

AS/A Level Computing Syllabus 2011

Section 1

- Computer Systems -
- Communications -
- Software -

Chapter 1.1

Components of a computer system

1.1 Components of a computer system and modes of use

COMPUTER SYSTEM

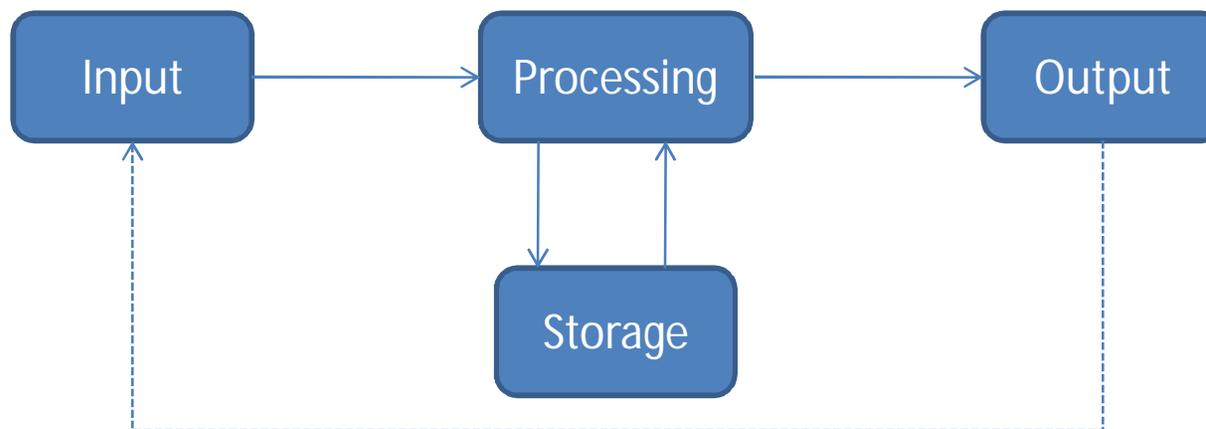
A computer system is a collection of hardware and software that work together to perform a task.

HARDWARE

Hardware are physical components of a computer system.

SOFTWARE

Software are the logical components of a computer system.



1.1 Components of a computer system and modes of use

1.1.1 TYPES OF HARDWARE

Hardware can be categorized into:

- Input Devices
- Processing Device
- Output Devices
- Storage Devices

Peripheral: **any external device that is directly connected to the computer and is controlled by the computer's processor.**

INPUT DEVICES

A peripheral device whose purpose is convert analog input into digital form.

Example:

- Keyboard – used for textual input
- Mouse – used for pointing and clicking
- Scanner – used for converting photos and text into digital format
- Barcode Reader – used for reading barcodes on different products

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PROCESSING DEVICE

A processing device is a hardware that processes all data and produces meaningful results.

- It also act as a controller of the computer system.

Example:

- Central Processing Unit (CPU) – acts as the 'brain' of a computer system and processes all data in the system and controls all other hardware.

OUTPUT DEVICES

Any peripheral device that is used to show the result (output) of processing.

- The output could be visual, audio, electronic or mechanical.

Example:

- Monitor – visual display unit that show text, graphics, animation and video on screen
- Speakers – audio output in shape of sounds or speech
- Printer – produces a 'hard copy' output on paper Can print text or graphics
- Robotic Arm – used in automated systems such as car manufacturing

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STORAGE DEVICES

Any device that is used to store information.

• Storage devices come in many different sizes and could store data in many different ways.

Example:

- Random Access Memory (RAM) – stores data and program while the computer is running
- CD/DVD – portable media for long term storage of large amount of data
- Hard Disk – stores large amount of information
- Flash Disk (USB Drive) – portable storage device with large capacity

1.1 Components of a computer system and modes of use

1.1.2 SOFTWARE

SOFTWARE

Software are the logical components of a computer system.

Software are the programs written to do something useful.

- Without software, hardware cannot function.

Software are divided into the following categories:

- System Software
 - Operating Systems
 - System Utilities
- Application Software
 - Generic Application Software
 - Special-purpose Application Software

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SYSTEM SOFTWARE

Software that are responsible for the management of the computer system.

OPERATING SYSTEM

Operating System (OS) is the foundation software that controls and manages the hardware and other software in a computer system.

- An OS is the foundation software, i.e. no hardware or software can function without an OS being present.
- Popular OS include UNIX, Linux, Microsoft Windows, SUN Solaris, Apple MacOS.

SYSTEM UTILITIES

System Utility is a program designed to perform a particular maintenance work on the system.

- A system utility assists the OS in performing system maintenance such as:
 - Disk management
 - Memory management
 - Print management
 - File management

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APPLICATION SOFTWARE

A program designed to assist in the performance of a specific task.

A program that allows the user to do something useful with the computer system.

Example:

- Word processing
- Accounting
- Drawing
- Gaming
- Communication
- Stock management
- Designing
- Music and Entertainment

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TYPES OF APPLICATION SOFTWARE

Two main categories of application software are:

GENERAL PURPOSE (GENERIC SOFTWARE)

Software that are for general use and perform tasks that are useful for a large number of users.

- General purpose software (also called Generic software) are available off-the-shelf, i.e. they are available in the market and users can purchase them ready made.

Example: word processor, database, communication software, games etc.

SPECIAL PURPOSE (CUSTOM SOFTWARE)

Software that are specially written to perform a specific task.

- Special purpose software has to be commissioned and are custom written for user's specific requirements.

Example: software that runs a machine, software written to automate manufacturing process.

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SOME OTHER TYPES OF SOFTWARE

Some other types of software that do not fall into either system or application software categories are:

NETWORKING SOFTWARE

Used to enable networking of computers and peripherals.

PROGRAMMING LANGUAGES

Used to write software. Every software is written in one of many programming languages available.

Example:

- BASIC
- C/C++
- Java
- PASCAL

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CONCEPT: CODE, PROGRAM & APPLICATION

The concept of code, software and application is often confusing.

CODE

Instruction(s) of a computer program written in a programming language.

PROGRAM

Complete set of instructions, written in a programming language, to perform a task.

APPLICATION

A computer program, along with operating instructions (printed or electronic), designed to help the user to accomplish a specific task.