CSC 102 : INTRODUCTION TO COMPUTER APPLICATIONS

Chapter 1 : Introduction to Operating Systems

1.1 History and Fundamentals of Operating Systems

An operating system is a program that acts as an intermediary between a user of a computer and the computer hardware. The purpose of an operating system is to provide an environment in which a user can execute program. This is achieved via a low-level software approach that enables a user and higher-level application software to interact with a computer's hardware and the data and other programs stored on the computer. The OS manages the hardware and software resources of a computer. It performs basic tasks such as controlling and allocating memory, prioritizing the processing of instructions, controlling input and output devices, facilitating networking, and managing files.

An operating system is an important part of almost every computer system. A computer system can be divided roughly into (4) four components: the *hardware*, the *operating system*, the *applications programs*, and the *users.*

i. The hardware, the central processing unit (CPU), the memory, and the input / output (I/O) devices - provides the basic computing resources.

ii. The applications programs. Such as compilers, database systems, games, and business programs define the ways in which these resources are used to solve the computing problems of the users.

iii. An operating system is a control program. A control program controls the execution of user programs to prevent errors and improper use of the computer. It is especially concerned with the operation and control of I/O devices. A more common definition is that the operating system is the one program running at all times on the computer (usually called the kernel), with all else being applications programs.

1.2 Need for an OS:

The primary need for the OS arises from the fact that user needs to be provided with services and OS ought to facilitate the provisioning of these services. The central part of

a computer system is a processing engine called CPU. A system should make it possible for a user's application to use the processing unit. A user application would need to store information. The OS makes memory available to an application when required. Similarly, user applications need use of input facility to communicate with the application. This is often in the form of a key board, or a mouse or even a joy stick (if the application is a game for instance).

The first computers did not have operating systems. However, software tools for managing the system and simplifying the use of hardware appeared very quickly afterwards and gradually expanded in scope. By the early 1960s, commercial computer vendors were supplying quite extensive tools for streamlining the development, scheduling, and execution of jobs on batch processing systems. Examples were produced by UNIVAC and Control Data Corporation, amongst others. Through the 1960s, several major concepts were developed, driving the development of operating systems. Today, Command line interface (or CLI) operating systems can operate using only the keyboard for input. Modern OS's use a mouse for input with a graphical user interface (GUI) sometimes implemented as a shell.

1.3 Basic Objectives Of Operating System

The purpose of an operating system (OS) is to control all of the interactions among the various system components, the human interactions with the computer, and the network operations for the computer system. An OS is actually a group of programs that accomplishes its tasks by building an increasingly complex set of software layers between the lowest level of a computer system (the hardware) and the highest levels (user interactions). An important type of software that works closely with the OS is a device driver—program code that allows the OS to interact with and control a particular device. Many device drivers come with Windows and you can easily add others to the OS. That is why new hardware comes packaged with a disc containing a device driver for one or more versions of Windows and other OSs.

Key objectives of Operating System are outlined as follows;

i. Simplifies the execution of user programmes and makes problem-solving easier
ii. Enable efficient use and interface to a variety of computer hardware
iii. Manages the sharing of hardware and software resources
iv. Provide an Application Programming Interface
v. Makes application software portable and versatile
vi. Provides isolation, security and protection among user programs
vii. Improve overall system performance and reliability

viii. Ensures error confinement, fault tolerance and reconfiguration.

A collection of software modules to assist programmers in enhancing system efficiency, flexibility, and robustness. From the user's point of view, it is an extended machine. And a resource manager a system's viewpoint.

1.4 Functions of an Operating System

Operating System performs several functions, some of which include;

i. Allocation / managing of System Resources (Time, Memory, data files, Input and Output)
ii. Monitoring system activities
iii. File and Disk Management
iv. scheduling processes and multiplexing the processor(s)
v. Programme Execution; providing an environment or platform for convenient running of programs.
vi. Coordinating interaction among processes, inter-process communication and synchronization.
vii. Enforcing access control and protection.
viii. Maintaining system integrity and performing error recovery.
ix. Providing an interface to the users.

As a control program, the Operating System controls the execution of user programs to prevent errors and improper use of the computer. It is especially concerned with the operation and control of I/O devices. A more common definition is that the operating system is the one program running at all times on the computer (usually called the kernel), with all else being applications programs.

1.5 Operating System Tasks and Services

An OS performs basic tasks, such as recognizing input from the keyboard, sending output to the display screen, keeping track of files and directories on the disk, and controlling peripheral devices such as printers. Other Services of OS include;

A. Program Execution

OS provides an environment where the user can conveniently run programs. The user does not have to worry about memory allocation or CPU scheduling.

B. I/O Operations

Each program requires input and produces output. The OS hides some of the details of the underlying hardware for such I/O. All the user sees is that the I/O has been performed, without those details.

C. Communications

There are instances where processes need to communicate with each other to exchange information. It may be between processes running on the same computer or running on different computers.

The OS provides these services to application programs, making inter-process communication possible, and relieving the user of having to worry about how this accomplished.

D. File Management

The OS is responsible for managing the computer's files in an organized manner and allowing the user to manage data files. The OS keeps track of the functions of particular files and brings them into memory as program code or data when needed.

Furthermore, the OS is responsible for maintaining file associations so data files launch in the proper applications. The OS is also responsible for managing the computer's disks, keeping track of each disk's identification, and managing disk space use.

A user interface (UI) is both the visual portion of the operating system and the software components that allow the user to interact with the OS for starting programs, creating data, saving files, and other user tasks. A graphical user interface (GUI) is a user interface that takes advantage of a computer's graphics capabilities to make it easier for the user to interact with the OS by manipulating graphic objects on the desktop to accomplish a multitude of tasks. An operating system also works with one or more computer architectures.
A computer architecture (sometimes called the platform) is the basic design of a computer describing the data pathways and the methods the computer's CPU uses to access other components with the computer. In physical terms, the main components are the CPU, BIOS, and chipset—all of which you will study in

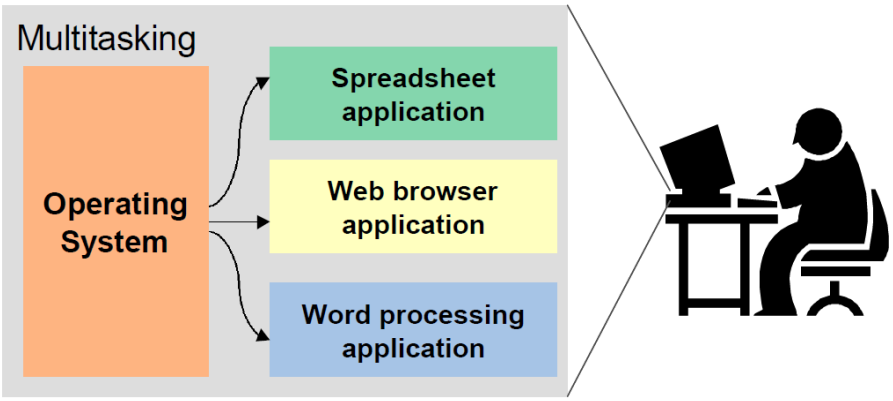
1.6 Classification of Operating System

Operating systems can be classified as single program and multi-tasking. A single program operating system allows only one program to run at a time. This was the operating system that was improved on to as multi-tasking operating systems as it was not practical to close

one application to open another, example, close a word document to open power point, especially if you are required to copy some texts from word to power point.

Multi-tasking operating systems enables a single user to have two or more applications open at the same time. It gives the computer the option to decide on how many time slices each program is allocated. The active program gets the most, and the rest is divided according to the factors of which programs are doing tasks although not active, and the last priority is given to programs and applications that are left open but are not doing anything.

Multi-tasking operating systems can be divided into three general types depending on the type of computer and the type of applications that will be run. These are Real time operating systems, Single user-Multi tasking, and Multi user operating systems



i. Multi-user and Single-user Operating Systems:

Computer operating systems of this type allow multiple users to access a computer system simultaneously. Time-sharing systems can be classified as multi-user systems as they enable a multiple user access to a computer through time sharing. Single-user operating systems, as opposed to a multi-user operating system, are usable by only one user at a time. Being able to have multiple accounts on a Windows operating system does not make it a multi-user system. Rather, only the network administrator is the real user. But for a Unix-like operating system, it is possible for two users to log in at a time and this capability of the OS makes it a multi-user operating system.

Windows 95, Windows 2000, Mac OS and Palm OS are examples of single-user operating systems. Unix and OpenVMS are examples of multi-user operating systems.

ii. Multi-tasking and Single-tasking Operating Systems:

When a single program is allowed to run at a time, the system is grouped under the single-tasking system category, while in case the operating system allows for execution of multiple tasks at a time, it is classified as a multi-tasking operating system. Multi-tasking can be of two types namely, pre-emptive or co-operative. In pre-emptive multitasking, the operating system slices the CPU time and dedicates one slot to each of the programs. Unix-like operating systems such as Solaris and Linux support pre-emptive multitasking. If you are aware of the multi-threading terminology, you can consider this type of multi-tasking as similar to interleaved multi-threading. Cooperative multitasking is achieved by relying on each process to give time to the other processes in a defined manner. This kind of multi-tasking is similar to the idea of block multi-threading in which one thread runs till it is blocked by some other event. MS Windows prior to Windows 95 used to support cooperative multitasking.

Palm OS for Palm handheld is a single-task operating system. Windows 9x support multi-tasking. DOS Plus is a relatively less-known multi-tasking operating system. It can support the multi-tasking of a maximum of four CP/M-86 programs.

iii. Distributed Operating System:

An operating system that manages a group of independent computers and makes them appear to be a single computer is known as a distributed operating system. The development of networked computers that could be linked and made to communicate with each other, gave rise to distributed computing. Distributed computations are carried out on more than one machine. When computers in a group work in cooperation, they make a distributed system.

Amoeba, Plan9 and LOCUS (developed during the 1980s) are some examples of distributed operating systems.

iv. Real-time Operating System:

It is a multitasking operating system that aims at executing real-time applications. Real-time operating systems often use specialized scheduling algorithms so that they can achieve a deterministic nature of behavior. The main object of real-time operating systems is their quick and predictable response to events. They either have an event-driven design or a time-sharing one. An event-driven system switches between tasks based of their priorities while time-sharing operating systems switch tasks based on clock interrupts.

Windows CE, OS-9, Symbian and LynxOS are some of the commonly known real-time operating systems.

v. Embedded System:

The operating systems designed for being used in embedded computer systems are known as embedded operating systems. They are designed to operate on small machines like PDAs with less autonomy. They are able to operate with a limited number of resources. They are very compact and extremely efficient by design.

Windows CE, FreeBSD and Minix 3 are some examples of embedded operating systems. The use of Linux in embedded computer systems is referred to as Embedded Linux.

vi. Mobile Operating System:

Though not a functionally distinct kind of operating system, mobile OS is definitely an important mention in the list of operating system types. A mobile OS controls a mobile device and its design supports wireless communication and mobile applications. It has built-in support for mobile multimedia formats. Tablet PCs and smartphones run on mobile operating systems.

Blackberry OS, Google's Android and Apple's iOS are some of the most known names of mobile operating systems.

vii. Batch Processing and Interactive Systems:

Batch processing refers to execution of computer programs in 'batches' without manual intervention. In batch processing systems, programs are collected, grouped and processed on a later date. There is no prompting the user for inputs as input data are collected in advance for future processing. Input data are collected and processed in batches, hence the name batch processing. IBM's z/OS has batch processing capabilities. As against this, interactive operating requires user intervention. The process cannot be executed in the user's absence.

Online and Offline Processing: In online processing of data, the user remains in contact with the computer and processes are executed under control of the computer's central processing unit. When processes are not executed under direct control of the CPU, the processing is referred to as offline. Let's take the example of batch processing. Here, the batching or grouping of data can be done without user and CPU intervention; it can be done offline. But the actual process execution may happen under direct control of the processor that is online.

1.7 Types of OS

Some types of Operating System are listed below. However, this list is by no means exhaustive.

i. Microsoft Windows
ii. DOS
iii. OS/2
iv. Linux
v. Mac OS
vi. AmigaOS
vii. Android

With recourse to this course, our study will be focused on the most popular OS, which is the Windows Operating invented by Microsoft.

Chapter Two: Microsoft Windows and Operating Fundamentals

2.1 Microsoft Windows

The Microsoft Windows family of operating systems originated as a graphical layer on top of the older MS-DOS environment for the IBM PC. Modern versions are based on the newer Windows NT core that first took shape in OS/2 and borrowed from OpenVMS. Windows runs on 32-bit and 64-bit Intel and AMD computers, although earlier versions also ran on the DEC Alpha, MIPS, and PowerPC architectures (some work was done to port it to the SPARC architecture).

As of 2004, Windows held a near-monopoly of around 90% of the worldwide desktop market share, although this is thought to be dwindling due to the increase of interest focused on open source operating systems. [1] It is also used on low-end and mid-range servers, supporting applications such as web servers and database servers. In recent years, Microsoft has spent significant marketing and R&D money to demonstrate that Windows is capable of running any enterprise application.

The operating system on the computer is the program that starts when you turn on the computer. It performs the basic tasks required to use the computer, including interacting with the computer hardware, scheduling tasks, and maintaining files. The operating system also manages the other programs on the computer. Computers using a Microsoft Windows operating system have the following features:

- **The desktop**: When you first log on to the computer, you see the desktop. The desktop is the display area you see when Windows opens. The major parts of the Windows desktop include the following:
- **Start button**: The Start button is in the lower left-hand corner of your screen. In Window 7, the round Microsoft globe is the Start button. (In earlier version, the button was labeled “Start”) This button opens the Start menu, which is what you can use to open programs and documents.
- **Taskbar**: Located along the bottom of the screen. Displays buttons for your open applications and windows as well as icons to open some programs.
- **System Tray**: The right-hand part of the taskbar that holds the clock, volume control, and icons for other utilities that run in the background of your system.
- **Shortcut icons**: These are links to programs, file or folders that you can place on your desktop.
- **Recycle Bin**: This is an electronic trash can where you can drag and drop any files you want to delete.

- **Mouse pointer**: The indicator on the screen that you use to select and move objects. It moves as you move the mouse and it changes appearance depending on what program you are using and what tool you have selected.

TYPES OF WINDOWS/OPERATING SYSTEM

i. Windows 95
ii. Windows 98
iii. Windows ME
iv. Windows 2000
v. Windows 2002
vi. Windows XP
vii. Windows Vista
viii. Windows NT
ix. Windows 7
x. Windows 8

2.2 The Mousing Skills

A mouse is a hand operated input device use to navigate on your computer screen and access what you need to accomplish a task. The mouse makes it easier to use Windows and Windows-based software. It is therefore essential that you know how to use your mouse. At the top of the mouse, there are two major buttons: the **left button** and the **right button**. (Some mice also have a **small roller** which can also be used as a button but generally not.) Remember: the buttons on the mouse should always be pointing away from you.

Holding the Mouse:

- With the buttons on the mouse pointing away from you, hold the sides of the mouse with your thumb, ring finger and pinkie.
- Place your index finger on the left button and your middle finger on the right button.
- Rest your wrist on the desk or mouse pad.
- The mouse stays on the mouse pad. You can lift the mouse to move it when you run out of room on the pad.

Pointing and Clicking: The most common mouse operation is pointing and clicking. Simply move the mouse so that the cursor is pointing to the object you want to select, and then click the left mouse button once. Pointing and clicking is an effective way to select menu items, directories, and files.

Click: this simple means to press the left mouse button and release it either on a file, folder or program.

Double-Clicking: If you're using a Windows Operating System, you'll need to double-click an item to open programs or files. This involves pointing at something onscreen with the cursor and then clicking the left mouse button twice in rapid succession.

Right-Clicking: When you select an item and then click the *right* mouse button, you'll often see a pop-up menu. This menu, when available, contains commands that directly relate to the selected object. This is sometimes referred to as a shortcut menu.

Dragging and Dropping: *Dragging* is a variation of clicking. To drag an object, point at it with the cursor and then press and hold down the left mouse button. Move the mouse without releasing the mouse button, and drag the object to a new location. When you're done moving the object, release the mouse button to drop it onto the new location.

Hovering: When you position the cursor over an item without clicking your mouse, you're *hovering* over that item. In some Microsoft programs you can hover over an icon and a small label will appear telling you what action will be taken by clicking that icon.

2.3 The Keyboard

The keyboard is the primary input device use in sending in data into the computer and its made up of keys that are used for typing and also navigating. Here are some definition of some keys and its functions.

Keyboard key	**What does it do**
Letter keys/Typing keys	These are normal keyboard keys containing ordinary alphabet characters.
Number keys	These are numerical keys grouped together in the same way as most calculators. This set of keys must be activated before they can be used.
Tab	This key enables the cursor to jump a couple of spaces to the right on the screen or from box to box in a table or a form.
Control (Ctrl)	This key is used in combination with other keys in specific programs. The key is pressed and held while another key (or keys) is pressed
Alternate (Alt)	This key is used in combination with other keys in specific programs. The key is pressed and held while another key (or keys) is pressed.
Delete	Used to erase text or characters to the right of the cursor or to erase anything highlighted in a document.

Windows	The Windows key opens the Start menu in Microsoft Windows.
Arrow keys/Cursor keys	These keys move you around a document in the direction of the arrow pressed.
Enter	This key is used to start a new paragraph in a document or it is pressed when you have finalized a task or a selection.
Shift	This key can be used in several different ways: It can be used to make a letter capitalized by pressing Shift, holding it down and pressing on a letter. It can be used to select text by pressing on the shift key, holding it down and using the arrow keys to highlight the text you wish to select. It can be used to select the characters at the top of some of the keyboard keys by pressing the Shift key, holding it down and pressing on the key that has the character you wish to select.
Spacebar	This long unmarked key is used to create spaces to the right when it is pressed. You press it in between each word that you type in a document
Caps lock	This key is used to capitalize letters by pressing on it once, typing the letters you wish to be capitalized and then pressing it again once you are done capitalizing the letters. If you do not press on it again, the letters in your text will just continue to be capitalized. A little green light goes on the right hand of your keyboard (Caps Lock) when the Caps key is on.
Backspace	This key is used to delete text or characters to the left of the cursor.

2.4 Booting and Shutdown

Booting is the process of turning on the computer. There are two ways of booting;

i. **Cold booting**: this is the processing of turning on the computer for the first time by pressing the button.
ii. **Warm booting:** this is the process of restarting the computer after cold booting by pressing the restarting button or Ctrl + Alt + del on the keyboard.

Shutting Down: This is the process of turning off the computer after use.

Step

i. Click on start button
ii. Click on turn off computer.

2.5 Software

This is the general name given to all computer programs. By itself, a computer's hardware is not very useful. You can connect it and set it in place, but it won't do anything until you have some software to perform tasks for you. *Software* refers to programs (i.e. instructions) that tell a computer what to do. Examples of computer software are:

- Microsoft Word for word processing
- Microsoft Excel to create spreadsheets and crunch numbers
- Microsoft Access for database management
- Internet Explorer to display websites from the World Wide Web
- Adobe Photoshop to edit pictures and graphics

A COMPUTER PROGRAM: is a set of instruction written with a particular programming language in a way a computer will understanding and execute its task.

TYPES OF PRGRAMS

i. Application Programs: these are programs that carry the task needed by the user. E.g. Word Processing, Spreadsheet, Database Management, and Desktop Publishing Application programs.
ii. Utility Programs: these are programs that help use and manage the application programs very well such as **Drivers.**
iii. System Control Software: this controls both the application and the utility programs. E.g. Windows/Operating System.

Application Software

These are programs designed or written to perform specific tasks eg. Library management software which manages book details, account holder details, and transaction details. Application software can be broadly classified into two (2) groups, viz; Generalised packages and Customised packages.

Generalised packages refer to user-friendly application designed to cater for user's general needs and applications. For instance, within an office environment users need applications that could cater for nearly all clerical or office tasks and responsibilities. Example of such package is the Microsoft office suites which comprise of a combination or group of software

that meet the demand of document preparation, computations, drawings, database management. Examples include;

i. Word Processing Software (MSword, Word Perfect, OpenOffice.org writer, NotePad, WordPad.
ii. SpreadSheets (for data analysis) – (MSExcel, Lotus 123, OpenOffice.org Calc, Apple Numbers).
iii. Presentations (MS-PowerPoint, Presentation Graphics, OpenOffice.org Impress)
iv. Database Management Systems (MS-Access, OpenOffice.Org Base, MS-SQL Server, Oracle)
v. Graphics Tools; Paintshop, CorelDraw, Adobe Photoshop etc)

Customised packages on the programmes specially and specifically designed to meet certain conditions and perform certain tasks. Such programs do not have abilities or capacities to extend to other tasks. Customised packages are usually designed to meet the requirements of organisations and institutions. Examples include;

i. Student Information System
ii. Payroll packages
iii. Inventory control systems
iv. Accounting packages

2.6 Windows Accessories

Window accessories are programs or application provided by windows for the user where the appropriate program/application is not installed like the **WordPad, Calculator and Paint** etc.

TO RUN THE WORDPAD

Steps

i. Click on start button
ii. Select all programs
iii. Select Accessories
iv. Click on WordPad

TO RUN THE CALCULATOR

Steps

i. Click on start button
ii. Select all programs
iii. Select Accessories

iv. Click on calculator

NOTE: To change from standard to scientific calculator.

i. Click on view
ii. Click on the desired calculator type.
iii. Then the calculator automatically changes.

TO RUN THE PAINT

Steps

i. Click on start button
ii. Select all programs
iii. Select Accessories
iv. Click on paint

NOTE: Drawing is making by picking the object/shape to draw and dragging it on the drawing space.

2.7 Computer Virus.

These are programs/applications written to break down the smooth operation and function of the computer system programs such as the operating system and application programs.

EFFECTS OF COMPUTER VIRUS

- Slow performance of the computer system
- Corrupting of programs and files.
- Losing of saved files.

WAYS OF GETTING VIRUS

- Illegal downloads from the internet
- Exchange of infected storage device like the flash or external hard disk.
- Copying of infected files from infected computer.

PREVENTING OF VIRUS

- Getting and installing of original programs
- Having a strong and updateable Anti-Virus Program
- Proper scanning of any external storage device.

Chapter 3: Introduction to Word Processing with Microsoft Word

3.1 Introduction

Word processing is the use of computer hardware and software to create, edit, view, retrieve and print textual materials (e.g. letters, memos, reports, books, etc.).

The group of software used for word processing is called word processors. Examples include Microsoft Office Word, Word Perfect, MultiMate, Loco Script, Professional Writer, Word Star, etc.

Before the advent of word processors, typewriters were used to produce textual materials. But they have limitations which word processors overcame.

Advantages of Word Processors over Typewriters

- The printing quality of computer printout/output is far better than both electric and manual typewriter.
- Many copies of the print out can be made
- All copies of a computer printout are original
- The word wrapping facility (automatic return of the cursor to the next line when it reaches the end of a line) in word processor make typing easier as you will not push the carriage return when you get to the end of a line as the case in typewriter.
- Graphics and pictures can be added to the document
- There are special facilities like spelling and grammar checker, automatic table generators, auto-formats, etc. which make word processing easier and faster.
- Editing and updating is easier and faster. Necessary corrections are made when and where applicable.\
- Colour, fonts, type styles and special effects like shadow, strikethrough, etc. make word processing documents more beautiful and fanciful.
- Some word processors also have desktop publishing capabilities
- Word processors can serve as input to other software.

MICROSOFT WORD

Microsoft word is a word processor package commonly used in offices. Microsoft Word is a word-processing program, designed to help you create professional-quality documents. With the finest document-formatting tools, Word helps you organize and write your documents more efficiently. Word also includes powerful editing and revising tools so that you can collaborate with others easily. It is a member of the Microsoft office that provides an

integrated suite of packages that are commonly used in offices like spreadsheet, word processor, database management, etc. into a single suite.

Microsoft word has all the advantages of a word processor and also has special features that make it easier to use and generally makes it better than other word processors.

The main distinguishing feature of MS-Word is that it has an intelligent editor. That is, a level of intelligence has been built into the editing screen of MS-Word such that it can actually do some form of 'thinking' and as such, it can 'guess' what you are doing (or want to do) and then help you do it automatically.

The Ribbon

Understanding the Ribbon is a great way to help understand the changes between Microsoft 2003 to Microsoft 2010. The ribbon holds all of the information in previous versions of Microsoft Office in a more visual stream line manner through a series of tabs that include an immense variety of program features.

Home Tab

This is the most used tab; it incorporates all text formatting features such as font and paragraph changes.

Insert Tab

This tab allows you to insert a variety of items into a document from pictures, clip art, tables and headers and footers.

Page Layout Tab

This tab has commands to adjust page elements such as margins, orientation, inserting columns, page backgrounds and themes.

Reference Tab

This tab has commands to use when creating a Table of Contents and citation page for a paper. It provides you with many simple solutions to create these typically difficult to produce documents.

Mailing Tab

This tab allows you to create documents to help when sending out mailings such as printing envelopes, labels and processing mail merges.

Review Tab

This tab allows you to make any changes to your document due to spelling and grammar issues. It also holds the track changes feature which provides people with the ability to make notes and changes to a document of another person.

View Tab

This tab allows you to change the view of your document to a different two page document or zoom.

Opening Outlook

You may have a shortcut to Word on your desktop, if so double click the icon and Word will open. If not follow the steps below:

1. Click on the Start button
2. Highlight Programs
3. Highlight Microsoft Office
4. Click on Microsoft Word 2010

Create a New Document

1. Click the **File** tab and then click **New**.
2. Under **Available Templates**, click **Blank Document**.
3. Click **Create**.

Using Templates

Word 2010 allows you to apply built-in templates from a wide selection of popular Word templates,

including resumes, agendas, business cards, and faxes. To find and apply a template in Word, do the following:

1. On the **File** tab, click **New**.
2. Under **Available Templates**, do one of the following:

To use one of the built-in templates, click **Sample Templates**, click the template that you want, and then click **Create**.

To reuse a template that you've recently used, click **Recent Template**s, click the template that you want, and then click **Create**.

To find a template on Office.com, under **Office.com Templates**, click the template category that you want, click the template that you want, and click **Download** to download the template from Office.com to your computer.

3. Once you have selected your template you can modify it in any way to create the

document you
want.

NOTE: You can also search for templates on Office.com from within Word. In the **Search Office.com for templates** box, type one or more search terms, and then click the arrow button to search.

Opening a document

1. Click the **File** tab, and then click **Open**.
2. In the left pane of the **Open** dialog box, click the drive or folder that contains the document.
3. In the right pane of the **Open** dialog box, open the folder that contains the document that you want.
4. Click the document and then click **Open**.

Print Preview

Print Preview automatically displays when you click on the **Print** tab. Whenever you make a change to a print-related setting, the preview is automatically updated.

1. Click the **File** tab, and then click **Print**. To go back to your document, click the **File** tab.
2. A preview of your document automatically appears. To view each page, click the arrows below the preview.

Print

The **Print** tab is the place to go to make sure you are printing what you want.

Click the **File** tab.

Click the **Print** command to print a document.

Click the **Print** button to print your document.

This dropdown shows the currently selected printer. Clicking the dropdown will display other available printers.

These dropdown menus show currently selected **Settings**. Rather than just showing you the name of a feature, these dropdown menus show you what the status of a feature is and describe it. This can help you figure out if you want to change the setting from what you have.

TIP: To go back to your document and make changes before you print it, click the **File** tab.

Save a document

To save a document in the format used by Word 2010 and Word 2007, do the following:

1. Click the **File** tab.

2. Click **Save As**.
3. In the **File name** box, enter a name for your document.
4. Click **Save**.

To save a document so that it is compatible with Word 2003 or earlier, do the following:

1. Click the **File** tab.
2. Click **Save As**.
3. In the **Save as type** list, click **Word 97-2003 Document**. This changes the file format to .doc.
4. In the **File name** box, type a name for the document.
5. Click **Save**.

Help

If you need additional assistance when completing your document you can use the help feature.

1. Click on the blue circle with the white question mark command
2. A **Help** box will appear.
3. Click in the **Search Help** textbox and type what you need help
4. Click the magnifying glass next to the text box and the possible with solutions will appear.

Cut, Copy and Paste

If you would like to remove text from your document you can copy or cut the text from the document. Simply highlight the text and go to the **Home** tab in the **Clipboard** group and click **Cut** or **Copy**. You can also right click on your mouse and select **Cut** or **Copy**.

Pasting Text

If you **Copy** text, you typically need to **Paste** it somewhere. The **Paste** feature in 2010 is much more detailed than in previous versions of Word. When you paste content, the **Paste Options** button provides different options, depending on the source of the content.

Keep Source Formatting: This option preserves the look of the original text.

Keep Text Only: This option removes all the original formatting from the text.

Link & Keep Source Formatting: This option preserves the look of the original text, and it maintains a link to the source file and updates the pasted text with any changes that are made to the source file.

Link & Use Destination Styles: This option formats the text to match the style that's applied where

the text is pasted. It also maintains a link to the source file and updates the pasted text with any

changes that are made to the source file.

Merge Formatting: This option changes the formatting so that it matches the text that surrounds it.
Picture: This option inserts the text as an image.
Use Destination Style: This option formats the text to match the style that is applied where the text is pasted.
Use Destination Theme: This option formats the text to match the theme that's applied to the
document where the text is pasted.
To Paste, click on the area you want your information to be inserted and either go to the **Home** tab in the **Clipboard** group and click **Paste** or right click on your mouse and select **Paste**.

Undo

The **Quick Access Toolbar** holds a variety of commands right at you finger tips. It is located in the top left of the document above the **File** and **Home** tab. You can add or remove command by clicking on the arrow to the right of the **Quick Access Toolbar.** If you make an error in your document click on the **Undo** command and it will remove the last thing you did.

Show/Hide Formatting Marks

The Show/Hide command allows you to see every time you hit the space bar, enter or tab. This feature can be quite useful when creating documents to understand where everything is placed within your document and see if any errors have been made.

On the **Home** tab, in the **Paragraph** group, click **Show/Hide**.

Formatting Text

Formatting a document can range from modifying text size to adding graphics. It is easy to add creative touches to any document with the options Microsoft Word has to offer.

Modifying Fonts

The **Font** Group allows you to change your text font style, size, color and many other elements.
1. Highlight the text you would like to modify.
2. Click on the drop down arrow of font style and font size and select the changes you would like to make.
3. While text is highlighted you can also click on the color, bold, italics or underline commands to modify the text even more.

Change Text Case

You can change the case of selected text in a document by clicking a single button called **Change Case** on the ribbon.

1. Highlight the text for which you want to change the case.
2. On the **Home** tab, in the **Font** group, click **Change Case**.
3. Choose an option from the dropdown list, which includes **Sentence case**, **lowercase**, **UPPERCASE**, **Capitalize Each Word**, and **tOGGLE cASE**.

Adding text effects

1. Select the text that you want to add an effect to.
2. On the **Home** tab, in the **Font** group, click **Text Effect**.
3. Click the effect that you want.

For more choices, point to **Outline**, **Shadow**, **Reflection**, or **Glow**, and then click the effect that you want to add.

Remove text effects

1. Select the text that you want to remove an effect from.
2. On the **Home** tab, in the **Font** group, click **Clear Formatting**.

Format Painter

The **Format Painter** feature allows you to quickly copy a format that you have applied to text already in your document.

1. Select the text or graphic that has the formatting that you want to copy.
2. On the **Home** tab, in the **Clipboard** group, single click **Format Painter.** The pointer will change to a paintbrush icon.
3. Bring your cursor to the text or graphic that you want to format and click on the text.
4. To stop formatting, press ESC or click on the **Format Painter** command again.

NOTE: Double-click the Format Painter button if you want to change the format of multiple selections in your document.

Clear Formatting

To get rid of all the styles, text effects, and font formatting in your document, do the following:

1. Select the text that you want to clear the formatting from. Or press CTRL+A to select everything in the document.
2. On the **Home** tab, in the **Font** group, click **Clear Formatting**.

NOTE: The **Clear Formatting** command will not remove highlighting from your text. To clear highlighting, select the highlighted text, and then click the arrow next to **Text Highlight Color** and click **No Colour**.

Formatting Documents

Adjusting Line Spacing

The default spacing is 1.15 line spacing and 10 points after each paragraph. The default spacing in

Office Word 2003 documents is 1.0 between lines and no blank line between paragraphs.

The easiest way to change the line spacing for an entire document is to highlight the paragraphs or entire document that you want to change the line spacing on.

1. On the **Home** tab, in the **Paragraph** group, click **Line Spacing**.
2. Do one of the following:

Click the number of line spaces that you want. For example, click **1.0** to single-space with the spacing that is used in earlier versions of Word. Click **2.0** to double-space the selected paragraph. Click **1.15** to single-space with the spacing that is used in Word 2010.

Click **Remove Space Before Paragraph** to remove any additional lines added after each paragraph as a default.

NOTE: If a line contains a large text character, graphic, or formula, Word increases the spacing for that line. To space all lines evenly within a paragraph, use exact spacing and specify an amount of space that is large enough to fit the largest character or graphic in the line. If items appear cut off, increase the amount of spacing.

Page Orientation

You can choose either portrait (vertical) or landscape (horizontal) orientation for all or part of your document.

Change Page Orientation

1. On the **Page Layout** tab, in the **Page Setup** group, click **Orientation**.
2. Click **Portrait** or **Landscape**.

Different Page Orientations on Same Document

1. Highlight the pages or paragraphs that you want to change to portrait or landscape orientation.
2. On the **Page Layout** tab, in the **Page Setup** group, click **Margins.**
3. Click **Custom Margins** at the bottom of the drop down menu.
4. A **Page Setup** dialog box will appear. On the **Margins** tab, click **Portrait** or **Landscape**.
5. In the **Apply to** list, click **Selected text** or **This point forward**.

NOTE: If you select some but not all of the text on a page to change to portrait or landscape

orientation, Word places the selected text on its own page, and the surrounding text on separate pages.

Page Margins

Page margins are the blank space around the edges of the page. In general, you insert text and graphics in the printable area inside the margins When you change a document's page margins, you change where text and graphics appear on each page. You can change the page margins either by choosing from one of Word's predefined settings in the Margins gallery or by creating custom margins.

Setting Predefined Page Margins

1. On the **Page Layout** tab, in the **Page Setup** group, click **Margins**. The Margins gallery drop down menu will appear.
2. Click the margin type that you want to apply.

Create Custom Margins

1. On the **Page Layout** tab, in the **Page Setup** group, click **Margins**.
2. At the bottom of the Margins gallery drop down menu, click **Custom Margins**.
3. The **Page Setup** dialog box will appear.
4. Enter new values for the margins in all or some of the Top, Bottom, Left or Right text boxes.
5. Click **OK**

NOTE: Most printers require a minimum width for margin settings, because they can't print all the
way to the edge of the page. If you try to set margins that are too narrow, Microsoft Word displays the message **One or more margins are set outside the printable area of the page.**

Page Breaks

Word automatically inserts a page break when you reach the end of a page. If you want the page to break in a different place, you can insert a manual page break.

Inserting a Page Break

1. Click where you want to start a new page.
2. On the **Insert** tab, in the **Pages** group, click **Page Break**.

NOTE: You can also insert breaks into your document by going to the **Page Layout** tab, **Page Setup** group and clicking on the **Breaks** command to view a variety of page and section breaks you can insert into your document.

Deleting a Page Break

You cannot delete the page breaks that Word inserts automatically; you can only delete a page break that you insert manually.

1. Go to the page break you would like to remove.
2. Select the page break by clicking in the margin next to the dotted line.
3. Press the DELETE key on your keyboard.

Headers, Footers, and Page Numbers

You can add headers, footers and page numbers numerous ways. The simplest way is to double click on the top or bottom of the page and the header and footer area will appear.
Enter the text you wish to be displayed at the top or bottom of every page.

Add Page Numbers

If you want a page number on each page, you can quickly add a page number from the gallery.

1. On the **Insert** tab, in the **Header & Footer** group, click **Page Number.**
2. Click the page number location that you want.
3. In the gallery, scroll through the options, and then click the page number format that you want.
4. To return to the body of your document, click **Close Header and Footer** on the **Design** tab (under **Header & Footer Tools**).

Header or Footer

1. On the **Insert** tab, in the **Header & Footer** group, click **Header** or **Footer.**
2. Click the header or footer that you want to add to your document and your header or footer area will open.
3. Type text in the header or footer area.
4. To return to the body of your document, click **Close Header and Footer** on the **Design** tab (under **Header & Footer Tools**).

Remove page numbers, headers, and footers

1. Click on the Header, Footer or Page Number Command.
2. A drop down menu will appear.
3. Click Remove at the bottom of the menu.

Bulleted or Numbered List

You can quickly add bullets or numbers to existing lines of text, or Word can automatically

create lists as you type. By default, if you start a paragraph with an asterisk or a number **1.**, Word recognizes that you are trying to start a bulleted or numbered list. If you don't want your text turned into a list, you can click the **AutoCorrect Options** button that appears.

Insert Bulleted or Numbered List

1. Click on the area where you would like your list to appear or highlight the text you would like to be in a list.
2. Go to the **Home** tab, in the **Paragraph** group, click **Bullets** or **Numbering**.
3. A bullet(s) or number(s) will be inserted.

Select Bullets or Numbering Style

1. Select the items that you want to add bullets or numbering to.
2. On the **Home** tab, in the **Paragraph** group, click the arrow next to the **Bullets** or **Numbering** command.
3. Select the bullet or number format you would like to be inserted.

Move a List Left or Right

If you do not like the location of your bullets or numbers you can easily move them to a preferred location.

1. Click a bullet or number in the list to highlight the list.
2. Drag the list to a new location. The entire list moves as you drag. The numbering levels do not change

Document Ruler

You can use the horizontal and vertical rulers in Word to align text, graphics, tables, and other elements in your document. To view the horizontal ruler across the top of your Word document and the vertical ruler along the left edge of your document, you must be in Print Layout view.

1. To show or hide the horizontal and vertical rulers, click **View Ruler** at the top of the vertical scroll bar.

Tab Stops

Creating tab stops can be helpful when creating a large number of documents such as flyers, table of contents or even when creating a resume. They help you to display and line up information correctly.

Setting Manual Tab Stops

1. Click the tab selector at the left end of the ruler until it displays the type of tab that you

want.

2. Then click in the ruler at the top of your page, where you want to set the tab stop.

The different types of tab stops found on the ruler are:

A **Left Tab** stop sets the start position of text that will then run to the right as you type.

A **Center Tab** stop sets the position of the middle of the text. The text centers on this position as you type.

A **Right Tab** stop sets the right end of the text. As you type, the text moves to the left.

A **Decimal Tab** stop aligns numbers around a decimal point. Independent of the number of digits, the decimal point will be in the same position. (You can align numbers around a decimal character only)

A **Bar Tab** stop doesn't position text. It inserts a vertical bar at the tab position.

NOTE: You can drag existing tab stops left or right along the ruler to a different position. Just Click and hold on the tab stop on the ruler then drag it to where ever you would like it to be.

Setting Detailed Tab Stops

If you want your tab stops at precise positions that you can't get by clicking the ruler, or if you want to insert a specific character (leader) before the tab, you can use the **Tabs** dialog box.

1. Click the **Home** tab, click the **Paragraph Dialog Box Launcher**
2. A **Paragraph** box will appear, click on the **Tabs** button at the bottom left of the dialog box.
3. A **Tabs** dialog box will appear.
4. Under **Tab stop position** area, type the location where you want to set the tab stop. Hit enter.
5. Under **Alignment**, click the type of tab stop that you want. See the table above for an explanation of the different types of tab stops.
6. To add dots with your tab stop, or to add another type of leader, click the option that you want under **Leader**.
7. Click **Set**.
8. Repeat steps 4-5 to add another tab stop, or click **OK**.
9. The **Tabs** dialog box will disappear and you should see your tabs set on the document ruler.

Clear Tab Stops

You can clear tab stops in a variety of ways, the simplest is going to the ruler, click and hold on the tab stop and drag in down towards the document. The tab stop will disappear. To quickly clear multiple tab stops and start fresh:

1. Click the **Home** tab, click the **Paragraph Dialog Box Launcher**
2. A **Paragraph** box will appear, click on the **Tabs** button at the bottom left of the dialog box.
3. A **Tabs** dialog box will appear.
4. In the list under **Tab stop position**, click the tab stop position that you want to clear, and then click **Clear**. To remove the spacing from all manual tab stops, click **Clear All**.
5. Click **OK**.

Working with Graphics

Inserting Shapes

You can add one shape to your file or combine multiple shapes to make a drawing or a more complex shape. Available shapes include lines, basic geometric shapes, arrows, equation shapes, flowchart shapes, stars, banners, and callouts. After you add one or more shapes, you can add text, bullets, numbering, and Quick Styles to them.

1. On the **Insert** tab, in the **Illustrations** group, click **Shapes**.
2. A drop down menu will appear, click the shape that you want.
3. Click anywhere in the document, and then drag to place the shape.

Insert Text to Shapes

Once you have added a shape, you may want to add text inside the shape. All you have to do is click on the inside of the shape and start typing.

NOTE: The text that you add becomes part of the shape — if you rotate or flip the shape, the text rotates or flips also.

Format Shapes

After you insert a shape a new tab called **Drawing Tools Format** will appear every time you click on the shape.

1. Click the shape that you want to apply a new or different Quick Style to.
2. Go to the **Drawing Tools Format** tab, in the **Shape Styles** group, click the style that you want to be applied.
3. To see more Quick Styles, click the **More** button .

The **Drawing Tools Format** Tab also allows you to change the shape fill, outline, effects and select how the text in your document is wrapped around the shape.

Delete Shapes

If you decide you no longer want the shape in your document then click on the shape and then press DELETE.

Inserting Text Boxes

A text box is an object that lets you put and type text anywhere in your file.

1. On the **Insert** tab, in the **Text** group, click **Text Box** and a drop down menu will appear.
2. Click on a text box template or click **Draw Text Box** at the bottom of the drop down menu to draw your own text box.
3. If you elect to draw your own text box you need to click in the document, and then drag to draw the text box the size that you want.
4. To add text to a text box, click inside the text box, and then type or paste text.

To format text in the text box, select the text, and then use the formatting options in the **Font** group on the **Home** tab.

To position the text box, click it, and then when the pointer becomes a, drag the text box to a new location.

NOTE: If you have problems printing text boxes, make sure that the **Print drawings created in Word** check box is selected. To do this, click the **File** tab, click **Options**, click **Display**, and then under **Printing Options**, select the **Print drawings created in Word** check box.

Deleting Text Boxes

To remove a text box just click the border of the text box that you want to delete, and then press DELETE. Make sure that the pointer is not inside the text box, but rather on the border of the text box. If the pointer is not on the border, pressing DELETE will delete the text inside the text box and not the text box.

WordArt

WordArt can be used to add special text effects to your document. For example, you can stretch a title, skew text, make text fit a preset shape, or apply a gradient fill. This WordArt becomes an object that you can move or position in your document to add decoration or emphasis. You can modify or add to the text in an existing WordArt object whenever you want. To add WordArt to text in your document, complete the following steps:

1. On the **Insert** tab, in the **Text** group, click **WordArt**,
2. A Drop down menu will appear, click the WordArt style that you want.
3. A Text Box will appear with the words" Enter your text here", Enter your text.

Insert Picture/Clip Art

Pictures and clip art can be inserted or copied into a document from many different sources, including downloaded from a clip art Web site provider, copied from a Web page, or inserted from a folder where you save pictures.

Insert Clip Art

1. On the **Insert** tab, in the **Illustrations** group, click **Clip Art**.
2. A **Clip Art** task pane will appear on the right of your screen, in the **Search for** box, type a word or phrase that describes the clip art that you want.
3. Click **Go**.
4. In the list of results, double click on the clip art to insert it into your document.

Insert Picture from Web

1. Open the document.
2. From the Web page, drag the picture that you want into the Word document.

Insert Picture from File

To insert a picture saved in your computer, insert it by following these steps.

1. Click where you want to insert the picture in your document.
2. On the **Insert** tab, in the **Illustrations** group, click **Picture**.
3. Locate the picture that you want to insert. For example, you might have a picture file located in **My Documents**.
4. Double-click the picture that you want to insert and it will appear in your document.

NOTE: To resize a picture, select the picture you've inserted in the document. To increase or decrease the size in one or more directions, drag a sizing handle away from or toward the center, while you do one of the following:

Sizing Graphics

You can easily resize pictures, text boxes, shapes, and WordArt in your file. You can also crop pictures or return them to their original size.

Manually Resize Graphics

1. Click the picture shape text box or WordArt that you want to resize.
2. Small circles or squares, also known as sizing handles, will appear at the corners and sides of a selected object.
3. Click and hold on a sizing handle away from or toward the center to increase or decrease the size of the picture.

Cropping a Picture

Cropping reduces the size of a picture by removing vertical or horizontal edges. Cropping is often used to hide or trim a part of a picture, either for emphasis or to remove unwanted portions.

1. Click on the picture that you want to crop.

2. Go to **Picture Tools**, on the **Format** tab, in the **Size** group, click **Crop**.
3. Black dotted lines will appear around your picture. Then drag the centre cropping handle on that side inward.

4. As you drag the cropping handle you will notice the area of your graphic you want removed will become gray.
5. Once you have cropped out everything you want, click outside of the graphic for the gray area you want removed to disappear.

Uncrop a Picture

You can always restore a resized or a cropped picture to its original appearance.

1. Click on your picture
2. Go to **Picture Tools**, on the **Format** tab, in the **Size** group, click **Crop**.
3. Black dotted lines will appear around your picture. Drag the black lines away from the center of the picture and the original picture will appear.

Advanced Formatting Techniques

Create Columns

Columns can be used in documents such as brochures, newsletters or to save space when creating lists.

Add columns before entering text:

1. Go to the **Page Layout** tab, in the **Page Setup** group, click **Columns**.
2. Click the layout that you want. Your document will be formatted in columns.

NOTE: To add a vertical line between the columns, click **Columns** again, click **More Columns**, and then select the **Line between** check box. You can also adjust the column width and spacing.

Add columns to part of a document

To do that highlight the text you want formatted in columns, or place your cursor where you want columns to begin.

1. On the **Page Layout** tab, in the **Page Setup** group, click **Columns**.
2. Click **More Columns**.
3. Click the number of columns that you want.
4. In the **Apply to** list, click **Selected text** or **This point forward**.

NOTE: To change the layout again further on in your document, select text or click where you want to change the layout, and then follow the same steps. For example, you can change from one column to a two-column layout, and then you can change back to the single-column layout on a later page.

SmartArt Graphic

A SmartArt graphic is a visual representation of your information that you can quickly and easily create, choosing from among many different layouts, to effectively communicate your message or ideas. You can create SmartArt graphics in Excel, Outlook, PowerPoint, and Word.

SmartArt graphics enables you to create designer-quality illustrations with only a few clicks of your mouse. When you create a SmartArt graphic, you are prompted to choose a type of SmartArt graphic, such as **Process**, **Hierarchy**, **Cycle**, or **Relationship**. Each type of SmartArt graphics contains several different layouts. After you choose a layout, it is easy to switch the layout or type of a SmartArt graphic. Most of your text and other content, colors, styles, effects, and text formatting are automatically carried over to the new layout.

When you select a layout, placeholder text (such as **[Text]**) is displayed, so that you can see how your SmartArt graphic looks, nor is it displayed during a slide show. However, the shapes are always displayed and printed, unless you delete them. You can replace the placeholder text with your own content.

Create a SmartArt Graphic

1. On the **Insert** tab, in the **Illustrations** group, click **SmartArt**.
2. In the **Choose a SmartArt Graphic** dialog box, click the type and layout that you want.
3. Enter your text by doing one of the following:

Click **[Text]** in the Text pane, and then type your text.

Copy text from another location, click **[Text]** in the Text pane, and then paste your text.

Add or Delete Shapes in SmartArt Graphic

1. Click the SmartArt graphic that you want to add another shape to.
2. Click the existing shape that is located closest to where you want to add the new shape.
3. Under **SmartArt Tools**, on the **Design** tab, in the **Create Graphic** group, click the arrow under **Add Shape**.
4. Do one of the following:

To insert a shape after the selected shape, click **Add Shape After**.

To insert a shape before the selected shape, click **Add Shape Before**.

NOTE: To delete a shape from your SmartArt graphic, click the shape you want to delete, and then press DELETE. To delete your entire SmartArt graphic, click the border of your SmartArt graphic, and then press DELETE.

Format SmartArt Graphic

You can apply color variations to the shapes in your SmartArt graphic.

1. Click your SmartArt graphic.
2. Under **SmartArt Tools**, on the **Design** tab, in the **SmartArt Styles** group,
3. Select the SmartArt Style you wish to apply to add line styles, bevels or 3-D effects.
4. In the **SmartArt Styles** group you can also click **Change Colors** to further modify your SmartArt

graphic.

NOTE: If you don't see the **SmartArt Tools** or **Design** tabs, make sure that you've selected a SmartArt graphic. You may have to double-click the SmartArt graphic to open the **Design** tab.

5. Click the color variation that you want.

Tables

Using tables in Word can provide you with additional elements to any document. Tables can be used to create lists or format text in an organized fashion.

Inserting a Table

1. Click where you want to insert a table.
2. On the **Insert** tab, in the **Tables** group, click **Table**
3. A drop down box will appear; click and hold your mouse then drag to select the number of rows and columns that you want inserted into your document. You will see your table appearing in your document as you drag on the grid.
4. Once you have highlighted the rows and columns you would like let go of your mouse and the table will be in your document

Add Row/Column to Table

1. Click on the table.
2. Under **Table Tools**, go to the **Layout** tab
3. Click on the **Insert Above** or **Insert Below** to add a row, Click on **Insert Left** or **Insert Right** to insert a column.
4. Click on **Delete** to remove a column, row or cell.

Delete a Table

1. Rest the pointer on the table until the table move handle appears, and then click the table move

handle.
2. Press BACKSPACE on your keyboard.

Delete Table Contents.
You can delete the contents of a cell, a row, a column, or the whole table. When you delete the contents of a table, the table's rows and columns remain in your document.
1. Select the contents that you want to clear by following the table below:

TO SELECT	DO THIS
The entire table	In Print Layout view, rest the pointer over the table until the move handle appears, and then click the table move handle.
A row or rows	Click to the left of the row.
A column or columns	Click the column's top gridline or border.
A cell	Click the left edge of the cell.

2. Press DELETE.

Finalizing a Document
Using the "Spell Check" Feature
As you type your document, red wavy lines will appear under any word that is spelled incorrectly. The fastest way to fix spelling errors is to:
1. Put your cursor over the misspelled word and right click.
2. A drop down box will appear with correct spellings of the word.
3. Highlight and left click the word you want to replace the incorrect word with.
To complete a more comprehensive Spelling and Grammar check, you can use the Spelling and
Grammar feature.
1. Click on the **Review** tab
2. Click on the **Spelling & Grammar** command (a blue check mark with ABC above it).
3. A **Spelling and Grammar** box will appear.
4. You can correct any Spelling or Grammar issue within the box.

Bibliography
A bibliography is a list of sources, usually placed at the end of a document that you consulted or cited in creating the document. In Microsoft Word 2010, you can automatically generate a bibliography based on the source information that you provide for the document.

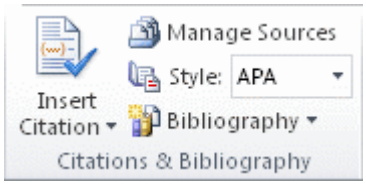
Each time that you create a new source, the source information is saved on your computer, so that you can find and use any source you have created.

You can choose the bibliography style that you want, and you can add new bibliography styles.

Add a new citation and source to a document

When you add a new citation to a document, you also create a new source that will appear in the bibliography.

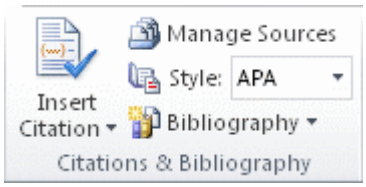
1. On the **References** tab, in the **Citations & Bibliography** group, click the arrow next to **Style**.



2. Click the style that you want to use for the citation and source.

   For example, social sciences documents usually use the MLA or APA styles for citations and sources.

3. Click at the end of the sentence or phrase that you want to cite.
4. On the **References** tab, in the **Citations & Bibliography** group, click **Insert Citation**.



5. Do one of the following:

- To add the source information, click **Add New Source**.
- To add a placeholder, so that you can create a citation and fill in the source information later, click **Add New Placeholder**. A question mark appears next to placeholder sources in Source Manager.

6. Begin to fill in the source information by clicking the arrow next to **Type of source**.

   For example, your source might be a book, a report, or a Web site.

7. Fill in the bibliography information for the source.

   To add more information about a source, click the **Show All Bibliography Fields** check box.

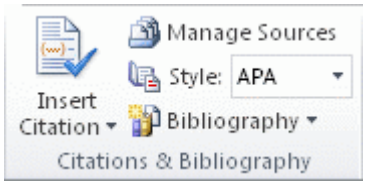
NOTES

- If you choose a GOST or ISO 690 style for your sources and a citation is not unique, append an alphabetic character to the year. For example, a citation would appear as [Pasteur, 1848a].
- If you choose ISO 690-Numerical Reference and your citations still don't appear consecutively, you must click the ISO 690 style again, and then press ENTER to correctly order the citations.

Find a source

The list of sources that you consult or cite can become quite long. At times you might search for a source that you cited in another document by using the Manage Sources command.

1. On the **References** tab, in the **Citations & Bibliography** group, click **Manage Sources**.



If you open a new document that does not yet contain citations, all of the sources that you used in previous documents appear under **Master List**.

If you open a document that includes citations, the sources for those citations appear under **Current List**. All the sources that you have cited, either in previous documents or in the current document, appear under **Master List**.

2. To find a specific source, do one of the following:

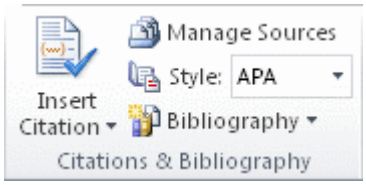
- In the sorting box, sort by author, title, citation tag name, or year, and then search the resulting list for the source that you want to find.
- In the **Search** box, type the title or author for the source that you want to find. The list dynamically narrows to match your search term.

NOTE You can click the **Browse** button in **Source Manager** to select another master list from which you can import new sources into your document. For example, you might connect to a file on a shared server, on a research colleague's computer or server, or on a Web site that is hosted by a university or research institution.

Edit a Citation Placeholder

Occasionally, you may want to create a placeholder citation, and then wait until later to fill in the complete bibliography source information. Any changes that you make to a source are automatically reflected in the bibliography, if you have already created one. A question mark appears next to placeholder sources in Source Manager.

1. On the **References** tab, in the **Citations & Bibliography** group, click **Manage Sources**.



2. Under **Current List**, click the placeholder that you want to edit.

   NOTE Placeholder sources are alphabetized in Source Manager, along with all other sources, based on the placeholder tag name. Placeholder tag names are numbers by default, but you can customize the placeholder tag name with whatever tag you want.

3. Click **Edit**.
4. Begin to fill in the source information by clicking the arrow next to **Type of source**.

   For example, your source might be a book, a report, or a Web site.

5. Fill in the bibliography information for the source. Use the **Edit** button to fill in fields instead of having to type names in the appropriate format.

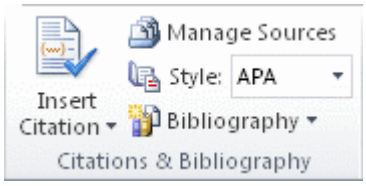
   To add more information about a source, click the **Show All Bibliography Fields** check box.

Create a Bibliography

You can create a bibliography at any point after you insert one or more sources in a document. If you don't have all of the information that you need about a source to create a complete citation, you can use a placeholder citation, and then complete the source information later.

NOTE: Placeholder citations do not appear in the bibliography.

1. Click where you want to insert a bibliography, usually at the end of the document.
2. On the **References** tab, in the **Citations & Bibliography** group, click **Bibliography**.



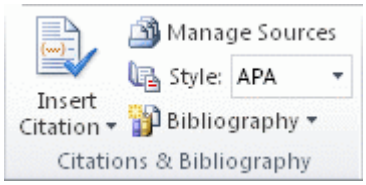
3. Click a predesigned bibliography format to insert the bibliography into the document.

Add new bibliography styles from Office Online

You can automatically download new bibliography styles and updates to styles that are already installed by turning on content updates from Office Online. You can also manually add new styles.

ADD NEW STYLES AUTOMATICALLY

1. On the **References** tab, in the **Citations & Bibliography** group, click the arrow in the **Style** list.



2. Click **Enable Content Updates From Office Online**.

If you already enabled content updates from Office Online, this button choice isn't displayed.

Create a Table of Contents

You create a table of contents by applying heading styles — for example, Heading 1, Heading 2, and Heading 3 — to the text that you want to include in the table of contents. Microsoft Office Word searches for those headings and then inserts the table of contents into your document.

When you create a table of contents this way, you can automatically update it if you make changes in your document.

Microsoft Office Word provides a gallery of automatic table of contents styles. Mark the table of contents entries, and then click the table of contents style that you want from the gallery of options.

You can also create a custom table of contents with the options you choose and any custom styles that you've applied by using the **Table of Contents** dialog box.

Mark entries for a Table of Contents

The easiest way to create a table of contents is to use the built-in heading styles (heading style: Formatting applied to a heading. Microsoft Word has nine different built-in styles: Heading 1 through Heading 9.). You can also create a table of contents that is based on the

custom styles that you have applied. Or you can assign the table of contents levels to individual text entries.

MARK ENTRIES BY USING BUILT-IN HEADING STYLES

1. Select the text that you want to appear in the table of contents.
2. On the **Home** tab, in the **Styles** group, click the style that you want.

For example, select text that you want to style as a main heading, click the style called **Heading 1** in the Quick Style gallery.

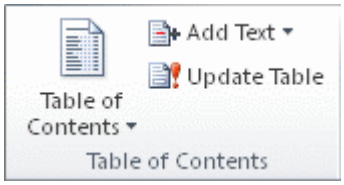
NOTES:

- If you don't see the style that you want, click the arrow to expand the Quick Style gallery.
- If the style that you want does not appear in the Quick Style gallery, press CTRL+SHIFT+S to open the **Apply Styles** task pane. Under **Style Name**, click the style that you want.

Create a Table of Contents from the Gallery

After you mark the entries for your table of contents, you are ready to build it.

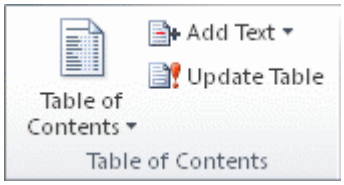
1. Click where you want to insert the table of contents, usually at the beginning of a document.
2. On the **References** tab, in the **Table of Contents** group, click **Table of Contents**, and then click the table of contents style that you want.



NOTE If you want to specify more options — for example, how many heading levels to show — click **Insert Table of Contents** to open the **Table of Contents** dialog box. To find out more about the different options, see Format the table of contents.

Create a Custom Table of Contents

1. On the **References** tab, in the **Table of Contents** group, click **Table of Contents**, and then click **Insert Table of Contents**.



2. In the **Table of Contents** dialog box, do any of the following:

- To change how many heading levels are displayed in the table of contents, enter the number that you want in the box next to **Show levels**, under **General**.
- To change the overall look of your table of contents, click a different format in the **Formats** list. You can see what your choice looks like in the **Print Preview** and **Web Preview** areas.
- To change the type of line that appears between the entry text and the page number, click an option in the **Tab leader** list.
- To change the way heading levels are displayed in the table of contents, click **Modify**. In the **Style** dialog box, click the level that you want to change, and then click **Modify**. In the **Modify Style** dialog box, you can change the font, the size, and the amount of indentation.

3. To use custom styles in the table of contents, click **Options**, and then do the following:

1. Under **Available styles**, find the style that you applied to the headings in your document.
2. Under **TOC level**, next to the style name, type a number from 1 to 9 to indicate the level that you want the heading style to represent.

NOTE If you want to use only custom styles, delete the TOC level numbers for the built-in styles, such as Heading 1.

3. Repeat step 1 and step 2 for each heading style that you want to include in the table of contents.
4. Click **OK**.

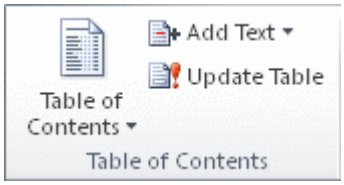
- Choose a table of contents to fit the document type:
- **Printed document:** If you are creating a document that readers will read on a printed page, create a table of contents in which each entry lists both the heading and the page number where the heading appears. Readers can turn to the page that they want.

- **Online document:** For a document that readers will read online in Word, you can format the entries in the table of contents as hyperlinks, so that readers can go to a heading by clicking its entry in the table of contents.

Update the Table of Contents

If you added or removed headings or other table of contents entries in your document, you can quickly update the table of contents.

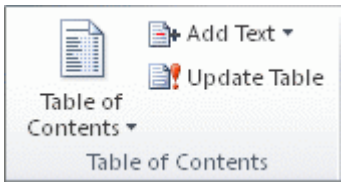
1. On the **References** tab, in the **Table of Contents** group, click **Update Table**.



2. Click **Update page numbers only** or **Update entire table**.

Delete a Table of Contents

On the **References** tab, in the Table of Contents group, click **Table of Contents**.



1. Click **Remove Table of Contents**.

MAIL MERGE

Mail Merge is a wizard facilities that enables you send a single letter to many recipients by asking questions on how you want your finished product to look like.

Step by Step Mail Merge Procedure

Click on **Mailings** Tab

Click Start **Mail Merge**

Select Step by Step Mail Merge Wizard

Select the type of document (i.e. letters, e-mail messages, envelopes, labels, etc.) under Select document type.

Click Next

Choose the Starting document

Click on Next

Select recipient (you can use an existing list or type a new list)

If you are using existing list, click on Browse to locate the file in which your list is stored and then open the file

If you select ‘type a new list’, click on Create and Add new entry under New Address List dialog box (To add more entries, click on new entry button)

Click on OK

Save the Address List and click on OK

Click on Next to write your letter

To add recipient information to your letter, click a location in the document, and then click address book

Click on OK if you are satisfied with the preview of the address list

Click Next to edit and preview your individual letters

Click on Next to complete the merge

Chapter 4: introduction to Electronic Spreadsheet with Microsoft Excel

4.1 Introduction

This is an application package used mostly in accounting, statistics, financial and inventory control. The most popular spreadsheet packages available in the market are called Lotus-1-2-3, Microsoft Excel, and SPSS (Statistical Package for Social Scientists).

Microsoft Excel is a spreadsheet program, which enables you to record, format and analyse numerical information. You can use Excel to create expense report, track and analyse sales, organizes finances and manage different kind of data quickly and easily.

Over the years, spreadsheets have found extensive use in a diverse range of discipline. Professionals in mathematics, engineering, science, medicine, the arts, social science and education find the spreadsheet to be a natural tool for modelling, implementing and analyzing algorithms, constructing laboratory reports, carrying out statistical analyses and producing graphical displays.

Definition of Terms

Row: A row consists of series of boxes arranged horizontally in a workbook. Rows are numbered serially from 1 to 1048576.

Column: A column is made up of series of boxes arranged vertically in a workbook. An alphabet or combination of two or three alphabets identifies each column. The first column in a worksheet is ‘A’ and the last column is ‘XFD’.

Cell: The intersection of each column and row is referred to as a cell. This is the basic unit of a worksheet in which you can store data. Each cell holds a single piece of information known as entry.

Cell Address: The reference name or identifier for a particular cell is known as cell address. It is made up of the column and row locations that intersect to make up the cell. This includes a unique letter and number combination.

Worksheet: A worksheet is made up of cells organized into rows and columns. It can be defined as any area to be documented and consists of a series of rows and columns, which is suitable for any form of analysis.

Workbook: A workbook is another name for an Excel file. It consists of various worksheets. Workbook keeps the sheets or pages you need together in the same file. The workbook can contain different charts, sheets, visual basic modules and other types of documents. You can switch between sheets by clicking the sheet number tab at the bottom

of the workbook.

Getting Started

Now that you have an understanding of where things are located, let's look at the steps needed to create an Excel document.

Opening Outlook

You may have a shortcut to Word on your desktop, if so double click the icon and Word will open. If not follow the steps below:

1. Click on the Start button
2. Highlight Programs
3. Highlight Microsoft Office
4. Click on Microsoft Excel 2010

Create a New Workbook

1. Click the **File** tab and then click **New**.
2. Under **Available Templates**, double click **Blank Workbook** or Click **Create**.

Find and Apply Template

Excel 2010 allows you to apply built-in templates and to search from a variety of templates on Office.com. To find a template in Excel 2010, do the following:

1. On the **File** tab, click **New**.
2. Under **Available Templates**, do one of the following:

a. To reuse a template that you've recently used, click **Recent Templates**, click the template that you want, and then click **Create**.

b. To use your own template that you already have installed, click **My Templates**, select the template that you want, and then click **OK**.

c. To find a template on Office.com, under **Office.com Templates**, click a template category, select the template that you want, and then click **Download** to download the template from Office.com to your computer.

3. Once you click on the template you like it will open on your screen as a new document.

Enter Data in a Worksheet

1. Click the cell where you want to enter data.
2. Type the data in the cell.
3. Press enter or tab to move to the next cell.

Select Cells or Ranges

In order to complete more advanced processes in Excel you need to be able to highlight or select cells, rows and columns. There are a variety of ways to do this, see the table below to understand the options.

To select	Do this
A single cell	Click the cell, or press the arrow keys to move to the cell.
A range of cells	Click the first cell in the range, and then drag to the last cell, or hold down SHIFT while you press the arrow keys to extend the selection.
A large range of cells	Click the first cell in the range, and then hold down SHIFT while you click the last cell in the range. You can scroll to make the last cell visible.
All cells on a worksheet	Click the Select All button or press CTRL+A.
Nonxadjacent cells or cell while ranges	Select the first cell or range of cells, and then hold down CTRL you select the other cells or ranges
An entire row or column	Click the row or column heading.
Adjacent rows or columns	Drag across the row or column headings. Or select the first row or column; then hold down SHIFT while you select the last row or column.
Non adjacent rows or	Click the column or row heading of the first row or column in your columns selection; then hold down CTRL while you click the column or row headings of other rows or columns that you want to add to the selection.
Cells to the last used cell	Select the first cell, and then press CTRL+SHIFT+END to extend the on the worksheet (lower-selection of cells to the last used cell on the worksheet (lower-right right corner).
Cells to the beginning of	Select the first cell, and then press CTRL+SHIFT+HOME to extend the worksheet.

NOTE: To cancel a selection of cells, click any cell on the worksheet. This is not applicable to cells with formulas in it.

Save a Spreadsheet

To save a document in the format used by Excel 2010 and Excel 2007, do the following:

1. Click the **File** tab.
2. Click **Save As**.
3. In the **File name** box, enter a name for your document.
4. Click **Save**.

To save a document so that it is compatible with Excel 2003 or earlier, do the following:

1. Click the **File** tab.
2. Click **Save As**.
3. In the **Save as type** list, click **Excel 97-2003 Document**. This changes the file format to .xls.

4. In the **File name** box, type a name for the document.
5. Click **Save**.

Print Preview

Print Preview automatically displays when you click on the **Print** tab. Whenever you make a change to a print-related setting, the preview is automatically updated.

1. Click the **File** tab, and then click **Print**. To go back to your document, click the **File** tab.
2. A preview of your document automatically appears. To view each page, click the arrows below the preview.

Print a Worksheet

1. Click the worksheet or select the worksheets that you want to print.
2. Click File
3. Click Print.
4. Once you are on the Print screen you can select printing options:

To change the printer, click the drop-down box under Printer, and select the printer that you want.

To make page setup changes, including changing page orientation, paper size, and page margins, select the options that you want under Settings.

To scale the entire worksheet to fit on a single printed page, under Settings, click the option that you want in the scale options drop-down box.

To print the specific information, select Print Active Sheets or Print Entire Workbook

5. Click Print.

Help

If you need additional assistance when completing your document you can use the help feature.

1. Click on the blue circle with the white question mark command
2. A **Help** box will appear.
3. Click in the **Search Help** textbox and type what you need help with
4. Click the magnifying glass next to the text box and the possible solutions will appear.

Modifying Spreadsheets

In order to create an understandable and professional document you will need to make adjustments to the cells, rows, columns and text. Use the following processes to assist when creating a spreadsheet.

Cut, Copy, and Paste Data

You can use the Cut, Copy, and Paste commands in Microsoft Office Excel to move or copy entire cells or their contents. **NOTE:** Excel displays an animated moving border around

cells that have been cut or copied. To cancel a moving border, press ESC.

Move/Copy Cells

When you move or copy a cell, Excel moves or copies the entire cell, including formulas and their resulting values, cell formats, and comments.

1. Select the cells that you want to move or copy.
2. On the **Home** tab, in the **Clipboard** group, do one of the following:

a. To move cells, click Cut

b. To copy cells, click Copy

3. Click in the center of the cell you would like to Paste the information to.
4. On the Home tab, in the Clipboard group, click Paste

NOTES: Excel replaces existing data in the paste area when you cut and paste cells to move them. When you copy cells, cell references are automatically adjusted. If the selected copy or paste area includes hidden cells, Excel also copies the hidden cells. You may need to temporarily unhide cells that you don't want to include when you copy information.

Move/Copy Cells with Mouse

1. Select the cells or a range of cells that you want to move or copy.
2. To move a cell or range of cells, point to the border of the selection. When the pointer becomes a move pointer drag the cell or range of cells to another location.

Column Width and Row Height

On a worksheet, you can specify a column width of 0 to 255 and a row height of 0 to 409. This value represents the number of characters that can be displayed in a cell that is formatted with the standard font. The default column width is 8.43 characters and the default row height is 12.75 points. If a column/row has a width of 0, it is hidden.

Set Column/Row Width/Height

1. Select the column(s) or row(s) that you want to change.
2. On the **Home** tab, in the **Cells** group, click **Format**.
3. Under **Cell Size**, click **Column Width** or **Row Height**.
4. A **Column Width** or **Row Height** box will appear.
5. In the **Column Width** or **Row Height** box, type the value that you want your column or row to be.

Automatically Fit Column/Row Contents

1. Click the **Select All** button
2. Double-click any boundary between two column/row headings.
3. All Columns/Rows in the entire worksheet will be changed to the new size

NOTE: At times, a cell might display #####. This can occur when the cell contains a

number or a date that exceeds the width of the cell so it cannot display all the characters that its format requires. To see the entire contents of the cell with its current format, you must increase the width of the column.

Set Column/Row Width/Height with Mouse

To change the width of one column/row

1. Place you cursor on the line between two rows or columns.
2. A symbol that looks like a lower case t with arrows on the horizontal line will appear
3. Drag the boundary on the right side of the column/row heading until the column/row is the width that you want.

To change the width of multiple columns/rows

1. Select the columns/rows that you want to change
2. Drag a boundary to the right of a selected column/row heading.
3. All selected columns/rows will become a different size.

To change the width of columns/rows to fit the contents in the cells

1. Select the column(s) or row(s) that you want to change
2. Double-click the boundary to the right of a selected column/row heading.
3. The Column/Row will automatically be size to the length/height of the longest/tallest text.

Merge or Split Cells

When you merge two or more adjacent horizontal or vertical cells the cells become one larger cell that is displayed across multiple columns or rows. When you merge multiple cells, the contents of only one cell appear in the merged cell.

Merge and Center Cells

1. Select two or more adjacent cells that you want to merge.
2. On the **Home** tab, in the **Alignment** group, click **Merge and Center**.
3. The cells will be merged in a row or column, and the cell contents will be centered in the merged cell.

Merge Cells

To merge cells only, click the arrow next to **Merge and Center**, and then click **Merge Across** or **Merge Cells**.

Split Cells

1. Select the merged cell you want to split
2. To split the merged cell, click **Merge and Center**

The cells will split and the contents of the merged cell will appear in the upper-left cell of the range of split cells.

Automatically Fill Data

To quickly fill in several types of data series, you can select cells and drag the fill handle

To use the fill handle, you select the cells that you want to use as a basis for filling additional cells, and then drag the fill handle across or down the cells that you want to fill.

1. Select the cell that contains the formula that you want to be brought to other cells.
2. Move your curser to the small black square in the lower-right corner of a selected cell also known as the fill handle. Your pointer will change to a small black cross.
3. Click and hold your mouse then drag the fill handle across the cells, horizontally to the right or vertically down, that you want to fill.
4. The cells you want filled will have a gray looking border around them. Once you fill all of the cells let go of your mouse and your cells will be populated.

Formatting Spreadsheets

To further enhance your spreadsheet you can format a number of elements such as text, numbers, colouring, and table styles. Spreadsheets can become professional documents used for company meetings or can even be published.

Wrap Text

You can display multiple lines of text inside a cell by wrapping the text. Wrapping text in a cell does not affect other cells.

1. Click the cell in which you want to wrap the text.
2. On the **Home** tab, in the **Alignment** group, click **Wrap Text**.
3. The text in your cell will be wrapped.

NOTE: If the text is a long word, the characters won't wrap (the word won't be split); instead, you can widen the column or decrease the font size to see all the text. If all the text is not visible after you wrap the text, you might have to adjust the height of the row. On the **Home** tab, in the **Cells** group, click **Format**, and then under **Cell Size** click **AutoFit Row**

Format Numbers

In Excel, the format of a cell is separate from the data that is stored in the cell. This display difference can have a significant effect when the data is numeric. For example, numbers in cells will default as rounded numbers, date and time may not appear as anticipated. After you type numbers in a cell, you can change the format in which they are displayed to ensure the numbers in your spreadsheet are displayed as you intended.

1. Click the cell(s) that contains the numbers that you want to format.
2. On the **Home** tab, in the **Number** group, click the arrow next to the **Number Format** box, and then click the format that you want

.

If you are unable to format numbers in the detail you would like that you can click on the **More Number Formats** at the bottom of the **Number Format** drop down list.

In the Category list, click the format that you want to use, and then adjust settings to the right of the Format Cells dialog box. For example, if you're using the Currency format, you can select a different currency symbol, show more or fewer decimal places, or change the way negative numbers are displayed.

Cell Borders

By using predefined border styles, you can quickly add a border around cells or ranges of cells. If
predefined cell borders do not meet your needs, you can create a custom border.

NOTE: Cell borders that you apply appear on printed pages. If you do not use cell borders but want worksheet gridline borders for all cells to be visible on printed pages, you can display the gridlines.

Apply Cell Borders

1. On a worksheet, select the cell or range of cells that you want to add a border to, change the border style on, or remove a border from.
2. Go to the **Home** tab, in the **Font** group
3. Click the arrow next to **Borders**
4. Click on the border style you would like
5. The border will be applied to the cell or cell range

NOTE: To apply a custom border style, click **More Borders**. In the **Format Cells** dialog box, on the **Border** tab, under **Line** and **Colour**, click the line style and colour that you want.

Remove Cell Borders

1. Go to the **Home** tab, in the **Font** group
2. Click the arrow next to **Borders**
3. Click **No Border**

NOTES: The **Borders** button displays the most recently used border style. You can click the Borders button (not the arrow) to apply that style.

Cell Styles

You can create a cell style that includes a custom border, colours and accounting formatting.

1. On the **Home** tab, in the **Styles** group, click **Cell Styles**.
2. Select the different cell style option you would like applied to your spreadsheet.

NOTE: If you would like to apply a cell fill and a cell border, select the cell fill colour first then ensure both formats are applied.

Cell and Text Colouring

You can also modify a variety of cell and text colours manually.

Cell Fill

1. Select the cells that you want to apply or remove a fill colour from.

2. Go to the **Home** tab, in the **Font** group and select one of the following options:

a. To fill cells with a solid colour, click the arrow next to **Fill Colour**, and then under **Theme Colours** or **Standard colours**, click the colour that you want.

b. To fill cells with a custom colour, click the arrow next to **Fill Colour**, click **More Colours**, and then in the **Colours** dialog box select the colour that you want.

c. To apply the most recently selected colour, click **Fill Colour**

.

NOTE: Microsoft Excel saves your 10 most recently selected custom colours. To quickly apply one of these colours, click the arrow next to **Fill Colour** , and then click the colour that you want under **Recent Colours**.

Remove Cell Fill

1. Select the cells that contain a fill colour or fill pattern.
2. On the **Home** tab, in the **Font** group, click the arrow next to **Fill Colour**, and then click **No Fill**.

Text Colour

1. Select the cell, range of cells, text, or characters that you want to format with a different text colour.
2. On the **Home** tab, in the **Font** group and select one of the following options:

a. To apply the most recently selected text colour, click **Font Colour**

b. To change the text colour, click the arrow next to **Font Colour**, and then under **Theme Colours** or **Standard Colours**, click the colour that you want to use.

Bold, Underline and Italics Text

1. Select the cell, range of cells, or text.
2. Go to the **Home** tab, in the **Font** group
3. Click on the Bold (**B**) Italics (*I*) or Underline (U) commands.
4. The selected command will be applied.

Customize Worksheet Tab

1. On the **Sheet tab** bar, right-click the sheet tab that you want to customize
2. Click **Rename** to rename the sheet or **Tab Colour** to select a tab colour.
3. Type in the name or select a colour you would like for your spreadsheet.
4. The information will be added to the tab at the bottom of the spreadsheet.

Entering Formula to Calculate a Value

Using a Formula

1. Click the cell in which you want to enter the formula
2. Type = (an equal sign)

3. Enter the formula
4. Press Enter

Using a Function

1. Click the cell in which you want to enter the formula
2. Click insert function on the formula bar or click on formula tab and select insert function
3. Click the function you want
4. Enter the arguments
5. Click on OK

The following is a list of commonly used functions, their syntax and some basic examples:
SUM: Adds all numbers in arrange of cells
Syntax
= SUM(number1, number2,…)
Examples
If cells A2:E2 contain 5,15,30,40,and 50
=SUM(A2:C2) equals 50
=SUM(B2:E2,15) equals 150

Auto Sum

To summarize values quickly, you can also use **AutoSum**.
1. Select the cell where you would like your formulas solution to appear.
2. Go to the **Home** tab, in the **Editing** group,
3. Click **AutoSum**, to sum your numbers or click the arrow next to **AutoSum** to select a function that you want to apply.

AVERAGE: Average returns the arithmetic mean of the arguments
Syntax
= AVERAGE(number1, number2,…)
Examples
If A1:A5 contains numbers 10,7,9,27,and 2 then
=AVERAGE(A1:A5) equals 11
=AVERAGE(A1:A5,5) equals 10

PRODUCT: Multiplies all the numbers given as arguments and returns the product
Syntax
= PRODUCT(number1, number2,…)
Examples
If cells A2:C2 contain 5,15, and 20 then
=PRODUCT(A2:C2) equals 1500

=PRODUCT(A2:C2,2) equals 3000

MIN: Returns the smallest number in a set of values
Syntax
= MIN(number1, number2,…)
Examples
If cells A1:A5 contain 10, 7, 9, 27, and 2
=MIN(A1:A5) equals 2
=MIN(A1:A5,0) equals 0

MAX: Returns the largest number in a set of values
Syntax
= MAX(number1, number2,…)
Examples
If cells A1:A5 contain 10, 7, 9, 27, and 2
=MAX(A1:A5) equals 27
=MAX(A1:A5,30) equals 30

MODE: Returns the most frequently occurring or repetitive value in any array or range of data
Syntax
= MODE(number1:number n)
Examples
If cells A1:A5 contain 10, 2, 9, 27, and 2
=MODE(A1:A5) equals 2

MEDIAN: Returns the number in the middle set of a given range of numbers
Syntax
= MEDIAN(number1:number n)
Examples
If cells A1:A5 contain 10, 2, 9, 27, and 2
=MEDIAN(A1:A5) equals 9
=MEDIAN(A1:A5,10) equals 9.5

ABS: Returns the absolute value of a number, a number without its sign.
Syntax
= ABS(number)
Examples
=ABS(16) equals 16
=ABS(-16) equals 16

SQRT: Returns a positive square root
Syntax
= SQRT(number)
Examples
=SQRT(16) equals 4
=SQRT(-16) equals #Num!
=SQRT(ABS(-16)) equals 4

FACT: Returns a factorial of a number square root
Syntax
= FACT(number)
Examples
=FACT(3) equals 6
=FACT(6) equals 720

BIN2DEC: Converts a binary number to a decimal
Syntax
= BIN2DEC(binary number)
Example
=BIN2DEC(100111) equals 39

BIN2OCT: Converts a binary number to Octal
Syntax
= BIN2OCT(number, places)
Example
=BIN2OCT(100111,2) equals 47

Note: Places (Optional). This indicates the number of characters to use. If places is omitted, the function uses the minimum number of characters necessary. Places is useful for padding the return value with leading 0s (zeros).

BIN2HEX: Converts a binary number to Hexadecimal
Syntax
= BIN2HEX(number, places)
Example
=BIN2HEX(100111,2) equals 39
OCT2BIN: Converts octal number to binary
Syntax
= OCT2BIN(number, places)
Examples
=OCT2BIN(243,8) equals 10011100

=OCT2BIN(243) equals 10011100

OCT2DEC: Converts an octal number to decimal
Syntax
= OCT2DEC(number)
Example
=OCT2DEC(243) equals 163

OCT2HEX: Converts an octal number to hexadecimal
Syntax
= OCT2HEX(number)

Example
=OCT2HEX(243) equals A3

HEX2BIN: Converts a hexadecimal number to binary
Syntax
= HEX2BIN(number,places)
Example
=OCT2HEX(123,9) equals 100100011
=OCT2HEX(123) equals 100100011

HEX2BIN: Converts a hexadecimal number to binary
Syntax
= HEX2BIN(number,places)
Example
=OCT2HEX(123,9) equals 100100011
=OCT2HEX(123) equals 100100011

HEX2OCT: Converts a hexadecimal number to Octal
Syntax
= HEX2OCT(number,places)
Example
=OCT2HEX(123,3) equals 443
=OCT2HEX(123) equals 443

HEX2DEC: Converts a hexadecimal number to decimal
Syntax
= HEX2BIN(number)
Example
=OCT2HEX(123) equals 291

POWER: Returns the result of a number raised to a power

Syntax

= POWER(number,power)

Examples

=POWER(2,3) equals 8

=POWER(6,7) equals 279936

QUOTIENT: Returns the integer portion of a division

Syntax

= QUOTIENT(numerator,denominator)

Examples

=QUOTIENT(2,3) equals 0

=QUOTIENT(16,7) equals 2

IF: 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 that is returned if logical-test is TRUE. Value-if-false is the value that is returned if logical-test is FALSE

Examples

Study the table below and answer the questions that follow

CUSTOMER'S NAME	AMOUNT (₦)	INTEREST	BALANCE
IBRAHIM	85,000		
UCHE	105,000		
ESTHER	28,000		
HARUNA	12,500		
RUTH	30,000		

CONDITION

The bank gives an interest of 2% to any customer whose amount is above 30,000 and 1% interest to any amount below or exactly 30,000

REQUIRED

(i) Write IF function to calculate the interest for each customer

(ii) Get the balance for each customer's account

SOLUTION:

INTEREST

IBRAHIM =IF(B2>30000,2%*B2,1%*B2)

UCHE =IF(B3>30000,2%*B3,1%*B3)
ESTHER =IF(B4>30000,2%*B4,1%*B4)
HARUNA =IF(B5>30000,2%*B5,1%*B5)
RUTH =IF(B6>30000,2%*B6,1%*B6)

BALANCE
IBRAHIM =B2+C2 OR =SUM(B2:C2)
UCHE =B2+C2 OR =SUM(B2:C2)
ESTHER =B2+C2 OR =SUM(B2:C2)
HARUNA =B2+C2 OR =SUM(B2:C2)
RUTH =B2+C2 OR =SUM(B2:C2)

NESTED IF: Up to 64 **IF** functions can be nested as ***value_if_true*** and ***value_if_false*** arguments to construct more elaborate tests.
Example
Assign letter grade, remark and rank to the scores in the table below

SCORE	**GRADE**	**REMARK**	**RANK**
47			
78			
65			
41			
23			
54			
39			
89			
66			
18			

SOLUTION
GRADE
=IF(A2>69,”A”,IF(A2>59,”C”,IF(A2>49,”C”,IF(A2>44,”D”,IF(A2>39,”E”,”F”)))))

REMARK =IF(A2>=40,”PASS”,”FAIL”)

RANK: Returns the rank of a number in a list of numbers. The rank of a number is its size relative to other values in a list. (If you were to sort the list, the rank of the number would be its position)
Syntax
=RANK(number,ref,order)
The RANK function syntax has the following arguments :

Number (Required): The number whose rank you want to find.
Ref (Required): An array of, or a reference to, a list of numbers. Nonnumeric values in ref are ignored.
Order (Optional): A number specifying how to rank number.
If order is 0 (zero) or omitted, Microsoft Excel ranks number as if ref were a list sorted in descending order.
If order is any nonzero value, Microsoft Excel ranks number as if ref were a list sorted in ascending order.
Looking at the table above, we have,
=RANK(A2,A2:A12,1)

LCM: Returns the least common multiple
Syntax
= LCM(number1,number2,…)
Example
=LCM(2,4,5,6) equals 60

LEFT: Returns the specified number of characters from the start of a text string
Syntax
= LEFT(text,num_chars)
Example
=LEFT(“KOLAJO”,4) equals KOLA

RIGHT: Returns the specified number of characters from the end of a text string
Syntax
= RIGHT(text,num_chars)
Example
=RIGHT(“KOLAJO”,4) equals LAJO

LEN: Returns the number of characters in a text string
Syntax
= LEN(text)
Example
=LEFT(“KOLAJO”) equals 6

LOOKUP: LOOKUP function is an alternative to the IF function for elaborate tests or tests that exceed the limit for nesting of functions.

Syntax
= LOOKUP(lookup_value, array)

The LOOKUP function array form syntax has these arguments:

Lookup_value (Required): A value that LOOKUP searches for in an array. The lookup_value argument can be a number, text, a logical value, or a name or reference that refers to a value.

If LOOKUP can't find the value of lookup_value, it uses the largest value in the array that is less than or equal to lookup_value.

If the value of lookup_value is smaller than the smallest value in the first row or column (depending on the array dimensions), LOOKUP returns the #N/A error value.

Array (Required): A range of cells that contains text, numbers, or logical values that you want to compare with lookup_value.

Note: The values in array must be placed in ascending order: ..., -2, -1, 0, 1, 2, ..., A-Z, FALSE, TRUE; otherwise, LOOKUP might not return the correct value. Uppercase and lowercase text are equivalent.

The following example uses an array of numbers to assign a letter grade to a test score using LOOKUP function.

SCORE	**GRADE**
45	
90	
78	

=LOOKUP(A2, {0, 60, 70, 80, 90}, {"F", "D", "C", "B", "A"}) returns F

=LOOKUP(A3, {0, 60, 70, 80, 90}, {"F", "D", "C", "B", "A"}) returns A

=LOOKUP(A4, {0, 60, 70, 80, 90}, {"F", "D", "C", "B", "A"}) returns C

Delete a Formula

When you delete a formula, the resulting values of the formula is also deleted. However, you can instead remove the formula only and leave the resulting value of the formula displayed in the cell.

To delete formulas along with their resulting values, do the following:

1. Select the cell or range of cells that contains the formula.
2. Press DELETE.

To delete formulas without removing their resulting values, do the following:

1. Select the cell or range of cells that contains the formula.
2. On the **Home** tab, in the **Clipboard** group, click **Copy.**
3. On the **Home** tab, in the **Clipboard** group, click the arrow below **Paste Values**., and then click **Paste**

NOTE: To avoid common errors with formulas,

i. Match all open and close parentheses
ii. Use a colon to indicate a range
iii. Enter all required arguments
iv. Nest no more than 64 functions
v. Enclose other sheet names in single quotation marks
vi. Enter numbers without formatting

How to Create Charts

Charts are used to display series of numeric data in a graphical format to make it easier to understand large quantities of data and the relationship between different series of data.
To create a chart in Excel,

Block the range of data (one of which must be numeric value)
Click on Insert tab
Under the Chart group, select the chart type (column, line, pie, area, etc.)
Click on the chart and change the design, layout and format as you desire

NOTE:

i. The **chart area** is the entire chart and all its elements
ii. The **plot area** is the area of the chart bounded by the axes
iii. The **data points** are individual values plotted in a chart represented by bars, columns, lines, or pies.
iv. The **horizontal** (category) and **vertical** (value) **axis** along which the data is plotted in the chart.
v. The **legend** identifies the patterns or colours that are assigned to the data series or categories in the chart.
vi. A **chart and axis title** are descriptive text that for the axis or chart.
vii. A **data label** provides additional information about a data marker that you can use to identify the details of a data point in a data series.

Move Chart to New Sheet

1. On the **Design** tab, in the **Location** group, click **Move Chart**.
2. Under **Choose where you want the chart to be placed**, click on the **New sheet** bubble
3. Type a chart name in the **New sheet** box.

Change Chart Name

1. Click the chart.
2. On the **Layout** tab, in the **Properties** group, click the **Chart Name** text box.
3. Type a new chart name.
4. Press ENTER.

Change Chart Layout

1. Click anywhere in the chart.
2. Go to the **Chart Tools**, the **Design** group
3. In the **Chart Layouts**, click the chart layout that you want to use. To see all available layouts, click More

Change Chart Style

1. Click anywhere in the chart.
2. On the **Design** tab, in the **Chart Styles** group, click the chart style that you want to use. To see all predefined chart styles, click More

Chart or Axis Titles

To make a chart easier to understand, you can add titles, such as chart and axis titles.
To add a chart title:

1. Click anywhere in the chart.
2. On the **Layout** tab, in the **Labels** group, click **Chart Title**.
3. Click **Centered Overlay Title** or **Above Chart**.
4. In the **Chart Title** text box that appears in the chart, type the text that you want.
5. To remove a chart title, click **Chart Title**, and then click **None**.

NOTE: You can also use the formatting buttons on the ribbon (**Home** tab, **Font** group). To format the whole title, you can right-click it, click **Format Chart Title**, and then select the formatting options that you want.

To add axis titles:

1. Click anywhere in the chart.
2. On the **Layout** tab, in the **Labels** group, click **Axis Titles**.
3. Do one or more of the following:

a. To add a title to a primary horizontal (category) axis, click **Primary Horizontal Axis Title**, and
then click the option that you want.

b. To add a title to primary vertical (value) axis, click **Primary Vertical Axis Title**, and then click the option that you want.

4. In the Axis Title text box that appears in the chart, type the text that you want.
5. To remove an axis title, click **Axis Title**, click the type of axis title to remove, and then click **None**.

Data Labels

1. On a chart, do one of the following:

a. Click on the **chart area** to add a data label to all data points of all data series

b. Click in the **data series** to add a data label to all data points of a data series

c. Click on a specific **data point** to add a data label to a single data point in a data series

2. On the **Layout** tab, in the **Labels** group, click **Data** Labels, and then click the display option that you want.

3. Text boxes will appear in the area of your chart based on your selection.

4. Click on the text box to modify the text.

5. To remove data labels, click **Data Labels**, and then click **None**.

NOTE: Depending on the chart type that you used, different data label options will be available.

Legend

When you create a chart, the legend appears, but you can hide the legend or change its location after you create the chart.

1. Click the chart in which you want to show or hide a legend.

2. On the **Layout** tab, in the **Labels** group, click **Legend**.

3. Do one of the following:

a. To hide the legend, click **None**.

b. To display a legend, click the display option that you want.

c. For additional options, click More Legend Options, and then select the display option that you want.

NOTE: To quickly remove a legend or a legend entry from a chart, you can select it, and then press DELETE. You can also right-click the legend or a legend entry, and then click Delete.

Move or Resize Chart

You can move a chart to any location on a worksheet or to a new or existing worksheet. You can also change the size of the chart for a better fit.

To move a chart, drag it to the location that you want.

To resize a chart, click on one of the edges and drag towards the center.

Advanced Spreadsheet Modification

Once you have created a basic spreadsheet there are numerous things you can do to make working with you data easier. Some of these elements are hiding, freezing and splitting rows. You can also sort and filter data, these features are quite helpful when working with a large amount of data.

Hide or Display Rows and Columns

You can hide a row or column by using the **Hide** command or when you change its row

height or column width to 0 (zero). You can display either again by using the **Unhide** command. You can either unhide specific rows and columns, or you can unhide all hidden rows and columns at the same time. The first row or column of the worksheet is tricky to unhide, but it can be done.

Hide Rows or Columns

1. Select the rows or columns that you want to hide.
2. On the **Home** tab, in the **Cells** group, click **Format**.
3. Under **Visibility**, point to **Hide & Unhide**, and then click **Hide Rows** or **Hide Columns**.

NOTE: You can also right-click a row or column (or a selection of multiple rows or columns), and then click **Hide**.

Unhide Rows or Columns

1. Select the rows, columns or entire sheet to unhide.
2. On the **Home** tab, in the **Cells** group, click **Format**.
3. Under **Visibility**, point to **Hide & Unhide**, and then click **Unhide Rows** or **Unhide Columns**.

TIP: You can also right-click the selection of visible rows and columns surrounding the hidden rows and columns, and then click **Unhide**.

Freezing/Splitting Rows and Columns

To keep an area of a worksheet visible while you scroll to another area of the worksheet, you can either lock specific rows or columns in one area by freezing panes.

Freezing vs. splitting

When you **freeze** panes, Microsoft Excel keeps specific rows or columns visible when you scroll in the worksheet. For example, if the first row in your spreadsheet contains labels, you might freeze that row to make sure that the column labels remain visible as you scroll down in your spreadsheet. A solid line indicates that the row is frozen to keep column labels in place when you scroll.

When you **split** panes, Excel creates either two or four separate worksheet areas that you can scroll within, while rows or columns in the non-scrolled area remain visible. This worksheet has been split into four areas. Notice that each area contains a separate view of the same data. Splitting panes is useful when you want to see different parts of a large spreadsheet at the same time.

NOTE: You cannot split panes and freeze panes at the same time.

Freeze Panes

1. On the worksheet, select the row or column that you want to keep visible when you scroll.

2. On the **View** tab, in the **Window** group, click the arrow below **Freeze Panes**.
3. Then do one of the following:
To lock one row only, click **Freeze Top Row**.
To lock one column only, click **Freeze First Column**.
To lock more than one row or column, or to lock both rows and columns at the same time, click **Freeze Panes**.
NOTE: You can freeze rows at the top and columns on the left side of the worksheet only. You cannot freeze rows and columns in the middle of the worksheet.

Unfreeze panes
1. On the **View** tab, in the **Window** group, click the arrow below **Freeze Panes**.
2. Click **Unfreeze Panes**.

Split Panes
1. To split panes, point to the split box at the top of the vertical scroll bar or at the right end of the horizontal scroll bar.
2. When the pointer changes to a split pointer, drag the split box down or to the left to the position that you want.
3. To remove the split, double-click any part of the split bar that divides the panes.

Moving or Copying Worksheets

Sometimes you may need to copy an entire worksheet instead of copying and pasting the data which may or may not paste properly, you can use the steps below to achieve a must better result.
Move or Copy Worksheets
1. Select the worksheets that you want to move or copy.
2. On the **Home** tab, in the **Cells** group, click **Format**, and then under **Organize Sheets**, click **Move or Copy Sheet**. You can also right-click a selected sheet tab, and then click **Move or Copy**.
3. A **Move or Copy** dialog box will appear
4. To move a sheet, in the **Before sheet** list:
Click the sheet that you want to insert the moved or copied sheets directly in front of.
Click **move to end** to insert the moved or copied sheets after the last sheet in the workbook and before the **Insert Worksheet** tab.
5. To copy the sheets, in the **Move or Copy** dialog box, select the
Create a copy check box.
NOTE: When you create a copy of the worksheet, the worksheet is duplicated in the workbook, and the sheet name indicates that it is a copy — for example, the first copy that you make of Sheet1 is named Sheet1 (2).
NOTE: To move sheets in the current workbook, you can drag the selected sheets along the row of
sheet tabs. To copy the sheets, hold down CTRL, and then drag the sheets; release the

mouse button before you release the CTRL key.

Move or Copy to a Different Workbook

1. In the workbook that contains the sheets that you want to move or copy, select the sheets.
2. On the **Home** tab, in the **Cells** group, click **Format**, and then under **Organize Sheets**, click **Move or Copy Sheet**.
3. In the **Move or Copy** dialog box, click the drop down list in the **To book** box, then:

Click the workbook to which you want to move or copy the selected sheets.

Click **new book** to move or copy the selected sheets to a new workbook.

6. To move a sheet, in the **Before sheet** list:

Click the sheet that you want to insert the moved or copied sheets directly in front of.

Click **move to end** to insert the moved or copied sheets after the last sheet in the workbook and before the **Insert Worksheet** tab.

7. To copy the sheets, in the **Move or Copy** dialog box, select the **Create a copy** check box.

Sorting Data

Sorting data is an integral part of data analysis. You might want to arrange a list of names in alphabetical order, compile a list of product inventory levels from highest to lowest, or order rows by colours or icons. Sorting data helps you quickly visualize and understand your data better, organize and find the data that you want, and ultimately make more effective decisions.

Sort Data in Single Column

1. Select a column of data in a range of cells
2. On the **Data** tab, in the **Sort & Filter** group, do one of the following:

To sort in ascending or smallest to largest order, click **Sort A to Z**

To sort in descending or largest to smallest order, click **Sort Z to A**.

3. To reapply a sort after you change the data, click a cell in the range or table and then, on the **Data** tab, in the **Sort & Filter** group, click **Reapply**.

Sort Data in Multiple Columns or Rows

You may want to sort by more than one column or row when you have data that you want to group by the same value in one column or row, and then sort another column or row within that group of equal values.

1. Select a range of cells with two or more columns of data.
2. On the **Data** tab, in the **Sort & Filter** group, click **Sort**.
3. The **Sort** dialog box will appear.
4. Under **Column**, in the **Sort by** box, select the first column that you want to sort.
5. Under **Sort On**, select the type of sort.

To sort by text, number, or date and time, select **Values**.

To sort by format, select **Cell Colour**, **Font Colour**, or **Cell Icon**.

6. Under **Order**, select how you want to sort.
For text values, select **A to Z** or **Z to A**.
For number values, select **Smallest to Largest** or **Largest to Smallest**.
For date or time values, select **Oldest to Newest** or **Newest to Oldest**.
To sort based on a custom list, select **Custom List**.
7. To add another column to sort by, click **Add Level**, and then repeat steps four through six.
8. To copy a column to sort by, select the entry and then click **Copy Level**.
9. To delete a column to sort by, select the entry and then click **Delete Level**.
10. To change the order in which the columns are sorted, select an entry and then click the **Up** or **Down** arrow to change the order.
11. To reapply a sort after you change the data, click a cell in the range or table and then, on the **Data** tab, in the **Sort & Filter** group, click **Reapply**.

Finalizing a Spreadsheet

To complete your spreadsheet there are a few steps to take to ensure your document is finalized.

Using the "Spell Check" Feature

Excel does not have the same spell check feature as Word and PowerPoint. To complete a Spelling and Grammar check, you need to use the Spelling and Grammar feature.
1. Click on the **Review** tab
2. Click on the **Spelling & Grammar** command (a blue check mark with ABC above it).
3. A **Spelling and Grammar** box will appear, correct any Spelling or Grammar issue with the help of the box.

Chapter 5: Introduction to Database Management with Microsoft Access

5.1 DATABASE MANAGEMENT

1. Data Hierarchy - Foundation Data Concepts
   - *Character*–single alphabetic, numeric or other symbol
   - *Field* –group of related characters
   - *Entity* –person, place, object or event
   - *Attribute* –characteristic of an entity
   - *Record* –collection of attributes that describe an entity
   - *File* –group of related records
   - *Database* –integrated collection of logically related data elements

   Relational Definitions: A collection of fields make up a record. A collection of records make up a Table. A collection of Tables make up a database. See Figure below:

Field *– One column of a Table common to all the records*
Record *– One row of a Table containing all data about a particular entry*
Table *– One set of related data*
Database *– Structured collection of related Tables*

2. Types of Databases
   - *Operational* – store detailed data needed to support the business processes and operations of a company
   - *Distributed* – databases that are replicated and distributed in whole or in part to network servers at a variety of sites
   - *External* – contain a wealth of information available from commercial online services and from many sources on the World Wide Web
   - *Hypermedia* – consist of hyperlinked pages of multimedia

3. Types of Fundamental Database Structures
   - *Hierarchical* – relationships between records form a hierarchy or treelike structure. A record is subdivided into segments that are connected to each other in one to many parents – child relationship. Relationships among the records are one-to-many.

- *Network* – data can be accessed by one of several paths because any data element or record can be related to any number of other data elements. An older logical database model that is useful for depicting many-to-many relationships. The network structure can represent more complex logical relationships, and is still used by many mainframe DBMS packages.
- *Relational* – All data elements within the database are viewed as being stored in the form of simple tables
- *Multidimensional* – Variation of the relational model that uses multidimensional structures to organize data and express the relationships between data.
- *Object-Oriented* – Can accommodate more complex data types including graphics, pictures, voice and text
  - ✓ *Encapsulation* – data values and operations that can be performed on them are stored as a unit
  - ✓ *Inheritance* – automatically creating new objects by replicating some or all of the characteristics of one or more existing objects

4. Database Development Process
   - *First*, develop a Conceptual design – an abstract model of the database from the user or business perspective. – Create physical and logical view
   - *Second*, organize with Entity-Relationship (ER) modeling – process of planning the database design
     - ✓ Entity classes
     - ✓ Instance
     - ✓ Identifiers
     - ✓ Relationships
   - *Third*, analyze the data structure by applying the Normalization process – method that reduces a relational database to its most streamlined form and helps achieve
     - ✓ minimum redundancy
     - ✓ maximum data integrity
     - ✓ best processing performance
   - *Fourth*, physically implement the data structure in the database management system software (– Create tables – Define fields and field properties – Establish primary keys – Define table relationships – Add actual data (records) to tables)

5. Guidelines for Developing a Database?
   [1]. Determine the purpose of the database
   [2]. Design the tables
   [3]. Design tables on paper first
   [4]. Each table should contain data about one subject
   [5]. Design the records and fields for each table. Allow enough space for each field
   [6]. Be sure every record has a unique primary key
   [7]. Use separate fields for logically distinct items
   [8]. Do not create fields for information that can be derived from entries in other fields
   [9]. Set default values for frequently entered data
   [10]. Determine the relationships between tables

RELATIONAL DATABASES

Why use Microsoft Access?

Microsoft Access is a "relational" database application. Relational means we can link together sets of data, we can relate the data. We can keep track of the patients, the doctors and when the patients last saw their doctors, what happened at each visit and so on. Access allows us to relate our data, without the repetition that may occur anywhere else.

Basic Access Objects:

Access consists of four main database objects: ***Tables, Queries, Forms, and Reports.*** Each object has at least two views, **Design and Data**. The Design View is where we build the structure of that database object. The data view is different for each object. Tables and Queries have a **Datasheet View,** Forms have a **Form View,** and Reports have a **Report View,** or a **Print Preview View.**

ables: In Access the data is saved in **Tables**. As the Tables change, the rest of the Access database will reflect the newest information. Tables store data. The Tables are the true **T**'database' (base of data). This need to be created and properly linked (related) in order to effectively use the other Access tools. Tables are the core of your database, everything else in Access depends on the Tables.

The Design View of a Table allows you to create and modify:

-Field Names (the column headings)

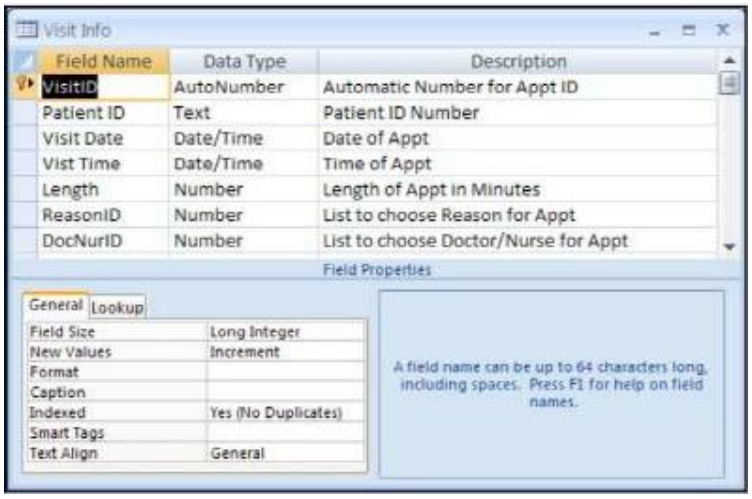
-The type of data stored in a field (Data Type)

In this class we use:

Data Type	Description
Text	Allows any alphanumeric characters, up to 255 characters
Number	Limited to Numbers only
Date/Time	Allows Dates and/or Times only
AutoNumber	Creates a unique sequential number for each record.
Yes/No	This is a binary field (only two answers, Yes/No, True/False)
Lookup Wizard...	The lookup wizard allows you to link the field to another Table or to type in a list of your own creation.

-Descriptions, which will be displayed in the status bar in the Data view of Forms

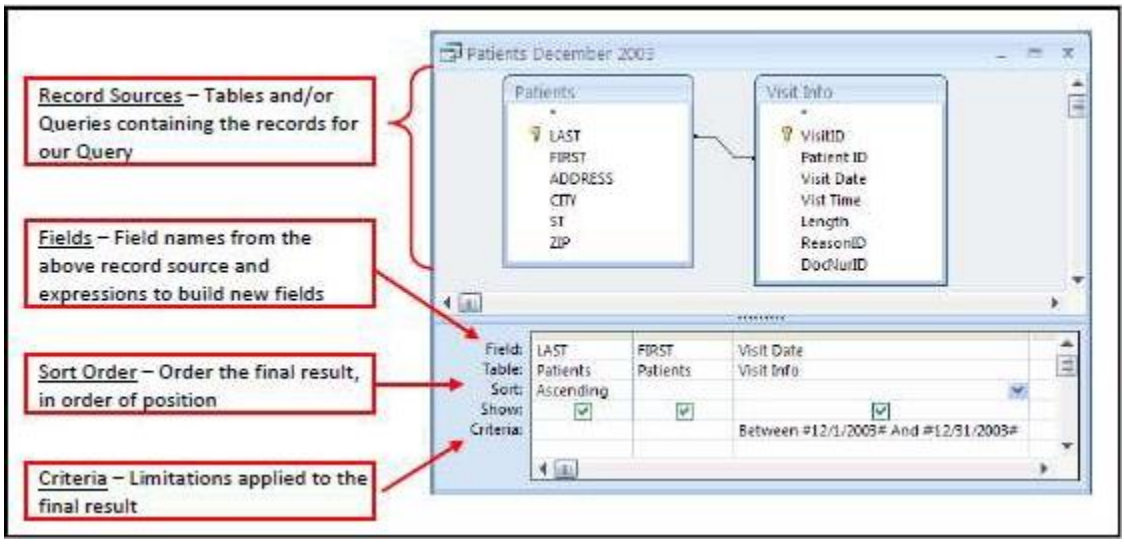
-And the Properties of each field, such as how many characters can be entered (text field size), or how the data is formatted (05/05/95 or May 5, 1995).



The **Datasheet View** of a Table allows you to create and modify the data within a grid structure based on the settings in the Design View.

Queries show the data in a Table format. A Query can pull from multiple Tables and allow you to limit the records (rows) display by using criteria and showing only the fields (columns) you want. Queries show a selection of data based on criteria (limitations) you provide. Queries can pull from one or more related Tables and/or other Queries.

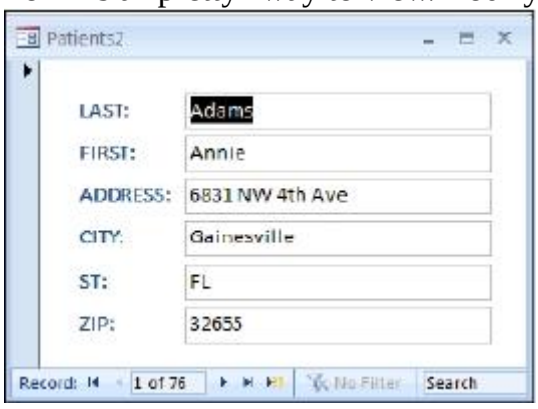
The **Datasheet View** of a Query looks like a Table. All data added or modified in a Query, will be saved in the Table. The **Design View** is where the structure of the Query is created. This is where we choose the record sources and fields, and set the sort order and criteria.



Record Sources – Tables and/or Queries containing the records for our Query
Fields – Field names from the above record source and expressions to build new fields
Sort Order – Order the final result, in order of position
Criteria – Limitations applied to the final result

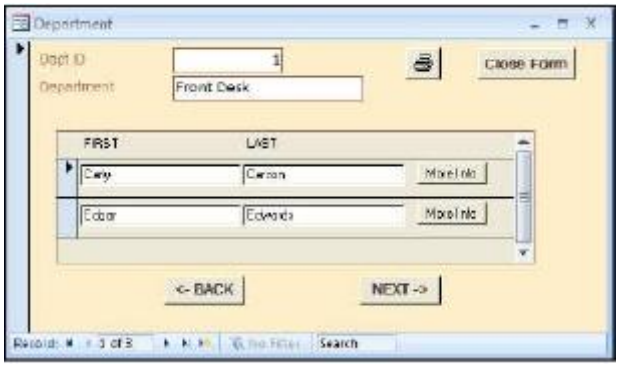
Forms can be created to provide a "user-friendly" side to your database. They are used to view and enter your data in an interactive formatted structure. Forms are also used to make menus and search windows. Most Forms display one record at a time, in a formatted user-friendly environment. You can build your Form so it will display multiple records. As you develop Forms you can create navigation buttons, insert graphics, and change the colors to display everything consistently.

Forms have three basic views: Design View, Layout View and Form View.
Your record source can be a Table or Query. If we want to *all* the patients use the Table; if we only want to see Dr. Edward's Patients, use a Query. The data entered or modified in a Form is automatically saved to the Table. The Table is the true location of the data; the Form is a "pretty" way to view/modify/create the data.



If you would like to view more than one record at a time you may use a "Multiple Items" Form, or a "Split Form". Multiple Items, sometimes called a Tabular or Continuous Form, shows multiple formatted records. Split Forms show the Form view and a datasheet view in the same window.

For this class we will use the AutoCreate buttons to make our Forms. Once the Form is created, you can use the **Layout View** to change the placement and size of the fields.
As your Forms become more involved, you can use the **Design View** to add objects like command buttons to move between records, Forms and Reports.

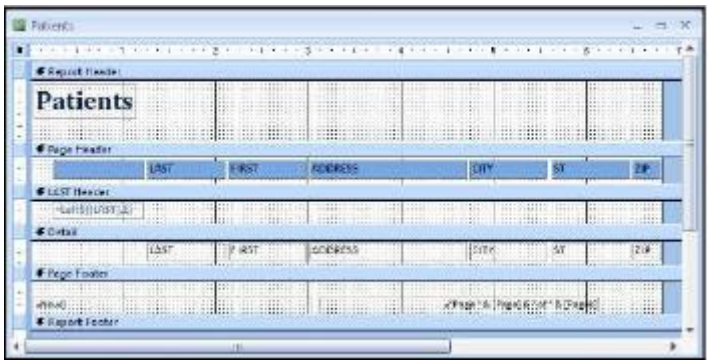


eports are created to print out your data in a formatted structure. They allow you to group and organize your data. They can also be used to create Form letters and mailing labels.
RReports are designed to create an organized output of data from your database. With a Report, you can group and summarize information. You can't edit the data in a Report, but if you make the modifications in the Table, Query, or Form you will see the results when you open the Report again.

Reports have four basic views: Report View, Print Preview, Layout View, and Design View. For this basic class we will use the wizard and AutoCreate buttons to make our Reports.

The **Print Preview** and **Report View** allow you to view how the data falls into the Report. The Print Preview will show you how the data falls on the page, and how it will appear when printed. The Report view lets you see a continuous flow of the data without page breaks.

The **Design View** and **Layout View** allow you to resize and move the fields.
The Design View allows you to add objects (like text boxes that contain formulas). The Layout view allows you to resize the field and see the data at the same time.



Class Exercise

Create the Database

1. Open Microsoft Access 2010
2. Click on Blank Database, Create (notice default location)
3. Close the new Table that is automatically created, right mouse on the tab & close table.
4. File, Save Database As: Patient Details

**If you get the yellow Security tab, click on Enable Content button.

Create a Patients Table

1. Click on the Create tab and choose Table Design
2. Type in the first line under Field Name: Pt Med Rec #
    a. Data Type: Text
    b. Description: Patient's Medical Record Number
3. Enter in the rest of the fields as shown below (descriptions not necessary for the remaining items):

Field Name	Data Type	Description
Pt Med Rec #	Text	Patient's Medical Record Number
Pt First Name	Text	
Pt Last Name	Text	
Pt Prim Phone #	Text	
Pt Birth Date	Date/Time	

4. Click on the Pt Med Rec # (entire row), we want to make it the Primary key
    a. Click on the big yellow key on the toolbar
5. Now let's save that table, File, Save object As, (the Table) as Patients

Entering the First Record

1. **Home** tab, **View**, **Datasheet View**
2. Enter our first Med Rec #: **123-456**
3. Press tab move to the next field

Pt Med Rec #	Pt First	Pt Last	Pt Phone	Pt Birth Date
123-456	Shaun	Fuller	3525551234	1/1/1

    a. First Name: **Shaun**
    b. Last Name: **Fuller**
    c. Phone #: **3525551234** − No dashes
    d. Birth Date: **1/1/1** − If you set it as a **DATE/TIME** field. Access will add the "200" for 2001

Rearrange Fields

1. To rearrange a field you need to be in the Design View. Go to **Home** tab, **View**, **Design View**.
2. Move **Pt Birth Date** above the **Pt Phone** by selecting entire row (solid arrow) & drag up. (watch for rectangle while moving)
3. Enter the next record as shown below by going **Home** tab, **View**, **Datasheet View**.

*****Always say Yes when asked to save the Table dialog box that appears!***

Pt Med Rec #	Pt First Name	Pt Last Name	Pt Birth Date	Pt Prim Phone #
123-456	Shaun	Fuller	1/1/2001	3525551234
789-123	Jacob	Smith	2/2/1992	3525554321

Adding another Field

1. **Home** tab, **View, Design View**, create **Pt Gender**, text field, above **Pt Birth Date**
    a. **Insert Rows** from **Design** tab, or from the right-click menu. Be in the row below where you want to insert above.
2. In **Datasheet View** enter "**Male**" (the whole word) for Shaun and Jacob.
3. Enter a new record with details shown below.

Pt Med Rec #	Pt First Nam	Pt Last Name	Pt Gender	Pt Birth Date	Pt Prim Phor
123-456	Shaun	Fuller	Male	1/1/2011	3525551234
789-123	Jacob	Smith	Male	2/2/1992	3525554321
555-555	Jennifer	Walton	F	3/3/1983	352-555-5555

    a. Enter the Gender as just one character "**F**"

b. Enter birth date as **March 3, 1983**; it should change to 3/3/1983
c. Type in the hyphens for the phone number

Modify Field Properties – Change Field Size

1. **Home** tab**, View, Design View**, select the row of **Pt Gender.** In the **Field Properties** area, below, it shows the **Field Size** is 255, we now will change the **Field Size** of Pt Gender to be **1**.
2. Click on **File, Save.**

** When you save you will get an error message saying data may be lost click, click **Yes.** (as shown below) It will be ok!

Yes, data is lost, but look at our Male entries; it shows only the letter **M**. Go into the **Datasheet View** to verify!

Modify Field Properties – Format Date

1. **Home** tab, **View**, **Design View**, select the row for **PT Birth Date.** In the **Field Properties** area, below, set the **Format** of the **Pt Birth Date** to be a **Medium Date.**
2. Click on **File, Save.**
3. Go to **Datasheet View.** (See the dates now, shown below)

Pt Med Rec	Pt First Name	Pt Last Nam	Pt Gende	Pt Birth Date	Pt Prim Phor
123-456	Shaun	Fuller	M	01-Jan-01	3525551234
789-123	Jacob	Smith	M	02-Feb-92	3525554321
555-555	Jennifer	Walton	F	03-Mar-83	352-555-5555

Modify Field Properties – Input Mask – Change Phone Number

1. **Home** tab**, View**, **Design View**, select the entire row for **Pt Prim Phone Number.** In the **Field Properties** area below, click in the **Input Mask** line; then click the Build button (…) which shows up on the right side.
2. In the **Input Mask Wizard** dialog box that appears, the **Phone Number** is already selected. Click **Finish**.
3. View results under Datasheet View and always click Yes to Save when prompted. See phone numbers now

Pt Med Rec #	Pt First Name	Pt Last Name	Pt Gender	Pt Birth Date	Pt Prim Phone #
123-456	Shaun	Fuller	M	1/1/2001	(352) 555-1234
555-555	Jennifer	Walton	F	3/3/1983	352-555-5555
789-123	Jacob	Smith	M	2/2/1992	(352) 555-4321

Now, let's fix Jennifer's Phone Number. Remove it; just type the numbers, nothing else. **3525555555** They all look the same now!

Enter a New Record & Sort

1. Enter a new record with details below in **Datasheet View.**

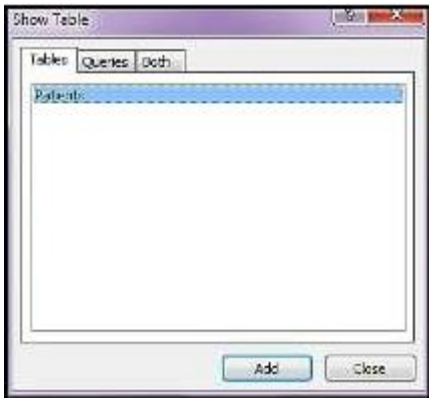
527-594	Doris	Jones	F	4/4/1954	(352) 555-5432

2. Close the Table, right mouse on tab and **Close**.
3. Now double click to open the **Patient's** Table, notice all detail are there! No saving Necessary!
4. The table below is sorted by **Pt Med Rec #**. Click on the drop down arrow beside **Pt Med Rec#** to sort the data to appear just like shown below. Or **Home** tab, **Sort**, **Ascending/Descending**.

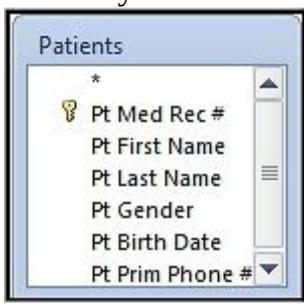
Pt Med Rec #	Pt First Nam	Pt Last Name	Pt Gender	Pt Birth Date	Pt Prim Phor
123-456	Shaun	Fuller	M	01-Jan-01	(352) 555-1234
527-594	Doris	Jones	F	04-Apr-54	(352) 555-5432
555-555	Jennifer	Walton	F	03-Mar-83	(352) 555-5555
789-123	Jacob	Smith	M	02-Feb-92	(352) 555-4321

Create a Gender Patient's Query

1. Go to the **Create** tab and choose **Query Design.** A **Show Table** dialog box opens.



2. Click **Add** on the **Show Table** dialog box; a **Patients** window appears, now click the **Close** button on the **Show Table** dialog box.
3. Now watch below and we will add **Pt First Name** & **Pt Last Name** and **Pt Gender** by double-clicking on the 3 fields inside the small **Patients** dialog box that appears.



Now go to the **Home** tab**, View, Datasheet View.**

Pt First Nam	Pt Last Name	Pt Gender
Shaun	Fuller	M
Doris	Jones	F
Jennifer	Walton	F
Jacob	Smith	M

Customizing a Query to Sort By Female

1. In the **Datasheet View**, the sort order is by **Med Rec #** as it is on the **Patients** table.
2. Go to **Design View**, set to **Sort by** (in the **Pt Last Name** column**) Ascending** in **Field Properties** area below.

Field:	Pt First Name	Pt Last Name	Pt Gender
Table:	Patients	Patients	Patients
Sort:		Ascending	
Show:			

3. Go to the **Datasheet View**, patients should read, Fuller through Walton
4. In the **Design View**, set the **Criteria** line for the **Pt Gender** field by typing in a **F.**

Field:	Pt First Name	Pt Last Name	Pt Gender
Table:	Patients	Patients	Patients
Sort:		Ascending	
Show:	☑	☑	☑
Criteria:			"F"

5. In **Datasheet View**, you should only have two people: Jennifer and Doris.
6. **File, Save Object as (**Query), **Female Patients**

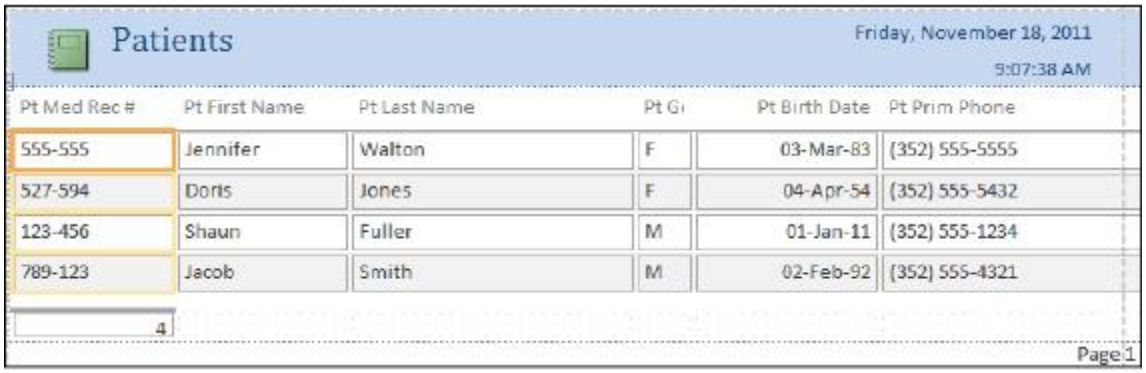
Create Simple Form

1. Select the **Table** (double click) from left Navigation Pane so it becomes the data source
2. On the **Create** tab click on the **Form** button. You now see your data displayed as a Form.
3. **File** and **Save Object As** (Form)**, Patient Form.**

Notice the arrows at the bottom to navigate the records, a **Search** and the **New Record.**

Create Simple Report

1. Select the **Patients** Table from left Navigation Pane so it becomes the data source. On the **Create** tab click on the **Report** button.
2. You are now in **Layout View**, notice the **Report Layout Tools** tabs, adjust the columns to fit the data by using the 2 headed arrows. The dotted lines will help guide you as this is the print area. Notice you can drag from the far right side of the columns.
3. Right-click on the top of (green) **Report** tab, to the **Print Preview** to see what your data will look like. **Close** Preview to go back**.**
    a. **File** and **Save Object As** (Report)**, Patient Report.**



Patients

Friday, November 18, 2011
9:07:38 AM

Pt Med Rec #	Pt First Name	Pt Last Name	Pt G	Pt Birth Date	Pt Prim Phone
555-555	Jennifer	Walton	F	03-Mar-83	(352) 555-5555
527-594	Doris	Jones	F	04-Apr-54	(352) 555-5432
123-456	Shaun	Fuller	M	01-Jan-11	(352) 555-1234
789-123	Jacob	Smith	M	02-Feb-92	(352) 555-4321

4

Page 1

Your Access database now has a **Table, Query, Form** and a **Report.**

Backing up Database, Exit and Zipped Files

1. From the **File Tab** choose **Info.** Choose **Compact and Repair** − You should do this every time it crashes, or begins to run slowly.
2. From the **File Tab** choose **Save & Publish.** Under advanced choose **Back up Database** − you should do this on a regular basis, but definitely before you make any major changes. It will put todays date in the name of file.
3. Exiting Access & Zipping. File, Close Database. Zip by Right-Clicking on File, Choose "Send to Compressed Zipped Folder" − The Access Database inside the zipped folder is READ ONLY, meaning no one cannot make changes to it. To make the file editable, you will need to click on “Save As” and save it outside of the zipped folder or simply drag outside of the zipped folder.

Chapter 6: Introduction to Presentations with Microsoft PowerPoint

6.1 PowerPoint Presentation

Important Considerations for PowerPoint Design
When you prepare to deliver your next PowerPoint presentation, your audience should be first on your list of considerations. For better performances, observe the following rules:

1. Do not read the slides, present your points in bullets and explain them yourself
2. Do not make the texts too small
3. Do not make the Slides hard to see because of color choice
4. Do not use too many Moving/flying text or graphics
5. Do not use overly complex diagrams or charts

Design tips for text
Don't overload slides! One of the biggest design mistakes made is including too much text on a presentation slide. The purpose of a slide in a presentation should be to give your audience the most important points of information. The purpose of a slide should NOT be to give detailed information or complete sentences, nor should a slide be used as a set of lecture notes for the instructor. If you need to deliver a lot of text content, consider using Notes Pages or another form of document handout.

Use the Rule of Sixes.
According to the "rule of sixes" effective presentation slides should include no more than six bullets per slide and no more than six words per line. These, of course, are rules of thumb, but if your slides routinely have ten bullets or your font size falls below 18 point, your presentation is probably not as effective as it could be.

Choose fonts for legibility.
San serif fonts, like Arial and Helvetica, read better on screen. Don't use a font size smaller than 18 point.

Try the floor test.
The "floor test" is an informal way to check the readability of slides. Print out a slide page and place it on the floor at your feet. Is everything legible? Does each point stand out?

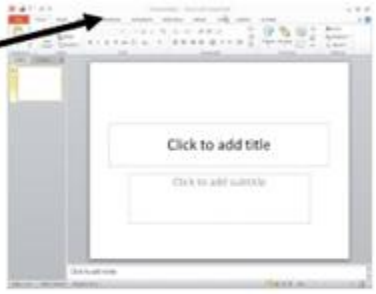
Use text formatting to support information hierarchy.
Format text consistently from slide to slide and in a way that supports the hierarchy of your information. For example, slide titles should be in the largest font used. Sub-bullets should be in a smaller font size than main bullets.

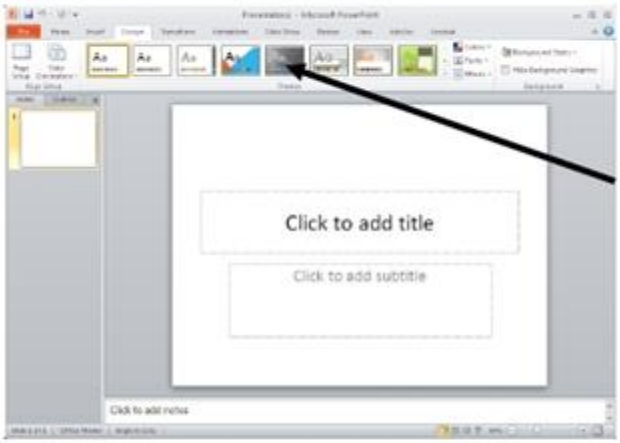
Design tips for movement / animation
Use animation sparingly and for a purpose. Transitions and animation can easily become distracting, especially if they are not used for a specific purpose. Keep transitions consistent.

Minimize distraction by using low-key transitions and keeping transitions consistent throughout a presentation. Likewise, if you use an animation scheme for bulleted text, keep it *consistent*. Animate objects for *a purpose*, not just for effect. Use animation *to add interactivity* to a presentation. Place a question on a slide. Solicit responses from your audience, and then animate the entry of the answer.

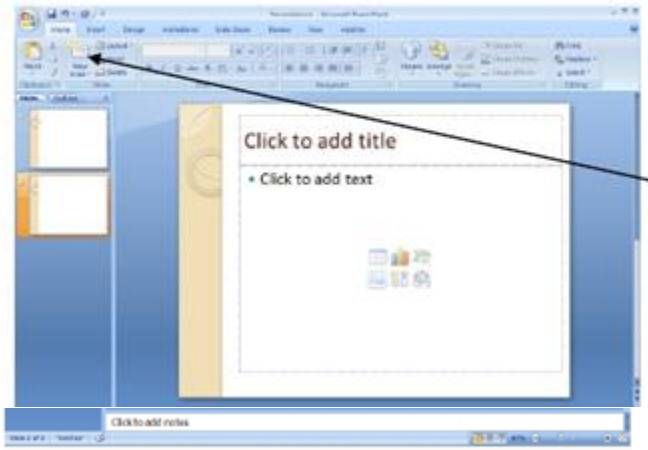
How To Make a Basic PowerPoint Presentation (MS 2010)

1) Open Microsoft PowerPoint
(Start➔Programs➔Microsoft Office➔Microsoft PowerPoint - 2010)
2) You will see a screen like this.
a) Click on **Design** on the toolbar





3) The "Design Ribbon" is now open.
a) Roll you mouse over the various patterns to choose which design you want. The slide on your screen will temporarily take on the design you click on instantly.
b) Click on the template you want.
c) Use the scroll bar for additional design template options
d) Click where it says and "Add Title" and type the title of your presentation.
e) Click where it says "Click to add subtitle" and type a secondary title such as your name or topic subtitle.



4) To add a new slide click on "Home" tab and then in the second ribbon box called "Slides" click on "New Slide".

5) To change slide layout click on the down arrow for "Layout" in the "slides Ribbon and a pop up box will appear for your layout choices. Click on the layout you want.

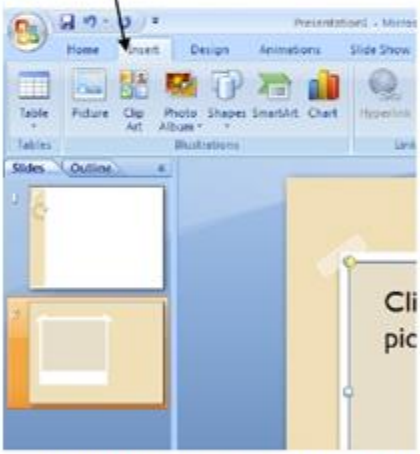
6) Where it says "Click to add text," you can write bulleted phrases to help your listener follow your ideas.

7) To easily put pictures in your slide, you should choose (click on) the layout that has a picture and caption description.

8) Your screen will look like this.
   a) Click at the top to give the keyword or title for this slide.

   b) Where you see the picture icon click the icon for to go to your "My Pictures".

   c) Otherwise click on the "insert tab" and choose. This can be from a file on your computer, digital camera, or jump drive. *(There are directions later in this presentation to assist you with these options.)*



9) Click on new slide and choose "Blank" slide layout

10) Inserting pictures (CLIPART – Internet – USB (Digital Camera / Jump Drive)

INTERNET: The fastest way to get pictures in your work is to cut & paste a picture from the internet. This is a simple process. However, you should keep track of where you get the picture and include a reference like the following.

Happy.jpg. Retrieved January 11, 2013 from http://www.happygolucky.com.

- Minimize Power Point by clicking on the box with the minus sign in the upper right hand corner.
  - This will reduce the program to the bottom status bar of your computer screen.

- The next step is to open your Internet Browser, most likely MS Internet Explorer.
- Go to any search engine such as www.google.com

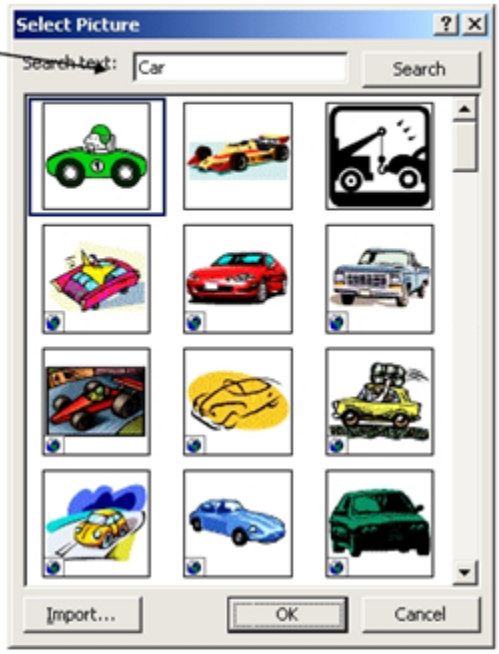
- Click on the "Images" tab so that only pictures will be brought back for you to see.
- Type in the Search Box the kind of pictures you want.
- Click on the "Google Search" button. Then you will see various pictures as the result.

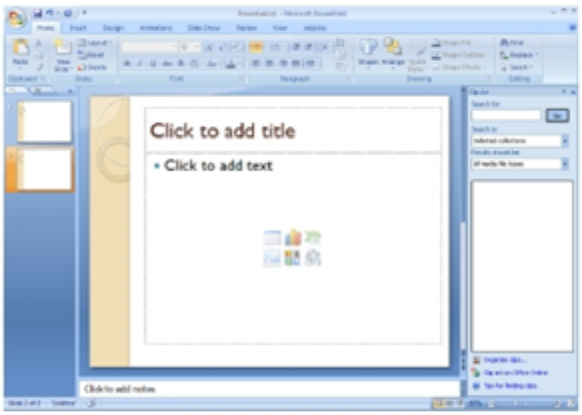
To copy a picture

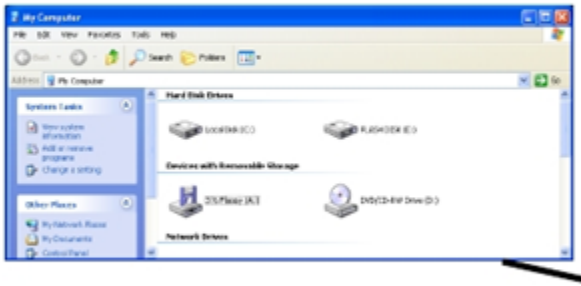
- Select a picture with a high pixel count.
- Click once on the picture you want. It will take you to another web site that contained the picture. Click on "See full size image". Once it appears, right click on the picture, then left click on "Copy" in the drop down menu.
- Minimize the Internet Browser *(click on the minus sign in the upper right hand corner).*
- Click on MS PowerPoint on the bottom status bar. It will open fully.
- Click on the PowerPoint slide. Right Click on a blank part of the slide then click on "Paste".
- The picture will be somewhere on your slide. Then you can position it and scale it as needed.

CLIP ART: Click on the picture you want or type a subject

a) Double click on the picture you want
b) Your picture will probably look like this.
c) Put your cursor on the picture.
d) Hold the left mouse button down.
e) Move your picture to the position you'd like.
f) The computer will automatically adjust it.

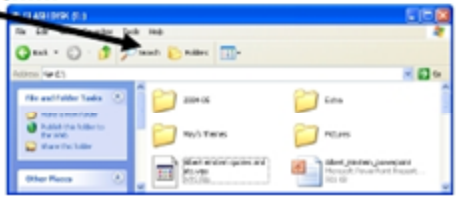






Using a data stick, digital camera:

- Inset the data stick (jump drive), or the cable for your camera into the USB port.
- Once the connection is made, click on My Computer and identify the drive, double click on it and you should see your files and folders.



- Open the folder. Right click on the picture, copy the picture. You might have to open the picture file by double clicking on it (or right click and select "Open with" and then right clicking on it and select copy). When you see the picture right click on it and copy (the picture will appear very large in PP and you will have to make it smaller by scaling it down.

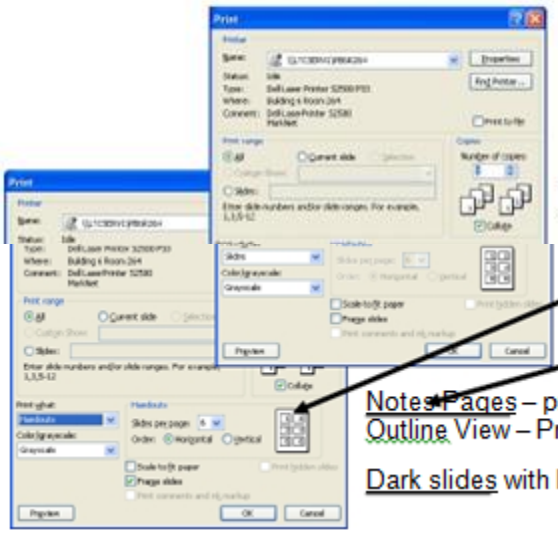
- Maximize your Power Point and right click on the slide you want the picture on and click on paste. Click on the picture and the white dots in the corner of the picture will enable you to enlarge or shrink the picture to fit the slide.

11) Adding Animation

a) Go to Animations Tab"
b) Click the button "Custom Animation"
c) Click "Add Animation" Select "Fly In" from "Entrance".
d) Click "Effect Options" Select "Direction:" to choose the direction the picture will enter from.
e) Click on "Timing" tab of "Fly In" Window to adjust when to "Start" the animation on for "Duration" (speed)
f) Click "Preview" to see what you have done
g) To add more effects you can click on "Transition" tab
h) Also under modify transition you can add a sound effect.

Helpful notes:

- Always have slide advance on mouse click.
- Have all animation on one slide start "After Previous" to avoid clicking to start each animation
- Always test your Power Point. Slide Show / From Beginning



Printing Slides or Handouts:

Printing Slides
(One slide = 1 page)
Printing Handouts
Select number of slides per page
1,2,3,6,9 per page

Notes Pages – prints slide at top of page with notes beneath
Outline View – Prints outline of bulleted text on slides

Dark slides with light text will print as black text on white.

⇨ **The handout option of 3 slides per page is a popular option, because it includes lines next to each slide for note taking.**