Department of biology

((علوم الحاسوب))

Stage 2

المحاضرة الثانية

Computer Organization

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1. Computer Organization and Information technology

1.1 Introduction to Computer Architecture

• Most computers have similar architectures that combine software and hardware.

Hardware

• The term hardware refers to the physical components of your computer such as the system unit, mouse, keyboard, monitor, processors, memory andperipheral devices etc...

Software

• The software is the collection of instructions which makes the computer work. For instance, when you type in words via the keyboard, the software is responsible for displaying the correct letters, in the correct place on the screen. Software is held either on your computer's hard disk, CD-ROM, DVD or on a diskette (floppy disk) and is loaded (i.e. copied) from the disk into the computers RAM (Random Access Memory), as and when required.

Software includes the operating system which controls the computer hardware and application software, such as word processing, spreadsheets, etc…

Input devices

Input devices allow you to input information to the computer and include things such as the keyboard and mouse.

Output devices

Output devices allow you to output information from the computer and include the printer and the monitor.

Peripheral device

A peripheral device is any device which you can attach to your computer. Thus, you could attach a scanner or modem to the back of your system unit.

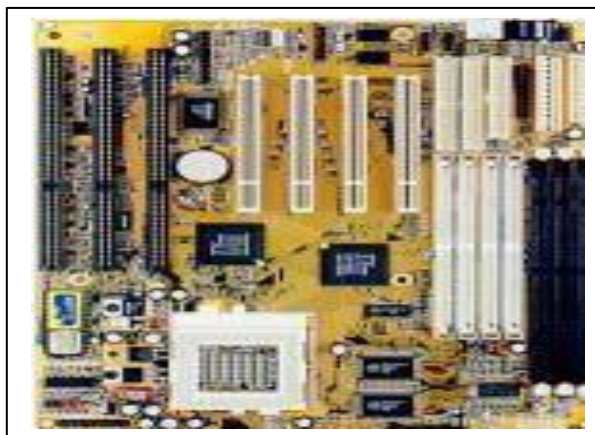### 1.2 Main Parts of a Personal Computer

The System Unit

- The "system unit" is the name given to the main PC box which houses the various elements which go together to make up the PC. For instance within the system unit is the computer system's motherboard, which contains allthe main components, such as the CPU. The system unit also houses items such as the hard disk, the floppy disk and CD-ROM drives etc.

The System (Mother) Board

- The system (mother) board is contained within your system unit and allthe vital computer systems plug directly into the system board. The CPU is normally housed on your system board along with all the other electronic components. Other items such as the hard disk are attached to the system board, either directly or via cables. These boards are getting smaller and smaller as the components become more integrated.

The CPU

- The CPU (Central Processing Unit) is normally an Intel Pentium (or equivalent) and it is one of the most important components within your computer. It determines how fast your computer will run and is measured by its MHz or GHz speed. Thus, a 2 GHz Pentium is much faster than say a GHz Pentium CPU. **It is the CPU which performs all the calculations within the computer, when running programs such as word- processors, spreadsheets and databases.**

Memory (RAM)

- The RAM (Random Access Memory) within your computer is where the operating system is loaded to when you switch on your computer and also where your applications are copied to when you start an application, such asa word processor or database program. When you create data, (e.g. letters and pictures), these are initially created and held in RAM and then copied to disk when you save the data. As a rule
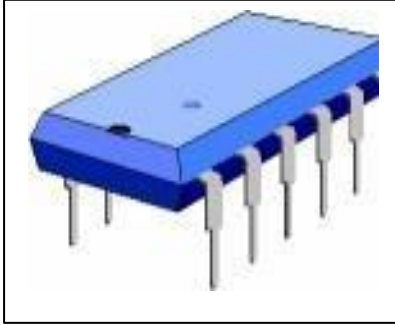
ROM-BIOS

- The ROM-BIOS (Read Only Memory - Basic Input Output System) chipis a special chip held on your computer's system (mother) board. It contains software which is required to make your computer work with your operating system, **for instance it is responsible for copying your operating system into RAM when you switch on your computer.**

Serial Port

The serial port is a socket located at the back of your computer which enables you to connect items to the computer, such as a modem. They are commonly labelled as COM1 or COM2.

Parallel Port

- The parallel port is a socket located at the back of your computer which enables you to connect items to the computer, such as a printer. It iscommonly labelled as LPT1 or LPT2.

Universal Serial Bus (USB)

- The Universal Serial Bus is a relatively new item within the PC. You will see one or more USB sockets at the back of the system unit, allowing you toplug in devices designed for the USB. These devices include printers,scanners and digital cameras.