**COMPUTER STUDIES**

SS 2 Second term note 2024/2025 session

WEEK

1-2. Concept of Computer file

3-4. Handling Computer files

5-6 System Development Cycle

7. . Program Development

8. Algorithm

9. Flowchart

10. Basic Programming

TOPIC 1: CONCEPT OF COMPUTER FILE

Definition of terms

* 1.       Data: a raw fact that has not been processed.  It is the smallest unit (an item) of information e.g. James, 45, Male etc.
* 2.       Field: it is a space/named area of a record allocated to store an item of information, e.g. Name, Age, Gender etc.
* 3.       Record: It is a collection of related data items or fields about an entity i.e. a person, thing or place. For example, a student record may consist of his/her gender, name, age etc.
* 4.       (Computer) file: A file can be defined as a collection of related records that give a complete set of information about a certain item or entity.

A file may also refer to an object on a computer that stores [data](https://www.computerhope.com/jargon/d/data.htm), [information](https://www.computerhope.com/jargon/i/informat.htm), settings, or commands used with a computer [program](https://www.computerhope.com/jargon/p/program.htm). In a graphical user interface ([GUI](https://www.computerhope.com/jargon/g/gui.htm)) such as [Microsoft Windows](https://www.computerhope.com/jargon/w/windows.htm), files display as [icons](https://www.computerhope.com/jargon/i/icon.htm) that relate to the program that opens the file.

A file is created using a [software](https://www.computerhope.com/jargon/s/software.htm) [program](https://www.computerhope.com/jargon/p/program.htm) on the computer. For example, to create a [text file](https://www.computerhope.com/jargon/t/textfile.htm) you would use a [text editor](https://www.computerhope.com/jargon/e/editor.htm) (notepad), to create an [image](https://www.computerhope.com/jargon/i/image.htm) file you would use an [image editor](https://www.computerhope.com/jargon/i/imageedi.htm) (paint, Corel draw etc.), and to create a [document](https://www.computerhope.com/jargon/d/document-area.htm) you would use a [word processor](https://www.computerhope.com/jargon/w/wordproc.htm) (Microsoft Word, Word Perfect etc).

Computer files are stored on a [drive](https://www.computerhope.com/jargon/d/drive.htm) (e.g., the [hard drive](https://www.computerhope.com/jargon/h/harddriv.htm)), [disc](https://www.computerhope.com/jargon/d/disc.htm) (e.g., [DVD](https://www.computerhope.com/jargon/d/dvd.htm)), and a [diskette](https://www.computerhope.com/jargon/d/disk.htm) (e.g., [floppy disk](https://www.computerhope.com/jargon/f/floppydi.htm)) and may also be contained in a [folder](https://www.computerhope.com/jargon/f/folder.htm) ([directory](https://www.computerhope.com/jargon/d/director.htm)) on that medium.

Every created file has an extension. A *file extension* or file name extension is the ending of a file that helps identify the type of file in [operating systems](https://www.computerhope.com/jargon/o/os.htm), such as [Microsoft](https://www.computerhope.com/comp/msoft.htm) [Windows](https://www.computerhope.com/jargon/w/windows.htm). In Microsoft Windows, the file name extension is a period that is often followed by three [characters](https://www.computerhope.com/jargon/c/charact.htm), but may also be two or four characters long. As an example the [file name](https://www.computerhope.com/jargon/f/filename.htm) "myfile.txt" has a file extension of ".txt", which is a file name extension [associated](https://www.computerhope.com/jargon/a/associat.htm) with [text files](https://www.computerhope.com/jargon/t/textfile.htm).

Assignment:

List the type of file associated with each of the following file extensions:

1.”.3gp”                2. “.exe”              3. “.dll” 4. “.bat”               5. “.html”             6. “.cmd”

7. “.rtf”                 8. “.accdb”                          9. “.pptx”                             10. “.cdr”

Types of data items

The following are types of data (item):

·         Numeric data: these consists of digits (0-9) e.g. 1, 43, 0.56 etc.

·         Alphabetic data: these consists of alphabetic characters (A-Z or a-z) only e.g. School, Bond, Name etc.

·         Alphanumeric data: these are data made up of combination or alphabets and numbers.

Types of File Organisation Method

File organization is a way of organizing the data or records in a file. It refers to how the contents of a file are added and accessed, but not how files are organized in folders. The four file organisation methods are:

* 1.       Serial file organisation: records are stored in the order they occur. They have not been sorted in any particular order.
* 2.       4 file organisation: records are stored in a sorted order of a particular field(s), usually the key field(s).
* 3.       Indexed file organisation: An indexed file contains records ordered by a record key. A record key uniquely identifies a record and determines the sequence in which it is accessed with respect to other records.
* 4.       Random or direct file organisation: records are stored randomly in no particular order i.e. in any sequence

Methods of Accessing Files

Access method is a mechanism or manner in which the records in a file may be accessed.  It defines the way the *read* and *write* operations are done. The methods of accessing files include:

* 1.       Sequential access: a sequential file access is that in which the records are accessed in some sequence i.e., the information in the file is processed in order, one record after the other. It requires the program to start writing or reading at the beginning and continues until it finds the desired data. Device like magnetic tape enforces sequential access method.
* 2.       Direct/random access: the records on the storage location can be accessed (read or written to) in any order i.e. randomly/directly. Devices such as magnetic disk storage and the main storage i.e. RAM and ROM are based on this method.
* 3.       Indexed-sequential access: this mechanism is built on the basis of sequential access. An index is created for each file which contains pointer to various records (blocks). Index *is* searched*sequentially* and its pointer is used to access the file *directly*.

Computer File Classifications

Computer files can be classified as follows:

* 1.       Master file: This is a computer file that is used as the authority in a given job that is relatively permanent. It is a permanent file, periodically updated, that serves as an authoritative source of data. It is an [original](https://www.collinsdictionary.com/dictionary/english/original) [file](https://www.collinsdictionary.com/dictionary/english/file) from which [duplicates](https://www.collinsdictionary.com/dictionary/english/duplicate) are made.
* 2.       Transaction file: It is a computer file containing relatively transient data about a particular data processing task. It is a file, especially a [data file](http://www.encyclopedia.com/computing/dictionaries-thesauruses-pictures-and-press-releases/data-file), containing transaction records, used to update the [master file](http://www.encyclopedia.com/computing/dictionaries-thesauruses-pictures-and-press-releases/master-file).
* 3.       Reference file: This is a computer file containing data, which is kept so that it can be referenced for future use. It is stable and permanent in nature.

Criteria for classifying computer file

Computer files can be classified according to the following criteria:

1.       Nature of content: files of similar contents are classified together. Examples are database file, word processed file etc.

2.       Organisation method i.e. whether sequential, direct etc.

3.       Storage medium: whether they are stored in tapes, disks or any other storage devices.

TOPIC TWO: HANDLING COMPUTER FILES

Basic operations on Computer files

The following are some of the basic operations on a computer file:

* 1.       File creation: using an application package to create a file
* 2.       File deletion: an unneeded file can be removed (deleted) from the computer to free up disk space.
* 3.       File retrieval:  the file is brought out from where it is located for further processing
* 4.       File copy: process of making duplicate copies of a file
* 5.       File open: files are loaded (opened) before it can be used. The content are being displayed on the screen
* 6.       File close: when you are done with a file and need to free up main memory space, you close the file.
* 7.       File read: The file read operation is performed just to read the data that are stored in the required file. No addition is done to the file.
* 8.       File Write: The file write operation is used to write the data to the file, again, generally at the current position.
* 9.       File Update: making changes to the content/records of a file
* 10.   File Rename: The file rename operation is used to change the name of the existing file.

File insecurity and its effect

File insecurity is a concept that a file is always vulnerable and is prone to be lost or missing in the computer. Virus attack, careless deletion of files, hardware failure/malfunctioning etc. are some of the causes of file insecurity.

The following are the effects of file insecurity:

1.       Loss of data

2.       Data unreliability

3.       Data corruption

Methods of File Security

The methods of file security include:

1.       Use of backup: make copy of computer files on DVD, external HD, CD etc. 2.       Use of antivirus: install and update antivirus to avoid virus attack 3.       Passwords:  Password your computer to prevent unauthorized access to the files.

4.       Proper labeling of storage devices: this helps in identifying what file is stored in a particular storage device

5.       Disk/directory/file encryption: encode/encrypt the file to make it meaningless to anyone that may have unauthorized access to it.

6.       Physical security: e.g. security guards, alarm systems, lock on rooms and on computer etc.

Advantages and disadvantages of computer file

Advantages

1.       Faster and efficient in processing of information

2.       More secure

3.       Fast to access

4.       Uses less space

5.       More accurate

6.       Can be updated

7.       Permits long term storage and retrieval

Disadvantages/limitations

1.       Expensive to set up

2.       Require power supply

3.       Data are often duplicated

4.       Can be corrupted

5.       Vulnerable to virus attack

6.       Requires formal training to handle

## Differences between Computer Files and Manual Files

|  |  |
| --- | --- |
| Computer files | Manual files |
| More secured | Less secured |
| More reliable | Less reliable |
| Can easily and neatly be modified | Cannot be easily and neatly modified |
| Fast to access | Slow to access especially if there is large number of file to check from |
| Can be attacked by virus and worms | Can be attacked by rodents, insects, fire etc. |

TOPIC THREE: SYSTEM DEVELOPMENT CYCLE (SDC)

Software Development Cycle (SDC) or Software Development Life Cycle (SDLC) is a process that consists of a series of planned activities to develop or alter an Information system.

System development Cycle can be thought of as a set of activities that analysts, designers and users carry out to develop and implement an information system.

Stages in the SDC

The diagram below shows the stages involved in the SDC, starting from the initial stage i.e. the preliminary study to the study review stage. Note that since this is a cycle, the event may be repeated.



The stages in the SDC include the following:

* 1.       Preliminary
* 2.       Feasibility study
* 3.       Investigative
* 4.       Analysis
* 5.       Design
* 6.       Implementation
* 7.       Maintenance
* 8.       Study review

Description of the stages in SDC

1. Preliminary: The intended goal (i.e. what the system will do) of the project (information system) is established in this stage.
2. Feasibility study: This is the study carried out before development of the system to ascertain if the proposed system is possible, practical and can serve a purpose.
3. Investigative: The project goals are restated into specific functions and operation of the intended system. Whatever the end-user want, how he/she wants it and when he/she wants it is considered and analysed here.
4. Analysis: The goal of the system analysis is to examine the type of the system on the basis of user requirements (what the user needs in the system).
5. Design:  Designing the system in terms of user interface, data storage and data processing functions on the basis of the analysis phase by developing system flowcharts, system and data flow diagrams, screen layouts and reports.
6. Implementation: programming the system as designed and conducts the continuous testing and debugging. The user accepts it at this stage before migration to live environment.
7. Maintenance: This stage involves making changes, corrections, additions to the software while in use.
8. Study review: The system is continuously evaluated as it functions in the live environment; this is done to see if there is need for upgrade or replacement of the system.

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, Information Technology and Data Pro Program Development

What is a Program?

A program is a set of instructions that are executed by the CPU. A program can also be defined as an organized list of instructions that when executed cause the computer to behave in a predetermined manner. Without a program the computer is useless.

## Characteristics of a Good Program

The following are characteristics of a good program:
Accuracy: Program should be sufficiently accurate to get the desired results.
Extensibility: this means that you so design the program so that you can add and remove an element from your program without disturbing the underlying structure of the program.
Maintainability: this is making your code easy to update
Efficiency: a good program should be designed to use the least amount of primary memory and the fewest devices possible.
Generality: Design the program to be generalized and flexible, if possible
Portability: a good program can be moved to another environment
Simplicity: program logic should be as simple and as uncomplicated as possible
Transferability: plan the program to be as machine independent as possible.
Reusability: write code that will be able to be used in unrelated projects.
Leanness: leanness means making the design with no extra parts.

## Precautions in Program Development

There are certain precautions that one should take during the development of a program. These are:
Patience: one should not rush up the programming process, although deadlines are important that should not be at the expense of a faulty program.
Step Following: all steps of the program should be followed religiously without skipping any step or there will be erroneous results.
Execution order: the order of execution of instructions should be followed.
Fresh mind: One should be sufficiently fresh to work on a program, being free of any kind of fatigue.

## Program Development Stages

Software(Program) development can be divided into several stages as listed below:
1. Problem Definition
2. Problem analysis
3. Flowcharting
4. Desk checking
5. Program coding
6. Program compilation
7. Testing/Debugging
8. Program documentation

Problem Definition: This is the formal definition of task. It includes specification of inputs and outputs processing requirements, system constraints and error handling methods.
Problem Analysis: this step is the process of becoming familiar with the problem that will be solved with the computer program.
Flowcharting: A flowchart is a pictorial representation in which symbols are used to show the various operations and decisions to be followed in solving a problem. Flow chart depicts the logic involved in the problem solution and therefore, is a step-by-step sequence that the program will describe to the computer.
Desk-checking: Desk-checking is a manual (non-computerized) technique for checking the logic of an algorithm
Program coding: this is the process of transforming the program logic document into a computer language format.
Program compilation: A compiler is a computer program (or a set of programs) that transforms source code written in a programming language (the source language) into another computer language (the target language), with the latter often having a binary form known as object code. The process of transforming source code into object code is called compilation.
Testing and debugging: This stage is the discovery and correction of programming errors.
Program documentation: Comprehensive information on the capabilities, design details, features, and limitations of the program so that those who use and maintain it can understand it so that the program can be extended to further applications.

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### Algorithm and Flowchart

## Definition Algorithm

Algorithm can be defined as a set of rules and sequential steps that define how a particular problem can be solved in finite and ordered sequences.

## *Function of Algorithms*

An algorithm generally takes some input, carries out several effective steps in a finite amount of time, and produces some output.

## Characteristics of Algorithms

Every algorithm should have the following five characteristic features
i. Input
ii. Output
iii. Definiteness
iv. Effectiveness
v. Termination

Example1: Write an algorithm to compute the area and circumference of a cycle given the diameter d. Use the formular A= πr^2 and C= 2πr Solution
Step 1: Start
Step 2: Get the diameter d
Step 3: Compute r=(d/2)
Step 4: Compute A= πr^2
Step 5: Compute C= 2πr
Step 6: Display the results
Step 7: Stop

Example 2: Write an algorithm that tells you how to wash dishes
Solution
Step 1: start
Step 2: scrape food off dishes
Steps 3: wash the dishes with soap and water
Step 4: Rinse the dishes
Step 5: Dry them
Step 6: Stop

Example 3: Write an algorithm to evaluate the equation y = a(b-c)^2/d+2
Solution
The rule of BODMAS is to be followed to effectively evaluate thise equation
Step 1: start
Step 2: Input the values of a, b, c, d
Step 3: The value of y is to be calculated
Step 4: Calculate the value of b-c and denote f
Step 5: Calculate the square of f
Step 6: Multiply f by a and denote g
Step 7: Calculate the value of d+2 and denote h
Step 8: divide h by g
Step 9: We get the value of y
Step 10: Print y
Step 11: Stop

## Definition of Flowchart

This is the graphical representation of the steps involved in solving a given problem. More formally, a flowchart is a pictorial representation in which symbols are used to show the various operation and decisions to be followed in solving a problem.
Some standard symbols used in drawing a program flow chart are:



## Rules for Drawing Flowchart

i. Every flowchart must terminate, that is, it must have a starting and ending points.
ii. The Direction of flow should be from left to right or top to bottom.
iii. Maintain consistent spacing between symbols
iv. Use the correct symbol for each step
v. Keep it simple and clear.
Example 1: Draw a flow chart to print the area of a 10cm square



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### BASIC Programming II (Built-in Functions)

## What is a Function

A function is a structure that simplifies a complex operation into a single-step

## Definition of BASIC Built-in Functions

BASIC built-in functions are predefined functions integrated into BASIC interpreter, that can be used to perform a wide range of operations.

## Some BASIC Built-in Functions

BASIC has several built-in functions that greatly extend its capability. They include the following:
1. CHR$ function
The CHR$ function returns a string containing the character associated with the specified ASCII (American Standard Code for Information Interchange). The syntax is CHR$(X). "X" is a whole number in decimal number system.
Example
PRINT CHR$ (65) returns letter A
PRINT CHR$ (66) returns letter B

2. SQR Function
The SQR function calculates the square root of a number. The general form of the function is SQR(X)
Example
PRINT SQR(9) will return 3
PRINT SQR(2) will return 1.414214

3. INT Function
The INT function finds the greatest integer less than or equal to a number. The general form of the function is INT(X)
Example
PRINT INT(15.46) will return 15
PRINT INT(-15.46) will return -16
PRINT INT(15.56) will return 15
PRINT INT(-15.56) will return -16

4. CINT Function
CINT means Integer Conversion. This function is used to convert a number into an integer. It rounds off the number to the nearest integer value.
Example
PRINT CINT(15.46) will return 15
PRINT CINT(-15.46) will return -15
PRINT CINT(15.56) will return 16
PRINT CINT(-15.56) will return 16

5. FIX Function
This function truncates the number into an integer. The General form of the function is FIX (X)
Example
PRINT FIX(15.46) will return 15
PRINT FIX(-15.46) will return -15
PRINT FIX(15.56) will return 15
PRINT FIX(-15.56) will return -15

6. ABS Function
ABS means absolute. It is used to find the absolute value of a number. The absolute value of a number means the number without any sign. The general form of the function is ABS(X)
Example
PRINT ABS(+3.4) returns 3.4
PRINT ABS(-3.4) returns 3.4

7. RND Function
RND means random. RND is a special function that gives us a random number between 0 and 1
Example
PRINT RND
PRIND RND
This program will print RND twice. Notice that you’ll get to numbers that appear to be unpredictable and random. But, try running the program again. You’ll get the same random numbers.

8. COS, SIN, TAN, and ATN Function
The COS, SIN, TAN, and ATN trigonometric functions are used to find the Cosine, Sine, Tangent and Arctangent of a particular numeric expression. The general form is:
COS(X)
SIN(X)
TAN(X)
ATN(X)

9. MODE Function
It means remainder. This function returns the remainder. The general form of the function is X MOD Y
Example:
PRINT 16 MOD 5 will return 1
PRINT 30 MOD 5 will return 0

9. SGN Function
It means sign. This returns the sign of the input number in numeric value. The general form of the function is SGN(X).
Examples
PRINT SGN(54) will return 1
PRINT SGN(-54) will return -1
PRINT SGN(0) will return 0

10. EXP Function
It is used to find the natural exponent of x, where e = 2.718281828. the general form of the function is EXP(X)
Example
EXP(4) will return 54.59815
EXP(-5) will return 6.737947E-03

LOG Function
This function returns the natural logarithm of a numeric expression (any positive numeric expression). The syntax is LOG(X)

## BASIC Notation

In a BASIC programming language, every arithmetic expression must appear on a single line. There is no superscript in BASIC as we find in algebra.
Examples

|  |  |
| --- | --- |
| Mathematics Expression | BASIC Expression |
| x=-b±b2-4ac2a | X=(-B±SQR(B^2-4\*A\*C))/(2\*A) |
| x-yx+y | (X-Y)/(X+Y) |
| ex2+y-Sin(x+ny) | EXP(X^2+Y)-SIN(X+N\*Y) |
| b=14ac | B=1/(4\*A\*C) |
| 2x2-3x-1x2-x-6 | (2\*X^2-3\*X-1)/(X^2-X-6) |

## Some BASIC Programs

Example 1: Write a BASIC program to find the square root of numbers in a given range
Solution
10 REM program to find the square root of numbers
20 INPUT “Enter the first number of range”; A
30 INPUT “ENTER the last number of range”; B
40 FOR I = A TO B
50 PRINT “the square root of “; A; “is”; SQR(A)
60 NEXT I
70 END

Example 2: Write a program to find the Sine of unknown values
Solution
10 REM Program to find the Sine of unknown value
20 INPUT “Enter the number”; A
30 LET S = SIN(A)
40 PRINT “The Sine of”; A; “is”; S
50 END <

Example 3: Write a program to output letters A - Z
Solution
10 REM this program is written to display letters from A to Z
20 FOR I = 65 TO 90
30 PRINT CHR$(I);
40 NEXT I
50 END

Example 4: Write a program to plot Cosine Graph
Solution
10 REM Program to plot cosine graph
20 SCREEN 13
30 FOR X% = 0 TO 360
40 PSET (X%, (COS(X% \* 0.017453) \* 50) + 50), 15
50 NEXT X%
60 END

### Word Processing

## Definition of Terms

Word Processing: Word processing means using the computer to create, edit, and print document.
Word processor: A word processor is an electronic device or computer software application, which performs the task of composition, editing, formatting, and printing of documents.
Text Document: Text document is something written, printed, or online document that presents data in the form of an articles, letter, memorandum, report, etc.

## Examples of Word Processors

There are many word processing software packages available today, such as
WordStar
MS-word
Corel WordPerfect
WordPad
Notepad
WPS writer, etc

## Application Areas of Word processing Software

i. Offices
ii. Publishing
iii. Journalism
iv. Education
v. Articles

## Steps Involved in Loading Microsoft Word

There are two ways of loading Microsoft word:
a. If the icon of the package is on desktop, double click on it for it to open
b. If the icon is not on the desktop, follow the step below:
i. Click the Start Button
ii. Click on all program
iii. Select and click Microsoft office
iv. Select and click Microsoft Word

MS-Word Processing Environment
The word window is made up of many components that are displayed onscreen at the start of the program such as:
a. Title bar: The title bar is the top part of the window displaying MS Word. It displays the name of the active document.
b. Menu bar: The menu bar contains commands for word operation. E.g Home, Insert, view, insert, page layout, etc
c. Status bar: bottom of the window it displays the status of the document
d. Toolbar: Toolbar serves as short cuts for common commands such as save, print, new, open, undo, etc.
e. Work space: it is the area where actual word processing is done.
f. Formatting toolbar: This toolbar contains shortcut to the commands used for formatting text. You can change your word or line paragraph to bold, italic or underline,

## Facilities Available in a Word Processor

a. Type document: the Keyboard is used to type a document. You type a document by pressing the relevant keys on the keyboard in order to arrive at the desired word.
b. Edit document: This is the ability to change text by adding, deleting and rearranging letters, words, sentences and paragraph.
c. Store document: Word processor gives the opportunity of accessing a previously saved file or document either on the computer or on external storage facility.
d. Move, copy and paste: A word, line or text, paragraph, page or diagram can be moved from one document to another. It could also be within a document that for one line to the other. It can also be from one application packages to the other, e.g., from CorelDraw to Microsoft Word.

## >Features of a Word Processor

Word processor varies considerably, but all word processors support the following basic features:
Insert text: Allows you to insert text anywhere in the document
Delete text: Allows you to erase characters, words, lines, or passages.
Cut and paste: Allows you to remove a section of text from one place in a document and insert it somewhere else
Copy: Allows you to duplicate a section of text
Page size and Margins: allows you to define various page size and margins.
Search and replace: Allows you to search for a particular word or phrase and also replace one group of characters with another everywhere that first group appears.
Word wrap: The word processor automatically moves to the next line when you have filled one line with text.
Headers, footers, and page numbering: Allows you to specify customized headers and footers the word process will display at the top and bottom of every page
Font Specification: Allows you to change font attributes within a document.
Spell Checker: A utility that allows you to check the spelling of words. It will highlight any word that it does not recognize
Thesaurus: Allows you to search for synonyms without leaving the word processor
WYSIWYG (what you see is what you get): With WYSIWYG, a document appears the display screen exactly as it will look when printed. ETC

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### Spreadsheets

### TOPIC: Spreadsheet Definition of Spreadsheet

1. Spreadsheet is an application software that tracks, analyzes, and charts numeric information.

2. A spreadsheet is an interactive computer application program for organization, analysis and storage of data in tabular form

3. Spreadsheet is a computer program or software which allows calculations to be carried out on several cells that have numbers

Examples of Spreadsheet Packages

1. iWork Numbers – Apple Office Suite

2. Lotus 1-2-3

3. OpenOffice – Calc

4. Lotus Symphony – Spreadsheets

5. Microsoft Excel

6. VisiCalc

7.SeaTable

8. AirTable

9.SmartSheet

10. LibreOffice

11. Google Sheets

12. Quip

13. JotForm Table

14. Zoho

15.EtherCalc

16. Stackby

Application Areas of Spreadsheet

1. Accounting.

2. Statistical calculations.

3. Preparation of student results.

4. Obtaining tax estimation

5. Preparation of daily sales

Features and Terminologies of Spreadsheet

1. Active Cell: The active cell is the cell in the spreadsheet that is currently selected for data entry. The active cell reference is listed in the Name Box directly above the spreadsheet’s column headings.

2. Anchor Cell: The anchor cell is the first cell that is highlighted in a range. When a range of cells is selected, they appear as highlighted in black. The anchor cell, however, remains white.

3. Cell: A cell is a rectangular area formed by the intersection of a column and a row.

4. Cell Reference: A cell reference is the name of the cell that is found by combining the Column Letter with the Row Number. For example the cell in Column “C” in Row “3” would be cell C3.

5. Column: Columns run vertically on the spreadsheet screen. An Excel spreadsheet contains 256 columns that are labeled with the letters of the alphabet.

6. Data: Data refers to the type of information that can be stored in the cells of a spreadsheet. Spreadsheet data types include values (numbers), labels, formulas and functions.

7. Formula: A formula is a spreadsheet data type that will calculate a result and display it in the active cell. A formula is written using cell references and must begin with an equal sign “=” to distinguish it from a label.

8. Formula Bar: The formula bar appears directly above the column headings of a spreadsheet and will display what has been typed into the active cell. For example, if you click on a cell that contains the formula =A3+C3, the cell itself will show the result of the formula.

9. Function: Functions are built-in formulas that are used to enter either commonly used or very complex formulas.

10. Gridlines: Gridlines are the horizontal and vertical lines on the screen that separate cells in a spreadsheet. Gridlines typically do not print unless the option is set in the layout options of the spreadsheet.

11. Labels: Labels refer to text that is typed into the cells of a spreadsheet. Labels have no numeric value and cannot be used in a formula or function.

12. Name Box: The name box appears to the left of the formula bar and displays the name of the current cell. Unless you define a cell or range of cells with a specific name, the name box will display the cell reference of the active cell.

13. Range: A range is a group of cells in a spreadsheet that have been selected.

14. Rows: Rows run horizontally on the spreadsheet screen. An Excel spreadsheet contains 16,384 rows which are labeled numerically.

15. Sheet Tabs: In Microsoft Excel, the sheet tabs appear below the worksheet grid area and allow you to switch from one worksheet to another in a workbook.

16. Values: Values are numeric data that is entered into a cell.

17. Workbook: A workbook is a collection of worksheets that are saved together in one file.

18. Worksheet: A worksheet is a single page in the workbook.

Basic Operations in Worksheet

Starting Worksheet

To start a worksheet, the MS Excel could be loaded first to the screen of the computer. A workbook will be displayed automatically as the default file name book1

Data Entry

This is the process of inputting data into the cells of the worksheet. There are three basic types of data in spreadsheet packages and they are:

a. Values or Numbers

b. Formula

c. Labels

Editing Worksheet

This is the process of customizing the worksheet so that it could ne neatly arranged on the pages when printing. Check spelling, preview layout, page setup and sheet setting, etc are parts of the editing process. The editing process gives the worksheet a befitting look.

Saving

This can easily be done using the Save As found on the file menu or by pressing ctrl + S keys simultaneously. A dialog box appears on your screen asking for the file name to be used and the location to save into.

Retrieving or Opening Worksheet

To retrieve or open a worksheet, click on office button on the menu and click on Open button from the file sub-menu or by pressing Ctrl + O keys together. A dialog box will be displayed asking you to choose the worksheet to be opened or retrieve.

Formatting Worksheet

a. Changing column width

i. Pull down the Format Menu and select Column and then width

ii. Type the desired width in the space provided

b. Changing Row Height

i. Pull down the Format Menu and select Column and then width

ii. Type the desired height in the space provided

Adding Formulae and Performing Calculations

To tell the spreadsheet package that you will be entering a formula, you must start the formula with a particular symbol. Excel uses the sign = and lotus 1-2-3, uses the @, - or + signs.

The operators used in spreadsheet formulae include

Operators Symbols

Addition +

Subtraction -

Multiplication \*

Division /

Exponentiation ^

Using Functions in Microsoft Excel

Sum Function

The sum function adds up the total values of a group of cells, depending on which cells you choose. The general form is:

=SUM(First cell:Last cell)

Average Function

This will compute the average of the values of a group of cells depending on which cells you choose. The general form is:

=AVERAGE(First cell:Last cell)
Count Function
This function will count the number of entries in the range from first cell to last cells you choose. The general form is:
=COUNT(First cell:Last cell)
Max Function
The max function is used to find the largest value in a set of values in the row or column. The general form is:
=MAX(First cell:Last cell)
Min Function The Min function is used to find the smallest value in a set of values in a row or column. The general form is:
=MIN(First cell:Last cell)

## Printing Worksheet

Printing a worksheet is not much different from printing a word processing document. To Print a Worksheet Click on office button, select print from the menu or by pressing ctrl + P keys simultaneously.

## Creating Graphs

MS Excel gives options of creating charts from data entries in your spreadsheets. Charts like line graph, histogram, pie charts and bar charts could be created from the supplied data basically numeric data.
All charts are created in the same way by selecting range of cells within a worksheet called chart range after which one selects chart wizard option.
There are different parts of chart namely:
a. Legend: In a chart or graph in spreadsheet programs such as Excel, the legend is most often located on the right hand side of the chart or graph and can sometimes be surrounded by a border. The legend is linked to the data being graphically displayed in the plot area of the chart
b. Axis: As in normal mathematical operations every chart must carry axis i.e. axis X and Y, where X and Y stands for horizontal and vertical lines respectively which are displayed on data scale
c. Data series: These are set of numbers in either row or column.