

# **VIDYAPITH ACADEMY**

A unit of **AITDC (OPC) PVT. LTD.**

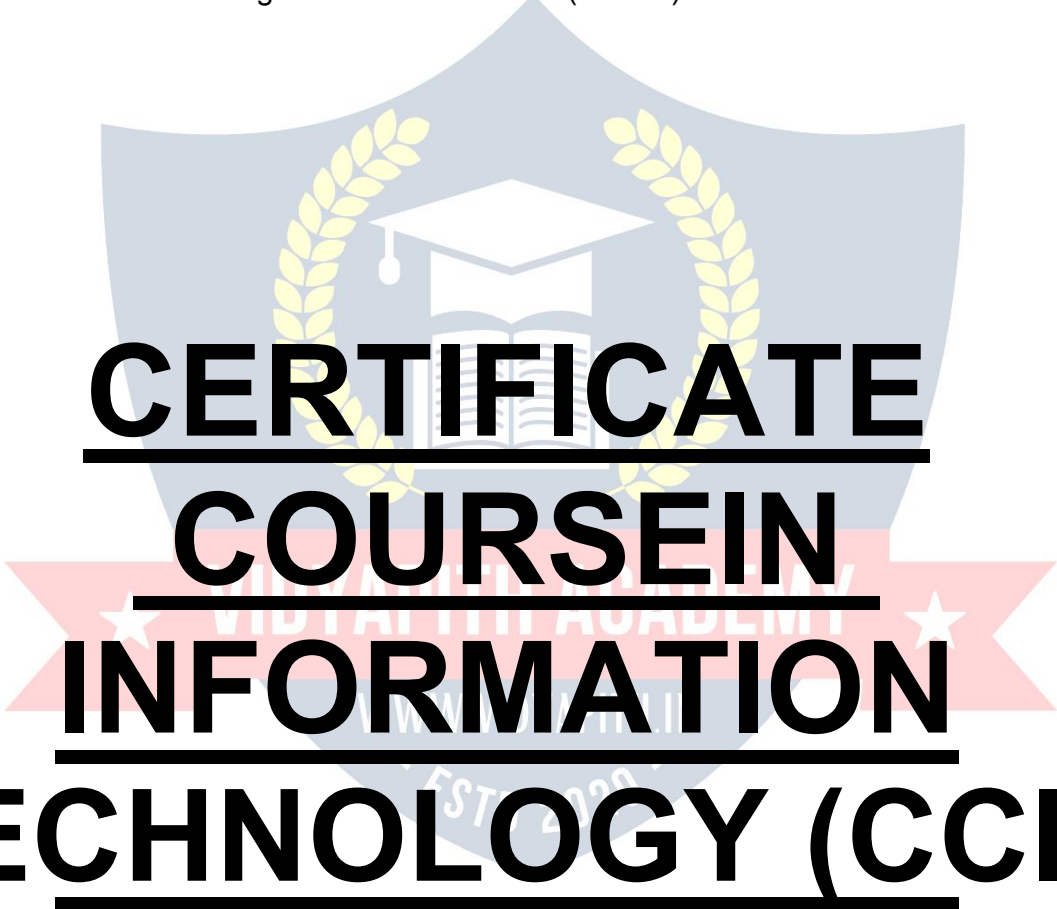
IAF Accredited An ISO 9001:2015 Certified Institute.

Registered Under Ministry of Corporate Affairs

(CIN U80904AS2020OPC020468)

Registered Under MSME, Govt. of India. (UAN- AS04D0000207).

Registered Under MHRD (CR act) Govt. of India.



# **CERTIFICATE COURSE IN INFORMATION TECHNOLOGY (CCIT)**

---

**TOPIC1: COMPUTER FUNDAMENTALS**

**TOPIC2: OPERATING SYSTEM (WINDOWS/MS-DOS)**

**TOPIC 3: WINDOWS OPERATION (MS-PAINT,  
NOTEPAD, WORDPAD)**

**TOPIC4:MS-OFFICE(MS-WORD,MS-EXCEL,MS-POWERPOINT) & INTERNET**

**TOPIC5:HTML &LANGUAGE C**

**PRACTICALLABASSIGNMENT&VIVAVOICE**



# COMPUTER FUNDAMENTALS

## **Computer:**

Computer is an electronic device that is designed to work with Information. The term computer is derived from the Latin term 'compute', this means to calculate. Computer cannot do anything without a Program. It represents the decimal numbers through a string of binary digits. The Word 'Computer' usually refers to the Center Processor Unit plus Internal memory.

## **CHARLESBABBAGE**

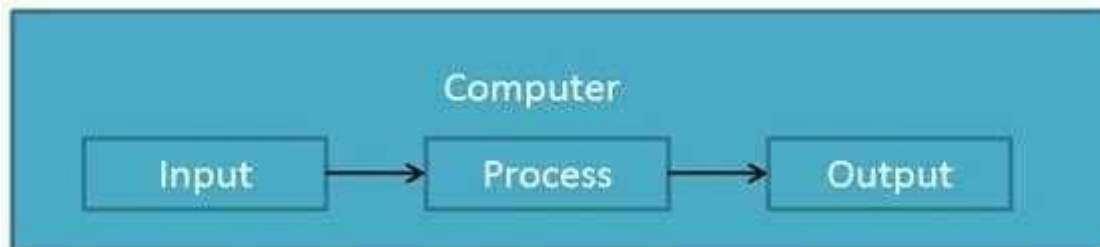
**Charles Babbage** was an English polymath. He was a mathematician, philosopher, inventor and mechanical engineer, who is best remembered now for originating the concept of a programmable computer.

Considered a "father of the computer", Babbage is credited with inventing the first mechanical computer that eventually led to more complex designs. His varied work in other fields has led him to be described as "pre-eminent" among the many polymaths of his century.

## **FUNCTIONALITESOF COMPUTER:**

Any digital computer carries out five functions in gross terms:

- Takes data as input.
- Stores the data/instructions in its memory and can use them when required.
- Processes the data and converts it into useful information.
- Outputs the information.
- Controls all the above four steps.



## **Definition**

Computer System is an electronic data processing device which does the following:

- Accept and store an input data.
- Process the data input.

- And output the processed data in required format.

### **ADVANTAGES OF COMPUTER:**

Following list demonstrates the advantages of Computers:

#### **High Speed**

- Computer is a very fast device.
- It is capable of performing addition of very big data.
- The computer has units of speed in microsecond, nanosecond and even the picoseconds.
- It can perform millions of calculations in a few seconds as compared to a man who can spend many months for doing the same task.

#### **Accuracy**

- In addition to being very fast, computer is very accurate.
- The computer can perform calculations 100% error free.
- Computers perform all jobs with 100% accuracy.

#### **Storage Capability**

- Memory is a very important characteristic of a computer.
- The computer has much more storage capacity than human beings.
- It can store large amount of data.
- It can store any type of data such as images, videos, text, audio and any other type.

#### **Diligence**

- Unlike human beings, a computer is free from monotony, tiredness and lack of concentration.
- It can work continuously without creating any error and boredom.
- It can do repeated work with same speed and accuracy.

#### **Versatility**

- A computer is a very versatile machine.

- A computer is very flexible in performing the job to be done.
- This machine can be used to solve the problems relating to various different fields.
- At one instant, it may be solving a complex scientific problem and the very next moment it may be playing a card game.

### **Reliability**

- A computer is a reliable machine.
- Modern electronic components have failure-free long lives.
- Computers are designed to make maintenance easy.

### **Automation**

- Computer is an automatic machine.
- Automation means ability to perform the task automatically.
- Once a program is given to computer i.e. stored in computer memory, the program and instruction can control the program execution without human interaction.

### **Reduction In Paper Work**

- The use of computers for data processing in an organization leads to reduction in paper work and speeds up the process.
- As data in electronic files can be retrieved as and when required, the problem of maintenance of large number of files gets reduced.

### **Reduction In Cost**

- Though the initial investment for installing a computer is high but it substantially reduces the cost of each of its transactions.

### **DISADVANTAGES OF COMPUTER:**

Following list demonstrates the disadvantages of computers in today's arena.

- A computer is a machine and has no intelligence of its own to perform many tasks.
- Each and every instruction has to be given to the computer.
- A computer cannot take any decision on its own.

## **Dependency**

- It can perform function as instructed by the user, so it is fully dependent on human being.

## **Environment**

- The operating environment of computers should be dust free and suitable to it.

## **No Feeling**

- Computer has no feeling or emotions.
- It cannot make judgment based on feelings, tastes, experiences and knowledge unlike a human being.

## **APPLICATIONS OF COMPUTER**

### **Banking**

Today Banking is almost totally dependent on computer. Banks provide following facilities:

- Bank on-line accounting facility, which include current balances, deposits, overdrafts, interest charges, shares and trustee records.
- ATM machines are making it even easier for customer to deal with banks.

### **Insurance**

Insurance companies are keeping all records up to date with the help of computer. The Insurance Companies, Finance houses and Stock broking firms are widely using computers for their concerns.

Insurance Companies are maintaining a database of all clients with information showing

- how to continue with policies
- starting date of the policies
- next due installment of a policy
- maturity date
- interests due
- survival benefits
- bonus

## Education

The computer has provided a lot of facilities in the Education System.

- The uses of computer provide a tool in the Education system is known as CBE (Computer Based Education).
- CBE involves Control, Delivery and Evaluation of learning.
- The computer education is very familiar and rapidly increasing the graph of computer students.
- There are number of methods in which educational institutions can use computer to educate the students.
- It is used for prepare a database about student performance and analysis are carried out.

## Marketing

In Marketing uses of computer are following:

- **Advertising:** With computers, advertising professionals create art and graphics, write and revise copy and print and disseminate ads with the goal of selling more products.
- **At Home Shopping:** At home shopping has been made possible through use of computerized catalogues that provide access to product information and permit direct entry of orders to be filled by the customers.

## HealthCare

Computers have become important part in all Medical Systems.

The computers are being used in hospitals to keep the record of patients and medicines. It is also used in scanning and diagnosing different diseases. ECG, EEG, Ultrasounds and CT Scans etc. are also done by computerized machines.

Some of major fields of health care in which computer are used:

- **Diagnostic System:** Computers are used to collect data and identify cause of illness.
- **Lab-diagnostic System:** All tests can be done and reports are prepared by computer.
- **Patient Monitoring System:** These are used to check patient's signs for abnormality such as in Cardiac Arrest, ECG etc.
- **Pharma Information System:** Computer checks Drug-Labels, Expiry dates, harmful drug side effects etc.
- Nowadays, computers are also used in performing surgery.

## Engineering Design

Computers are widely used in engineering purposes.

One of the major areas is CAD (Computer Aided Design). CAD provides creation, edition and modification of image. Some fields are:

- **Structural Engineering:** Requires stress and strain analysis required for design of Ships, Buildings, Bridges, and Airplanes etc.
- **Industrial Engineering:** Computers deal with design, implementation and improvement of integrated systems of people, materials and equipments.
- **Architectural Engineering:** Computers help in planning towns, designing buildings, determining a range of buildings on a site using both 2D and 3D drawings.

## Military

Computers are largely used in defense. Modern tanks, missiles, weapons etc. employ computerized control systems. Some military areas where a computer has been used are:

- Missile Control
- Military Communication
- Military operation and planning
- Smart Weapons

## Communication

Communication means to convey a message, an idea, a picture or speech that is received and understood clearly and correctly by the person for whom it is meant. Some main areas in this category are:

- E-mail
- Chatting
- Usenet
- FTP
- Telnet
- Video-conferencing

## Government applications

Computers play an important role in government applications. Some major fields in this category are:

- Budgets
- Sales tax department





- Incometaxdepartment
- Male/Femaleratio
- Computerizationofvoterslists
- ComputerizationofDrivingLicensingsystem
- ComputerizationofPANcard
- WeatherForecasting.

### **TYPESOFCOMPUTER:**

Computercanbebroadlyclassifiedbytheirspeedandcomputingpower.

Sr. No.	Type	Specifications
1	PC(PersonalComputer)	Single user computer system. Moderately powerful microprocessor.
2	WorkStation	Single user computer system. Similar to Personal Computer but have more powerful microprocessor.
3	MiniComputer	Multi-user computer system. Capable of supporting hundreds of users simultaneously.
4	MainFrame	Multi-user computer system. Capable of supporting hundreds of users simultaneously. Software technology is different from minicomputer.
5	Supercomputer	An extremely fast computer which can perform hundreds of millions of instructions per second.

### **INPUTDEVICES**

FollowingarefewoftheimportantinputdeviceswhichareusedinComputerSystems

- Keyboard
- Mouse
- JoyStick
- Lightpen

- TrackBall
- Scanner
- GraphicTablet
- Microphone
- MagneticInkCardReader(MICR)
- OpticalCharacterReader(OCR)
- BarCodeReader
- OpticalMarkReader

### **OUTPUT DEVICES**

Following are few of the important output devices which are used in Computer Systems

- Monitors
- GraphicPlotter
- Printer

### **CPU(CENTRAL PROCESSING UNIT)**

- CPU is considered as the brain of the computer.
- CPU performs all types of data processing operations.
- It stores data, intermediate results and instructions (program).
- It controls the operation of all parts of computer.

CPU itself has following three components.

- Memory Or Storage Unit:
- Control Unit
- ALU(Arithmetic Logic Unit)

**Memory or Storage Unit:**

This unit can store instruction, data and intermediate results. This unit supplies information to the other units of the computer when needed. It is also known as internal storage unit or main memory or primary storage or Random access memory (RAM).

Its size affects speed, power and capability. There are primary memory and secondary memory two types of memories in the computer.

Function of Memory Unit is:

It stores all the data to be processed and the instructions required for processing. It stores intermediate results of processing.

It stores final results of processing before these results are released to an output device.

All inputs and outputs are transmitted through main memory.

**Control Unit:**

This unit controls the operations of all parts of computer. It does not carry out any actual data processing operations.

Functions of this unit are

It is responsible for controlling the transfer of data and instructions among other units of a computer.

It manages and coordinates all the units of the computer.

It obtains the instructions from the memory, interprets them and directs the operation of the computer.

It communicates with input/output devices for transfer of data or results from storage. It does not process or store data.

**ALU (Arithmetic Logic Unit):**

This unit consists of two sub-sections namely

- Arithmetic section
- Logic Section

## ARITHMETIC SECTION

Function of Arithmetic section is to perform arithmetic operations like addition, subtraction, multiplication and division. All complex operations are done by making repetitive use of above operations.

## LOGIC SECTION

Function of logic section is to perform logic operations such as comparing, selecting, matching and merging of data.

## Units of Computer Memory Measurements

1 Bit = Binary Digit (Bits of Computer are 0 and 1) 8 Bits

= 1 Byte

1024 Bytes = 1 KB (Kilo Byte)

1024 KB = 1 MB (Mega Byte)

1024 MB = 1 GB (Giga Byte)

## Computer Memory

In computing, **memory** refers to the physical devices used to store programs (sequences of instructions) or data (e.g. program state information) on a temporary or permanent basis for use in a computer or other digital electronic device. The term primary memory is used for the information in physical systems which function at high-speed (i.e. RAM), as a distinction from secondary memory, which are physical devices for program and data storage which are slow to access but offer higher memory capacity. Primary memory stored on secondary memory is called "virtual memory". An archaic synonym for memory is store.

The term "memory", meaning primary memory is often (but not always) associated with addressable semiconductor memory, i.e. integrated circuits consisting of silicon-based transistors, used for example as primary memory but also other purposes in computers and other digital electronic devices. There are two main types of semiconductor memory: volatile and non-volatile. Examples of non-volatile memory are flash memory (sometimes used as secondary, sometimes primary computer memory) and ROM/PROM/EPROM/EEPROM memory (used for firmware such as boot programs). Examples of volatile memory are primary memory (typically dynamic RAM, DRAM), and fast CPU cache memory (typically static RAM, SRAM, which is fast but energy-consuming and offer lower memory capacity per area unit than DRAM).

## Volatile memory

Volatile memory is computer memory that requires power to maintain the stored information. Most modern semiconductor volatile memory is either Static RAM or dynamic RAM. SRAM retains its contents as long as the power is connected and is easy to interface to but uses six transistors per bit. Dynamic RAM is more complicated to interface to and control and needs regular refresh cycles to prevent its contents being lost. However, DRAM uses only one transistor and a capacitor per bit, allowing it to reach much higher densities and, with more bits on a memory chip, be much cheaper per bit. SRAM is not worthwhile for desktop system memory, where DRAM dominates,

but is used for their cache memories. SRAM is commonplace in small embedded systems, which might only need tens of kilobytes or less. Forthcoming volatile memory technologies that hope to replace or compete with SRAM and DRAM include Z-RAM, TTRAM, A-RAM and ETA RAM.

### **Non-volatile memory**

Non-volatile memory is computer memory that can retain the stored information even when not powered. Examples of non-volatile memory include read-only memory (ROM), flash memory, most types of magnetic computer storage devices (e.g. hard disks, floppy discs and magnetic tape), optical discs, and early computer storage methods such as paper tape and punched cards.



# OPERATING SYSTEM

An operating system is a program that acts as an interface between the software and the computer hardware.

- It is an integration set of specialized programs that are used to manage overall resources and operations of the computer.
- It is specialized software that controls and monitors the execution of all other programs that reside in the computer, including application programs and other system software.

## **Objectives of Operating System**

- Making a computer system convenient to use in an efficient manner
- To hide the details of the hardware resources from the users
- To provide users a convenient interface to use the computer system.
- To act as an intermediary between the hardware and its users and making it easier for the users to access and use other resources.
- Manage the resources of a computer system.
- Keep track of who is using which resource, granting resource requests, according to resource using and mediating conflicting requests from different programs and users.
- The efficient and fair sharing of resources among users and programs

## **Characteristics of Operating System**

- **Memory Management** -- It keeps tracks of primary memory i.e. what part of it are in use by whom, what part are not in use etc. Allocates the memory when the process or program requests it.
- **Processor Management** -- Allocate the processor (CPU) to a process. De-allocate processor when processor is no longer required.
- **Device Management** -- Keep tracks of all devices. This is also called I/O controller. Decides which process gets the device when and for how much time.
- **File Management** -- Allocates the resources. De-allocates the resources. Decides who gets the resources.
- **Security** -- By means of passwords & similar other techniques, preventing unauthorized access to programs & data.
- **Job accounting** -- Keeping track of time & resources used by various jobs and/or users.

- **Control over system performance** -- Recording delays between request for a service & from the system.
- **Interaction with the operators** -- The interaction may take place via the console of the computer in the form of instructions. Operating System acknowledges the same, do the corresponding action and inform the operation by a display screen.
- **Error-detecting aids** -- Production of dumps, traces, error messages and other debugging and error-detecting methods.
- **Coordination between other software and users** -- Coordination and assignment of compilers, interpreters, assemblers and other software to the various users of the computer systems.

## WINDOWS 7

**Windows 7** is an operating system produced by Microsoft for use on personal computers, including home and business desktops, laptops, net books, tablet PCs, and media center PCs. It was released to manufacturing on July 22, 2009, and became generally available retail worldwide on October 22, 2009, less than three years after the release of its predecessor, Windows Vista. Windows 7's server counterpart, Windows Server 2008 R2, was released at the same time. Windows 7 is succeeded by Windows 8.

Unlike Windows Vista's many new features, Windows 7 was an incremental upgrade designed to work with Vista-compatible applications and hardware. Presentations given by Microsoft in 2008 focused on multi-touch support, an updated Windows shell with a new taskbar, referred to internally as the *Superbar*, a home networking system called Home Group, and performance improvements. Some standard applications that have been included with prior releases of Microsoft Windows, including Windows Calendar, Windows Mail, Windows Movie Maker, and Windows Photo Gallery, are not included in Windows 7; most are instead offered separately at no charge as part of the Windows Essentials suite.

### Install Windows 7

Many people have computers that come with Windows 7 so they may never have to install it. However, you may need to install Windows 7 if:

- You replaced your hard disk drive with a new hard disk drive that does not have Windows 7 installed.
- You are reinstalling Windows 7 on a computer because you want to clean off your hard drive and remove any unwanted programs, such as spyware.
- You purchased a computer without an operating system.

## Pre-installation checklist

Before you begin the installation process, use this checklist to make sure that you are prepared:

- You have the Windows 7 CD.
- You have the product key available. The product key is located on your Windows 7 CD case and is required to install and activate Windows 7.
- Your computer hardware is set up. At a minimum, you should connect your keyboard, mouse, monitor, and CD drive. If available, you should connect your computer to a wired network.
- You have Windows 7 drivers available. Drivers are software that Windows 7 uses to communicate with your computer's hardware. If you do not have drivers available, Windows 7 may already include drivers for your hardware. If not, you should be able to download them from your hardware manufacturer's website after you set up Windows 7.
- If you are reinstalling Windows 7 on an existing computer, you need a backup copy of your files and settings. The installation process will delete all of your files. You can use the File and Settings Transfer Wizard to store your files and settings on removable media and then restore them after installation is complete.

## Installation process

Installing Windows 7 can take up to two hours. To make the process more manageable, it has been broken up into several sections.

To Begin Installation:

1. Insert the Windows 7 CD into your computer and restart your computer.
2. If prompted to start from the CD, press Spacebar. If you miss the prompt (it only appears for a few seconds), restart your computer to try again.
3. Windows 7 Setup begins. During this portion of setup, your mouse will not work, so you must use the keyboard. On the Welcome to Setup page, press Enter.
4. On the Windows 7 Licensing Agreement page, read the licensing agreement. Press the Page Down key to scroll to the bottom of the agreement. Then press F8.
5. This page enables you to select the hard disk drive on which Windows 7 will be installed. Once you complete this step, all data on your hard disk drive will be removed and cannot be recovered. It is extremely important that you have a recent backup copy of your files before continuing. When you have a backup copy, press D, and then press L when prompted. This deletes your existing data.
6. Press Enter to select unpartitioned space, which appears by default.
7. Press Enter again to select Format the partition using the NTFS file system, which appears by default.
8. Windows 7 erases your hard disk drive using a process called formatting and then copies the setup files. You can leave your computer and return in 20 to 30 minutes.



## To Continue the Installation

1. Windows 7 restarts and then continues with the installation process. From this point forward, you can use your mouse. Eventually, the Regional and Language Options page appears. Click Next to accept the default settings. If you are multilingual or prefer a language other than English, you can change language settings after setup is complete.
2. On the Personalize Your Software page, type your name and your organization name. Some programs use this information to automatically fill in your name when required. Then, click next.
3. On the Your Product Key page, type your product key as it appears on your Windows 7 CD case. The product key is unique for every Windows 7 installation. Then, click Next.
4. On the Computer Name and Administrator Password page, in the Computer name box, type a name that uniquely identifies your computer in your house, such as FAMILYROOM or TOMS. You cannot use spaces or punctuation. If you connect your computer to a network, you will use this computer name to find shared files and printers. Type a strong password that you can remember in the Administrator password box, and then retype it in the Confirm password box. Write the password down and store it in a secure place. Click Next.
5. On the Date and Time Settings page, set your computer's clock. Then, click the Time Zone down arrow, and select your time zone. Click Next.
6. Windows 7 will spend about a minute configuring your computer. On the Networking Settings page, click next.
7. On the Workgroup or Computer Domain page, click Next.

## To complete the installation

1. Windows 7 will spend 20 or 30 minutes configuring your computer and will automatically restart when finished. When the Display Settings dialog appears, click OK.
2. When the Monitor Settings dialog box appears, click OK.
3. The final stage of setup begins. On the Welcome to Microsoft Windows page, click Next.
4. On the Help protect your PC page, click Help protect my PC by turning on Automatic Updates now. Then, click Next.
5. Windows 7 will then check if you are connected to the Internet:
  - If you are connected to the Internet, select the choice that describes your network connection on the Will this computer connect to the Internet directly, or through a network page. If you're not sure, accept the default selection, and click Next.
  - If you used dial-up Internet access, or if Windows 7 cannot connect to the Internet, you can connect to the Internet after setup is complete. On the How will this computer connect to the Internet? page, click Skip.
6. Windows 7 Setup displays the Ready to activate Windows page. If you are connected to the Internet, click Yes, and then click Next. If you are not yet connected to the Internet, click No, click Next, and then skip to step 24. After

setup is complete, Windows 7 will automatically remind you to activate and register your copy of Windows 7.

7. On the Ready to register with Microsoft page, click Yes, and then click Next.
8. On the Collecting Registration Information page, complete the form. Then, click Next.
9. On the Who will use this computer page, type the name of each person who will use the computer. You can use first names only, nicknames, or full names. Then click Next.
10. On the Thank you! Page, click Finish.

Windows 7 setup is complete. You can log on by clicking your name on the logon screen. If you've installed Windows 7 on a new computer or new hard disk drive, you can now use the File and Settings Transfer Wizard to copy your important data to your computer or hard disk drive.

## MS-DOS

Short for **Microsoft Disk operating system**, MS-DOS is a non-graphical command line operating system derived from 86-DOS that was created for IBM compatible computers. MS-DOS originally written by Tim Peterson and introduced by Microsoft in August 1981 and was last updated in 1994 when MS-DOS 6.22 was released. Today, MS-DOS is no longer used; however, the command shell, more commonly known as the Windows command line is still used by many users.

Today, most computer users are only familiar with how to navigate Microsoft Windows using the mouse. Unlike Windows, MS-DOS is a command-line and is navigated by using MS-DOS commands. For example, if you wanted to see all the files in a folder in Windows you would double-click the folder to open the folder in Windows Explorer. In MS-DOS, to view that same folder you would navigate to the folder using the CD command and then list the files in that folder using the dir command.

### DOS Commands

MS-DOS has a relatively small number of commands, and an even smaller number of commonly used ones. Moreover, these commands are generally inflexible because, in contrast to Linux and other Unix-like operating systems, they are designed to accommodate few options or *arguments* (i.e., values that can be passed to the commands).

Some of the most common commands are as follows (corresponding commands on Unix-like operating systems are shown in parenthesis):

CD - change the current directory (cd)  
COPY - copies a file (cp)  
DEL - delete a file (rm)

DIR-lists directory contents (ls)  
EDIT-starts an editor to create or edit plain text files (vi, vim, ed, Joe) FORMAT -  
formats a disk to accept DOS files (mformat)  
HELP-displays information about a command (man, info) MKDIR -  
creates a new directory (mkdir)  
RD-removes a directory (rmdir)  
REN - renames a file (mv)  
TYPE-displays contents of a file on the screen (more, cat)

### Other DOS Command commonly used are:

#### Append

The append command can be used by programs to open files in another directory as if they were located in the current directory.

#### Attrib

The attrib command is used to change the attributes of a single file or a directory.

#### Break

The break command sets or clears extended CTRL+C checking.

#### Call

The call command is used to run a script or batch program from within another script or batch program.

The call command has no effect outside of a script or batch file. In other words, running the call command at the DOS prompt will do nothing.

#### Chcp

The chcp command displays or configures the active code page number.

#### Chdir

The chdir command is used to display the drive letter and folder that you are currently in. Chdir can also be used to change the drive and/or directory that you want to work in. **Chkdsk**  
The chkdsk command, often referred to as *check disk*, is used to identify and correct certain hard drive errors.

#### Choice

The choice command is used within a script or batch program to provide a list of choices and return the value of that choice to the program.

#### Cls

The cls command clears the screen of all previously entered commands and other text.

#### Dir

The dir command is used to display a list of files and folders contained inside the folder that you are currently working in.

The dir command also displays other important information like the hard drive's serial number, the total number of files listed, their combined size, the total amount of free space left on the drive, and more.

DIR[drive:][path][filename][/P][/W][/A[:]attributes][/O[:]sortorder][/S][/B][/L][/V]

[drive:][path][filename] Specifies drive, directory, or file to list. (Could be enhanced file specification or multiple file specs)

/P Pauses after each screenful of information.

/W Useswidelistformat.  
attributes:  
DDirectories  
RRead-onlyfiles  
/A HHiddenfiles  
AFilesreadyforarchiving S  
System files  
-Prefixmeaningnot  
Listbyfilesinsortedorder,sortorder: N  
By name (alphabetic)  
SBysize(smallestfirst)  
/O EByextension(alphabetic)  
DBydateandtime(earliestfirst)  
GGroupdirectoriesfirst  
-Prefixreverseorder  
AByLastAccessDate(earliestfirst)  
/S Displaysfilesinspecifieddirectoryandallsubdirectories.




# WINDOWS OPERATION

## **MS- PAINT**

Paint is a drawing tool you can use to create simple or elaborate drawings. These drawings can be either black-and-white or color, and can be saved as bitmap files. You can print your drawing, use it for your desktop background, or paste it into another document. You can even use Paint to view and edit scanned photos.

You can also use Paint to work with pictures, such as .jpg, .gif, or .bmp files. You can paste a Paint picture into another document you've created, or use it as your desktop background.


### **To draw a straight line**

1. In the toolbox, click **Line** .
2. Below the toolbox, click a line width.
3. Drag the pointer to draw the line.

### **To draw a freeform line**

1. In the toolbox, click **Freeform** .
2. Drag the pointer to draw the line.

### **To draw a curved line**



1. In the toolbox, click **Curve** .
2. Below the toolbox, click a line width.
3. Draw a straight line by dragging the pointer.
4. Click where you want one end of the curve to be, and then drag the pointer to adjust the curve. Repeat this step for a second arc. You can only create two curves for each line.

### **To send an image using e-mail**

After you are done working on an image, you can send it to anyone who has an e-mail account (as long as you also have access to an e-mail account).

1. On the **File** menu, click **Send**.
2. Your e-mail program will display, with your image included either as an attachment or as part of the message section of your e-mail.
3. Specify your recipient's e-mail address, a subject, and a message; then send the e-mail as you normally would.

### **To draw a rectangle or square**

1. In the toolbox, click **Rectangle**  to create a square-cornered shape, or click **Rounded Rectangle**  to create a round-cornered shape.
2. Below the toolbox, click a fill style.
3. To draw a rectangle, drag the pointer diagonally in the direction you want.
4. To draw a square, hold down **SHIFT** while dragging the pointer.

### **To acquire an image from a scanner or a digital camera**

1. On the **File** menu, click **From Scanner** or **Camera**.
2. In the **Get Pictures** dialog box, click the image you want, and then click **Get Picture**.

## NOTEPAD

### Notepad overview

Notepad is a basic text editor you can use for simple documents or for creating Web pages. The most common use for Notepad is to view or edit text (.txt) files, but many users find Notepad a simple tool for creating Web pages.

Because Notepad supports only very basic formatting, you cannot accidentally save special formatting in documents that need to remain pure text. This is especially useful when creating HTML documents for a Web page because special characters or other formatting may not appear in your published Web page or may even cause errors.

You can save your Notepad files as Unicode, ANSI, UTF-8, or big-endian Unicode. These formats provide you greater flexibility when working with documents that use different character sets.

## WORDPAD

**WordPad** is a basic word processor that is included with almost all versions of Microsoft Windows from Windows 95 onwards. It is more advanced than Notepad but simpler than Microsoft Works Word Processor and Microsoft Word. It replaced Microsoft Write.

### Using WordPad

WordPad is a basic word processor that is included in Windows. A word processor is a computer program that you can use to create, edit, view, and print text documents. With WordPad, you can type letters, book reports, and other simple documents. You can also change how the text looks, quickly move sentences and paragraphs around, and copy and paste text within and between documents.

### The WordPad window

To open WordPad, click the **Start** button , click **All Programs**, click **Accessories**, and then click **WordPad**.

There are four main parts of the WordPad window:

**The toolbar:** The toolbar contains buttons for basic commands, including saving and printing. To find out what a button does, rest your mouse pointer on it. A box pops up showing the function of the button.

**The format bar:** The format bar contains buttons that you can use to format the text in your document. For example, you can choose the font, color, and alignment of your text.

**The ruler:** Use the ruler to check the layout and placement of text in your document.

**The document area:** This is where you type your document, make changes to the text, and apply your formatting.

**Typing text:** When you're ready to get started, type in the document area of WordPad. A flashing vertical line called the cursor indicates where the next text that you type will appear. To move the cursor within text, click where you want the cursor to appear.

Unlike using a typewriter, when you type in WordPad you don't have to press ENTER to start a new line. WordPad will take care of that for you by automatically starting a new line when you reach the end of the one you're working on. When you want to start a new paragraph, press ENTER.

### **Selecting text**

Whenever you want to do something to text in your document, such as copy it or format it, you need to select it first. To select text, position the mouse pointer to the left of where you want to begin your selection. With the pointer positioned, click and hold the left mouse button while you drag the pointer over the text that you want to select. The selected text will be highlighted. Once you've completed your selection, release the mouse button.

### **Copying and moving text**

If you have text in one part of your document that you want to appear in another part, there are two ways to move the text around without having to retype it: You can copy and paste it to another location, or you can move it to another location.

When you copy text, it is placed in the Clipboard. You can then paste it in a different location. The original text is preserved.

When you move text to another location, the original text is not preserved. You might find this method useful when you want to rearrange the sentences and paragraphs in your document.

### **To copy text and paste it in another location**

1. Select the text that you want to copy.
2. On the **Edit** menu, click **Copy**.
3. Move the cursor to the location where you want to insert the copied text.
4. On the **Edit** menu, click **Paste**.

### **Tip**

- To quickly copy text that you've selected, press CTRL+C. To paste it, press CTRL+V.

### **Inserting and deleting text**

WordPad makes it easy to insert and delete text wherever you want. To insert text, click where you want to insert the text and then just start typing. To delete text, select the text that you want to delete, and then press DELETE.

### **Formatting your document**

Formatting refers to the how the text in your document looks as well as how it is arranged. WordPad lets you easily change the formatting in your document. For example, you can choose from many different fonts and font sizes, and you can make

your text almost any color you want. You can also easily change how your document is aligned.

### To change the font, font style, or font size:

1. Select the text whose formatting you want to change.
2. On the **Format** menu, click **Font**.
3. In the **Font** box, type or select the font you want to use.
4. In the **Font Style** box, type or select the font style you want.
5. In the **Size** box, type or select the size you want to use.

### To change the color

1. Select the text whose color you want to change.
2. On the **Format** menu, click **Font**.
3. Under **Color**, click the color that you want.

### To change the alignment

You can align the text in your document to either the left margin, the center, or the right margin.

1. Select the paragraph whose alignment you want to change.
2. On the **Format** menu, click **Paragraph**.
3. In the **Alignment** box, click the alignment you want.

### Saving your document

It's a good idea to save your document periodically while you are working on it so that in case your computer stops working for some reason, you won't lose any of your work. Saving the document will also allow you to come back to it later if you want to work on it again.

### To save the document

- On the **File** menu, click **Save**.

If you haven't saved the document yet, you'll be asked to provide a name for the document and location on your computer to save it to:

1. In the **Save in** box, click the location where you want to save the document.
2. In the **Filename** box, type a name for your document.
3. Click **Save**.



## Printing your document

On the **File** menu, click **Print**. In the **Print** dialog box, use the **Page Range** box and the **Number of copies** box to specify which pages you want to print as well as how many copies. When you're done, click **Print**.



# **MICROSOFT OFFICE**

## **(MS-WORD, MS-EXCEL, MS-POWERPOINT)**

**Microsoft Office** is an office suite of desktop applications, servers and services for the Microsoft Windows and OS X operating systems, introduced by Microsoft on August 1, 1989. Initially a marketing term for a bundled set of applications, the first version of Office contained Microsoft Word, Microsoft Excel, and Microsoft PowerPoint. Over the years, Office applications have grown substantially closer with shared features such as a common spell checker, OLE data integration and Microsoft Visual Basic for Applications scripting language. Microsoft also positions Office as a development platform for line-of-business software under the Office Business Applications brand. Office is reported to now be used by over a billion people worldwide.

The current versions are Office 2013 for Windows, released on October 11, 2012 and Office 2011 for OS X, released October 26, 2010. On 24 October 2012, the RTM final code of Office 2013 Professional Plus has been released to TechNet and MSDN subscribers for download. On 15 November 2012, the 60-day trial version of Office 2013 Professional Plus was released for download.

## **MS-WORD**

Microsoft Word is an example of a program called a "word processor." The key benefit to using a word processor is that you can make changes easily, including correcting spelling; adding, deleting, formatting, and relocating text; and inserting images. Once you create a document, you can effortlessly print it (as many copies as you want!), save it for later modifications, or send it to a friend via e-mail. Microsoft Word is a very powerful word processor—this handout was created using just a small number of its features!

Microsoft Word is available on both PCs and Macs, so what you learn in class today should be applicable to any computer you use. The program may look slightly different depending on the version and computer that you're using, but Microsoft Word will function in the same basic ways. There are other word processors out there, including OpenOffice.org Writer, WordPerfect, Apple Pages, and WordPad. They have many features in common with Microsoft Word, and you should feel free to choose any program you prefer.

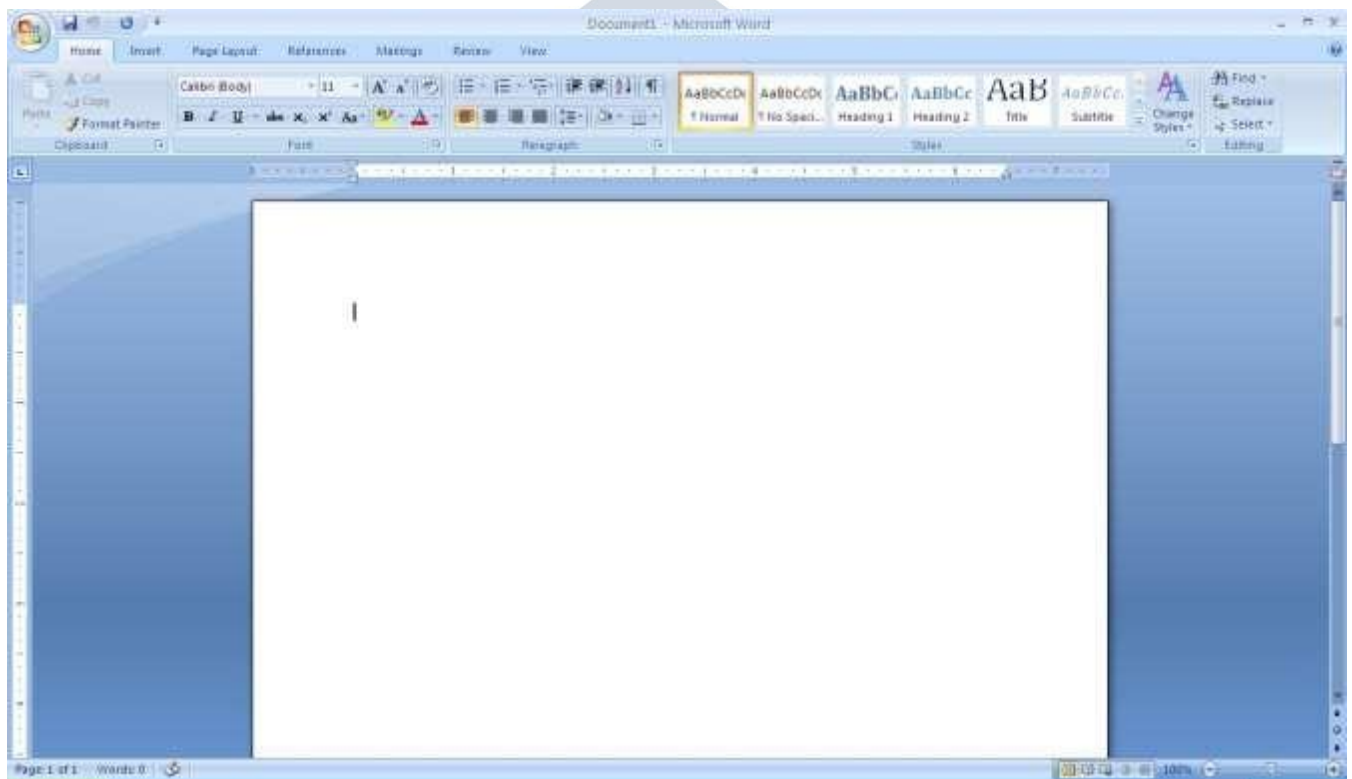
### **Opening Microsoft Word**

To get started with Microsoft Word (sometimes called "MSWord"), you will need to locate and open the program on your computer. To open the program, point to Word's icon on the desktop with your mouse and double-click on it with the left mouse button. If you don't see the MS Word icon on your desktop, you'll have to access the program from the Start Menu. Click on the button in the bottom left corner to pull up the Start Menu. You should see the MSWord icon here, so click on it once with your left button. If

you still don't see it, click on "All Programs" and scroll through the list of programs until you find it. Click once with your left button to open the program. Occasionally, Microsoft Word will be in a folder called "Microsoft Office" or something similar—this will make one more step between "All Programs" and "Microsoft Word."

MS Word will then open a blank page called "Document 1." This is an image of the upper-left corner of MS Word. This box features two important pieces of information: the name of the file that you are currently working on (in this case, "Document 1" since we have not yet renamed it) and which program you are using ("Microsoft Word"). There should now be a blinking line in the top left corner of the part of the screen that looks like a sheet of paper. This means you will be able to type in this space!

## Microsoft Word Features



### The Title Bar

This is a close-up view of the Title Bar, where file information is located. It shows the name of the file (here, "Microsoft Word") and the name of the program ("Microsoft Word"). Notice the three buttons on the right side, controlling the size and closing of the program.

**Minimize:** Left click this button to shrink the window down to a small button that will appear in the task bar

**Maximize:** Left click this button to make the window as large as it can be—it should take up your entire screen.

**Close:** Left-click this button to close the window. The program will close and stop running. Make sure you save your work first!

## **Restore Down:**

Left-click this button to make the window smaller without minimizing it. The tabbed Ribbon menu system is how you navigate through Word and access various Word commands. If you have used previous versions of Word, the Ribbon system replaces the traditional menus.

## **The File Menu**

In Microsoft Office 2007, there was something called the Microsoft Office Button ( ) in the top left-hand corner. In Microsoft Office 2010, this has been replaced with a tab in the Ribbon called "File."

When you left-click on this tab, a drop-down menu appears. From this menu, you can perform the same functions as were found under the Microsoft Office Button menu, such as: Create a new document, open files, save files in a variety of ways, and print.

## **Quick Access Toolbar**

On the top left-hand side of the Title Bar, you will see several little icons above the File menu. These let you perform common tasks, such as saving and undoing, without having to find them in a menu. We'll go over the meanings of the icons a little later.

## **The Home Tab**

The most commonly used commands in MS Word are also the most accessible. Some of these commands available in the Home Tab are: The Home Tab Toolbar offers options that can change the font, size, color, alignment, organization and style of the text in the document. For example, the "Times New Roman" indicates the FONT of your text, the "12" indicates the SIZE of your text; etc. We will go over how to use all of these options to format your text in a little while. Each of these options expands into a menu if you left-click on the tiny down-arrow in the bottom right corner of the window. The ruler is found below the Ribbon. The ruler tells you where you are on the page, along with the dimensions of the overall document. Just like a real piece of paper, the default setting is 8.5 x 11 inches, and the margins have been incorporated for you. Similar to most options in MS Word, this is entirely customizable and the user can create a document of any dimensions.

## **Keyboard Review**

In order to use MS Word effectively, you must input commands using both the mouse and the keyboard. The above image of a keyboard should look similar to the keyboard in front of you; learning just a few certain keys will help to improve your efficiency in typing, as well as present you with more options within the program. The following is a list of commonly used keys that have special functions in MS Word (key functions can change depending on which program you are using) :

1. Backspace: This key deletes letters backward.
2. Delete: This key deletes letters forward.
3. Shift: This key, when pressed WITH another key, will perform a secondary

Function.

4. Spacebar: This key enters a space between words or letters.
5. Tab: This key will indent what you type, or move the text to the right. The default Indent distance is usually ½ inch.
6. CapsLock: Pressing this key will make every letter you type capitalized.
7. Control (Ctrl): This key, when pressed WITH another key, performs a shortcut.
8. Enter: This key either gives you a new line, or executes a command (pressed in MS Word, it begins a new line).
9. Number Keypad: These are exactly the same as the numbers at the top of the keyboard; some people just find them easier to use in this position.
10. Arrow Keys: Like the mouse, these keys are used to navigate through a document.

## **MICROSOFT WORD BASICS**

### **Typing Text**

To enter text, type just as you would if you were using a typewriter. To capitalize a letter, hold down the SHIFT key while typing the letter. Or, press the CAPS LOCK key on the left-hand side of your keyboard. You will have to press the CAPS LOCK key again—once you are done capitalizing—to remove the lock. You do not need to press ENTER to start a new line—Microsoft Word will automatically wrap your sentence at the end of the line. To move the cursor from its position at the end of your sentence to anywhere else on the page, use the mouse or the arrow keys to move the cursor where you want the letters or spaces to be (left-click the mouse to place the cursor) and then type what you want to add—the text will automatically adjust to include it. Press ENTER to start a new paragraph (this is sometimes called a “carriage return”).

### **Deleting Text**

While typing a document, sometimes you will make a mistake. Unlike a typewriter, MS Word can delete text on the screen and leave no trace—it is as if you never typed on the page in the first place. There are two different buttons on the keyboard that will allow you to erase text. They are the “Delete” key and the “Backspace” key (#1 and 2 on the keyboard map on page). The “Backspace” key deletes words to the LEFT of the cursor, and the “Delete” key deletes words to the RIGHT of the cursor.

## **BACKSPACE↔ DELETE**

Let's assume that the vertical line dissecting the word "creative" in the example above is our cursor. Pressing the "Backspace" key will erase "a," "e," "r," "c," and so on, moving LEFT. The "Delete" key will erase "t," "i," "v," "e," and so on, moving RIGHT.

To delete a whole chunk of text at once, left-click with your mouse and drag to highlight a section of text. Then simply press "Backspace" or "Delete" and all of the highlighted Text will disappear.

## **Undoing and Redoing**

The UNDO and REDO features of Microsoft Windows applications are great tools to rely on. The program will keep a list of the last 25 commands that you have performed, and it allows for taking "one step" backwards in order to erase what you have just done. Click on the UNDO button in the Quick Access Toolbar to go back one step. Click on the REDO button in the Quick Access Toolbar to go forward one step.

## **Formatting Text**

Changing the look of what you've written is called "formatting." This can include changing the text style, size, color, and more. This is a sentence that features many different fonts. This is a sentence that features many different sizes. From the Home Tab, the "B" will make your text BOLD, the "I" will put it in italics, and the "U" will add an underline to your text. These features do not have to be used independently of each other—in other words, you can bold, underline, and italicize a single piece of text. The alignment of the text can be altered using the buttons with the horizontal lines on them. You can align text To the LEFT, To the CENTER and to the RIGHT.

In order to apply certain stylistic or formatting changes to text, you must first HIGHLIGHT the text. This is a common procedure in Microsoft Windows applications, and because it is so useful, it is a skill worth practicing. You can also change the font color by clicking on the appropriate buttons in the

**Formatting Toolbar.** Experiment and remember—you can always start over with a fresh, new document, so don't worry about making mistakes! If you do, however, there is always the incredible "UNDO" tool. Cutting, Copying, and Pasting Text in MS Word, you can CUT or COPY text from one area of the document and save that text to be PASTED elsewhere (these commands are found on the Home Tab). When you CUT text, you actually delete it from where you took it, as opposed to COPYING it, which makes a copy of your selection.

When you CUT or COPY text, it is stored on the CLIPBOARD. The Clipboard is a tool in MS Word that stores cuts and copies of your work, to be pasted in other places in the document. Once your selection is on the CLIPBOARD, you can PASTE it as many

times as you want! CUTTING a selection will place it on the clipboard, just in case you want to PASTE it elsewhere. To CUT a selection, first highlight it. Then, click on the CUT icon from the Home Tab. The highlighted text will disappear, as you have just cut it out, but a copy is now on your clipboard, and MS Word is waiting for you to paste it somewhere else.

To PASTE this cut selection, place your cursor where you want the selection to go. Click on the PASTE icon from the Home Tab toolbar, and it will pop the text into place, right where you have your cursor. To COPY, simply follow those same steps, replacing the CUT command with COPY. The COPY command will not alter your original selection at all, as it simply makes a copy of the selection without changing or deleting it in any way.

## DOING MORE WITH MICROSOFT WORD

### Inserting Images and Clip Art

With Microsoft Word, you can insert pictures in your document using the Insert Tab toolbar. You can insert pictures from the "Clip Art" album that comes with the program, or you can insert pictures from a file that you have previously saved on a disk or elsewhere on the computer (e.g., the My Pictures folder). Clip Art is a collection of cartoon and computer-generated images that cover a broad array of commonly needed icons and pictures. These include business, holiday, nature, entertainment, academic and other themes, along with standard bullets and symbols.

To insert a clip art picture into a Microsoft Word document, you will first need to place your cursor (left-click) where you wish to insert your picture in your document. Then, from the Insert tab on the Ribbon, click on "**Clip Art.**" A Clip Art search box will appear on the right side of your screen. From here, you can enter a search word for the picture you would like to find. Then click "Go." This will show all the options of pictures you can insert. When you see a piece of clip art that you like, click on it, and it will automatically insert into your document, in the exact place where you left the cursor. To resize your image, grab one of the corners of the image by left-clicking and holding—drag it to your desired size and fine-tune the placement. The cursor will change from a typing icon to a double arrow when it can be used to resize an image.

Drag the corner toward the upper-left corner of the screen, and the image will grow. Drag toward the bottom-right, and it will shrink. You can move the image to another place in the document by left-clicking and holding on the center of it; drag it to its desired location. More options, such as aligning the image with text (or special effects like wrapping text around or through an image) can be found by clicking on the picture, and then choosing the Picture Tools Tab. You can also insert a photograph or other images from your files using this same process. On the Insert Tab, click on Picture and locate the files that you want to include.

## Modifying Line Spacing

Line spacing in Word refers to the amount of space between lines of text. The default in Word 2010 is 1.15 spacing, which leaves a little bit more space than single-spacing, or what you would find in a normal book. Single spacing is generally easy for the eye to read. There may be times, however, when you want to change this spacing. One common option is to double-space text: This text is double-spaced. Double-spacing is especially useful if someone else is proof reading your document. It allows for more room to write comments on the page.

### To change the line spacing:

1. Select text you want to format by highlighting it.
2. On the Home Tab, click on the Line Spacing button in the Paragraph group.
3. Choose the spacing you want from the menu that appears. For more options, select Line Spacing Options. In the dialog box that appears, you can choose other spacing options, including spacing between paragraphs. This can be done by changing the values in the Before and After boxes.

### Creating Bulleted and Numbered Lists

Word allows you to create lists within your document that can be organized with bullets or numbers. Lists are useful for presenting text that wouldn't make the most sense in paragraph form (for example, step-by-step instructions) or for emphasizing key points. Bullets are usually small circles at the beginning of item in a list, and numbers are used for lists that are arranged in sequential order. Here's an example of a bulleted list:

- Bananas
- Milk
- Eggs
- Ice Cream

### To create a list:

1. On the Home tab, select either the Bullets or Numbering buttons from the Paragraph group. If you want to choose a particular style for your bullets or numbers, click on the triangle next to the button and choose a style from the menu that appears.
2. You will see the first bullet or number appear on your document. Type your first line of text and then hit Enter.
3. Another bullet or number will appear automatically. Type your next line of text and hit Enter.
4. When you have finished your list, hit Enter twice to end the bullets or numbering.



## **Changing Views and Overall Look**

There will be times when you need to create documents that don't fit on a standard piece of paper (8.5" by 11").

### **Click on the Page Layout Tab.**

From this menu, you can alter the margins, width, height, and orientation (portrait = 11" tall; landscape = 11" wide) of the document, as well as choose from a variety of templates, different types of paper, and document styles that come with the program. To change the orientation of your page, click on the Orientation button.

Click on Landscape from the drop-down box that appears. Your document should now be in landscape position. If you wish to return to portrait orientation, go through the same steps, clicking on the Landscape option instead of Portrait. If you would like to change the display of your document or zoom in and out without affecting the way your document will print, you can do that from the View Tab. Anything you change from the View Tab will not change the way your document prints out. So if you want your text to be bigger when you print out the document, make sure to change the size of the font instead of the zoom.

### **Spelling and Grammar Check**

One benefit of using a computerized word processor is its ability to recognize, change, and give advice about your writing. MS Word has utilities that can check your spelling and grammar against a master database, and can offer advice on a variety of different grammatical styles. **MS Word** automatically underlines any words that it does not recognize in red, assuming that they are not spelled correctly, and underlines in green if it does not recognize the grammatical pattern, assuming that the sentence does not make sense.

For example: In this case, "jumping" should read "jump" and "lazi" should be "lazy." If you right-click on the word, a menu with popup options, including "Ignore" if you do not want help on this specific phrase or agree with the suggestion. You can also choose to add words to the MS Word spelling database, if you are going to use them often and don't want them to be flagged as misspelled every time—this is especially useful for names, as MS Word often interprets these as misspellings. The spelling and grammar tools can be found in the Review Tab

## **USING MICROSOFT WORD**

Microsoft Word is an example of a program called a "word processor." Word processors are used to create and print text documents in much the same way that you would use a typewriter. The key benefit to using a word processor is that you can make changes easily, including correcting spelling; adding, deleting, formatting, and relocating text; and inserting images. Once you create a document, you can effortlessly print it (as many copies as you want!), save it for later modifications, or send it to a friend via e-mail.

Microsoft Word is a very powerful word processor—This handout was created using just a small number of its features! Microsoft Word is available on both PCs and Macs, so what you learn in class today should be applicable to any computer you use. The program may look slightly different depending on the version and computer that you're using, but Microsoft Word will function in the same basic ways. There are other word processors out there, including OpenOffice.org Writer, WordPerfect, Apple Pages, and WordPad. They have many features in common with Microsoft Word, and you should feel free to choose any program you prefer.

## **Opening Microsoft Word**

To get started with Microsoft Word (sometimes called "MS Word"), you will need to locate and open the program on your computer. To open the program, point to Word's icon on the desktop with your mouse and double-click on it with the left mouse button. If you don't see the MS Word icon on your desktop, you'll have to access the program from the Start Menu. Click on the button in the bottom left corner to pull up the Start Menu. You should see the MS Word icon here, so click on it once with your left button. If you still don't see it, click on "All Programs" and scroll through the list of programs until you find it. Click once with your left button to open the program.

Occasionally, Microsoft Word will be in a folder called "Microsoft Office" or something similar—this will make one more step between "All Programs" and "Microsoft Word." MS Word will then open a blank page called "Document1." This is an image of the upper-left corner of MS Word. This box features two important pieces of information: the name of the file that you are currently working on (in this case, "Document 1" since we have not yet renamed it) and which program you are using ("Microsoft Word"). There should now be a blinking line in the top-left corner of the part of the screen that looks like a sheet of paper. This means you will be able to type in this space!

## **MICROSOFT WORD BASICS**

### **Typing Text**

To enter text, type just as you would if you were using a typewriter. To capitalize a letter, hold down the SHIFT key while typing the letter. Or, press the CAPS LOCK key on the left-hand side of your keyboard. You will have to press the CAPS LOCK key again—once you are done capitalizing—to remove the lock. You do not need to press ENTER to start a new line—Microsoft Word will automatically wrap your sentence at the end of the line. To move the cursor from its position at the end of your sentence to anywhere else on the page, use the mouse or the arrow keys to move the cursor where you want the letters or spaces to be (left-click the mouse to place the cursor) and then type what you want to add—the text will automatically adjust to include it. Press ENTER to start a new paragraph (this is sometimes called a "carriage return").

## Deleting Text

While typing a document, sometimes you will make a mistake. Unlike a typewriter, MS Word can delete text on the screen and leave no trace—it is as if you never typed on the page in the first place. There are two different buttons on the keyboard that will allow you to erase text. They are the “Delete” key and the “Backspace” key (#s1 and 2 on the keyboard map on page).

The “Backspace” key deletes words to the LEFT of the cursor, and the “Delete” key deletes words to the RIGHT of the cursor.

## Microsoft Word Features

### The Title Bar

This is a close-up view of the Title Bar, where file information is located. It shows the name of the file (here, “Microsoft Word”) and the name of the program (“Microsoft Word”). Notice the three buttons on the right side, controlling the size and closing of the program.

**Minimize:** Left click this button to shrink the window down to a small button that will appear in the task bar

**Maximize:** Left click this button to make the window as large as it can be—it should take up your entire screen.

**Close:** Left-click this button to close the window. The program will close and stop running. Make sure you save your work first!

**Restore Down:** Left-click this button to make the window smaller without minimizing it.

### The File Menu

In Microsoft Office 2007, there was something called the Microsoft Office Button ( ) in the top left-hand corner. In Microsoft Office 2010, this has been replaced with a tab in the Ribbon called “File.” When you left-click on this tab, a drop-down menu appears. From this menu, you can perform the same functions as were found under the Microsoft Office Button menu, such as: Create a new document, open existing files, save files in a variety of ways, and print.

### The Home Tab

The most commonly used commands in MS Word are also the most accessible. Some of these commands available in the Home Tab are: The Home Tab Toolbar offers options that can change the font, size, color, alignment, organization and style of the text in the document. For example, the “Times New Roman” indicates the FONT of your text, the “12” indicates the SIZE of your text; etc. We will go over how to use all of these

options to format your text in a little while. Each of these options expands into a menu if you left-click on the tiny down-arrow in the bottom right corner of the window.

## The Ruler

The ruler is found below the Ribbon. The ruler tells you where you are on the page, along with the dimensions of the overall document. Just like a real piece of paper, the default setting is 8.5 x 11 inches, and the margins have been incorporated for you. Similar to most options in MS Word, this is entirely customizable and the user can create a document of any dimensions.

## Keyboard Review

In order to use MS Word effectively, you must input commands using both the mouse and the keyboard. The above image of a keyboard should look similar to the keyboard in front of you; learning just a few certain keys will help to improve your efficiency in typing, as well as present you with more options within the program. The following is a list of commonly used keys that have special functions in MS Word (key functions can change depending on which program you are using)

1. Backspace: This key deletes letters backward.
2. Delete: This key deletes letters forward.
3. Shift: This key, when pressed WITH another key, will perform a secondary function.
4. Spacebar: This key enters a space between words or letters.
5. Tab: This key will indent what you type, or move the text to the right. The default indent distance is usually 1/2 inch.
6. Caps Lock: Pressing this key will make every letter you type capitalized.
7. Control (Ctrl): This key, when pressed WITH another key, performs a shortcut.
8. Enter: This key either gives you a new line, or executes a command (pressed in MS Word, it begins a new line).
9. Number Keypad: These are exactly the same as the numbers at the top of the keyboard; some people just find them easier to use in this position.
10. Arrow Keys: Like the mouse, these keys are used to navigate through a document or page.

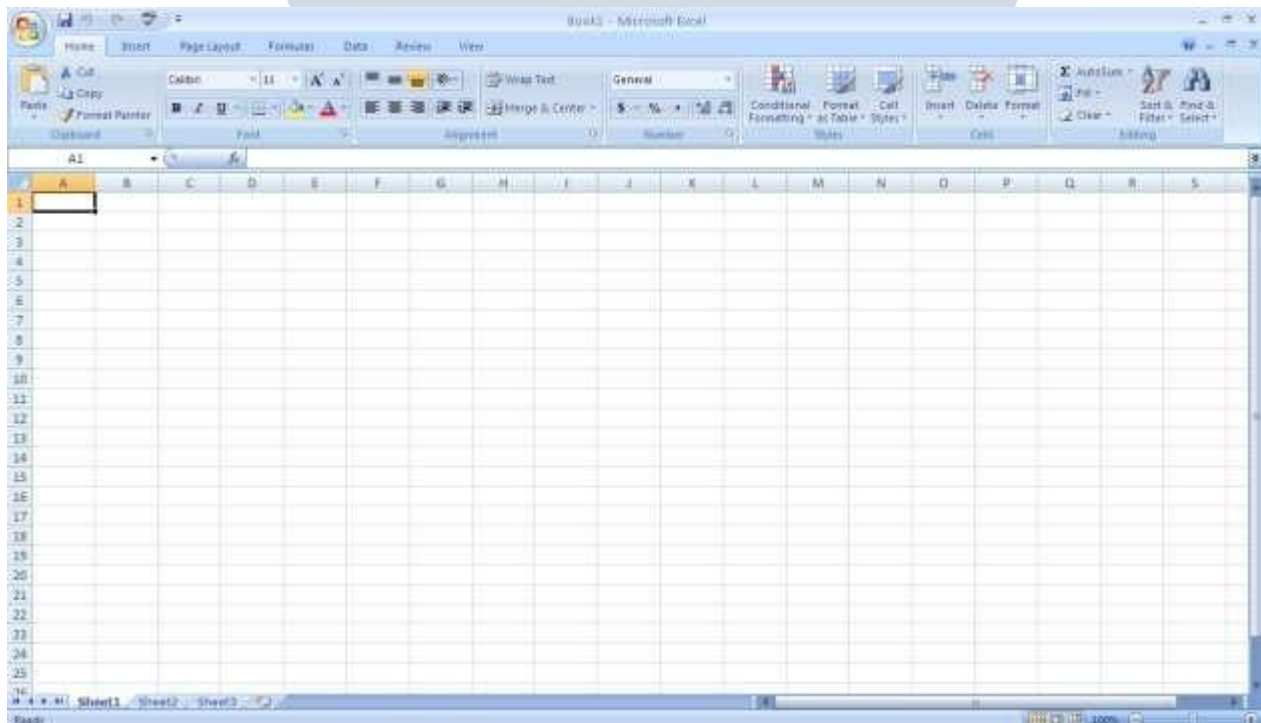
# **MICROSOFTEXCEL**

Microsoft Excel is an example of a program called a "spreadsheet." Spreadsheets are used to organize real world data, such as a check register or a rolodex. Data can be numerical or alphanumeric (involving letters or numbers). The key benefit to using a spreadsheet program is that you can make changes easily, including correcting spelling or values, adding, deleting, formatting, and relocating data. You can also program the spreadsheet to perform certain functions automatically (such as addition and subtraction), and a spreadsheet can hold almost limitless amounts of data—a whole filing cabinet's worth of information can be included in a single spreadsheet. Once you create a spreadsheet, you can effortlessly print it (as many copies as you want!), save it for later modifications, or send it to a colleague via e-mail. Microsoft Excel is a very powerful.

## **Opening Microsoft Excel**

To get started with Microsoft Excel (often called "Excel"), you will need to locate and open the program on your computer. To open the program, point to Excel's icon on the desktop with your mouse and double-click on it with the left mouse button. If you don't see the Excel icon on your desktop, you'll have to access the program from the Start Menu. Click on the button in the bottom left corner to pull up the Start Menu. You may see the Excel icon here, so click on it once with your left button. If you still don't see it, click on "All Programs" and scroll through the list of programs until you find it. It may also be located in a folder called "Microsoft Office" or something similar—it will depend on your specific machine. Click once with your left button to open the program. Excel will then open a blank page called "Book1."

## **Microsoft Excel Features**



## **The Title Bar**

This is a close-up view of the Title Bar, where file information is located. It shows the name of the file (here, "Book1," the default title) and the name of the program ("Microsoft Excel"). You will be able to name your file something new the first time that you save it. Notice the three buttons on the right side of the Title Bar, controlling the size and closing of the program.

## **The Ribbon Menu System**

The tabbed Ribbon menu system shows you how to navigate through Excel and access various Excel commands. If you have used previous versions of Excel, the Ribbon system replaces the traditional menus. At the bottom, left area of the spreadsheet, you will find worksheet tabs. By default, three worksheet tabs appear each time you create a new workbook. On the bottom, right area of the spreadsheet you will find page view commands, the zoom tool, and the horizontal scrolling bar.

## **The File Menu**

In Microsoft Office 2007, there was something called the Microsoft Office Button ( ) in the top left-hand corner. In Microsoft Office 2010, this has been replaced with a tab in the Ribbon called "File." When you left-click on this tab, a drop-down menu appears. From this menu, you can perform the same functions as were found under the Microsoft Office Button menu, such as: Create a new worksheet, open existing files, save files in a variety of ways, and print.

**Quick Access Toolbar** On the top left-hand side of the Title Bar, you will see several little icons above the File menu. These let you perform common tasks, such as saving and undoing, without having to find them in a menu. We'll go over the meanings of the icons a little later.

## **The Home Tab**

The most commonly used commands in Excel are also the most accessible. Some of these commands available in the Home Tab are: The Home Tab Toolbar offers options that can change the font, size, color, alignment, organization and style of the text in the spreadsheet and individual cells. For example, the "Calibri" indicates the FONT of your text; the "11" indicates the SIZE of your text; etc. We will go over how to use all of these options to format your text in a little while. Each of these options expands into a menu if you left-click on the tiny down-arrow in the bottom right corner of the window. This tab works the exact same way as the MS Word Formatting Toolbar. The main difference is that the format changes will only affect the selected cell or cells, all unselected cells remain in the default setting ("Calibri" font, size "11").

## **Equation Editor**

The Equation Editor is generally found below the ribbon menu. The left side denotes which cell is selected ("C5") and the right side allows you to input equations or text into the selected cell.

There are two ways to input information into a cell. You may either select an individual cell and type the equation or text into the equation editor or type the equation or text

directly into the selected cell. Equations (for example, =SUM(D5+E5)) will automatically be hidden inside the cell and can only be viewed using the equation editor; the result of the equation will display in the cell. If any written text is longer than the cell width, then the spreadsheet will cover up any portion longer than the cell width. The information will still be in the cell, you just won't be able to see it at all times.

### **Keyboard Review**

In order to use Excel effectively, you must input commands using both the mouse and the keyboard. The above image of a keyboard should look similar to the keyboard in front of you; learning just a few certain keys will help to improve your efficiency in typing as well as present you with more options within the program. The following is a list of commonly used keys that you may already be familiar with:

1. Backspace: This key deletes letters backwards.
2. Delete: This key deletes letters forward.
3. Shift: This key, when pressed WITH another key, will perform a secondary function.
4. Spacebar: This key enters a space between words or letters.
5. Tab: This key will indent what you type, or move the text to the right. The default indent distance is usually  $\frac{1}{2}$  inch.
6. CapsLock: Pressing this key will make every letter you type capitalized.
7. Control (Ctrl): This key, when pressed WITH another key, performs a shortcut.
8. Enter: This key either gives you a new line, or executes a command.
9. Number Keypad: These are exactly the same as the numbers at the top of the keyboard; some people just find them easier to use in this position.
10. Arrow Keys: Like the mouse, these keys are used to navigate through a document or page.

### **Pointer Shapes**

As with other Microsoft programs, the pointer often changes its shape as you work in Excel. Each pointer shape indicates a different mode of operation. This table shows the various pointer shapes you may see while working in Excel.

## **MICROSOFT EXCEL BASICS**

### **Formatting Cells**

Cells are the small rectangular boxes that make up the spreadsheet. All the information entered into an Excel spreadsheet is entered into cells. The cell width and height will usually need to be adjusted to view all the information entered into a cell.

To adjust the cell width, move the mouse pointer in between two cell columns in the column header. Hold down the left mouse button and drag the mouse left to shorten the width or right to expand the width. Notice that all cells within the column are automatically adjusted. Adjust the cell height using the same method. Move the mouse cursor between two rows, hold down the left mouse button and move the mouse up to decrease the height and down to increase the height. Before you begin entering data into a spreadsheet, you may already know the width and height you want your cells to have. In this case, you can adjust all the widths and heights by doing the following: Select the "square" between Column A and Row 1.

This will select ALL the cells in the spreadsheet. From the "Home" tab of the Ribbon Menu, within the "Cells" box, click on "Format," and select Row Height. You will now be asked to enter a numerical value for height. The default value is 15, but you can enter your own height value (10, 20, 25, etc.).

Repeat the same steps for Column width. From the "Home" tab of the Ribbon Menu, within the "Cells" box, click on "Format," and select Column Width. Note that the default value for the width is 8.43. Enter your own width value (5, 10, 15, 20, etc.).

For any given cell or selected cells, you can also format the way your data is represented within the cell(s). Select a single cell or multiple cells.

Again, from the "Home" tab of the Ribbon Menu, within the "Cells" box, click on "Format." Select "Format Cells." The format window will now appear, giving you a wide variety of options on how to format your cell.

**Number**— This allows you to choose how to represent the numbers that are entered into a cell (number, currency, time, etc.).

**Alignment**— This determines how the data will be aligned within the cell (left-side, centered, or right-side).

**Font**— Select the type of font to be used within the cells.

**Border**— This option lets you choose what type of border, if any, you would like around the cells or some of the cells.

**Fill**— This allows you to change the background color of the cell.

**Protection**— This option allows you to "lock" cell information so that other users cannot make changes.

### **Typing in Cells**

Click on a cell to begin typing in it. It is that easy! When you are finished typing in the cell, press the Enter key and you will be taken to the next cell down. You can then begin typing in that cell. You can easily navigate around the cells using your arrow keys. Keep in mind that the Formatting toolbar in Microsoft Excel 2010 is exactly the same as the one used for Microsoft Word 2010. The biggest difference between the two programs is that, in Excel, the format is set for each individual cell.

So if you change the font and applied the bold option in cell C5, then this format will only be applied to cell C5. All remaining cells will remain in default mode until they have been changed. Sometimes you may only wish to adjust the format of one particular cell. In this case, simply select the cell by clicking the mouse on it and make any necessary adjustments to the font, size, style, and alignment. Those changes will not carry over when you begin typing in a new cell. Other times, you may wish to adjust the text format of a group of cells, entire rows, or entire columns.

In Excel, you can choose groups of cells in rectangular units—all the cells you select must form a rectangle of some kind. To select a group of cells, begin by clicking on the cell that would be in the upper-left hand corner of your rectangle. Hold down the Shift key on your keyboard and use the arrows (←, →, ↑, ↓) on the keyboard to expand the selection of cells, or click and drag your mouse. Once the



group of cells has been selected, you can make adjustments to the font, size, style, and alignment and they will be applied to all selected cells.

To select an entire row, click on the Row Number with your mouse—note how the entire row becomes highlighted. All formatting changes will now be applied to the whole row. To select an entire column, click on the Column Number with your mouse—again, the entire column will become highlighted. All formatting changes will be applied to the whole column.

### **Inserting Rows and Columns.**

When you are working on a spreadsheet, you may realize that you left out a row or column of data and need to add it in. To insert a row, click on the row below where you want your new row to be (remember to click on the row number to highlight the entire row). From the "Home" tab, within the "Cells" box, click "Insert." Select

"**Insert Sheet Rows.**" A new row will automatically be inserted and the row numbers automatically adjusted. To insert a column, click on the column to the right of where you want your new column to be (remember to click on the column letter to highlight the entire column). From the "Home" tab, within the "Cells" box, click "Insert." Select "Insert Sheet Columns." A new column will automatically be inserted and the column letters automatically adjusted.

### **Sorting Data**

Once you have created your spreadsheet and entered in some data, you may want to organize the data in a certain way. This could be alphabetically, numerically, or another way. Let's look at the following spreadsheet as an example. This information can be sorted by check number, date, alphabetically by description, or using any of the other columns.

First, select all the cells that represent the data to be sorted, including the header descriptions (Check No., Date, Description, etc.). Then, select the first cell in Row 1 (Check No.) Click and drag to select all the cells that you want to sort. Using the mouse, select Sort & Filter from the Editing panel. Select Custom Sort...

Select the column you wish to sort by. Do you want to sort by alphabetical order, reverse alphabetical order, date, or amount? When you press "OK," your spreadsheet will be sorted in the order that you specified.

### **AutoSum and Excel Equations**

One of the most powerful features of Excel is its ability to perform basic math functions on data. Excel can add, subtract, multiply, divide, find the average, and perform general counting functions on the numerical data that you enter. To enable this feature, highlight all of the cells in a column, plus one additional empty cell in which to display the result.

### **Select the AutoSum icon from the ribbon menu:**

If you click directly on the  $\Sigma$ , Excel will automatically add up the numbers you have selected. If you click on the little dropdown arrow next to it ( $\blacktriangledown$ ), you will get the full choice of mathematical functions. If you double-click on the cell in which the answer

appears, you will see an equation that looks something like this (you will also see this equation in the Equation Editor):

Let's breakdown what exactly the equation means:

= indicates that you are starting an equation in this cell.

SUM tells the function to be performed. In this case, all the cells will be added together.

( ) The parentheses contain the cells that the function will be performed on.

D2 this is the first cell to be included in the addition formula.

D8 this is the last cell to be included in the addition formula indicates that all cells between the first and the last should be included in the formula.

The spreadsheet will often "select" the cells that it thinks you wish to include. But you can manually change the cell range by typing into the Equation Editor. When you are ready to execute the formula, just press the "Enter" key. Other mathematical functions you can perform from the AutoSum button include:

**Average** – This function will calculate the average of the selected cells.

**CountNumbers** – This function simply counts the number of cells selected. **Max** –

This function will return the highest value of the selected cells.

**Min** – This function will return the lowest value of these selected cells.

**\*Remember\*** Excel equations are similar to programming languages, so have some patience and if at first you don't succeed, try again. Even Excel professionals create incorrect formulas on their first try.

Once you get an equation to work, you will technically be a computer programmer!

### **Creating Charts and Graphs:**

In Excel, there are also ways to represent your data in chart or graphical forms.

To create a chart or graph, select the Insert tab from the Ribbon Menu bar. In the middle of this new menu, you will see a "Charts" box.

1. Select the range of data to be represented in the chart or graph. Click on your spreadsheet and select the data to be represented using the same method that you used to select data in the sorting exercise. For this example, we want to see a visual comparison of how much money we spent on each item in the list. Select rows 1 through 8 in rows B, C, and D.

2. Select the type of chart or graph you wish to create (for our example, we'll choose a bar graph).

3. Once you have created your graph, you can now "customize" it by giving it a title and labeling different parts. You can also make certain design decisions regarding the appearance of your graph or chart by choosing the different elements under the Design tab that appears on the Ribbon Menu bar.

4. Finally, you will need to decide if your chart should be pasted on to the existing spreadsheet or if it should be pasted on to a brand newsheet. On the very right side of the Ribbon Menu bar, select Move Chart. Once the chart or graph has been created and you realize a mistake has been made or it didn't turn out the way you wanted it to, simply click on the chart or graph and hit the Backspace key on your keyboard to delete it from your spreadsheet. Don't be afraid to go back and try again!

## Multiple Sheets

Sometimes you may find it useful to have multiple spreadsheets for related data. For example, personal finances are usually tracked on a monthly calendar and it's generally good idea to keep records of the past transactions. Excel can create multiple spreadsheets attached to the same Excel file, one for each month. Tabs for the different sheets are located in the lower-left corner of the spreadsheet. The spreadsheet that is currently being worked on is on the top tab. To access another spreadsheet, select the appropriate tab, such as Sheet 2. The default names for the sheets are usually Sheet1, Sheet2, and Sheet3. To rename a sheet or to create a new sheet, simply move the mouse pointer over the sheet name and right-click. Select "Rename" to rename the sheet or select "Insert" to create a new sheet.

You can transfer cell information between two or more sheets by creating a simple formula. For example, most people who keep track of their personal finances don't begin every month with a balance of \$0. Instead, the balance at the beginning of the month is transferred over from the previous month. So if you have a March 2012 finance spreadsheet and an April 2012 finance spreadsheet, you can select a cell in the April 2012 sheet and write in the formula

**= 'March2012'! D11**

The equals sign (=) tells Excel that the value for this cell is to be derived from somewhere in the spreadsheet (such as a formula or another cell location).

'Sheet name' tells Excel what sheet to refer to when it retrieves the value. The single quotation marks ( ' ') are important. ! D11 tells Excel that it is to copy the value that is located in cell D11 (or whatever cells you wish to copy the value from).

If you want to transfer cell information from one cell to another on the same sheet, you can use the exact same formula; just exclude 'Sheet name.'

## DOING MORE WITH MICROSOFT EXCEL

### Cutting, Copying, and Pasting Data

When you are typing in your spreadsheet, it can be very helpful to cut or copy information from one cell and paste it into another. This can help reduce the amount of typing you have to do, as well as limit the number of typographical errors. Cutting, copying, and pasting the contents of cells in Excel is very similar to the way you do it in Microsoft Word.

These commands are all accessible from the Home tab on the Ribbon Menu bar.

**To CUT** the contents of a cell, click on the cell to select it, then click on the Cut button on the Home tab. You will see the border of the cell turn into little "marching ants." The contents are now on the Clipboard, ready for you to paste them somewhere else.

**To PASTE** the cut selection somewhere else, click on the cell where you want the selection to go. Then click on the Paste button on the Home tab. The selection will now appear in the new cell and be removed from the original cell.

To **COPY** the contents of a cell, simply follow the directions above but replace the CUT command with COPY. This will leave the contents of the original cell in place and make an exact copy of them in another cell.

### **Filling Data across Columns and Rows**

Another way to copy text from one cell to another is to drag it or "fill" it across a range of cells (a row or a column). This is a great method if you want all the text (or numbers) in a column or row to be the same. For example, if you have a spreadsheet for your yearly budget with a column for rent, you could use this method to fill in all the cells in the rent column with the same number without re-typing.

To fill the contents of cells in a column:

1. Click on the cell with the information you want to copy to the other cells.
  2. Hover your mouse over the little square (called a "fill handle") in the bottom right corner of the highlighted cell border. Your mouse will turn into a cross.
  3. Click on the fill handle and drag your mouse (while still holding the button down) down the column until you've highlighted all the cells where you want the text to go.
  4. Let go of the mouse button. The text will now appear in all the cells you highlighted.
  5. You can follow these same steps to fill the contents of a row rather than a column— simply drag your mouse across the row instead of down the column.
- You can also use this technique to copy formulas across columns and rows in the spreadsheet.

## **CLOSING MICROSOFT EXCEL**

### **Saving Spreadsheets**

When you finish your spreadsheet and want to leave the computer, it is important to save your work, even if you are printing a hard copy. To save your work in Excel, it is essential to know **WHAT** you are trying to save and **WHERE** you are trying to save it. Click on the File Tab, then click "**Save As**" to get started. You can change the filename that Excel has chosen just by typing a new one in the "File name" box at the bottom of the window that appears. The My Documents folder on your computer's hard drive is a good place to store your documents. A blank CD or a USB jump drive are great portable storage options and can contain a LOT of data. Excel will automatically save your document with the suffix ".xlsx"—this is simply a tag that lets Excel know that your work is specific to this program and what version it is in. You do not have to type it—just highlight what is there (default is "Book1") and write a new file name. You may also choose to save it in an older format so that it can be opened with older versions of Excel. After the first save, you can just click "Save" to preserve your work.

However, it is important to note that every following command of SAVE will overwrite your original file, creating the most up-to-date version. If you would like to keep saving different versions of your worksheet, be sure to use the "Save As" function each time you save, using a slightly different name for each version.

### **Printing Spreadsheets**

To print your Excel document, click on the File Tab, then click "Print" from the left-side column. A Print Preview and printing options will appear in your Excel window.

Click the large "Print" button to send your worksheet to the printer. You can change the number of copies you would like to print, change the paper orientation, choose which printer you want to use, and more.

### **Finding More Help**

You can get help with Excel by clicking on the Question Mark symbol in the upper-right hand corner of the main menu bar or by pressing the "F1" button. This will take you to help from Office.com, Microsoft's help website. There are also many other resources and tutorials available online. You might try a Google search with the words "Excel 2010" and the function you are trying to perform. Ask your instructor for help finding these resources if you have any trouble.

### **Closing the Program**

Click on the File Tab, then click "Exit." OR  
Click on the X in the top right corner of the Excel screen.

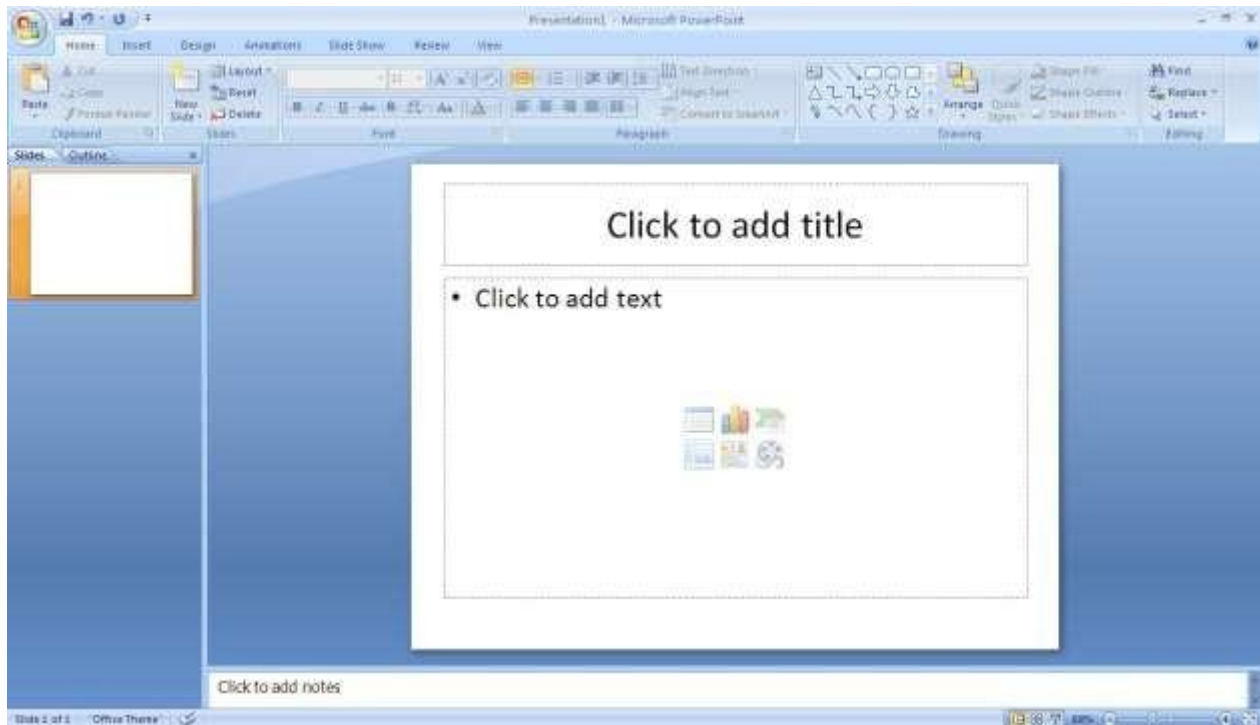
## **MICROSOFT POWERPOINT**

Microsoft PowerPoint is a professional presentation program that allows the user to create "presentation slides" that can be displayed on the computer screen or through a projector that is plugged into the computer. A PowerPoint presentation is a good way to convey pieces of information, usually in the form of an outline, to a large audience. Generally, PowerPoint presentations are appealing to users because they are easy to create and edit and generally small enough to fit onto a CD or a USB Jump Drive. Therefore, a user does not have to carry around any slides or a slide project, and, if necessary, can make last-minute changes to the presentation.

WWW.VIDYAPITH.IN

"ESTD 2020"

## Microsoft PowerPoint Components:



Before you get started with Microsoft PowerPoint (commonly referred to as PowerPoint), you will need to locate and open it on the computer. It may be on your desktop. On the computer desktop:

1. Double-click on the MS PowerPoint icon

If the MS PowerPoint icon is not on the desktop, go to the Start menu:

1. Click ► Start ► Programs ► Microsoft PowerPoint\*

MS PowerPoint will open a blank page called "Presentation1."

### The Title Bar

This is a close-up view of the Title Bar, where file information is located. Notice the default title "Presentation1." You will get a chance to rename your presentation slides the first time you choose to save it.

### The Menu Bar

The Menu Bar is a common sight in almost all Microsoft Windows programs. It features text-based menus, on which virtually every option available to the user in the entire program is listed.

Each menu expands when clicked (with the left mouse button), offering many options categorized by specific tasks.

## **Standard Toolbar**

Toolbars provide "shortcuts" to commands also found in the Menu Bar. Toolbars are usually located just below the Menu Bar and exist to offer another way to perform the same task.

The most commonly used commands in MS PowerPoint are also the most accessible. Some of these commands are:

**New|Open |Save| Print| Preview|Spell-check|Copy|Paste|Undo| Insert**

## **Formatting Toolbar**

The Formatting Toolbar offers options that can change the font, size, color, alignment, organization, and style of the text in the presentation slides. For example, (starting from the left side of the Toolbar) the "Arial" indicates the FONT of your text; the "32" indicates the SIZE of your text; and so on. This toolbar works the exact same way as the MS Word Formatting Toolbar. The main difference is that the format changes will only affect the text box in which you are currently working.

All other text boxes will remain in the default setting ("Arial" font, size "32"). Design/New Slide Icons additional shortcut icons appear on the MS PowerPoint toolbar: the Design icon and the New Slide icon. Both commands are frequently used, and it is good to be familiar with their location on the toolbar.

The Design icon is a shortcut to the slide design page. Here you will be able to create and edit the appearance of your slide(s). The New Slide icon automatically adds a new, blank slide for you to work on. You can keep track of the slides you have already worked on in the Slide Outline box on the left-hand side of the screen. You can access a slide at any time by clicking on it with your mouse through this screen.

## **SIMPLE TASKS IN MICROSOFT POWERPOINT**

### **Text Boxes:**

Text Boxes are "designated" areas that allow you to type words, sentences, and bullet points into the slide. You can adjust the size and placement of the text box within any given slide. It is also possible to have multiple text boxes per slide.

When you first open MS PowerPoint, there will automatically be two text boxes on the slide:

"Click to add title" and "Click to add subtitle." These text boxes already have a preset format applied to them. The "title" box has a font size of "44" while the "subtitle" box has a font size of "32." You can change the text format of any box at any time by adjusting the format settings on the Formatting Toolbar. To adjust the size of the text box, first click on the text box. Notice the change in border. Once you have clicked on a text box, the border of the box becomes thicker and little circles appear on the corners and at the midpoints of the box. Move the mouse pointer over any one of the circles. Notice that the mouse pointer will change to either  $\leftrightarrow$  or  $\updownarrow$ . Click and hold down the left mouse button. To adjust the height, move the mouse up or down; to adjust the width, move the mouse left or right. Note that the corner circles can adjust both height and width, while the mid-point circles can only adjust either height or width.

To move the text box to a different location on the slide, move your mouse pointer over any part of the thick, gray box outline. Notice the change in your mouse pointer (it will look something like a "plus" sign (+) with arrows). Click and hold down the left button on your mouse. You can now drag the text box to any position on the slide by simply moving your mouse. To write in a text box, simply click inside the box with your mouse. When a cursor is flashing, you are ready to type.

### **Slide Design:**

One of the more popular features of MS PowerPoint is that it gives the user a wide variety of design choices. At some point, you may wish to change the design and color of the background of your slides. To do so, simply click on the Design icon. On the right-hand side of your screen, the "Slide Design" pane will appear. Here, you are given three design options to apply to your slides.

**Design Templates:** Here is a list of over 20 templates that you can choose from to apply to the background of your slides. For each template, you have the option of applying the design to all slides or only the selected slide. You can view these options by clicking on the arrow on the right side of the template. If you are connected to the Internet, you can also choose to view hundreds of additional templates by choosing "Design Templates on Microsoft Office Online" on the bottom of the templates screen.

**Color Schemes:** This option gives you a variety of color schemes to choose from to apply to your selected design template.

**Animation Schemes:** This option will allow you to select different types of animation that can be applied to either all the slides or selected slides. The animation schemes are different ways the slides are "introduced" to your audience, such as "faded wipe" or "pinwheel."

### **Designing your own background:**

Sometimes you may wish to design your own background.

To do this, select Format ► Background... from the Menu Bar. Select the Color Bar on the bottom of the Background window and choose the appropriate color and/or effects that you desire. There is no right or wrong way to design your own background, so if you choose this option, have some patience and don't be afraid to experiment.

### **Slide Layout:**

The default in PowerPoint for each new slide is to have a Title text box and a Text box. As discussed earlier, you do have the option of rearranging the text boxes to fit any layout you have in mind. However, sometimes it will be easier simply to select a layout that fits your needs rather than reformatting the default layout for each slide. To choose a slide layout, select Format ► Slide Layout from the Menu Bar. On the right-hand side of your screen, the "Slide Layout" pane will appear. From here, you have the option of



applying a slide layout either to a selected slide or to a new slide that has yet to be inserted. You can view these options by clicking on the arrow on the right side of the template.

### **Note the four different types of layout categories.**

**Text Layout:** These options are for choosing a layout in which you are only organizing different text boxes. There is no room for pictures, charts, or graphs.

**Content Layout:** These options are for choosing a layout that will only contain pictures, charts, or graphs. There is no room for text boxes.

**Text and Content Layout:** These options have room for both text boxes and pictures, charts, or graphs.

**Other Layouts:** These layouts are redesigned for other media contents such as video clips or audio tracks.

### **Inserting a Picture:**

Inserting a picture into MS PowerPoint is very similar to inserting a picture into MS Word.

1. Select the slide that you wish to add a picture to.
2. From the Menu Bar, select **Insert ► Picture ► From File (or Clip Art)**.
3. Choose the picture you wish to insert and select **"Insert."**

**\*Note\*:** The picture will be inserted in its original size, so you will probably have to re-size it. You can re-size a picture the same way you re-sized a text box. Click on the picture and note the circles at the corners and at the midpoints of the length and width. Move your mouse pointer over the circles, left-click the mouse and hold the button down. Move the mouse vertically or horizontally to re-size.

**Rotating a picture:** It is possible to rotate pictures in MS PowerPoint. Once a picture has been inserted onto a slide and you have clicked on the picture so it is "outlined," notice the green circle above the center of the picture.

Move the mouse pointer over the green circle and left-click and hold the button down. Now move the mouse either clockwise or counter-clockwise and the picture will rotate in the same direction.

### **Inserting a Graph or Table:**

There are two ways to insert a graph or table into a PowerPoint slide.

1. The graph or table may already exist in another document or file. If this is the case, then you can simply insert the graph or table as you would a picture. Follow the instructions under

### **Inserting a Picture.**

Or you could Cut and Paste a graph or chart from another document or file into your slide presentation.

2. MS PowerPoint can create graphs or tables directly in the slide. From the Menu Bar, select

### **Insert ► Chart(orTable).**

For the Chart option, PowerPoint will present a very simple bar graph.

You will need to go in and edit the information in the bar graph to conform to the information you wish to represent in a chart. From the Datasheet, you can enter in the appropriate values for the columns and re-name the entities.

The Table option will present you with the following window:

Select the appropriate number of rows and columns you wish to have in your table. Click **"OK"** to insert the table. Once the table has been inserted you will be able to put information into the table cells.

### **Slide Management:**

Once you have completed a slide, you can create a new slide by clicking on the New Slide icon. Notice that your previous slides still appear on the left-side frame. You can still access your previous slides by simply clicking on them from this location.

Once all your slides have been completed, you can present your slides in a "slideshow." From the Menu Bar select Slide Show ► View Show. Notice that the slide takes over our entire screen. To navigate through the slides, use the arrow keys on your keyboard (←, → or ↑, ↓). You can also navigate through your slides by clicking on the left or right arrows in the lower left corner of your slide. To end your slide show, click on the square box on the lower left side of your slide show (this is difficult to see at first because it is designed to blend into your slideshow so it won't be noticeable to your audience). Select End Show from the pop-up window.

## CLOSING MICROSOFT POWERPOINT

### Saving Slide Shows:

When you come to a stopping point and want to leave the computer, it is important to save your work (even if you are printing a hard copy — saving should be a reflex). To save your work in MS PowerPoint, it is essential to know WHAT you are trying to save as well as WHERE you are trying to save it.

Click ► File ► Save from the Menu Bar to get started.

You can change the filename that PowerPoint has chosen just by typing a new one in the File name box at the bottom of the window that appears.

MS PowerPoint will automatically save your document with the suffix “.ppt” – this is simply a tag that lets PowerPoint know that your work is specific to this program. You do not have to type it – just highlight what is there (default is “Presentation1”) and write a new file name.

The My Documents folder on your computer’s hard drive is a good place to store your documents. A blank CD (compact disc) or a USB Jump Drive are great portable storage devices and can contain a LOT of data. It is important to note that every consequent command of SAVE will overwrite your original file, creating the most up-to-date version. If you want to save any changes to your PowerPoint slides without destroying the original one:

In the Menu Bar, click ► File ► Save As from the menu bar and give your document a new filename (unique from the original). To bring a saved document back up on the screen from MS PowerPoint:

Click ► File ► Open from the Menu Bar. Locate where the file is located (which folder, that is) and click on the filename of the document you want.

Click ► Open.

Printing Slides:

To print your MS PowerPoint slides:

Click ► File ► Print from the Menu Bar and a Print window will pop up on the screen. Click ► OK

for your document to start printing.

As with all commands in MS PowerPoint, you can make changes along the way. From the Print menu, you can alter how many copies will be made, in what order the pages will be, and much more. Other useful tools are the Print Preview function found alongside the Print command and the

**Page Setup function.** Print Preview will allow you to look over an exact copy of what will come out of the printer before actually executing the print command.

### **Closing the Program:**

When you are finished,

Click ► File ► Exit from the menu bar OR

Click on the X in the top right corner of the computer screen.

## **INTERNET**

### **Introduction:**

The internet in simple terms is a network of the interlinked computer networking worldwide, which is accessible to the general public. These interconnected computers work by transmitting data through a special type of packet switching which is known as the IP or the internet protocol.

Internet is such a huge network of several different interlinked networks relating to the business, government, academic, and even smaller domestic networks, therefore internet is known as the network of all the other networks. These networks enable the internet to be used for various important functions which include the several means of communications like the file transfer, the online chat and even the sharing of the documents and web sites on the WWW, or the World Wide Web.

It is always mistaken said that the internet and the World Wide Web are both the same terms, or are synonymous. Actually there is a very significant difference between the two which has to be clear to understand both the terms. The internet and World Wide Web are both the networks yet; the internet is the network of the several different computers which are connected through the linkage of the accessories like the copper wires, the fiber optics and even the latest wireless connections. However, the World Wide Web consists of the interlinked collection of the information and documents which are taken as the resource by the general public. These are then linked by the website URLs and the hyperlinks. Therefore World Wide Web is one of the services offered by the whole complicated and huge network of the internet. The use of IP in the Internet is the integral part of the network, as they provide the services of the internet, through different layers organization through the IP data packets. There are other protocols that are the sub-classes of the IP itself, like the TCP, and the HTTP.

By the turn of the century, information, including access to the Internet, will be the basis for personal, economic, and political advancement. The popular name for the Internet is the information superhighway. Whether you want to find the latest financial news, browse through library catalogs, exchange information with colleagues, or join in a lively political debate, the Internet is the tool that will take you beyond telephones, faxes, and isolated computers to a burgeoning networked information frontier. The Internet supplements the traditional tools you use to gather information, Data Graphics, News and correspond with other people. Used skillfully, the Internet shrinks the world and brings information, expertise, and knowledge on nearly every subject imaginable straight to your computer.

### **What is the Internet?**

The Internet links are computer networks all over the world so that users can share resources and communicate with each other. Some computers have direct access to all the facilities on the Internet such as the universities. And other computers, example privately-owned ones, have indirect links through a commercial service provider, who offers some or all of the Internet facilities. In order to be connected to Internet, you must go through service suppliers. Many options are offered with monthly rates. Depending on the option chosen, access time may vary. The Internet is what we call a Meta network, that is, a network of networks that span the globe. It's impossible to give an exact count of the number of networks or users that comprise the Internet, but it is easily in the thousands and millions respectively. The Internet employs a set of standardized protocols which allow for the sharing of resources among different kinds of computers that communicate with each other on the network. These standards, sometimes referred to as the Internet Protocol Suite, are the rules that developers adhere to when creating new functions for the Internet. The Internet is also what we call a distributed system; there are no central archives. Technically, no one runs the Internet. Rather, the Internet is made up of thousands of small networks. The Internet thrives and develops as its many users find new ways to create, display and retrieve the information that constitutes the Internet.

### **Who Owns the Internet?**

No one actually owns the Internet, and no single person or organization controls the Internet in its entirety. The Internet is more of a concept than an actual tangible entity, and it relies on a physical infrastructure that connects networks to other networks.

### **Is Web and Internet the Same?**

The Internet is not synonymous with World Wide Web. The Internet is a massive network of networks, a networking infrastructure. It connects millions of computers together globally, forming a network in which any computer can communicate with any other computer as long as they are both connected to the Internet. The World Wide Web, or simply Web, is a way of accessing information over the medium of the Internet. It is an information-sharing model that is built on top of the Internet.

### **WEB BROWSER:**

A **web browser** (commonly referred to as a **browser**) is a software application for retrieving, presenting, and traversing information resources on the World Wide Web.

An information resource is identified by a Uniform Resource Identifier (URI/URL) and may be a web page, image, video or other piece of content. Hyperlinks present in resources enable users easily to navigate their browsers to related resources.

Although browsers are primarily intended to use the World Wide Web, they can also be used to access information provided by web servers in private networks or files in filesystems.

## Uses of Internet

Internet is today one of the most important part of our daily life. There are large numbers of things that can be done using the internet and so it is very important. You can say that with the progress in the internet we are progressing in every sphere of life as it not only makes our tasks easier but also saves a lot of time. Today internet is used for different purposes depending upon the requirement. Here in this very article we have mentioned the ten best uses of the internet. Here goes the list.



### 1) Email:

By using internet now we can communicate in a fraction of seconds with a person who is sitting in the other part of the world. Today for better communication, we can avail the facilities of Email. We can chat for hours with our loved ones. There are plenty messenger services and email services offering this service for free. With help of such services, it has become very easy to establish a kind of global friendship where you can share your thoughts, can explore other cultures of different ethnicity.

### 2) Information:

The biggest advantage that internet offering is information. The internet and the World Wide Web has made it easy for anyone to access information and it can be of any type, as the internet is flooded with information. The internet and the World Wide Web has

madeiteasyforanyonetoaccessinformationanditcanbeof anytype.Anykindof information on any topic is available on the Internet.

### **3) Business:**

World tradehas seena bigboom with the help of the internet,as ithas becomeeasier for buyers and sellers to communicate and also to advertise their sites. Now a day's most of the people are using online classified sites to buy or sell or advertising their products or services. Classified sites save a lot of money and time so this is chosen as mediumbymostofpeopletoadvertisetheirproducts.We havemanyclassifiedsiteson the web like craigslist, Adsglobe.com, Kijiji etc.

### **4) Social Networking:**

Today'ssocialnetworkingsiteshavebecomeanimportantpartoftheonlinecommunity. Almost all users are members use it for personal and business purposes. It's an awesome place to network with manyentrepreneurs who come here to begin building their own personal and business brand.

### **5) Shopping:**

In today's busy life most of us are interested to shop online. Nowa day's almost anythingcanbeboughtwiththeuseoftheinternet.IncountrieslikeUSmostof consumers prefer to shop from home. We have many shopping sites on internet like amazon.com, Dealsglobe.com etc. People also use the internet to auction goods. There are many auction sites online, where anything can be sold.

### **6) Entertainment:**

Oninternetwecanfindallformsofentertainmentfromwatchingfilmstoplayinggames online. Almost anyone can find the right kindof entertainmentfor themselves.When people surf theWeb, there are numerous things that can be found. Music, hobbies, news and more can be found and shared on the Internet. There are numerous games thatmaybedownloadedfrom theInternetforfree.

### **7) E-Commerce:**

Ecommerce is the conceptusedfor anytype of commercial maneuvering, or business deals thatinvolves thetransferof informationacross the globe via internet.It has becomea phenomenon associatedwith anykind of shopping, almost anything. It has got a real amazing and range of products from household needs, technology to entertainment.

### **8) Services:**

Many services are now provided on the internet such as online banking, job seeking, purchasing tickets for your favorite movies, and guidance services on array of topics in theeveryaspectof life,andhotelreservationsandbillspaying.Oftentheseservicesare not available off-line and can cost you more.

## 9) Job Search:

Internet makes life easy for both employers and job seekers as there are plenty of job sites which connect employers and job seekers.

## 10) Dating/Personals:

People are connecting with others through internet and finding their life partners. Internet not only helps to find the right person but also to continue the relationship.

## E-mailing

Short for **electronic mail**, **e-mail** or **email** is text messages that may contain files, images, or other attachments sent through a network to a specified individual or group of individuals. The first e-mail was sent by Ray Tomlinson in 1971. By 1996, more electronic mail was being sent than postal mail.

***“Email, e-mail or electronic mail is the transmission of messages (emails or email messages) over electronic networks like the internet.”***

Email, sometimes written as e-mail, is simply the shortened form of “electronic mail,” a system for receiving, sending, and storing electronic messages. It has gained nearly universal popularity around the world with the spread of the Internet. In many cases, email has become the preferred method for both personal and business communication.

### How It Is Used

Messages sent by electronic mail normally reach a recipient's account within seconds. They frequently include more than just text; images and numerous types of formatted documents are now easily included as attached files. Moreover, it is no longer necessary to be sitting in front of a PC to send or receive an email. A variety of mobile devices, such as tablet computers and smart phones, make it possible to manage correspondence on the go.

Most e-mail systems include a rudimentary text editor for composing messages, but many allow you to edit your messages using any editor you want. You then send the message to the recipient by specifying the recipient's address. You can also send the same message to several users at once. This is called **broadcasting**.

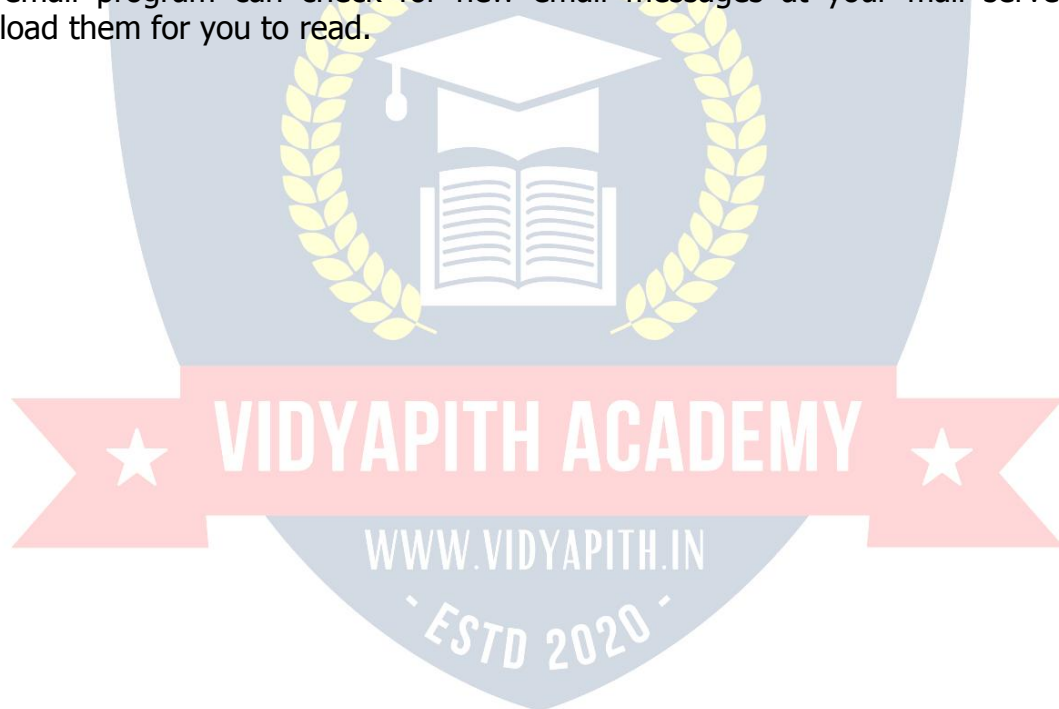
Sent messages are stored in electronic mailboxes until the recipient fetches them. To see if you have any mail, you may have to check your electronic mailbox periodically, although many systems alert you when mail is received. After reading your mail, you can store it in a text file, forward it to other users, or delete it. Copies of memos can be printed out on a printer if you want a paper copy. E-mail can be distributed to lists of people as well as to individuals. A shared distribution list can be managed by using a **mail reflector**. Some mailing lists allow you to subscribe by sending a request to



the mailing list administrator. A mailing list that is administered automatically is called a list server.

To get a grasp of what email is its best—the terminology indicates it—to think in equivalents of "traditional" postal mail.

- **The email message** - Instead of using a pen to write a letter on paper, you're using your keyboard to type an email message in an email program on your computer.
- **Sending the email** - When the email is finished and has been addressed to the recipient's email address, you don't put a stamp on it and post it but press the *Send* button in the email program. This makes the email message go on its journey.
- **Email transport**- Like postal services transport letters and parcels, email servers transmit email messages from sender to recipient. Usually, emails are not delivered to the recipient directly, though, but waiting at the "nearest" mail server to be picked up by them.
- **Fetching new mail** - If you've got new mail in your mailbox, you go and fetch it. Similarly, your email program can check for new email messages at your mail server and download them for you to read.



# HTML

HyperTextMarkupLanguage(HTML)isthemainmarkuplanguageforcreatingweb pages and other information that can be displayed in a web browser.

HTML is written in the form of HTML elements consisting of tags enclosed in angle brackets(like<html>),withinthewebpagecontent.HTMLtagsmostcommonlycomein pairslike<h1>and</h1>,althoughsometags,knownasemptyelements,areunpaired, forexample<img>.Thefirsttaginapairisthestarttag, andthesecondtagistheend tag (they are also called opening tags and closing tags). In between these tags web designers can add text, tags, comments and other types of text-based content.

The purpose of a web browser is to read HTML documents and compose them into visible or audible webpages.The browser does not displaythe HTML tags, butuses the tags to interpret the content of the page.

HTML elements form the building blocks of all websites. HTML allows images and objects to be embedded and can be used to create interactive forms. It provides a meanstocreatestructureddocumentsbydenotingstructuralsemanticstextsuchas headings, paragraphs, lists, links, quotes and other items. It can embed scripts written in languages such as JavaScript which affect the behavior of HTML webpages.

Web browsers can also refer to Cascading Style Sheets (CSS) to define theappearance and layout of text and other material. TheW3C, maintainer of both the HTML and the CSS standards, encourages the use of CSS over explicit presentational HTML markup.

## Markup

HTML markupconsistsofseveralkeycomponents,includingelements(and theirattributes),character-baseddatatypes,characterreferencesandentityreferences. Anotherimportantcomponentisthedocumenttypedeclaration,which triggers standards mode rendering.

The following is an example of the classic Hello world program, a common test employedforcomparingprogramminglanguages,scriptinglanguagesandmarkup languages. This example is made using 9 lines of code:

```
<!DOCTYPEhtml>
<html>
  <head>
    <title>HTML</title>
  </head>
  <body>
    <p>Helloworld!</p>
  </body>
</html>
```

(The text between <html> and </html> describes the webpage, and the text between <body> and </body> is the visible page content. The markup text ' <title>Hello HTML</title>' defines the browser page title.)

This Document Type Declaration is for HTML5. If the <!DOCTYPE html> declaration is not included, various browsers will revert to "quirks mode" for rendering.

## Elements

HTML documents are composed entirely of HTML elements that, in their most general form, have three components: a pair of tags, a "start tag" and "end tag"; some attributes within the start tag; and finally, any textual and graphical content between the start and end tags, perhaps including other nested elements. The HTML element is everything between and including the start and end tags. Each tag is enclosed in angle brackets.

The general form of an HTML element is therefore:

<tag attribute1="value1" attribute2="value2">content</tag>. Some HTML elements are defined as empty elements and

take the form <tag attribute1="value1" attribute2="value2">. Empty elements may enclose no content, for instance, the BR tag or the inline IMG tag. The name of an HTML element is the name used in the tags. Note that the end tag's name is preceded by a slash character, "/", and that in empty elements the end tag is neither required nor allowed. If attributes are not mentioned, default values are used in each case.

## Element examples

Header of the HTML document: <head>...</head>. Usually the title should be included in the head, for example:

```
<head>
  <title>The Title</title>
</head>
```

Headings: HTML headings are defined with the <h1> to <h6> tags:

```
<h1>Heading1</h1>
<h2>Heading2</h2>
<h3>Heading3</h3>
<h4>Heading4</h4>
<h5>Heading5</h5>
<h6>Heading6</h6> Paragr
```

aphs:

```
<p>Paragraph1</p><p>Paragraph2</p>
```

Linebreaks: <br/>. The difference between <br/> and <p> is that 'br' breaks a line without altering the semantic structure of the page, whereas 'p' sections the page into

paragraphs. Note also that 'br' is an empty element in that, while it may have attributes, it can take no content and it may not have an end tag.

```
<p>This<br/>is a paragraph<br/>with<br/>line breaks</p>Comments:
```

```
<!-- This is a comment -->
```

Comments can help in the understanding of the markup and do not display in the webpage.

### **There are several types of markup elements used in HTML:**

Structural markup describes the purpose of text

For example, `<h2>Golf</h2>` establishes "Golf" as a second-level heading. Structural markup does not denote any specific rendering, but most web browsers have default styles for element formatting. Content may be further styled using Cascading Style Sheets (CSS).

Presentational markup describes the appearance of the text, regardless of its purpose

For example `<b>boldface</b>` indicates that visual output devices should render "boldface" in bold text, but gives little indication what devices that are unable to do this (such as aural devices that read the text aloud) should do. In the case of both `<b>bold</b>` and `<i>italic</i>`, there are other elements that may have equivalent visual renderings but which are more semantic in nature, such as `<strong>strong text</strong>` and `<em>emphasized text</em>` respectively. It is easier to see how an aural user agent should interpret the latter two elements.

However, they are not equivalent to their presentational counterparts: it would be undesirable for a screen-reader to emphasize the name of a book, for instance, but on a screen such a name would be italicized. Most presentational markup elements have become deprecated under the HTML 4.0 specification in favor of using CSS for styling.

### **Tables**

Tables are used when you need to show "tabular data" i.e. information that is logically presented in rows and columns.

**Is it difficult?**

**Building tables in HTML may at first seem complicated but if you keep cool and watch your step, it is actually strictly logical - just like everything else in HTML.**

## Example1:

```
<table>
  <tr>
    <td>Cell1</td>
    <td>Cell2</td>
  </tr>
  <tr>
    <td>Cell3</td>
    <td>Cell4</td>
  </tr>
</table>
```

### What's the difference between <tr> and <td>?

As you will see from the above example, this is probably the most complicated HTML example we have given you so far. Let's break it down and explain the different tags:

3 different elements are used to insert tables:

- The opening tag <table> and the closing tag </table> starts and ends the table. Logical.
- <tr> stands for "table row" and starts and ends horizontal rows. Still logical.
- <td> is short for "table data". This tag starts and ends each cell in the row of your table. All simple and logical.

Here is what happens in Example 1: the table starts with a <table>, followed by a <tr>, which indicates the beginning of a new row. Two cells are inserted in this row: <td>Cell 1</td> and <td>Cell2</td>. The row is hereafter closed with a </tr> and a new row <tr> begins immediately after. The new row also contains two cells. The table is closed with </table>.

Just to make it clear: rows are horizontal lines of cells and columns are vertical lines of cells:

In the above example, the table has two rows and two columns. However, a table can have an unlimited number of rows and columns.

## Example2:

```
<table>
  <tr>
    <td>Cell1 </td>
    <td>Cell2 </td>
    <td>Cell3 </td>
    <td>Cell4 </td>
  </tr>
  <tr>
    <td>Cell5 </td>
    <td>Cell 6 </td>
    <td>Cell7 </td>
    <td>Cell8 </td>
  </tr>
  <tr>
    <td>Cell9 </td>
    <td>Cell10 </td>
    <td>Cell11 </td>
    <td>Cell12 </td>
  </tr>
</table>
```

## Are there any attributes?

Of course there are attributes. For example, the border attribute is used to specify the thickness of the border around your table:

## Example3:

```
<table border="1">
  <tr>
    <td>Cell1 </td>
    <td>Cell2 </td>
  </tr>
  <tr>
    <td>Cell3 </td>
    <td>Cell4 </td>
  </tr>
</table>
```

As with images, you can also set the width of a table in pixels-or alternatively in percentage of the screen:

More attributes?

There are a lot of attributes for tables. Here are two more:

- `align`: specifies the horizontal alignment of the content in the entire table, in a row or in a single cell. For example, `left`, `center` or `right`.
- `valign`: specifies the vertical alignment of the content in a cell. For example, `top`, `middle` or `bottom`.

Links

In this lesson, you will learn how to make links between pages. What do I need to make a link?

To make links, you use what you always use when coding HTML: an element. A simple element with one attribute and you will be able to link to anything and everything. Here is an example of what a link to HTML.net could look like:

**Example 1:**

```
<a href="http://www.html.net/">Here is a link to HTML.net</a>
```

The element stands for "anchor". And the attribute `href` is short for "hypertext reference", which specifies where the link leads to - typically an address on the internet or a file name.

In the above example the attribute `href` has the value `"http://www.html.net"`, which is the full address of HTML.net and is called a URL (Uniform Resource Locator). Note that `"http://"` must always be included in URLs. The sentence "Here is a link to HTML.net" is the text that is shown in the browser as the link. Remember to close the element with `</a>`.

What about links between my own pages?

If you want to make a link between pages on the same website, you do not need to spell out the entire address (URL) for the document. For example, if you have made two pages (let us call them `page1.htm` and `page2.htm`) and saved them in the same folder you can make a link from one page to the other by only typing the name of the file in the link. Under such circumstances a link from `page1.htm` to `page2.htm` could look like this:

### Example2:

```
<ahref="page2.htm">Clickheretogotopage2</a>
```

Ifpage2wereplacedinasubfolder(named"subfolder"),thelinkcouldlooklikethis:

### Example3:

```
<a href="subfolder/page2.htm">Clickheretogoto page 2</a>
```

Theotherwayaround,alinkfrompage2(inthesubfolder)topage1wouldlooklikethis:

### Example4:

```
<a href=" ../page1.htm">Alinkto page 1</a>
```

"../"pointstothe folderonelevelupfrompositionofthefilefromwhichthelinkismade. Followingthesamesystem,youcanalsopointtwo(or more)foldersupbywriting"../..".

Didyouunderstandthesystem?Alternatively,youcanalwaystypethecomplete address for the file (URL).

Whataboutinternallinkswithinapage?

Youcanalsocreateinternallinkswithinapage -forexampleatableof contentsatthe topwithlinkstoeachchapterbelow. Allyouneedtouseisaveryusefulattribute called id (identification) and the symbol"#".

Usetheidattributetomarktheelementtowhichyouwanttolink.Forexample:

```
<h1id="heading1">heading1</h1>
```

Youcannowcreatealinktothatelementbyusing"# "inthelinkattribute.The"# "must befollowedbythe idofthetagyouwanttolinkto.Forexample:

```
<ahref="#heading1">Linkto heading 1</a>
```

Allwillbecomeclearwithanexample:



## Example5:

```
<html>

  <head>
  </head>

  <body>

    <p><a href="#heading1">Linktoheading1</a></p>
    <p><a href="#heading2">Linktoheading2</a></p>

    <h1id="heading1">heading1</h1>
    <p>Texttexttext</p>

    <h1id="heading2">heading2</h1>
    <p>Texttexttext</p>

  </body>
</html>
```

Hypertextmarkupmakespartsofadocumentintolinkstoootherdocuments  
Ananchorelementcreatesahyperlinkinthedocumentanditshrefattributesetsthe link's  
target URL. For example the HTML  
markup, <a href="http://www.google.com/">Wikipedia</a>, will render the word  
"Wikipedia" as a hyperlink. To render an image as a hyperlink, an 'img' element is  
inserted as content into the 'a' element. Like 'br', 'img' is an empty element with  
attributes but no content or closing tag. <a href="http://example.org">  </a>.

As of version 4.0, HTML defines a set of 252 character entity references and a set of  
1,114,050 numeric character references, both of which allow individual characters to be written  
via simple markup, rather than literally. A literal character and its markup counterpart are  
considered equivalent and are rendered identically.

The ability to "escape" characters in this way allows for the characters < and & (when  
written as &lt; and &amp;, respectively) to be interpreted as character data, rather than markup.  
For example, a literal < normally indicates the start of a tag, and & normally  
indicates the start of a character entity reference or numeric character reference; writing  
it as &amp; or &#x26; or &#38; allows & to be included in the content of an element or in  
the value of an attribute. The double-quote character ("), when not used to quote an  
attribute value, must also be escaped as &quot; or &#x22; or &#34; when it appears within

the attribute value itself. Equivalently, the single-quote character ('), when not used to quote an attribute value, must also be escaped as `&#x27;` or `&#39;` (not as `&apos;`; except in XHTML documents) when it appears within the attribute value itself. If document authors overlook the need to escape such characters, some browsers can be very forgiving and try to use context to guess their intent. The result is still invalid markup, which makes the document less accessible to other browsers and to other user agents that may try to parse the document for search and indexing purposes for example.

### **Data types**

HTML defines several data types for element content, such as script data and stylesheet data, and a plethora of types for attribute values, including IDs, names, URIs, numbers, units of length, languages, media descriptors, colors, character encodings, dates and times, and so on. All of these data types are specializations of character data.



# LANGUAGE C

## Why we use Language?

We use language due to the following reasons:

- It stores data
- How to interact between input and output
- The operator uses to transform and combine data.

## What is C?

By 1960 languages come into existence. COBOL was being used for commercial purposes, FORTRAN for Engineering and Scientific applications. An International committee was setup to develop languages. This committee came out with a language called ALGOL60. ALGOL-60 never really became popular because it seemed too abstract, too general. To reduce the abstractness and generality a new language called Combined Programming Language (CPL) was developed at Cambridge University. CPL was an attempt to bring ALGOL60 new version, but CPL turned out to be so big, having so many features, that it was hard to learn and difficult to implement. BCPL (Basic Combined Programming Language) developed by Martin Richards at Cambridge University aimed to solve this problem by bringing CPL down to its basic good features. But unfortunately it turned out to be less powerful and too specific. Dennis Ritchie inherited the features of CPL and BCPL and made a language named C. C forms the basis for many advanced, highly powerful and effective programming languages. C is a programming language developed at AT&T's Bell Laboratories of USA in 1972. It was designed and written by a man named Dennis Ritchie. In the late seventies C began to replace the more familiar languages of that time like PL/I, ALGOL etc. No one pushes C. C seems so popular, because it is reliable, simple and easy to use. The concept of C derives its origin from a primitive form of C which was called Basic Combined Programming Language (BCPL) developed by Ken Thompson of Bell Laboratories which here referred to as 'B'. By now it might not be difficult to guess that a name as cryptic as C was conferred to it because it was considered to be a modified more adaptive successor of "B". C's compactness and coherence is mainly due to the fact that it's a one man language.

## C Basics

Before we embark on a brief tour of C's basic syntax and structure we offer a brief history of C and consider the characteristics of the C language.

In the remainder of the Chapter we will look at the basic aspects of C programs such as C program structure, the declaration of variables, data types and operators. We will assume knowledge of a high level language, such as PASCAL.

It is our intention to provide a quick guide through similar C principles to most high level languages. Here the syntax may be slightly different but the concepts are exactly the same.

C does have a few surprises:

- Many High level languages, like PASCAL, are highly disciplined and structured.
- However beware -- C is much more flexible and free-wheeling. This freedom gives C much more power that experienced users can employ. The above example below (mystery.c) illustrates how bad things could really get.

### Characteristics of C

We briefly list some of C's characteristics that define the language and also have led to its popularity as a programming language. Naturally we will be studying many of these aspects throughout the course.

- Small size
- Extensive use of function calls
- Loose typing -- unlike PASCAL
- Structured language
- Low level (Bitwise) programming readily available
- Pointer implementation - extensive use of pointers for memory, array, structures and functions.

C has now become a widely used professional language for various reasons.

- It has high-level constructs.
- It can handle low-level activities.
- It produces efficient programs.
- It can be compiled on a variety of computers.

<b>Features of C</b>	
----------------------	--

LowLevelLanguageSupport	ProgramPortability
PowerfulandFeatureRich	BitManipulation
HighLevelFeatures	ModularProgramming
EfficientUseof Pointers	

### FeaturesofCProgrammingLanguage:

C Programming is widely used in Computer Technology; We can say that C Programming is inspiration for development of other languages. We can use C Programming for different purposes. Below is some of the Features of C Programming language -

#### 1. LowLevel Features:

1. C Programming provides low level features that are generally provided by the Lower level languages. C is Closely Related to Lower level Language such as "Assembly Language".
2. Itiseasierto writeassemblylanguagecodesinCprogramming.

#### 2. Portability:

1. C Programs are portable i.e. they can be run on any Compiler with Little or no Modification
2. Compiler and Preprocessor make it Possible for C Program to run it on Different PC

#### 3. Powerful

1. ProvidesWideverityof 'DataTypes'
2. ProvidesWideverityof'Functions'
3. ProvidesusefulControl&LoopControlStatements

#### 4. Bit Manipulation

1. C Programs can be manipulated using bits. We can perform different operations at bit level. We can manage memory representation at bit level.
2. It provides wide variety of bit manipulation Operators. We have bitwise operators to manage Data at bit level.

#### 5. HighLevel Features:

1. It is more User friendly as compare to previous languages. Previous languages such as BCPL, Pascal and other programming languages never provide such great features to manage data.
2. Previous languages have their **pros and cons** but C Programming collected all useful features of previous languages thus C become **more effective language**.

#### 6. Modular Programming

1. **Modular programming** is a software design technique that increases the extent to which software is composed of separate parts, called **modules**
2. C Program Consist of Different Modules that are integrated together to form complete program

#### 7. EfficientUse of Pointers

1. Pointers have direct access to memory.
2. C Support efficient use of pointer.

#### C Program Structure

AC program basically has the following form:

- Preprocessor Commands
- Type definitions
- Function prototypes--declare function types and variables passed to function.
- Variables
- Functions

We must have a main() function.

A function has the form:

```
type function_name(parameters)
{
    local variables
    C statements
}
```

If the type definition is omitted C assumes that function returns an integer type. NOTE: This can be a source of problems in a program.

So returning to our first C program:

```
/*Sample program*/
main()
{
    printf("I like C\n"); exit
    (0);
}
```

**NOTE:**

- Requires a semicolon at the end of **every** statement.
- printf is a **standard** C function -- called from main.
- \n signifies newline. **Formatted output** -- more later.
- exit() is also a standard function that causes the program to terminate. Strictly speaking it is not needed here as it is the last line of main() and the program will terminate anyway.

Let us look at another printing statement:

```
printf("`.n.1n..2n...3n");
```

The output of this would be:

```
.1
..2
...3
```

## C Keywords

Keywords are the set of predefined words whose functionality has been expressed to the compiler and whenever called upon they furnish their task with utmost comfort. The keywords cannot be used for any function other than what it is defined for, not even as variable names. This code of conduct it will result in giving a new meaning to the keyword, which is not permissible by the computer. There are 32 keywords in C which are used at various points in a program to launch the proficiency of the language.

## C Instructions

The different types of constants, variables and keywords then the next logical step is to learn how to learn they are combined to form instructions. There are four types of instruction in C:

- **Type Declaration Instruction**
- **Input/Output Instruction**
- **Arithmetic Instruction**
- **Control Instruction**

**Type Declaration Instruction:** We can declare the type of variables used in C program by using this instruction. Any variable used in a program must be declared before using it in any statement. The type declaration statement usually written at the beginning of the C program.

```
int EmpCode;  
float Bsalary;  
char EmpName
```

**Input/Output Instruction:** We can perform the function of supplying input data to a program and obtaining the output results from it.

**Arithmetic Instruction:** We can perform arithmetic operations between constants and variables.

**Control Instruction:** We can control the sequence of execution of various statements in a C program.

## Variables

A program is made of data and instructions to manipulate those data. Note that data have to be stored somewhere, and thus will need some memory space in the RAM.

A variable is an entity that is used to store data. Without variables, there is no way (or actually NO PLACE) to store data. A variable has

- a name (more specifically a symbolic name)



- an associated physical memory space (portion in RAM)
- a data type
- a value (depends on data type)
- a scope
- a lifetime

### How do you declare a variable?

In C, the syntax for declaring a variable is as follows:

<variablename>

The symbol <item> means that it is required to specify the item enclosed within a pair of angled brackets. A semicolon signifies the end of a declaration. A missing semicolon will cause the compiler to generate a syntax error. Variables should be named following the C naming conventions.

Example:

```

charch;
int i;
float f;
double d;
```

It is possible to declare several variables of the same type on the same line. In such a case, a comma should be inserted between two variables. A missing comma will generate a syntax error.

Example:

```

charch1, ch2;
int x, y, z;
float hourly_rate, number_of_hours, salary;
double numerator, denominator;
```

### Basic Data Types

The language of C supports several types of Data, each of which is represented in a varied manner within the memory. The data in the memory can be of integer type or of character type or of integer with decimal points. Whenever an integer or a character is used in a program the computer should be able to identify where to store it in the memory.

The basic data types are depicted in a tabular format to get a better understanding of the basics of C programming.

Data Type	Description	Memory Requirement	Range	Format Specifier
Int	wholenumbers	2bytes	-32768to	%d,%i
long	--	4bytes	+32767	%ld
Char	Characters	1Byte	0to255	%c,%s
Float	Numberswith Decimals	4Bytes	1.0E-37to 1.0E+37	%f
Double	Numberswith	8Bytes	1.7E-308to	%lf

**Int:** The particular data type deals in storing only whole integer numbers and they are incapable of dealing with fractions or number with decimals. The number which they can deal with a range from -32768 to +32767. An int requires 2 bytes of memory by most computers.

**Char:** The char data type holds individual characters or alphabets and they require only 1 byte of memory. Most compilers permit a range of 0 to 255 regarding the char data type.

**Float:** A float data type is involved in restoring floating point numbers or to put it simply, it is used to store numbers with decimal point. The float desires 4 bytes for storage and has a fractional precision of 6 digits.

**Double:** A double data type is also used for the restoration of floating point numbers. The difference lies in the precision and storage space. Double offers a great precision, of about 15 digits and compiler requires 8 bytes to store a double. The ranges with which the float can be represented are  $1.7 \text{ E} - 308$  to  $1.7 \text{ E} + 308$  resp.

### Qualifiers Used With Basic Data Types

To expand the horizon of the basic data types, making it more flexible and adaptable to get into various situations with preciseness and accuracy. The qualifier tagged to the data types are LONG, SHORT, SIGNED AND UNSIGNED. To make any data type a qualifier, the name of the qualifier has to be tagged before the data type.

**Long:** As the name suggests the qualifier long extended the range of the data type to which it is prefixed. It can be applied to only the int and double data types and it expands the spectrum of range from a maximum of 2,147,483,647 to -2,147,483,647.A

long int requires memory that is more than an ordinary int and therefore takes 4 bytes for storage. To make an integer long qualifier just add the word long before it.

**Short:** This qualifier is most interesting because if an ordinary int has the same memory value as that of long i.e. 4 bytes a short will have 2 bytes, but if an int has memory of 2 bytes a short will have the same memory i.e. 2 Bytes.

**Signed:** By using signed data qualifier that data type can accommodate both positive and negative numbers. When a variable is signed it has the same positive and negative range as a regular int. By default an int is a signed data type.

**Unsigned:** The qualifier unsigned is tagged mostly to int and it also has the same memory requirement as that of ordinary int i.e. 2 bytes. Unsigned integer has a range from 0 to 65535.

### Constants

ANSI C allows you to declare **constants**. When you declare a constant it is a bit like a variable declaration except the value cannot be changed.

The `const` keyword is to declare a constant, as shown below:

```
int const a = 1;
const int a = 2;
```

Note:

- You can declare the `const` before or after the type. Choose one and stick to it.
- It is usual to initialize a `const` with a value as it cannot get a value **any other way**.

The preprocessor `#define` is another more flexible (see Preprocessor Chapters) method to define **constants** in a program. You frequently see `const` declaration in function parameters. This says simply that the function is **not** going to change the value of the parameter. The following function definition used concepts we have not met (see chapters on functions, strings, pointers, and standard libraries) but for completeness of this section it is included here:

```
void strcpy(char*buffer, char const*string)
```

The second argument string is a C string that will not be altered by the string copying standard library function.

## Operators in C:

Operators can briefly be defined as the tools used for solving various mathematical, conditional, relational and logical problems. The operators that you will be dealing with are arithmetic operators, unary operators, relational and logical operators. The items in between which the operators are placed are called operands.

### Arithmetic operators:

Arithmetic Operators can be considered the main point of all the operators. Arithmetic operators are tools that help us in computing various mathematical operations.

Operators	Function Performed
+	Addition
-	Subtraction
*	Multiplication
/	Division
%	(Modulus) Find the remainder

### Unary Operators:

There are two types of unary operators:-

- **The increment operator (denotes as '++')**
- **The decrement operator (denotes as '--')**

When the increment operator is prefixed to a variable which holds an integer it increases the value of the number by one. Similarly the decrement operator decreases the value by one.

### Relational and Logical Operators:

Operators	Significance
<	Less than
<=	Less than or equal to
>	Greater than
>=	Greater than or equal to
Equality Operators	Significance
==	Equal to
!=	Not equal to
Logical Operators	Significance
&&	And
	Or

!

Not

**Assignment** `i.e. i=4; ch='y';`

**Increment** `++`, **Decrement** `--` which are more efficient than their long hand equivalents, for example: `--x++` is faster than `x=x+1`.

The `++` and `--` operators can be either in post-fixed or pre-fixed. With pre-fixed the value is computed before the expression is evaluated whereas with post-fixed the value is computed after the expression is evaluated.

In the example below, `++z` is pre-fixed and the `w--` is post-fixed: `int`

```
x,y,w;
main()
{
x=((++z)-(w--))%100;
}
```

This would be equivalent to:

```
int x,y,w;
main()
{
z++;
x=(z-w)%100;
w--;
}
```

The `%` (modulus) operator only works with integers. Division `/` is for both integer and float division. So be careful. The answer to: `x=3/2` is 1 even if `x` is declared a float!!

**RULE:** If both arguments of `/` are integer then do integer division.

So make sure you do this. The correct (for division) answer to the above is `x = 3.0 / 2` or `x= 3 / 2.0` or (better) `x=3.0/2.0`. There is also a convenient shorthand way to express computations in C. It is very

common to have expressions like:  $i = i + 3$  or  $x = x*(y+2)$  This can be written in C (generally) in a **shorthand** form like this:

$$expr_1 op = expr_2$$

which is equivalent to (but more efficient than):

$$expr_1 = expr_1 op expr_2$$

So we can rewrite  $i = i + 3$  as  $i += 3$  and  $x = x*(y+2)$  as  $x *= y+2$ .

NOTE: that  $x *= y+2$  means  $x = x*(y+2)$  and NOT  $x = x*y+2$ .

## Comparison Operators

To test for equality is `==`

**Warning:** Beware of using `'='` instead of `=='`, such as writing accidentally

`if(i=j).....`

This is a perfectly LEGAL C statement (syntactically speaking) which copies the value in "j" into "i", and delivers this value, which will then be interpreted as TRUE if j is non-zero. This is called assignment by value -- a key feature of C.

Note equals is `!=`

Other operators `<` (less than), `>` (greater than), `<=` (less than or equals), `>=` (greater than or equals) are as usual.

## Pointers

C supports the use of pointers, a type of reference that records the address or location of an object or function in memory. Pointers can be dereferenced to access data stored at the address pointed to, or to invoke a pointed-to function. Pointers can be manipulated using assignment or pointer arithmetic. The run-time representation of a pointer value is typically a raw memory address (perhaps augmented by an offset- within-word field), but since a pointer's type includes the type of the thing pointed to,

expressions including pointers can be type-checked at compile time. Pointer arithmetic is automatically scaled by the size of the pointed-to data type. Pointers are used for many different purposes in C. Text strings are commonly manipulated using pointers into arrays of characters. Dynamic memory allocation is performed using pointers.

## Statements in C Language

C needs some kind of managerial system which instructs the computer what function has to be performed at which time. The control statement acts as a manager. You will be amazed at the functions the different control statements handle. For example in a program you may have a statement in which a multiplication operation is to be performed and in the next an addition operation and after the next line there may be a statement which may want itself to be repeated 8 times and another statement may like itself to be skipped and attended to at a later stage. All these conditions are managed by the control statements.

The sequence control structure is one of the basic uncomplicated control statements. The idea is very simple. In the sequence control instructions the statements to be executed are done so in a serial manner one after the other. The C compiler first executes the opening line and then moves on to the next and so on. In a serial fashion and the entire program is executed in this manner.

### Conditional Statement

C program executes program sequentially. Sometimes, a program requires checking of certain conditions in program execution. C provides various key condition statements to check condition and execute statements according to conditional criteria. These statements are called as 'Decision Making Statements' or 'Conditional Statements'. Following are the different conditional statements used in C:

1. **If Statement**
2. **If-Else Statement**
3. **Nested If-Else Statement**
4. **Switch Case**

**If Statement:** The if statement can be used to test conditions so that we can alter the flow of a program. Code:

```
#include<stdio.h>
int main()
{
    int mark;
    char pass;
```

```

scanf("%d",&mark);
if (mark > 40)
    pass="y";
    return 0;
}

```

**If-Else Statement:** The if statement first tests if a condition is true and then executes an instruction and the else is for when the result of the condition is false. Code:

```

#include<stdio.h>
int main()
{
    int mark;
    char pass;
    scanf("%d",&mark);
    if (mark > 40)
    {
        pass = "y";
        printf("You passed");
    }
    else
    {
        pass = "n";
        printf("You failed");
    }
    return 0;
}

```

**The Switch Statement:** The switch statement is just like an if statement but it has many conditions and the commands for those conditions in only 1 statement. It runs faster than an if statement. In a switch statement you first choose the variable to be tested and then you give each of the conditions and the commands for the conditions. You can also put in a default if none of the conditions are equal to the value of the variable.

### **For Loop, While Loop, Break and Continue**

Control structures are basically of three types—

- **Sequence statements**
- **Iterative statements**
- **Selection statements**



**Sequence Statements:** All the State in a program except the iterative & statements. They are generally the individual statements which perform the task of input, output, assignment declaration etc.

**Iterative Statement** are those repeated execution of a particular set of instructions desired number of times. These statements are generally called loops for their execution nature.

### **Types of Looping Statements:**

Basically, the types of looping statements depend on the condition checking mode. Condition checking can be made in two ways as: Before loop and after loop. So, there are 2(two) types of looping statements.

- **Entry controlled loop**
- **Exit controlled loop**

#### **1. Entry controlled loop:**

In such type of loop, the test condition is checked first before the loop is executed.

Some common examples of this looping statements are:

- **while loop**
- **for loop**

#### **2. Exit controlled loop:**

In such type of loop, the loop is executed first. Then condition is checked after block of statements are executed. The loop is executed at least one time compulsarily.

Some common examples of this looping statements are:

- **do-while loop**

In C language the iterative statements (loops) can be implemented in the three loops and they are

#### **The For Loop**

Syntax-

```
for(initialization;condition;incrementation)  
{
```

```
----- bodyofloop -----  
}
```

For Loop will perform its execution until the condition remains satisfied. If the body of the loop consists of more than one statement then these statements are made compound by placing the open and closed curly brackets around the body of the loop. For loop is a count loop. The initialization condition and incrementation may be done in the same statement. For loop will not execute at least once also if the condition is false at the first time itself.

### **The While Loop**

Syntax–

```
Initialization;  
While(condition)  
{  
  Body of loop;  
  Incrementation;  
}
```

In this loop, initialization, condition and incrementation is done in the three different statements. This loop is count as well as event loop. In case of while loops the body of the loop will consist of more than one statement because each time one statement will be of incrementation. Hence the open and closed curly brackets are required.

### **Do-While Loop Statement:**

The third loop statement available in C is do-while statement syntax:- Initialization;

```
Do  
{  
  Body of loop;  
  Incrementation;  
}while(condition)
```

### **An Introduction to Arrays**

The concept of arrays depends on other data types, which was meant to facilitate the storage of abundant amount of number and wasting an entire delivery of space in the memory. It would be like buying two dozen books and ultimately using one and dumping the rest in the garbage. Arrays can be defined as a collection of similar elements. An array of elements can be formed only if all the elements are of one particular data type i.e. all of them are either integer or character or a floating point number, but there cannot exist an array which hosts a combination of these data types.

## Advantage of Arrays

The usage of arrays is crucial to any professional programming. Arrays just make the life of a programmer a bit easier. It relieves him of a burden of having to keep naming the variables. An array is a single variable holding multiple data. Each data is referred to by its element number, if for instance, you wish to store a list of items you could just name the variable 'item\_code' and keep storing the data by referring to item\_code (1), item\_code (2), item\_code (3), .....etc.

## Array Declaration

Like other variables an array needs to be declared so that the compiler will know what kind of an array and how large an array we want. In our program we have done this with the statement

```
int sal[20];
```

Here it specifies the type of the variable, just as it does with ordinary variables and the word **sal** specifies the name of the variable. The [20] however is new. The number 20 tells how many elements of the type **int** will be in our array. This number is often called the "dimension" of the array. The bracket ([]) tells the compiler that we are dealing with an array.

## Types of Arrays

The array is divided into two parts:

- **Single Dimensional Arrays**
- **Multidimensional Arrays**

### Single Dimensional Arrays:

The single dimensional arrays as the name suggested, handles only a single advance of similar elements. That is to say you can only have one row of elements and the size of a single dimensional array depends on the programmer. Basically the single dimensional arrays facilitate the accommodation of many similar elements in a single variable. The succeeding sections after which you will have a clear view of the single dimensional arrays.

### Multidimensional Arrays:

The multidimensional arrays are two or more arrays clubbed together. They can be of two dimensional type or three dimensional types or more, but you can restrict the research only to two and three dimensional arrays. An example of the two dimensional arrays is the matrix because like the matrix the two dimensional arrays have two matrices one symbolizing the row elements and the other the column elements. The three dimensional array is a shade different because the first array list the number of

tables of the two dimensional arrays. The rest of the two arrays are similar to the two-dimensional array in the sense that one is for the row and the other is for the column.

### **Array Initialization**

The initial step of declaring of an array is done. You have given it a variable name and also declared its size but upto this stage the array is empty. It is like a box without any book in it. Similarly declaration of variable is done but some values have to be passed into it. You must be aware of initializing ordinary variables but how do you initialize an array in which more than one value has to be initialized into one array variable.

### **Entering Data into an Array:**

You have declared an array by giving it a specific name and size you can try and explore the individualities of each element in the array, that is to say how each element is addressed in an array. Array element indexing always starts with 0.

Number[0]	1st element
Number[1]	2nd element
Number[2]	3rd element
Number[3]	4th element

This means that [0] will hold the first value, [1] the second, [2] the third & soon. If you want to access the fourth element of the array "sal" you have to write sal[3].

### **Describe two distinct methods:**

- a) **Static Initialization**
- b) **Dynamic Initialization**

#### **Static:**

The array once initialized in this cannot be altered by the user. This means that each time the program is executed, the same values are utilized and they can be altered only from the code. It doesn't require the user to input values for the array. This type of initialization is done at the time of the declaration of the array. The value to be inserted are mentioned in the braces

```
int sal[4] = {101, 102, 103, 104, 105}; int  
a [ 2 ] = { 201, 202, 320 } ;
```

In the static initialization the number of values to be allocated is mentioned in the square bracket and the element is mentioned in the curly braces. The elements are initialized in a static mode.

#### **Dynamic:**

In static initialization you noticed that the elements of the array are initialized while declaring the array, but there is a problem. If you want to alter the values or if you want the user to supply the values then static initialization will turn out to be a wrong thing. That

is where dynamic initialization takes control of the reins. The user can be allowed to enter the values of his choice into the array and when the program returns the values are not retained and they cover the way for new values. Dynamic initialization can be done using the For Loop

```
for(i=0;i<=10;i++)  
{  
    printf("Enter values");  
    scanf("%d",&sal[i]);  
}
```

### **Array inside the Memory**

The element stored in a serial order or they are stored randomly.

```
int sal [ 8 ] ;
```

The statement indicates that an array variable is to be created which is of an integer data type and the array can hold 8 elements. In the memory 16 bytes will be reserved because each integer will be 2 Bytes long. The array is initialized with some numbers, this array will host some unrelated numbers. Once the array is initialized the elements are stored in a continuous manner.

```
201202203204205206207208
```

```
31123114311631183120312231243124
```

The number entered by the user is registered in a successive pattern and each element takes 2 bytes. This is exactly how it is represented in the memory of a computer. The number below the element location is the address of the location and each element has its unique address in the memory by which it is identified.

### **Multi Dimensional Arrays:**

Multi dimensional array requires separate brackets for each subscript. One dimensional array has a pair of square brackets, a two dimensional array will have two pairs of square brackets, three dimensional array three pairs of square brackets and so on.

### **Two Dimensional Array:**

A two dimensional array can be visualized as an array below an array. Two dimensional arrays will have two pairs of square brackets.

Syntax:- datatype arrayname [statement1] [statement2]

The two dimensional array is often referred to as a matrix. The statement one and two are the subscripts that the two dimensional array will hold. One will specify the row and expression, two will specify the column and they indicate the number of array elements associated with each subscript.

```
intA[ 4] [ 2 ];
```

Column0

Column1

RowNo0	4200	10
RowNo1	6500	20
RowNo2	7850	30
RowNo3	3450	40

Thus the element in `A[0][0]` will be 1000 and the element `A[3][3]` will be 40. The rest of the numbers can be figured by having a look at the above table. In the memory the element are placed in a sequential pattern such that the element `[0][0]` will be first followed by the element in `[0][1]` followed by `[1][0]` and soon.

### Character Arrays

C is also flexible that it extends its services to character also. It means that arrays can be formed using even characters. One such array of characters is called string. A string is a collection of characters that are in a particular order.

```
char name[10] = "Ankush";
```

In the above example name is an array with an element holding capacity of 10 and it holds a string called "Ankush". The first element is stored in the `[ 0 ]` th position of the array name. That is, the alphabet A will be stored in the `[0]` th position, n will be in the `[1]` st position and so on till `[ 9 ]` th element.

A doubt may arise that while the array can accommodate 10 values only 6 have been entered. What happens to the rest? Since only 4 values have been accommodated the 7th value will be a null character ( `\0` ) which represents the end of the string. This will be placed automatically at the end of the string if any of the array indexes are vacant.

A blank space cannot exist between any two characters while taking input from the user unless accompanied by a specific format specified.

### Strings

A group of integers can be stored in an integer array. Similarly a group of characters can be stored in a character array. Character arrays are many a time also called strings. Most languages internally treat strings as character arrays, but somehow conceal this fact from the programmer. Character arrays or strings are used by programming languages to manipulate text such as words and sentences. A string constant is a one dimensional array of characters terminated by a null (`\0`) for example,

```
char name[] = {'I','T','T','C','O','M','P','U','T','E','R','\0'};
```

Each character in the array occupies one byte of memory and the last character is always `\0`. What character is this? It looks like two characters, but it is actually only one character, either the `\` indicating that what follows it is something special. `\0` is called null character. Note that `\0` and `'0'` are not same. ASCII value of `\0` is 0 whereas ASCII value of `'0'` is 48 It shows a way a character array is stored in

memory. The elements of character array are stored in contiguous memory locations. The terminating null ( ` \ 0 ` ) is important, because it is the only way the functions that work with a string can know where the string ends. A string not terminated by a ` \ 0 ` is really a string, but merely a collection of characters.

With C compiler a large set of useful string handling library functions are provided.

Function	Use
strlen	Finds length of a string
strlwr	Converts a string to lowercase
strupr	Converts a string to uppercase
strcat	Appends one string at the end of another
strcpy	Copies a string into another
strcmp	Compares two strings
strdup	Duplicating a string
strrev	Reversing a string

### strlen ( )

This function counts the number of characters present in a string.

```

void main ( )
{
    char array[] = "Hello", new[20];
    int size, size1, size2 ;
    printf("Enter a string");
    scanf ( " %s ", new );
    size = strlen ( array );
    size1 = strlen("SoftBrainComputers");
    size2 = strlen ( new );
    printf("\n Length of string %s are %d", array, size);
    printf("\n Length of Second string %s are %d", "SoftBrain
Computers" ,size1 );
    printf("\n Length of Third string %s are %d", new, size2);
    getch( ) ;
}

```

### strcpy()

This function copies the contents of one string into another. The base addresses of the source and target strings should be supplied to this function.

```

void main()
{
    char source[] = "SoftBrainComputers";
    char target[20], old[10], new[10];
    printf("Enter a string");
    scanf ("%s", old);
    strcpy( target, source);
    strcpy ( new, old);
    printf("\nSource string are %s and target string are %s", source, target);
    printf("\nSecond source string are %s and second target string are %s", old,
new);
    getch();
}

```

On supplying the base addresses strcpy ( ) goes on copying the characters in source string into target string till it doesn't encounter the end of source string (^ \0). It is our responsibility to see to it that the target string's dimension is big enough to hold the string meal, character by character.

### Strcmp ( )

This is a function which compares two strings to find out whether they are same or different. The two strings are compared character by character until there is a mismatch or end of one of the strings is reached, whichever occurs first. If the two strings are identical, strcmp ( ) returns a value 0. If they are not, it returns the numeric difference between the ASCII values of the non-matching characters.

### Function

A function is a self contained block of statements that perform a coherent task of some kind. Every C program can be thought of as a collection of these functions. Sometimes the interaction with this person is very simple sometimes it's complex.

You have a task which is always performed exactly in the same way... saya servicing of your motor bike. When you want it to be done, you go to the service station and say "I's time, do it now You don't need to give instructions, because the mechanic knows his job. You don't need to be told when the job is done. U assumes the bike would be serviced in the usual way, the mechanic does.

A simple C function which operated in much the same way as the, mechanics. We will be looking at two things a program that calls or activates the function and the function itself.

```

void main()
{
    message();
    printf("\n Thanks after return of first function");
    getch
();
}

```



```

}
message()
{
printf("\nWelcometotheirstfunctionprogram");
}

```

**Note:**

Any C program contains at least one function.

If a program contains only one function, it must be `main()`.

In a C program if there are more than one functions present, then one ( and only one ) of these functions must be `main( )`, because program execution always begins with **main ( )** .

There is no limit on the number of functions that might be presented in a C program.

Each function in a program is called in the sequence specified by the function calls in **main( )**.

After each function has done its things, control returns to **main()**. When **main()** runs out of function calls, the program ends.

**Functions may be divided into three categories.**

- Without arguments without return value
- With arguments without return value
- With arguments with return value

**Without arguments without return value**

For functions of this type neither the caller function nor the called function take any arguments. When a function is called the control jumps directly to the function and executes the statements that are specified within the called function. After the statement is the called function is executed, the control returns to the main program.

**With arguments without return value**

For function this the caller function transport some values to the called function or the function definitely where these values are used for some specific function or computation but once the computed value is found out within the called function the value is not returned back to the caller function .

**With arguments with return value**

In this type of functions the values as the arguments are being passed into the called functions where they will be computed and a definite result is relayed back to the caller function and the value will be printed from there.

**Advantage of Functions:**

A programmer can identify whatever actions are performed repeatedly on various parts of the program, write them as a function and call the function from various parts of

the program whenever needed. This approach avoids code duplication. Instead of duplicating the same code in different parts of the program, you just write the function once and call it from different parts of the program thus reducing the executable file size and redundancy of code, making the maintenance of code easy.

In a multi tasking system like Unix there is a direct relationship between the amount of memory a program consumes and the speed with which it runs. You will in general find that large programs which demand a lot of memory sluggish.

Breaking down your program into subroutines lends your program a structure. You can divide your task into multiple sub-tasks, develop a function for each sub task, and integrate them into a single program. Once a function is written and completely tested, a programmer can expect it to smoothly fit in with the rest of the program modules.

Once a function is written, tested and found to be working as per the expectations, the function can be loaded into a library, and can be used in an all together different application. This approach encourages code reusability.

### **The types of variables are:**

- Local Variables
- Global Variables

### **Local Variables:**

The fact that main is a function and you can declare any number of variables within it. So if a rule holds good for one function why can't it for other functions? It definitely can. You can declare a variable inside any function belonging to any size and type. Thus variables declared inside a function are called local variables and are valid and can be used within that function. The life of these variables exists until they are within the function. It is same as the value of a particular variables in a program cannot exist for all the programs. Any attempt to break the rules will result an error.

### **Global Variables:**

Before you can accuse C of being inefficient in certain areas it pops up with an alternative. The alternative for reducing the before mentioned problem is declaring the variables globally. The global variables are otherwise called external variables and unlike the local variables which are confined only to the function which has them, the global variables can be used anywhere in the program. The global variables are declared outside the main i.e. before beginning the program and the values hold good throughout the program. The storage for global variables is in a fixed region of memory set aside for this specific purpose by the compiler. The effectiveness of declaring globally can be felt when many functions in a program use the same data.

Defining a variable as global is particularly advantageous because its value is made available to all other functions. But the only risk factor involved in this is that if any function manipulates or alters the global variable than any other function using the same variable at the same time gets the altered value.

## Recursion in Functions

Recursion in general terms means repeating itself. A recursive function is a process where the function calls itself repeatedly until a particular condition is satisfied. It is more like the loop conditions. But the difference lies in that each action or recursion is based in the result of the previous one.

A recursive result triggers the recursive action for the next result until the condition is satisfied. For a problem to be solved recursively there are two conditions to be satisfied. The problem must be written in a recursive form, the recursion must have a condition which seals the recursion.

### C program to check odd or even using modulus operator

```
#include<stdio.h>

main()
{
    int n;

    Printf("Enter an integer\n");
    Scanf ("%d",&n);

    if (n%2==0)
        Printf("Even\n");
    Else
        Printf("Odd\n");

    return 0;
}
```

We can use bitwise AND (&) operator to check odd or even, as an example consider binary of 7 (0111) when we perform  $7 \& 1$  the result will be one and you may observe that the least significant bit of every odd number is 1, so  $(\text{odd number} \& 1)$  will be one always and also  $(\text{even number} \& 1)$  is zero.

### C program to check odd or even using bitwise operator

```
#include<stdio.h>

main()
{
    int n;

    printf("Enter an integer\n");
    scanf("%d",&n);
}
```

```

if (n &1 ==1 ) printf("Odd\n");
else
    printf("Even\n");

return0;
}

```

### Find odd or even using conditional operator

```

#include<stdio.h>

main()
{
    intn;

    printf("Input an integer\n");
    scanf("%d",&n);

    n%2==0?printf("Even\n"):printf("Odd\n");

    return0;
}

```

### C program to check odd or even without using bitwise or modulus operator

```

#include<stdio.h>

main()
{
    intn;

    printf("Enter an integer\n");
    scanf("%d",&n);

    if((n/2)*2==n)
        printf("Even\n");
    else
        printf("Odd\n");

    return0;
}

```

In programming language when we divide two integers we get an integer result, For example the result of 7/3 will be 2. So we can take advantage of this and may use it to find whether the number is odd or even. Consider an integer  $n$  we can first divide by 2

and then multiply it by 2 if the result is the original number then the number is even otherwise the number is odd. For example  $11/2=5, 5*2=10$  (which is not equal to eleven), now consider  $12/2=6$  and  $6*2=12$  (same as original number). These are some logic which may help you in finding if a number is odd or not.

### Prime number program in language

```
#include<stdio.h>

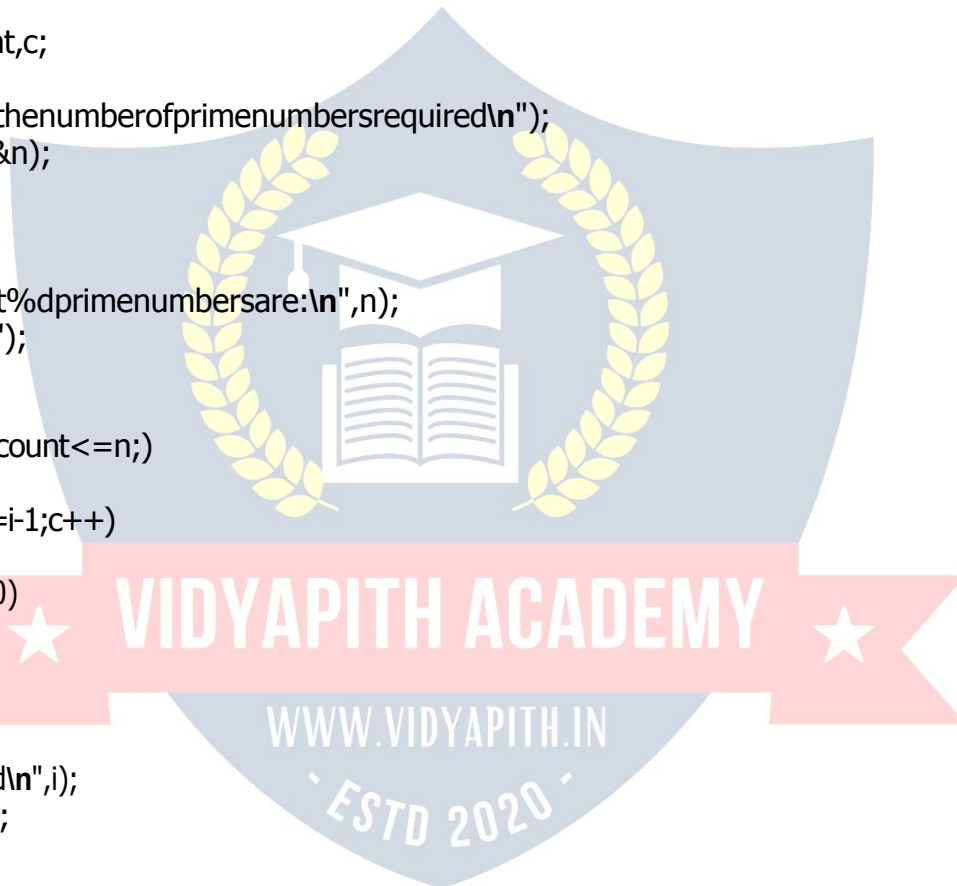
int main()
{
    int n,i=3,count,c;

    printf("Enter the number of prime numbers required\n");
    scanf("%d",&n);

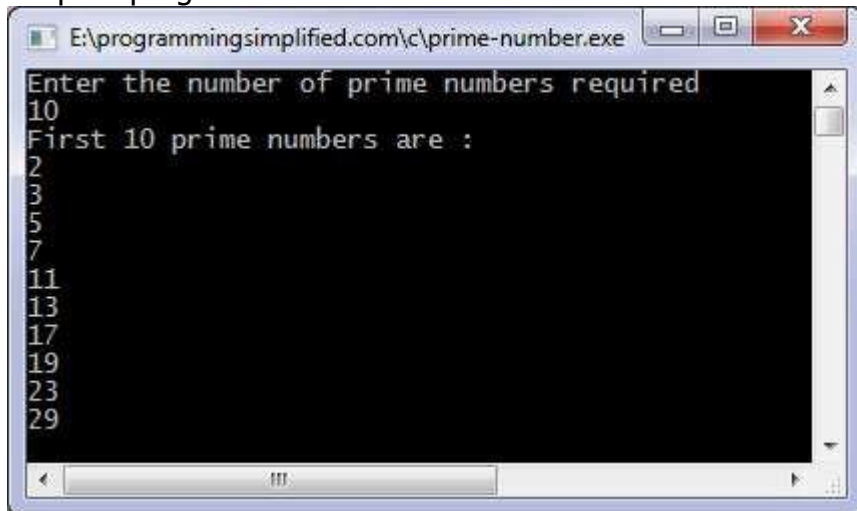
    if(n>=1)
    {
        printf("First %d prime numbers are:\n",n);
        printf("2\n");
    }

    for(count=2;count<=n;)
    {
        for(c=2;c<=i-1;c++)
        {
            if(i%c==0)
                break;
        }
        if(c==i)
        {
            printf("%d\n",i);
            count++;
        }
        i++;
    }

    return 0;
}
```



Output of program:



```
E:\programmingsimplified.com\c\prime-number.exe
Enter the number of prime numbers required
10
First 10 prime numbers are :
2
3
5
7
11
13
17
19
23
29
```

### C program for primenumber or not

```
#include<stdio.h>

main()
{
    int n,c=2;

    printf("Enter a number to check if it is prime\n"); scanf("%d",&n);

    for(c=2;c<=n-1;c++)
    {
        if(n%c==0)
        {
            printf("%d is not prime.\n",n);
            break;
        }
    }
    if(c==n)
        printf("%d is prime.\n",n);

    return 0;
}
```

### C program for prime number using function

```
#include<stdio.h>
int tcheck_prime(int);

main()
```

```

{
    int n, result;

    printf("Enter an integer to check whether it is prime or not.\n"); scanf("%d", &n);

    result = check_prime(n); if
    ( result == 1 )
        printf("%d is prime.\n", n); else
        printf("%d is not prime.\n", n);

    return 0;
}

int check_prime(int a)
{
    int c;

    for(c=2; c<=a-1; c++)
    {
        if(a%c==0)
            return 0;
    }
    if(c==a)
        return 1;
}

```

There are many logics to check prime numbers, one given below is more efficient than the above method.

```
for(c=2; c<=(int)sqrt(n); c++)
```

Only checking from 2 to square root of number is sufficient. There is much more efficient logic available.

