Al-ESRAA University College
Civil Engineering Department

Chapter 1

Computers Programming -First Class

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Introduction to Computers

What are Computers?

Computers are machines that perform tasks or calculations according to a set of instructions, or programs. The first fully electronic computers, introduced in the 1940s, were huge machines that required teams of people to operate. Compared to those early machines, today's computers are amazing. Not only are they thousands of times faster, they can fit on your desk, on your lap, or even in your pocket.

Computers work through an interaction of hardware and software. **Hardware** refers to the parts of a computer that you can see and touch, including the case and everything inside it. The most important piece of hardware is a tiny rectangular chip inside your computer called the Central Processing Unit (CPU), or microprocessor. It's the "brain" of your computer—the part that translates instructions and performs calculations. Hardware items such as your monitor, keyboard, mouse, printer, and other components are often called hardware devices, or devices.

Software refers to the instructions, or programs, that tell the hardware what to do. A word-processing program that you can use to write letters on your computer is a type of software. The operating system (OS) is software that manages the computer and the devices connected to it. Windows is a well-known operating system.

What can do with computers?

In the workplace, many people use computers to keep records, analyze data, do research, and manage projects. At home, you can use computers to find information, store pictures and music, track finances, play games, and communicate with others—and those are just a few of the possibilities.

You can also use your computer to connect to the Internet, a network that links computers around the world. Internet access is available for a monthly fee in most urban areas, and increasingly, in less populated areas. With Internet access, you can communicate with people all over the world and find a vast amount of information.

Here are some of the most popular things to do with computers: **the web, E-mail, Instant messaging, Pictures, music, movies, and gaming.**

Types of Computers

Computers range in size and capability. At one end of the scale are supercomputers, very large computers with thousands of linked microprocessors that perform extremely complex calculations. At the other end are tiny computers embedded in cars, TVs, stereo systems, calculators, and appliances. These computers are built to perform a limited number of tasks.

The personal computer, or PC, is designed to be used by one person at a time. This section describes the various kinds of personal computers**: desktops, laptops, handheld computers, and Tablet PCs.**

- **Desktop computers**

  Desktop computers are designed for use at a desk or table. They are typically larger and more powerful than other types of personal computers. Desktop computers are made up of separate components. The main component, called the system unit, is usually a rectangular case that sits on or underneath a desk. Other components, such as the monitor, mouse, and keyboard, connect to the system unit.

Desktop computer

- **Laptop computers and small notebook PCs**

  Laptop computers are lightweight mobile PCs with a thin screen. Laptops can operate on batteries, so you can take them anywhere. Unlike desktops, laptops combine the CPU, screen, and keyboard in a single case. The screen folds down onto the keyboard when not in use.

  Small notebook PCs (often referred to as mini-notebooks), are small, affordable laptops that are designed to perform a limited number of tasks. They're usually less powerful than a laptop, so they're used mainly to browse the web and check e-mail.

A laptop computer and a small notebook PC

- **Smart phones**

Smart phones are mobile phones that have some of the same capabilities as a computer. You can use a smart phone to make telephone calls, access the Internet, organize contact information, send e-mail and text messages, play games, and take pictures. Smart phones usually have a keyboard and a large screen.

Smartphone

- **Handheld computers**

Handheld computers, also called personal digital assistants (PDAs), are battery-powered computers small enough to carry almost anywhere. Although not as powerful as desktops or laptops, handheld computers are useful for scheduling appointments, storing addresses and phone numbers, and playing games. Some have more advanced capabilities, such as making telephone calls or accessing the Internet. Instead of keyboards, handheld computers have touch screens that you use with your finger or a stylus (a pen-shaped pointing tool).

Handheld computer

- **Tablet PCs**

Tablet PCs are mobile PCs that combine features of laptops and handheld computers. Like laptops, they're powerful and have a built-in screen. Like handheld computers, they allow you to write notes or draw pictures on the screen, usually with a tablet pen (the pen that come with table and is used to interact with items in the screen) instead of a stylus. They can also convert your handwriting into typed text. Some Tablet PCs are “convertibles” with a screen that swivels and unfolds to reveal a keyboard underneath.

Tablet PC

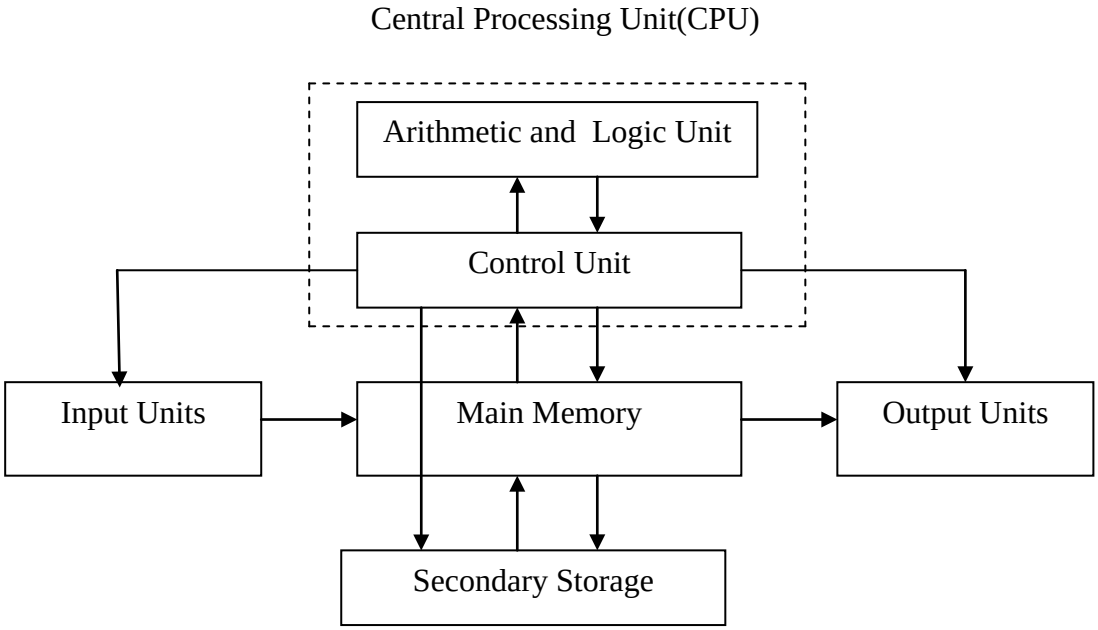
ENIAC

Introduced in 1946, ENIAC (Electronic Numerical Integrator and Computer) was the first general-purpose electronic computer. It was built for the United States military to calculate the paths of artillery shells. Physically, ENIAC was enormous, weighing more than 27,000 kilograms (60,000 pounds) and filling a large room. To process data, ENIAC used about 18,000 vacuum tubes, each the size of a small light bulb. The tubes burned out easily and had to be constantly replaced.

Computers Operations

All computers execute three basic operations:

1. Input data and instruction by input unit.
2. Save and process data and instruction by memory unit and central processing unit.
3. Output results and instruction by output unit.



Computer Hardware Diagram