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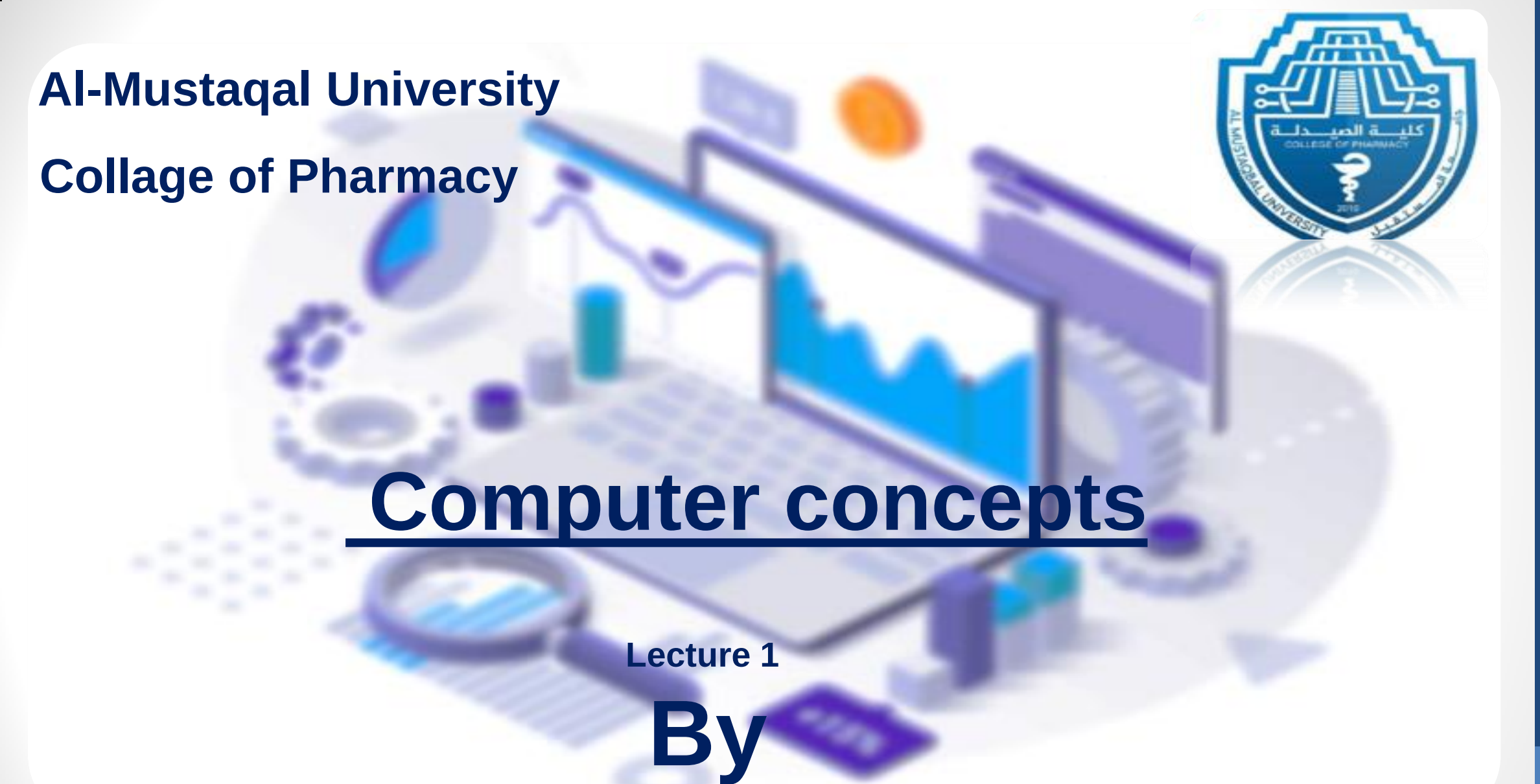
Collage of Pharmacy



Computer concepts

Lecture 1

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2024-2025

What is a computer ?

- *An electronic device that stores, retrieves, and processes data, and can be programmed with instructions. A computer is composed of hardware and software, and can exist in a variety of sizes and configurations* .

Hardware & Software

- The term **hardware** refers to the physical components of your computer such as the system unit, mouse, keyboard, monitor etc .

- The **software** is the instructions that makes the computer work. Examples (Facebook, Microsoft Word Document, etc.)

Hardware Components

➢ Input Devices

✓ It Means " How to tell it what to do“
✓ A keyboard and mouse are the standard way to interact with the computer. Other devices include joysticks and game pads used primarily for games.

➢ Output Devices

✓ It Means "How it shows you what it is doing"
✓ The monitor (the screen) is how the computer sends information back to you. A printer is also an output device

➢ Input Devices

1.Keyboard: A device that allows the user to input text, numbers, and other commands.

2.Mouse: A pointing device that moves a pointer on the screen to interact with the computer.

3.Scanner: Converts physical documents, images, or text into digital form for the computer to process.

4.Microphone: Captures sound and converts it into a digital signal that the computer can process.

5.Camera: Captures visual images or video and sends them to the computer.

6.Touchscreen: Allows direct interaction with the computer screen through touch, combining input and output functions.

7. Joystick/Gamepad: Used for gaming, providing input through movement or buttons.

8. Digital Pen/Stylus: A pointing device used to draw or write on touch-sensitive screens or digital tablets.

9. Barcode Reader: Scans and decodes barcodes, often used in inventory or retail.

➢ Output Devices

1.Printer: Produces a hard copy of digital content, such as documents or images, on paper.

2.Speakers/Headphones: Output audio signals, enabling the computer to deliver sound to the user.

3.Projector: Projects video output to a larger surface, typically used for

4.Monitor: Displays visual output such as text, images, or video.

5. Plotter: Used for printing large, high-quality images or drawings, often for engineering or architectural purposes

6. Vibration Feedback Devices: These provide physical feedback, like vibrations, to the user based on digital inputs, often used in gaming controllers

Software components

1- Operating systems software

- ✓ The operating system is a special type of program that loads automatically when you start your computer.
- ✓ The operating system allows you to use the advanced features of a modern computer without having to learn all the details of how the hardware works
- ✓ The link between the hardware and you, the user
- ✓ Makes the computer easy to use without having to understand bits and bytes

2- Applications Software

- ✓ An application program is the type of program that you use once the operating system has been loaded.
- ✓ Examples include word-processing programs, spreadsheets and databases

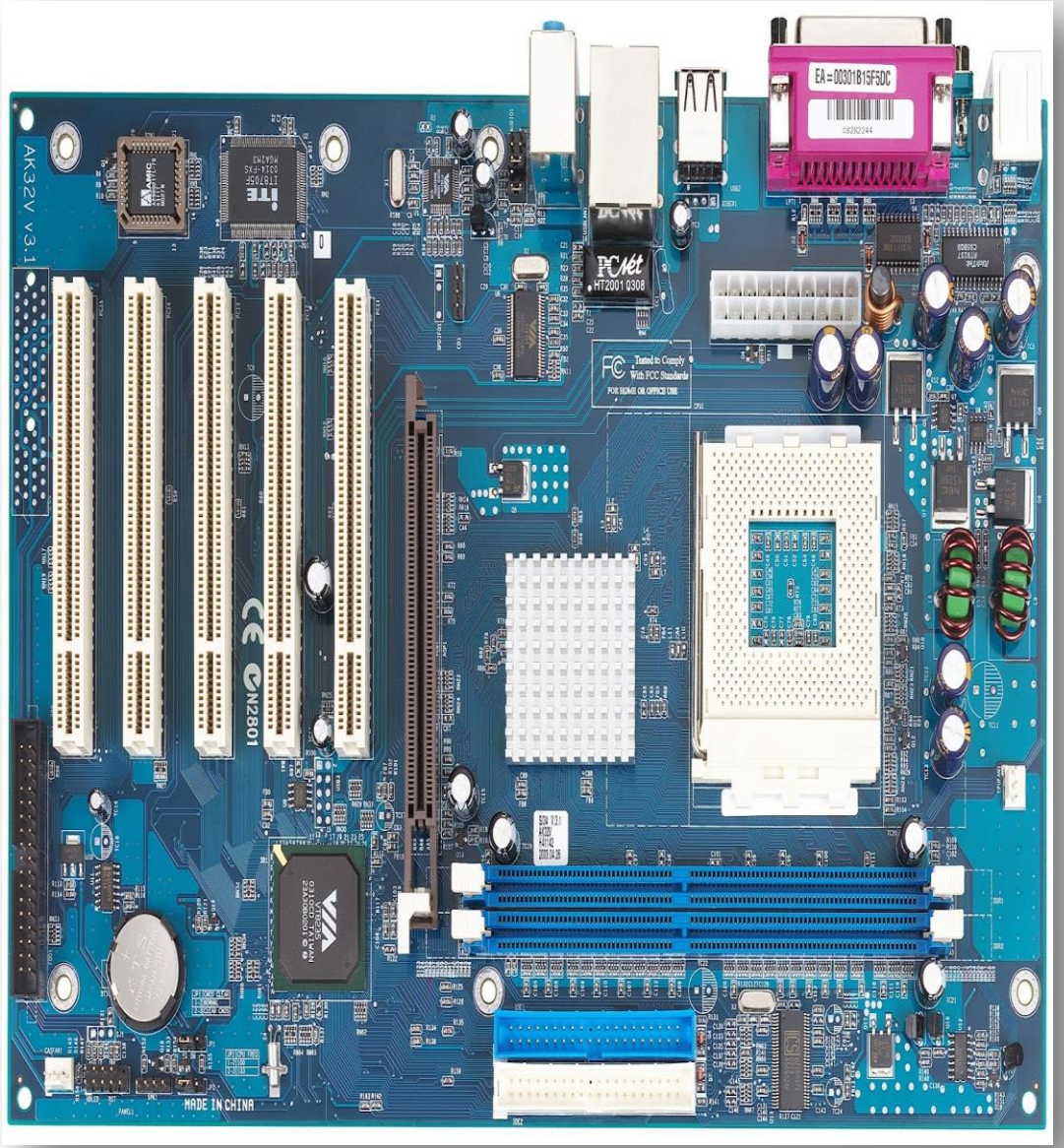
Computer parts:

- ✓ Motherboard
- ✓ Central Processing Unit
- ✓ Computer Memory
- ✓ Ports
- ✓ Power Supply
- ✓ Expansion Card
- ✓ CD Drive
- ✓ DVD Drive
- ✓ Floppy Drive
- ✓ Fan
- ✓ Heatsink

Motherboard

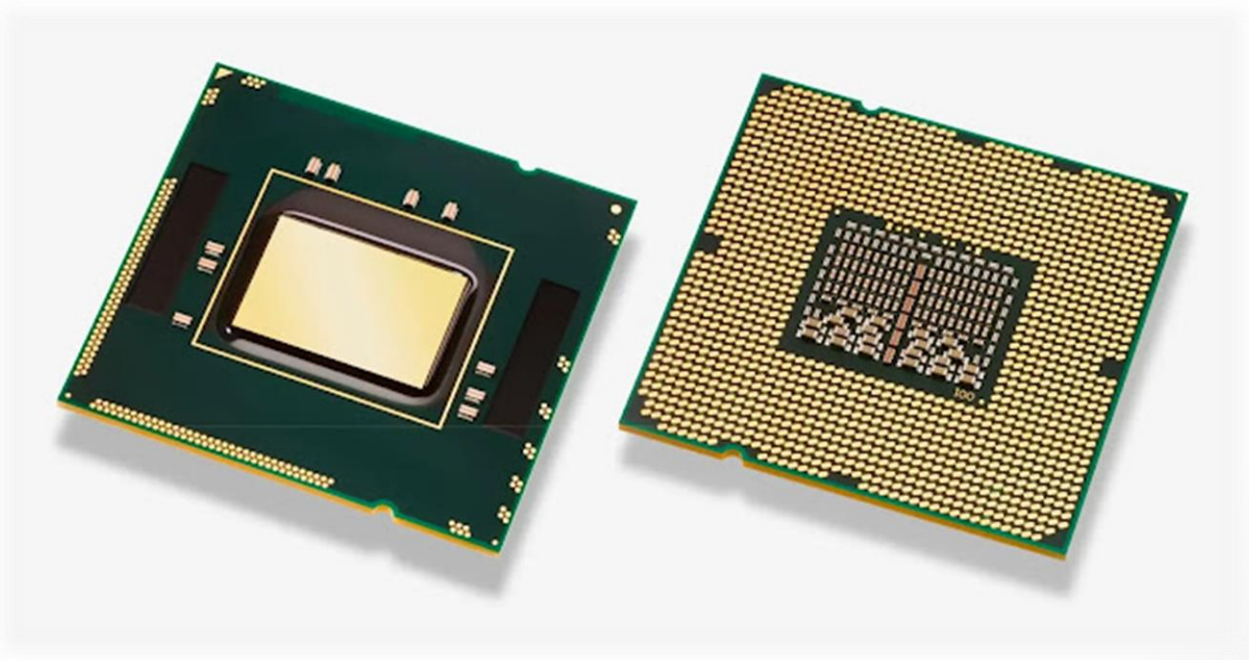
– A circuit board where most of the electronics including the CPU are mounted. It allows the CPU to interact with other parts of the computer.

It connects other components in the computer to each other.



The central processing unit

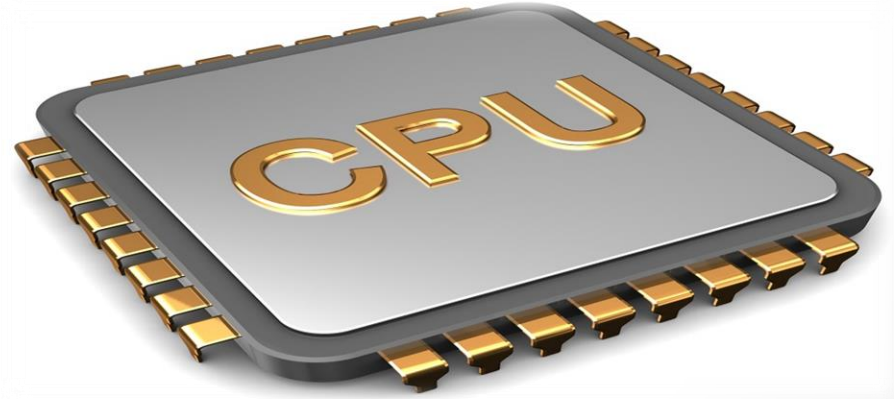
Central Processing Unit– CPU or Processor. The brain of a computer. Approximately 1.5 in X 1.5 in. Does all the computation/work for the computer



The Central Processing Unit (CPU)

- ✓ Often referred to as the “brain” of the computer.
- ✓ Responsible for controlling all activities of the computer system.
- ✓ The two major components of the CPU are:

1. Arithmetic and logic Unit (ALU) (Computations performed)
2. Control Unit (CU)(is circuitry that control and directs operations within a computer's processor)



3- Registers

Small, non-volatile internal storage units for storing temporary data during surgical operations. Types include:

Instruction Register (IR): Stores instructions being selected.

Brown Register (AR): Responds to terrorist responses.

Data Register (DR): Stores data while not being recorded.

4- Cache (Temporary Memory)

A small memory located in or near your computer.

It counts the most frequently used data, determining when to retrieve information from random access memory (RAM).

5- Buses

Data transmission lines between different computer components, including:

Data Bus: Transports data between the processor and other components.

Address Bus: Determines where data is located in memory.

- When the CPU receives and carries out an instruction, it has completed one cycle.
- Computer’s speed = number of cycles completed in one second

- Cycles are measured in:
  - Megahertz (MHz) = millions of cycles per second
  - Gigahertz (GHz) = billions of cycles per second

- It determines how fast your computer will run and is measured by its MHz speed.

computer memory and storage

Memory

✓ Its mean "How the processor stores and uses immediate data“

✓ we have a two types of memory

- **Random Access Memory– (RAM).** Where information is stored temporarily when a program is run. Information is automatically pulled into memory, we cannot control this. **RAM** is cleared automatically when the computer is shutdown or rebooted. **RAM** is volatile (nonpermanent).
- **Read Only Memory–(ROM).** More permanent than **RAM**. Data stored in these chips is nonvolatile -- it is not lost when power is removed. Data stored in these chips is either unchangeable or requires a special operation to change.

➢ When Do I Use RAM and ROM?

When you use your computer to perform any type of task, you are using two types of memory:

Type of Memory	What Does It Do?	When Is It Used?
Read-only memory (ROM)	Stores permanent information like telling the computer how to start up	When you turn a computer on or off
Random-access memory (RAM)	Stores temporary information when you are working in a file	When you start and use software

➢ How Is Information Stored?

When you save a file, you move the information from **RAM** to a **storage device**. The type of storage device depends on how much space is needed. Music and video files require more storage space than text files.

How Computer Memory Is Measured?

1- **Bit** All computers work on a binary numbering system, i.e. they process data in one's or zero's. This 1 or 0 levels of storage is called a bit.

2- **Byte**

A byte consists of eight bits.

3- **Kilobyte (KB)**

consists of 1024 bytes.

4- **Megabyte (MB)**

consists of 1024 kilobytes.

5- **Gigabyte (GB)**

consists of 1024 megabytes

Storage Devices

- Its means “How it saves data and programs“.
- We have four types of storage devices :-

1. Hard disks

2. Diskettes (Floppy Disks)

3. CD-ROM Disks

4. DVD Drives

- The four most important characteristics of storage devices:
  - **Speed and access time**
  - **Cost**
  - **Capacity**

Storage Devices

1- Hard disks : A hard drive is the hardware component that stores all of your digital content. Your documents, pictures, music, videos, programs, application preferences, and operating system represent digital content stored on a hard drive. Hard drives can be external or internal.

Speed: Very fast! The speed of a hard disk is often quoted as "average access time" speed, measured in milliseconds. The smaller this number the faster the disk.

Capacity: Enormous! Often 40GB to 100GB or more

Cost: Hard disks costs are falling rapidly and normally represent the cheapest way of storing data.

Storage Devices

2- Diskettes (Floppy Disks)

Speed:

Very slow!

Capacity:

Normally 1.44 Mbytes.

Cost:

Very cheap

Storage Devices

3- CD-ROM Disks

Speed:

Much slower than hard disks. The original CD-ROM speciation is given a value of 1x speed.

Capacity:

Around 650 Mbytes and more

Storage Devices

4- DVD Drives

Speed:

Much faster than CD-ROM drives but not as fast as hard disks.

Capacity:

Up to 17 Gbytes.

Cost:

Slightly higher than CD-ROM drives

- Thanks for lessening ..

Any questions?