8.1 Computer Systems

This unit takes learners on a tour through the different layers of computing systems: from programs and the operating system, to the physical components that store and execute these programs, to the fundamental binary building blocks that these components consist of.

What is a computer?

A computer is any device take takes an input, processes it and then outputs infor-

System software is designed to control the hardware of the computer. It provides an interface between the hardware and the application software.

Application software is designed to perform tasks that the user wants to complete. Examples include:

- Word processors
- Spreadsheet software
- Presentation software
- Web browsers
- Games

Logic Gates

Logic gates are the building blocks of digital circuits. **Logic gates** have one or two inputs that can be turned on or off.

NOT – exactly opposite to the input

AND – both inputs must be on to work

OR – either input needs to be ON or both to work

XOR – either input needs to be on but not both to get it to work

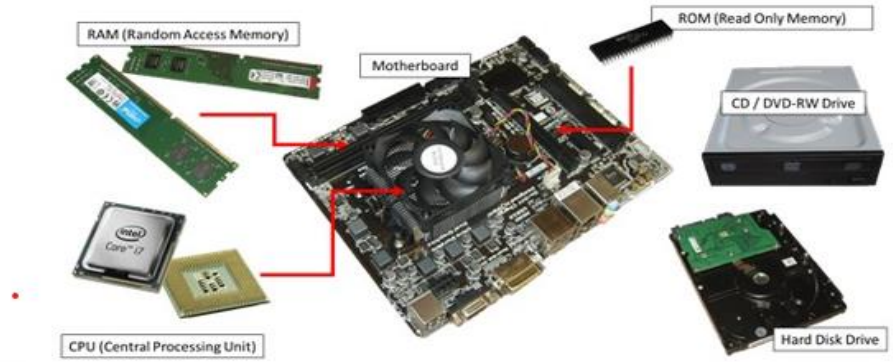
Storage

Non-volatile storage means data can be stored permanently, even when the computer is turned off.

Secondary storage

- Optical storage – e.g. Blue-Ray
- Solid state storage – e.g. Memory stick
- Magnetic storage – e.g. Hard disk drive

Internal Components



Computer	An electromechanical device which receives input, processes it and produces and output
Device	A piece of electrical or mechanical equipment made for a particular purpose
Program	A sequence of instructions written in a programming language that a computer can execute or interpret
Software	A set of programs used to operate computers and perform specific tasks
Hardware	The physical components of a computer
Data	Individual facts or statistics
Processor	The part of the computer that interprets and carries out instructions
Main memory	The part of the computer that stores data that is currently being used by the processor
Secondary storage	The part of the computer that stores data long term that is not currently being used by the processor
I/O (Input / Output)	Refers to input, any method of getting information into the computer, and output, any method of getting data out of the computer.
Operating system	Specialised software that communicates with computer hardware to allow other programs to run
Logic gate	A physical device which performs a logical operation (AND, OR, NOT)