



In this lecture, you will learn:

What's computers

The basic elements of a Computer System

Explore hardware.

Software

What's computer

A computer is an electronic device capable of performing commands. The basic commands that a computer performs are input (get data), output (display result), storage, and performance of arithmetic and logical operations.

All computer systems consist of similar hardware devices and software components.

Hardware

Hardware refers to the physical components that a computer is made of. A computer is not an individual device, but a system of devices. Each device plays its own part. A typical computer system consists of the following major components **Figure 1: Example of computer hardware:**

1. The central processing unit (CPU)
2. Main memory (random-access memory, or RAM)
3. Secondary storage devices
4. Input devices
5. Output devices

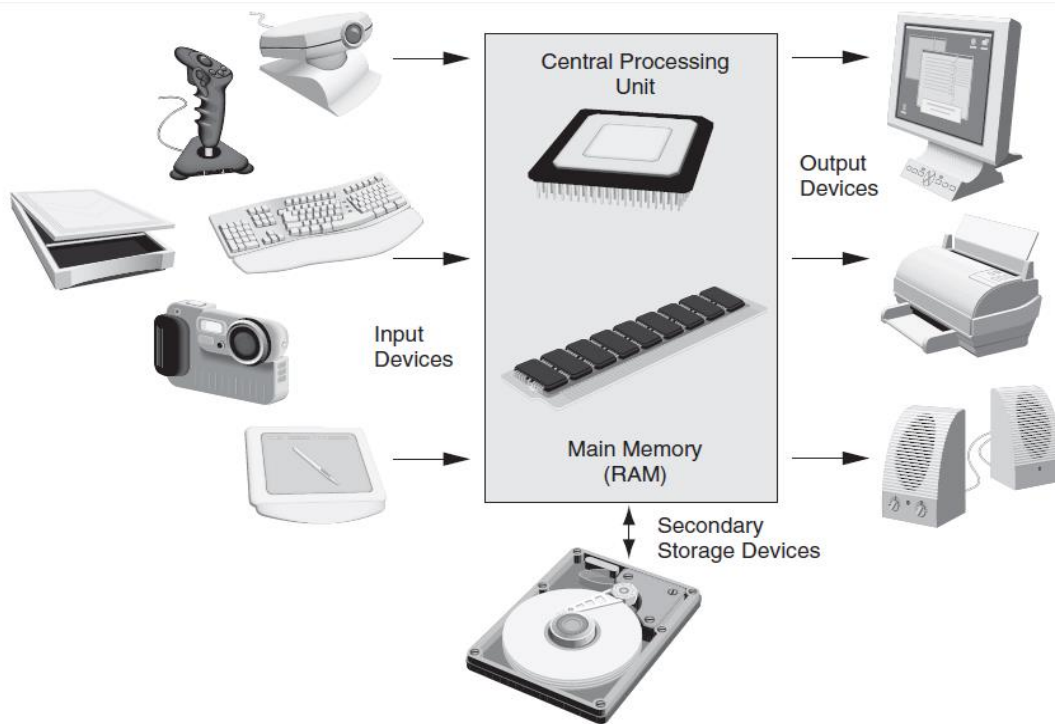


Figure 1: Example of computer hardware

Software

Everything that a computer does, from the time you turn the power switch on until you shut the system down, is under the control of software. There are two general categories of software: system software and application software. Most computer programs clearly fit into one of these two categories.

Let us take a closer look at each.

System Software

The programs that control and manage the basic operations of a computer are generally referred to as *system software*. System software typically includes the following types of programs:

1. **Operating Systems:** An operating system is the most fundamental set of programs on a computer. The operating system controls the internal operations of the computer's hardware, manages all the devices connected to the computer, allows data to be saved to and retrieved from storage devices, and allows other programs to run on the computer.
2. **Utility Programs:** A *utility program* performs a specialized task that enhances the computer's operation or safeguards data. Examples of utility programs are virus scanners, file-compression programs, and data-backup programs.
3. **Software Development Tools:** The software tools that programmers use to create, modify, and test software are referred to as *software development tools*. Compilers and integrated development environments, which we discuss later in this chapter, are examples of programs that fall into this category.

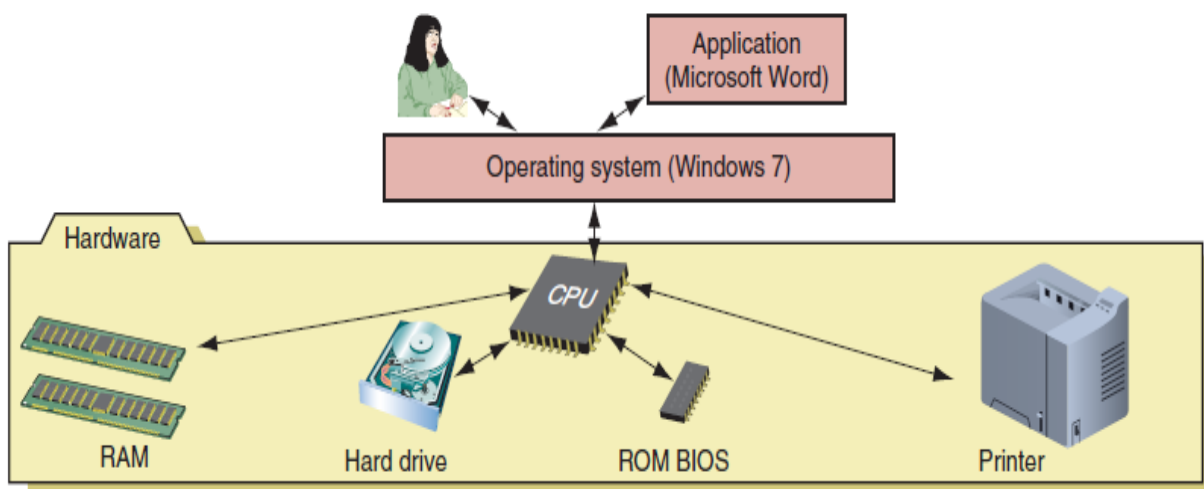


Figure 2: operating system

Application Software

Programs that make a computer useful for everyday tasks are known as *Application software*. These are the programs that people normally spend most of their time running on their computers

Reviewing the Basics

- What is the purpose of an expansion slot on a motherboard?
- What is the difference between a transformer and a rectifier? Which are found in a PC power supply?
- What is the purpose of an AGP slot?
- Who are the two major manufacturers of processors?
- What is the name of the memory cache that is on the same die as the processor?
- What is the name of the Intel technology that allows a processor to handle two threads at the same time?
- How many threads can a quad-core processor handle at once?
- Which is faster, SRAM or DRAM? Why?
- What is the most amount of RAM that can be used by a 32-bit installation of Windows 7 Professional?
- What two types of technologies are used inside hard drives?

References:

- [1] Deitel, P. & Deitel, R., "C++ How to Program", Eighth Edition, Pearson Education Inc., 2012.
- [2] Stefan B., " C++ Primer Plus ", Sixth Edition, Pearson Education Inc., 2012.