Computer software (Computer programs)

Computer software (software) are the set of digital instructions that control the actions of a computer.

The preparation of such instructions is called programming/coding, and is done by programmers.

Computer software classification

Computer software is broadly categorized according to:

- **Functional (purpose); this includes,**

i)System software, and

ii)Application software,

- **Mode of acquisition; this includes:**

i)off-shelf(standard) software,

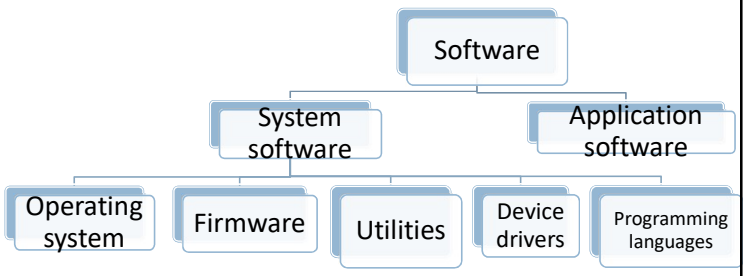
ii)custom made (user developed/in-house) software.

iii)Freeware

iv)Open source

v)Shareware and

iv)Public Domain software.



System software

The System software are programmes that start up a computer and manage the general functioning of the system devices.

The types of system software include

i) **Firmware,**
ii) **Operating system,**
iii) **Utilities/Utility programs**
iv) **Programming languages,**
v) **Device drivers.**

Firmware (stored logic)

Firmware are the small programs recorded by the computer manufacturers at the factory on electronic chips mounted on the computer's motherboard or any other device to control the devices.

- **Some of the devices containing firmware are remote controls, calculators, cell phones, digital cameras, and computer ROM chips.**

Device drivers

A device driver is a program that controls a particular type of device that is attached to a computer.

Any hardware device requires its drivers so that the operating system can recognize it to enable the user to use the device.

- The drivers are written by the device manufacturers. These programs can be updated time and again to improve the performance of the devices.

The Operating system (OS) software

The Operating system software is the program that governs the working (operation) of a computer system.

it serving as a bridge between the computer hardware and the application software with which the computer user works.

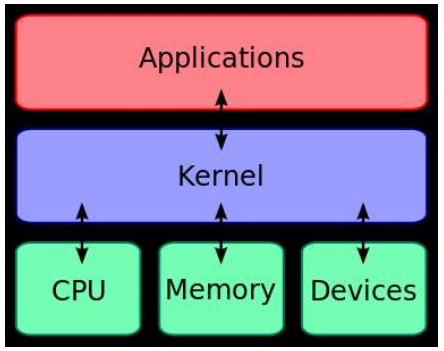
Examples of operating systems include:

Windows OS, Mac OS, UNIX and DOS, Linux, Ubuntu

Kernel

The kernel is a computer program that is a major part of an Operating system that manages the rest of the operating system and the input/output (system hardware) requests from application software and translates them into data processing instructions for the central processing unit and other electronic components of a computer.

It is also responsible for memory management, process and task management, and disk management.



Name the common Operating Systems



The General functions of the operating system

- It provides an interface between the user and the computer.
- It manages the flow of information in the computer.
- It manages computer hardware.
- It does File management. this includes keeping record of the saved files, their names, sizes, location etc.

- It manages the shutting down of the computer.
- It controls the running of other programs, i.e. loads and enables the other programs to operate.

- It does Memory management. i.e. By constantly assigning memory locations to the data and program instructions.
- It does Error handling. identifying and reporting errors such as memory error, device failure, etc.

- It completes the booting process of the computer system. The OS checks the reliability of the system, and loads drivers for installed devices such as mouse and CD-ROM.

- It does Spooling of print jobs. placing a task (print job) into a queue for extended or later processing.

SPOOL (simultaneous peripheral operations on-line) It is a type of buffering. The most common spooling application is print spooling.

Types of operating system

Operating systems are categorized based on:

1. The types of computers they control and the sort of applications they support.
2. According to the number of users that can be logged in at a time.
3. The number of tasks an operating system can perform concurrently.
4. The human computer interface (HCI) used.

Classification of OS according to human–computer interface

The user interface is the aggregate of means by which the user interacts with the computer system. A user interface provides:

1. Input, allowing the users to manipulate a system
2. Output, allowing the system to indicate the effects of the users' manipulation

Graphical user interface (GUI) operating systems

A graphical user interface (GUI) is a type that allows users to interact with programs by manipulating graphical features like icons and menus, using pointing devices such as a mouse.

- **The acronym WIMP is used to refer to Windows, Icons, Menus and Pointing device in respect to GUI.**
- **The most common GUI operating systems are Microsoft Windows, Mac OS X, and X Window System interfaces**
- **Examples of graphics used on GUIs include wizards, menu, buttons, tool bars, check boxes, etc.**

Wizards

A wizard is a tool to guide you through the steps of a process or task by asking a series of questions or presenting options for the user to proceed through a task.

Icons

- **An icon in computing is a small pictogram representing either a file, folder, application or device on a computer system.**

Check boxes

In computing, a check box (or tick box) is a widget that permits the user to make multiple(several) selections from a number of options at the same time by checking/clicking any that apply.

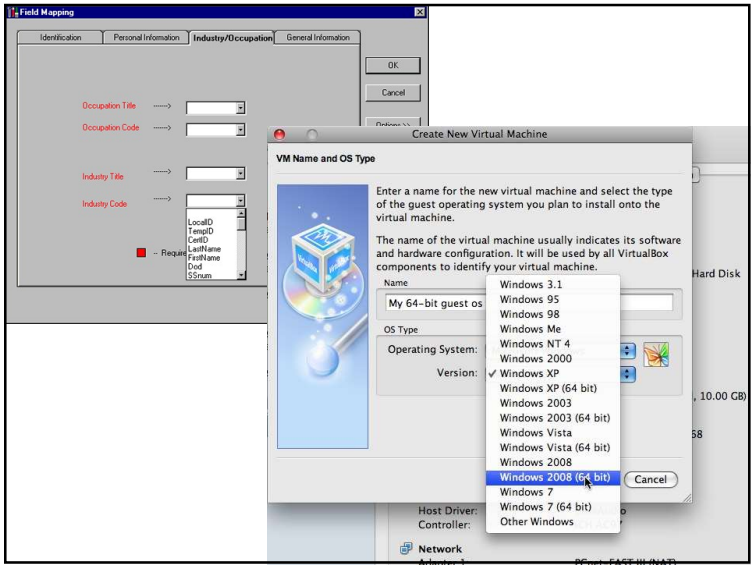


Menu Bar

This is a section on a program window which contains a list of options of available menus or application interface where drop down menus or a lists of available menus for a certain program are displayed.

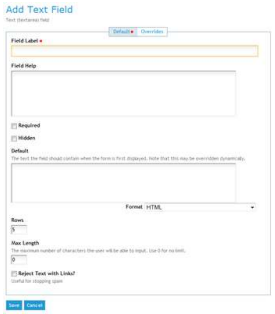
Drop-down menus

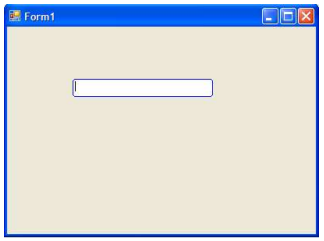
A drop-down menu, also called a pull-down menu, is a list of commands or options that appears when the user selects an item with a mouse or click on the drop-down arrow at the right-hand corner of the menu box.



Text boxes

A text box, text field or text entry box allows the user to input text information to be used by the program.





Scrollbars

A scrollbar is a graphical object in which continuous text, pictures or anything else can be viewed even if it does not fit onto the screen.

Toolbars

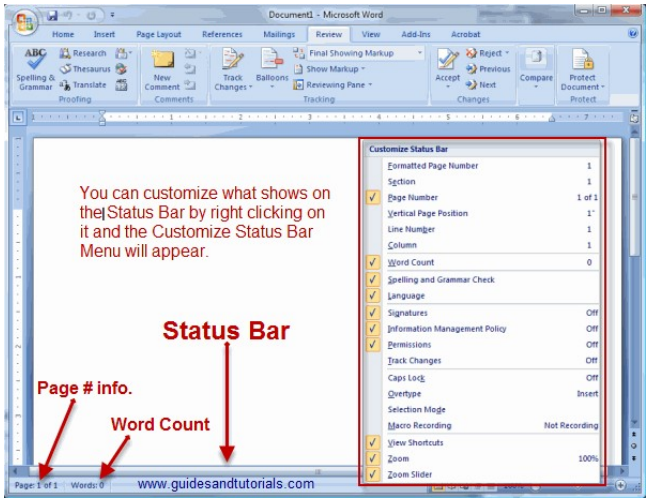
- **A toolbar is a series of selectable icon buttons in a GUI that gives the user an easy way to select desktop, application or Web browser functions.**

- Toolbars are used to activate functions in the application.
- they are customizable, letting the user add and delete buttons as required.
- Toolbars may be fixed in position or may float.

Status bar

A status bar is found at the bottom of a window in a graphical user interface, divided into sections, each of which shows different information.

Its job is to display information about the current state of its window.



Advantages of a GUI operating System

- It is easy to learn and use. It is easy to identify graphics to use.
- it provides users with immediate, visual feedback about the effect of each action.
- It is easy to explore and find one's way around it.
- No need to learn complicated commands.
- It provides help facilities

- GUIs allow multitasking by allowing multiple programs and/or instances to be displayed simultaneously.
- It is easy to import or export files
- It provides a WYSIWYG interface
- Easy to detect mistakes

- programs, files or folders are easy to identify because they are represented in terms of graphical images or icons

Disadvantages of GUI

- GUI take up a lot of hard disk space to install.
- GUI requires a lot RAM to operate.
- Users can find it difficult to use it if it was not properly designed.
- usually requires installation of additional software, e.g., the "runtime environment" in the case of java.

- It is slow to download into memory on computers with low processing power and low memory.
- The user choices are restricted to those on the menu.

Command-line user interface (CLI) OS

The CLI is one that is navigated by typing text commands at a command prompt; for example, the root MS-DOS command line prompt is C:\>.

CLI can only be navigated by using a keyboard and entering commands; it does not use a mouse.

The output is returned to the user in the form of text lines on the CLI.

- **CLIs are often used by programmers and system administrators, in engineering and scientific environments, and by technically advanced personal computer users.**
- **Commands must be typed correctly and in the right order.**

Advantages of CLI

- **It does not require a lot of memory resources to run because it is light.**
- **Users have much more control of the file system and operating system. For example, users can easily copy a specific file from one location to another with a one-line command.**
- **It is precise because the user states exactly what he or she wants to do.**

- **It is less prone to virus attack.**
- **It is fast and precise. because command line users only need to use their keyboards to navigate a command line interface and only need to type a few lines to perform a task.**

Disadvantages of CLI

- It is Difficult to use by new users. because of the need to memorize and familiarize with many commands.
- CLIs cannot show images.
- It is difficult to view multiple processes on the screen at the same time.
- Commands have to be entered accurately with the correct spellings and syntax (rules)
- Many feature are hidden from the user. If you don't know the command you cant use

CLI	GUI
The user has to know the commands or look them up	The commands are much more intuitive
The commands usually have to be entered in full	Command shortcuts are possible such as <Ctrl> C to copy
The user has to learn the commands and more training is needed	Less learning and training by the user is required
The interface is not appealing, more difficult to use and the user is more likely to make mistakes	The GUI is more user-friendly
There are no graphics	Graphics are used to represent tasks, files etc.
There are no menus	Menus are used for making choices and selections
The user has complete control	The user choices are restricted to those on the menus
Commands have to be entered accurately with the correct spellings and syntax (rules)	Spelling and typing errors are avoided
No pointing device is used	A pointing device is used to select items and make choices

Menu driven interface

- This is the interface that lets the user to interact with the computer using a series of menus and screens. Eg. Mobile phones, MP3 players, household devices and ATMs Operating systems
- E.g. of a mobile phone menu interface:

MTN Menu

1. Mobile Money
2. MTN Servuces
3. MTN BackUp
4. Contact Xchange

Advantages of menu driven interface

- It is easy to use. The user does not have to memorise any commands since it is astep by step process.
- They are user friendly. Because they are intuitive/instinctive.
- Good for the physically impaired because the menu options can be spoken instead of visual options.
- Good if there are limited number of options and screens.

- They are easy to program in more than one language.
- They don't require a lot of memory resources.
- Easy to learn

Disadvantages of Menu driven interface

- They can be irritating if there are many levels to maneuver to get to the desired screen.
- It is limited by screen space and the number of options available.

Touch sensitive interface

Touch sensitive interface are graphical user interfaces using a touchscreen display as a combined input and output device. Used in many types of point of sale, industrial processes and machines, self-service machines, tablet computers, smartphone etc.

Advantages of touch sensitive interface

- All the options can be seen by the user.
- It is intuitive to use.
- Do not require skills like typing to use/it is easy to use
- Can be adopted for many uses. Eg. Cash point machines, ticket sales, etc.

Disadvantages of touch sensitive interface

- Limited options. Not many options can be displayed on the screen
- Not good in case of bright daylight
- Cannot be used if the screen gets damaged.
- Difficult to use by the visually impaired.
- It is an inconvenience on small screens
- It consumes a lot of battery on wide screens.

Voice user interfaces

Voice user interfaces accept input and provide output by generating voice prompts. The user input is made by pressing keys or buttons, or responding verbally to the interface.

Factors to consider when choosing an operating system

- The Human–computer interface it provides.
- The Applications intended for the computer.
- The Cost of the operating system.
- Its availability on the market.
- Reliability of the operating system.
- The basic design of the computer.
- the Hardware provisions of the computer.

File management

- This is the process of classifying, sorting, organising and storing information in electronic and non-electronic formats in files and folders.
- A file management system is Software used to manage files on a disk. It provides functions to delete, copy, move, rename, search, view, print files as well as create and manage directories/folders.

File Management operations using Windows

A computer file is the basic unit of data or information in digitized form as a document stored on a computer storage device under a particular file name.
Any document is stored as a file by the computer.
Each file is given a file name for identification purposes.
Each computer file name consists of two parts; the name and secondly, the file extension.
These two parts are separated with a dot (period) for example; **classlist.Doc**
Classlist is the name and
.doc is the file extension



- **By default the computer allocates a name to a file which you can change.**
- **The computer file name can carry any number of characters but the file extension must have at least three characters.**

File extensions

A file extension is the second part of a file name that is separated from the file name by a period. The file extension is based on the program used to create the file.

- **The extension helps to identify the file type.**
- **It indicates the application that was used to create the file.**
- **It identifies the program to associate the file with and how to properly open it using the correct program.**
- **It helps to easily locate files.**

Some common file extensions

.BAT BATch files containing a series of DOS commands.
.COM Executable COMmands.
.EXE EXEcutable commands
.SYS Various types of SYStem files- usually drivers to control devices.
.DOC DOCument files created by eg. Microsoft word.

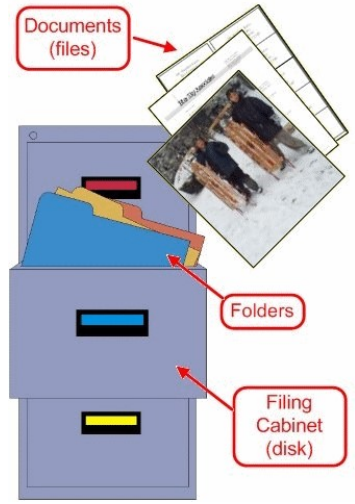
.AVI Microsoft Windows Movie file.
.BAK Backup file used for important windows files usually used with the System.ini and the Win.ini.
.BMP Graphical Bit Mapped File used in Windows Paintbrush.
.DOCX New Microsoft Word open standard introduced with Microsoft Word 2007.
.HTML Web page files containing HTML or other information found on the Internet.

.GIF Graphics Interchange Format. A digital image file format.

.TXT TeXT files- associated with the note pad program.
.XLS A spreadsheet file created by a MS excel spreadsheet program.
.JPG or .JPEG a graphics file commonly used for photos and illustrations.
.BMP Bitmapped graphics, such as photos and illustrations.
.PDF Portable Document Format- a file type that displays finished text and graphics in application such as Acrobat.

Folders/directories and subfolders/subdirectories

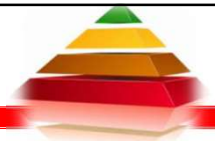
- **A folder is a location/storage space where multiple files are kept to group and organize them. A folder can also contain other folders to create a file hierarchy/file system**
- **A file system is a way of storing of data on a storage device such as a hard disk, organized in files within folders**



The root directory/root folder

- This is the first/highest/topmost folder in a file hierarchy. It contains all other folders in the drive .e.g. C:\ on the hard disk.

File hierarchy



A file hierarchy is the Directory structure and its contents, including the root directory and other directories (also called folders), and files.

The top-most directory in any file system is called the root directory.

A directory that is below another directory is called a subdirectory.

A directory above a subdirectory is called the parent directory.

- One way to keep similar files together so that they are easily identified and accessed is to store them in a directory/folder.

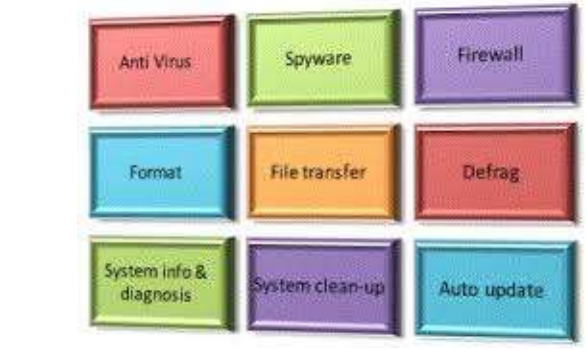
File path

A file path is the general form of a filename or of a directory name, specifying a unique location of a particular file in a file system.

A file path enables easy identification of the location of file on a storage device.

For example,

C:\Users\Samuel\MyDocuments\Assignments\English\English test.doc



Utilities (Utility Programmes)

Utility programs are system software programs that are designed to configure, analyse, optimise, and maintain a computer in a normal working state by providing useful services, such as performing common tasks and 'housekeeping' routines.

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Examples of utility programs and their use:

- **Backup: This utility allows you to make a duplicate copy of every file on your hard disk, which can be stored on CDs or diskettes.**
- **Disk defragmentation: A defragmenter utility finds fragmented files on a disk and organises them back in a contiguous manner.**

Disk repair utility: A disk repair utility scans a disk for bad sectors (defective areas) and either makes repairs to these sectors, or marks the defective area so that the operating system does not store any data in that location.

- **Virus protection utility**: Antivirus software programs scan for computer viruses and removes them.
- **Computer language translators**: Computer language translators (assemblers, compilers and interpreters) translate a program written by a programmer into machine language.

- **Check Disk**: a utility that checks the hard drive for problems, such as directory structure errors, file errors, etc.
- **Scandisk**: This is a utility used to scan computer disks to see if there are any potential problems on the disk, such as bad disk areas, and possibly repairs them.

Disk cleaners

These are utilities used to find and remove files that are unnecessary to the computer's operation and taking up disk space.

Disk partitioning software

These are used to divide/partition an individual drive into multiple logical drives, each with its own file system, which can be mounted by the operating system and treated as individual/separate drives.

Disk compression utilities: used to compress or decompress the contents of a disk, increasing free space on the disk. The compressed file must be decompressed in order to use it.

File managers: A file manager provides a user interface to work with file systems. The most common file management operations used include create, open, edit, view, print, play, rename, move, copy, delete, attributes, properties, search/find, and permissions.

Cryptographic utilities: used to encrypt and decrypt data.

Cryptography is the art of hiding information by transforming it (encrypting it) into an unreadable format, called cipher text. Only those who possess a secret key can decrypt the message into plain text.

Registry cleaners

Registry cleaners clean and optimize the Windows registry by removing old registry keys that are no longer in use.

Network utilities: tools that analyse the computer's network connectivity, configure network settings, check data transfer or log events.

Screensaver: a computer program that blanks the screen or fills it with moving images or patterns when the computer is not in use.

The screensaver file can be programmed in several different ways to run whenever the computer is left on but idle for a certain period of time

Programming Languages

A programming language is a set of instructions used to build and design other computer programs.

A programming language has a unique set of keywords (words that it understands) and a special syntax for expressing and organising program instructions.

Syntax refers to the spelling and grammar of a programming language.

Levels of programming languages

1. 1. The machine language. This is a low level language, which is the lowest possible level of language in which it is possible to write a computer program.
2. High level programming languages. These enable programmers to write programs that are more or less independent of a particular type of computer.
3. because they are closer to human languages and further from machine languages.

- Low-level programming languages are machine dependent. Thus each language is unique to the CPU on which it is implemented and is, therefore, not usable on a computer with a different CPU.
- Writing a low level language is time consuming.
- It is easy to make mistakes.

- There are two categories of low-level programming languages:

i) Machine Language

ii) Assembly Language.

Machine language – First Generation Language (1GL)

- This is the lowest possible level in which programing can be done because It is machine code, consisting of strings of ones and zeroes and stored as binary numbers.

Characteristics of 1GL

- Fastest to execute because it is already in the language that the computer can understand
- Difficult to interpret (requires the aid of a reference manual to make out the meaning of each code)
- Easy to make mistakes in the sequence of 1s and 0s; replacing a 1 for a 0 can result in the wrong command/instruction being executed

- Time-consuming and tedious to write
- Machine dependent
- Programing becomes more difficult as the complexity of the program increases

Assembly language – Second Generation Language (2GL)

Assembly language is a low level programming language that is near to machine code and must be translated into machine language by language translators known as assemblers.

Characteristics of 2GL

- **Easier to write than machine language**
- **It is machine dependent**

High-level programming languages (3rd generation)

high-level language are closer to human languages and far from machine languages. It enables a programmer to write programs that are independent of a particular type of computer.

- **Examples of high level languages include: Ada, Algol, BASIC, COBOL, C, C++, FORTRAN, LISP, Pascal, and Prolog.**
- **Programs written in a high-level language must be translated into machine language by a compiler or interpreter.**
- **i.e. There are two ways to run programs written in a high-level language.**
- **The most common is to compile the program; the other method is to pass the program through an interpreter.**

Compiler

- A compiler is a program that translates a source code into machine code. The compiler derives its name from the way it works, looking at the entire piece of source code and collecting and reorganizing the instructions (compiling or putting together).
- A source code is the Program instructions in their original form, as written (coded) by the programmer in a particular programming language.

Interpreters

- An interpreter translates high-level instructions directly/immediately into machine language without compiling the entire program.

Characteristics of high-level languages

- They are machine independent hence portable
- They are user friendly and easy to learn
- High-level language programs are easy to debug
- They are more flexible hence they enhance the creativity of the programmer, increasing productivity
- They are executed much slower than low-level programming languages

- They have to be translated into machine code before execution
- One instruction translates into several machine code instructions

- The words and grammar of high-level languages are English-like and this makes the programs more readable and easy to write.

- A high-level language is governed by a strict syntax (set of grammatical rules).
- high-level languages are machine independent.
- High-level languages are easier to read, write, and maintain than low level language.
- They also permit faster development of large programs.

- programs written in a high-level language must be translated into machine language by a compiler or interpreter.

Advantages of High level languages

- High level language is easily understood by programmers because it is closer to human language.
- High-level programming languages are problem oriented, therefore they enable the programmer concentrate on solving the problem.
- Since high-level languages reflect the logic and procedures used in a human algorithm, the programmer is able to concentrate on developing task algorithms.

- The words and grammar of high-level languages are English-like and this makes the programs more readable and easy to write.

- A high-level languages are machine independent Since the syntaxes of high-level languages are standardized so that they can be used on different computer systems.
- they are easier to read, write, and maintain.
- They also permit faster development of large programs.

- High-level languages have evolved over the years and can be grouped into five categories:
- Third Generation Languages (3GL),
- Fourth Generation Languages (4GL),
- Object Oriented Programming Languages (OOP),
- Fifth Generation Languages (5GL) and
- Scripting Languages.

Application software/Productivity software

Application software is software that allows end users to accomplish one or more specific tasks.

- **application software include industrial automation software, business software, video games software packages, quantum chemistry and solid state physics software, telecommunications software (i.e., the Internet and everything that flows on it), database software, educational software, medical software, military software, molecular modelling software, image editing, spreadsheets, simulation software, word processing, decision-making software, etc.**

Category	Application software
Entertainment	Applications for games Example: Solitaire Applications for media, and DVD and CD burners Example: Rhapsody, Pandora, Roxio Toast
Business	Applications for accounting, customer relationship management, database management, spreadsheets, word processing and presentation software
Photo management	Applications for photo organising, photo editing and photo sharing Example: Adobe Photoshop
Collaborative	Applications for blogging, instant messaging and e-mail communication Example: Microsoft Outlook, Windows Live Messenger, AIM
Graphically Oriented	Applications used to design graphics, such as desktop publishing software
Educational	Content access software has the content and/or features adapted for use by educators and students. For example, it may deliver evaluations (tests), track progress through material, or include collaborative capabilities.
Content access	Used primarily to access content without editing, but may include software that allows for content editing. Such software addresses the needs of individuals and groups to consume digital entertainment and published digital content. (Examples include media players, Web browsers, help browsers, and games.)
Industry	Production and manufacturing, computer numerical control (CNC), computer-aided design (CAD), and computer-aided manufacturing (CAM), building information modelling, computer-aided engineering (CAE), geotechnical engineering, electronic design automation (EDA), electronic circuit simulators, film production, screenwriting, robotics



- **Application software can also be categorised as follows: general-purpose, specialised, integrated, customized, and custom-written software packages.**

General-purpose software

This is software that is not written for any specific business or organisation but which can be used or adapted to suit a wide selection of users' specific needs. For example, Microsoft office packages.

Specialised software

Specialised software is written for a specific task rather than for a broad application area. For example, a payroll program, expert systems, accounting programs and theatre or airline booking programs.

Integrated software

An integrated software package is a single application which combines most commonly used functions and commands and interface of many productivity software programs.

For example, most word processors have the capability of mailing, creating web pages, drawing, charting, and others in addition to word processing.

Software suites (application suites or productivity suites)

Several applications supplied as a single package that work well together because they have related functions, features and user interfaces, and are able to interact with each other.

- **Business applications often come in suites, e.g. Microsoft Office, OpenOffice.org, and iWork, which bundle together a word processor application, a spreadsheet application, presentation graphics, database and e-mail applications, etc.**

Advantages of integrated software and software suites

i)It is easy to transfer data from one component of the application to another.

ii) An integrated software takes up less disk space than individual packages.

iii) The user can move much faster from one application to the next.

iv) It is easy to learn the applications in a software suite because the user interfaces are similar for all applications.

v) A software suite is more versatile than individual applications.

vi) It is less likely to crash and contains fewer errors (bugs), since it has been widely tried and tested.

vii) The producers of software suites often offer after-sales services (e.g. online help facilities).

viii) Software suites are cheaper to buy than purchasing the packages individually.

Disadvantages

- Not all the features of a single application are included.
- Some integrated packages do not contain all the applications that may be required to complete a task.

Categorization of software according to acquisition/procurement

1) Off-the-shelf software (OTS) or standard software

This is copyrighted commercial software packages that are released to the market for sale, lease, or license to any user.

Examples of off-shelf software packages

- MS office suite
- Computer games packages
- Education software packages
- Etc.

Advantages of off-the-shelf software

i) relatively cheap. The cost of development can be spread over a large number of users.

ii) offer a wide range of capabilities, performs several functions.

iii)They are Easily available from most computer vendors

iv) It is thoroughly tested so there are no serious problems or bugs.

v) a lot of user support is available; books, user guides, online help and discussion forums on the Internet.

vi) easy to learn and use (user friendly)

vii) can be customized to the user's needs.

viii) easy to install.

The Disadvantages of off-the-shelf software

i) It is complex because It includes large sections that a user may never use.

ii) does not address needs of specific users.

iii) iii) it takes a long time to learn properly. This is because this software tends to be large and complicated.

iv) It is time consuming to learn and adopt because it requires the user to adapt to the system it self to do work.

v) May not address some of the individual needs of the user.

Custom made (Tailor-made, in-house/ custom-written/ customised or user-made) software

Custom-made software copyrighted software that is uniquely designed and tailored (tailor-made) software, based on a particular user's request to perform particular the user's specific needs.

- The individual user hires programmers to design such a program which does not target the general market and therefore is not available for sale to the general public.

Examples of custom made software

- Locally made school management information systems(SMIS)
- Inventory management systems
- Payroll management systems
- Library management systems

Advantages of Custom-made software

- A custom-made application directly addresses the user's needs.

- The software developer delivers and installs the software and trains the end users in the use of the new software.
- The software also performs tasks that the general purpose software cannot perform.
- This kind of software can be quickly changed when the needs of the organisation change, since the source code belongs to the company.

Disadvantages of custom made

- High costs of developing the software, on-site installation, support and training.
- It takes time to acquire because of the need to get information necessary and to write the code of the new software.
- There is high possibility of undetected errors/bugs in the software.

Open source software (OSS)

OSS is copyrighted software for which the software plus the source code are freely distributed.

permits users to use, change, and improve the software, and to redistribute it in modified or unmodified forms.

It is developed in a public, collaborative manner.

A software licence (copyright) is a legal instrument governing the usage or redistribution of software to protect the interests of the program designer.

- **for example, software licence may grant an end-user permission to use one or more copies of software in ways where such a use does not constitute copyright infringement of the software owner's exclusive rights under copyright law.**

- **In addition to granting rights and imposing restrictions on the use of software, a software licence contains provisions which allocate liability and responsibility between the parties entering into the licence agreement.**

Freeware

Freeware is copyrighted software that is offered at no cost but whose source code is not provided.

Software that is not freeware is referred to as commercial software or payware or commercial software.

Proprietary software(closed source software)

Proprietary software is copyrighted software obtained at a cost where the software publisher grants a licence to use one or more copies of the software, but the ownership of those copies remains with the software publisher such that all rights regarding the software are reserved by the software publisher.

Shareware

Shareware is copyrighted software that is distributed free on a trial basis (as a trial version) with the understanding that the user may need or want to pay for it later.

- **Shareware developers offer the trial version of their program with a built-in expiration date, say 15, 30 or 60 days, as an enticement to buy the complete version of the program. Once the trial period has passed, the program may stop running until a licence is purchased.**

- Shareware is often offered as a download from an Internet website or as a compact disc included with a newspaper or magazine. The rationale behind shareware is to give buyers the opportunity to use the program and judge its usefulness before purchasing a licence for the full version of the software.

Public domain software

Public domain software is the software which is not copyrighted because it has been formally released to the public domain such that there is no copyright restriction on it.

Works are in the public domain if they are not covered by intellectual property rights at all, due to expiry of the intellectual property rights, and/or if the intellectual property rights are forfeited/surrendered.

Copylefted software

- This is free software whose distribution terms ensure that all copies of all/modified versions of the copylefted software to carry the same distribution terms like the original version.

Installing and uninstalling application and utility software

Program installation is the process of setting up of a program on a computer to be able to use it.

Once the program has been installed, it can be executed any time without the need to reinstall until this program is uninstalled.

Reasons for installation of a program

- In case of a new application package that must be installed in order to run on a computer.
- in case of a plug-in. a plug-in is a set of software components that adds specific capabilities to a larger software application
- Installation of a device driver In case a new device is attached to the computer.
- if there is need to update an old version of a program by installing an update of it

- When the program previously installed is corrupted and you need to reinstall it to be able to use it.

Program installer

A program installer is a specialised program which automates most of the work required for a program installation, some installers are specifically made to install the files they contain; other installers are general-purpose and work by reading the contents of the software package to be installed.

- Many programs are supplied with a dedicated installer that must be run in order to set up the program because the installation process requirements vary for each application.

- Installation may include unpacking of files supplied in a compressed form, copying them to suitable locations, tailoring the software to suit the hardware and the user's preferences.
- The installer also tests for system suitability and available mass storage space, such tests are necessary to determine the compatibility of the computer in relation to the program being installed.

Software package/ Software suit

- A collection of program files supplied by the software developer to be used on computers as either a system or application program.

Software update

- The changes made to a software package overtime usually to clear software bugs identified
- It benefits all those who have acquired a software licence for that particular package
- No payment needed to acquire the updates

Software upgrade

- This involves issuing an entirely new software package to replace an earlier version of the same package. A new licence is issued by the developer for which the user must pay.

Software version

- **A software package released for use at a particular time usually under a given name.**

Reasons for software update and upgrade

- **New features of the program are introduced for better performance.**
- **To correct Bugs in earlier versions.**
- **To obtain a version that can work well with the new hardware.**