjust**: Controls the picture brightness, contrast, and colors
**Picture Style**: Allows you to place a frame or border around the picture and add effects
**Arrange**: Controls the alignment and rotation of the picture
**Size**: Cropping and size of graphic



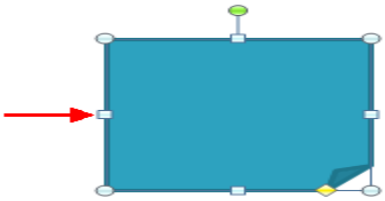

## Adding a Shape

To add Shapes:

- Click the **Insert** Tab
- Click the **Shapes** Button
- Click the shape you choose

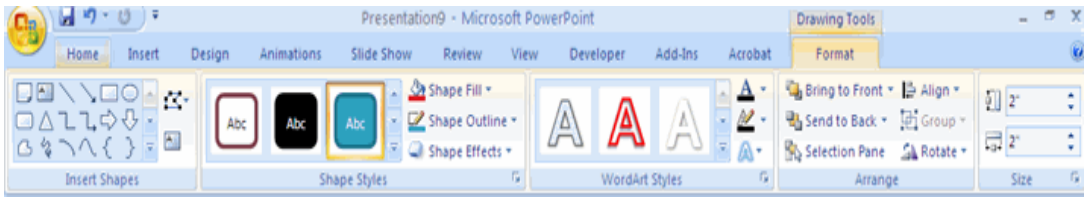


- Click the **Slide**
- Drag the **cursor** to expand the Shape



To format the shapes:

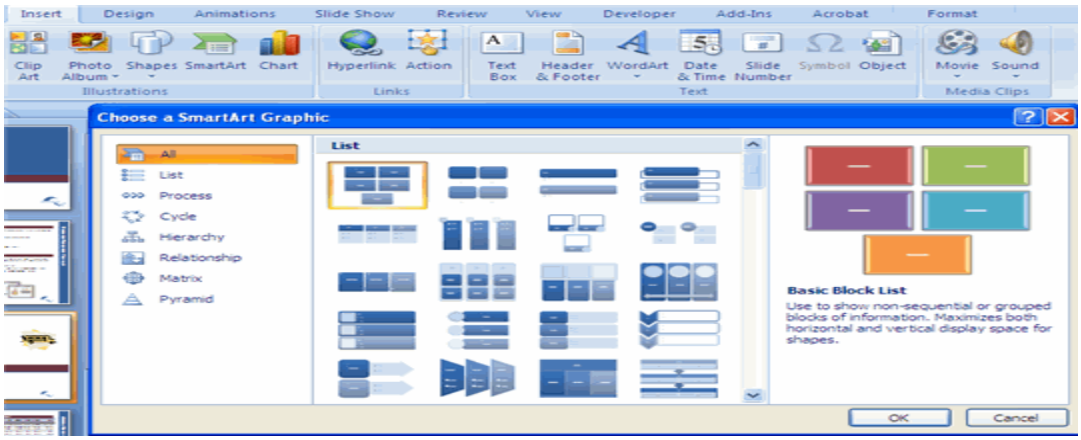
- Click the **Shape**
- Click the **Format** tab




## Adding SmartArt

SmartArt is a feature in Office 2007 that allows you to choose from a variety of graphics, including flow charts, lists, cycles, and processes. To add SmartArt:

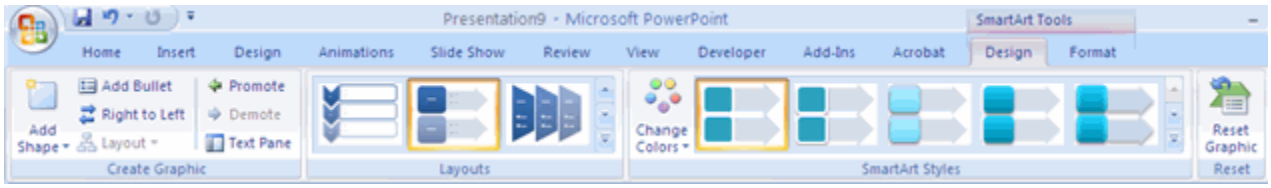
- Click the **Insert** Tab
- Click the **SmartArt** Button
- Click the **SmartArt** you choose



- Click the **SmartArt**
- Drag it to the desired location in the slide

To format the SmartArt:

- Click the **SmartArt**
- Click either the **Design** or the **Format** tab
- Click the **SmartArt** to add text and pictures.

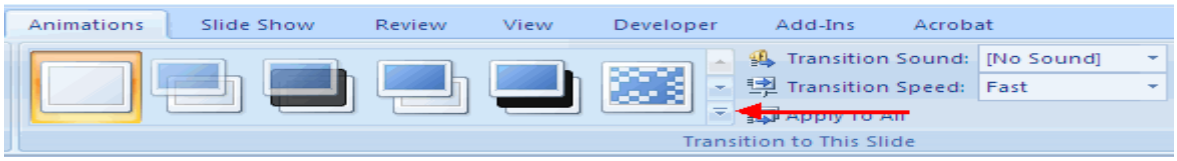



## Slide Effects

### Slide Transitions

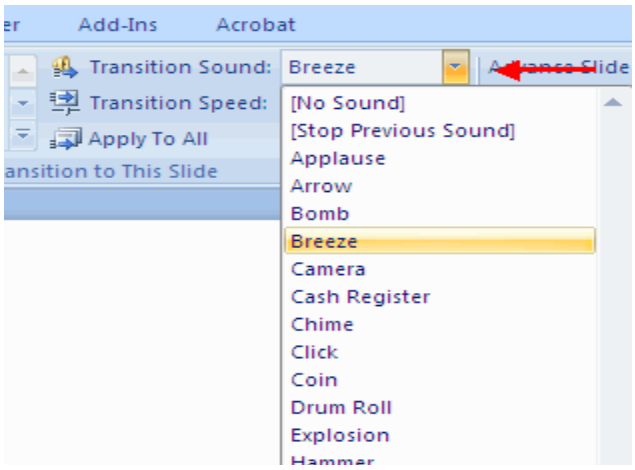
Transitions are effects that are in place when you switch from one slide to the next. To add slide transitions:

- Select the slide that you want to transition
- Click the **Animations** tab
- Choose the appropriate animation or click the **Transition** dialog box

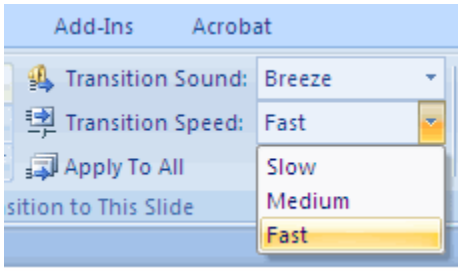



To adjust slide transitions:

- Add sound by clicking the arrow next to **Transition Sound**

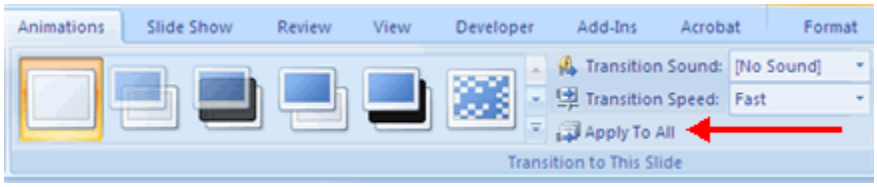



- Modify the transition speed by clicking the arrow next to **Transition Speed**



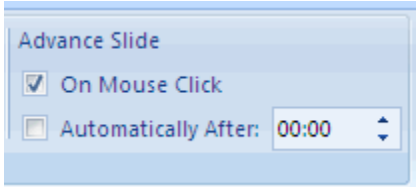

To apply the transition to all slides:

- Click the **Apply to All** button on the **Animations** tab




To select how to **advance a slide**:

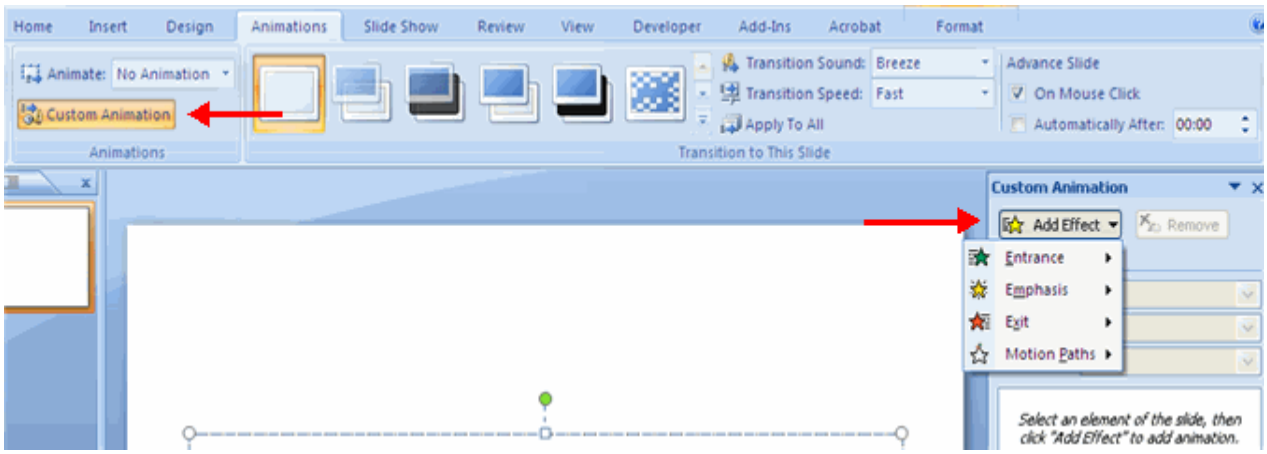
- Choose to **Advance on Mouse Click**, or
- Automatically after a set number of seconds



## Slide Animation

Slide animation effects are predefined special effects that you can add to objects on a slide. To apply an animation effect:

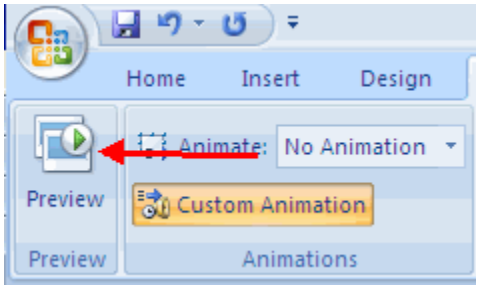
- Select the object
- Click the **Animations** tab on the Ribbon
- Click **Custom Animation**
- Click **Add Effect**
- Choose the appropriate effect




## Animation Preview

To preview the animation on a slide:

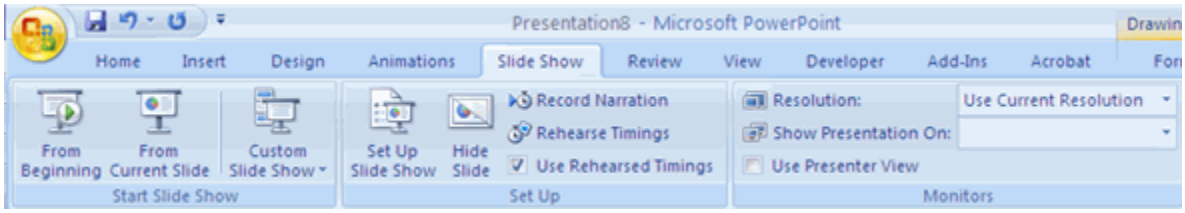
- Click the **Preview** button on the **Animations** tab



## *Slide Show Options*

The Slide Show tab of the ribbon contains many options for the slide show. These options include:

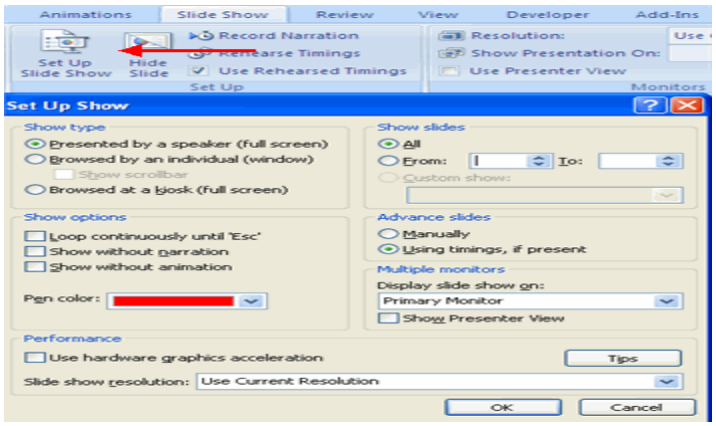
- Preview the slide show from the beginning
- Preview the slide show from the current slide
- Set up Slide Show




## Set Up Slide Show

This option allows you to set preferences for how the slide show will be presented. The options include:

- Whether the show will run automatically or will be presented by a speaker
- The looping options
- Narration options
- Monitor resolutions



## Printing

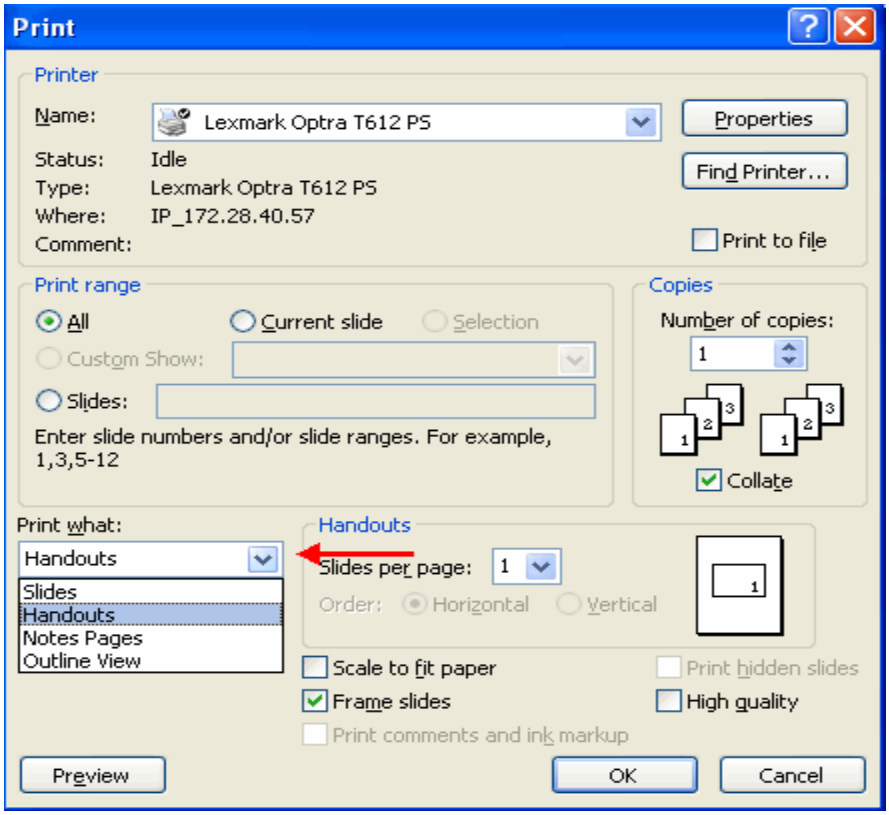
### *Print a Presentation*

There are many options for printing a presentation. They are:

- **Slides**: These are slides that you would see if you were showing the presentation, one slide per page
- **Handouts**: 1, 2, 3, 4, 6 or 9 per page, this option allows for more slides per page
- **Notes Page**: This includes the slides and the speaker notes
- **Outline View**: This will print the outline of the presentation

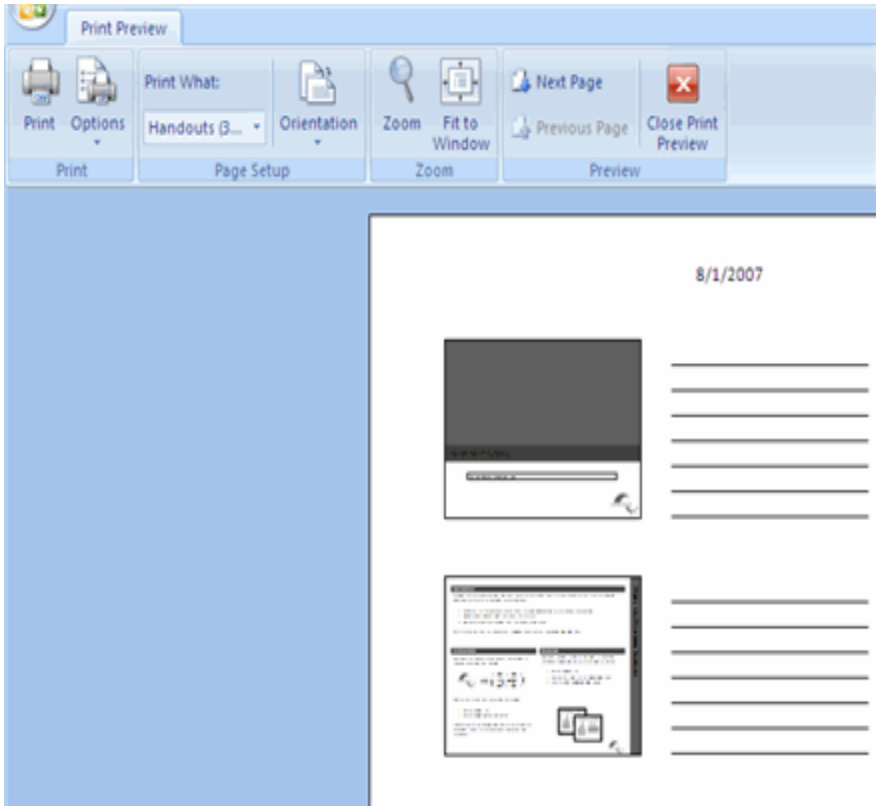
To access the print options:

- Click the **Microsoft Office Button**
- Click **Print**
- In the Print Dialog Box, click the **arrow** next to **Print what**
- Choose the format and click **OK** to print



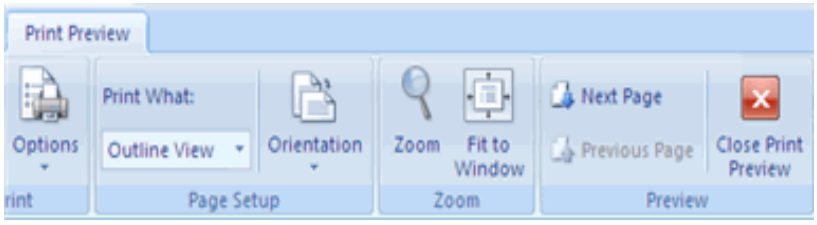
To print preview:

- Click the **Microsoft Office Button**
- Place the cursor over **Print**
- Click **Print Preview**
- Click the arrow next to **Print What** to change print options
- To print from Print Preview, click **Print**




To Exit Print Preview:

- Click the **Close Print Preview** button



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## II. Websites for further reference


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