



Computer Components

Hardware and Software

Introduction to Computers

Presented by MSc Abbas Yaseen



Two Main Parts Work Together

Hardware

The physical parts of a computer that you can see and touch

Software

The programs and instructions that tell hardware what to do

Both hardware and software must work together seamlessly for a computer to operate properly. Without hardware, software has nothing to run on. Without software, hardware is just a collection of parts.

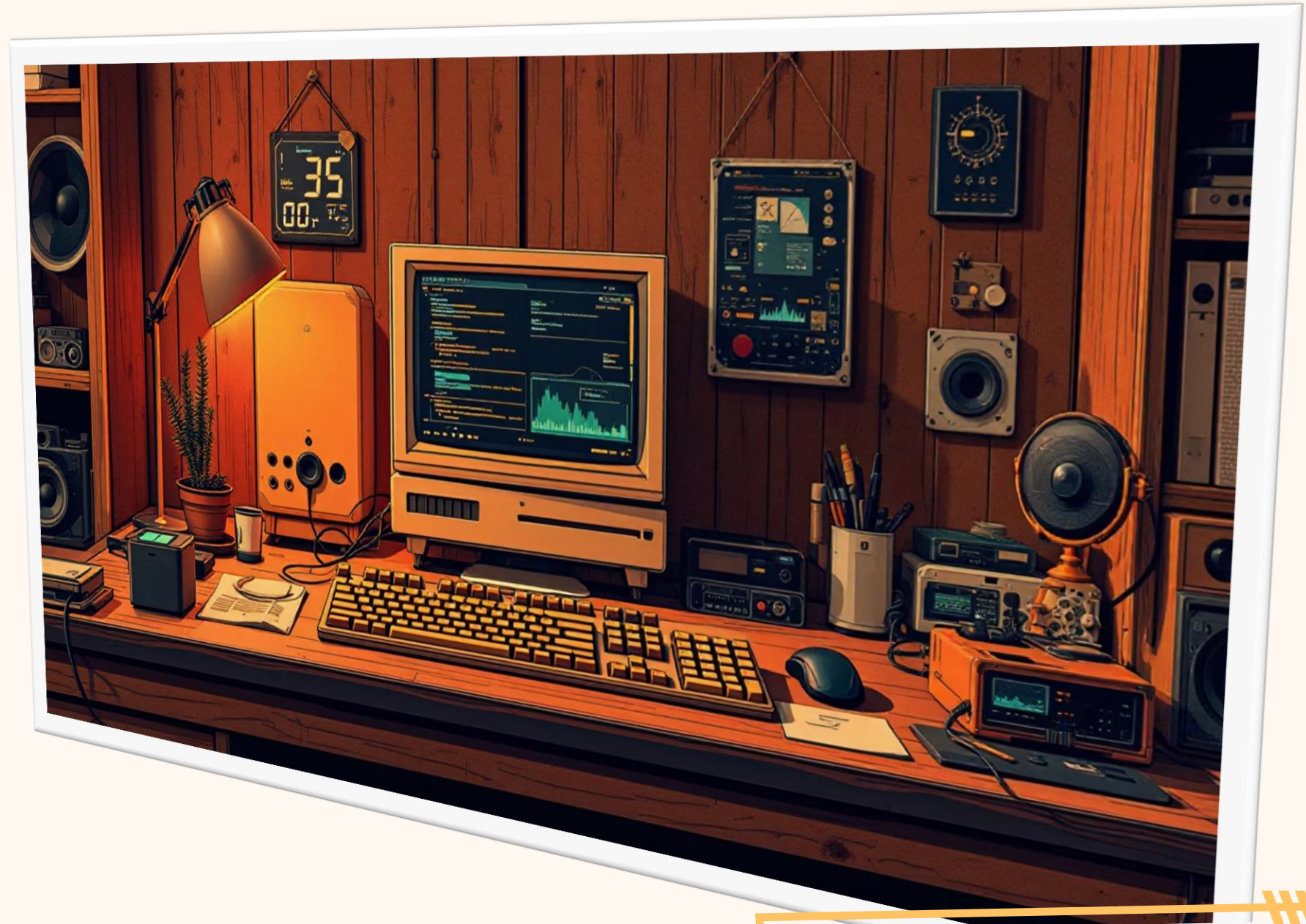
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What is Hardware?

Hardware refers to the **physical parts** of a computer that we can see and touch. These are the tangible components that make up the computer system.

Common Examples:

- Monitor
- Keyboard
- Mouse
- CPU (Central Processing Unit)
- Printer



Four Types of Hardware

Input Devices
Enter data into the computer



Processing Unit
The brain that processes information



Storage Devices
Save data permanently



Output Devices
Show results to users



Input Devices

Devices used to enter data and instructions into the computer. They allow users to communicate with the computer system.



Keyboard

Types text, numbers, and commands



Mouse

Controls pointer and selects items



Scanner

Converts physical documents to digital



Microphone

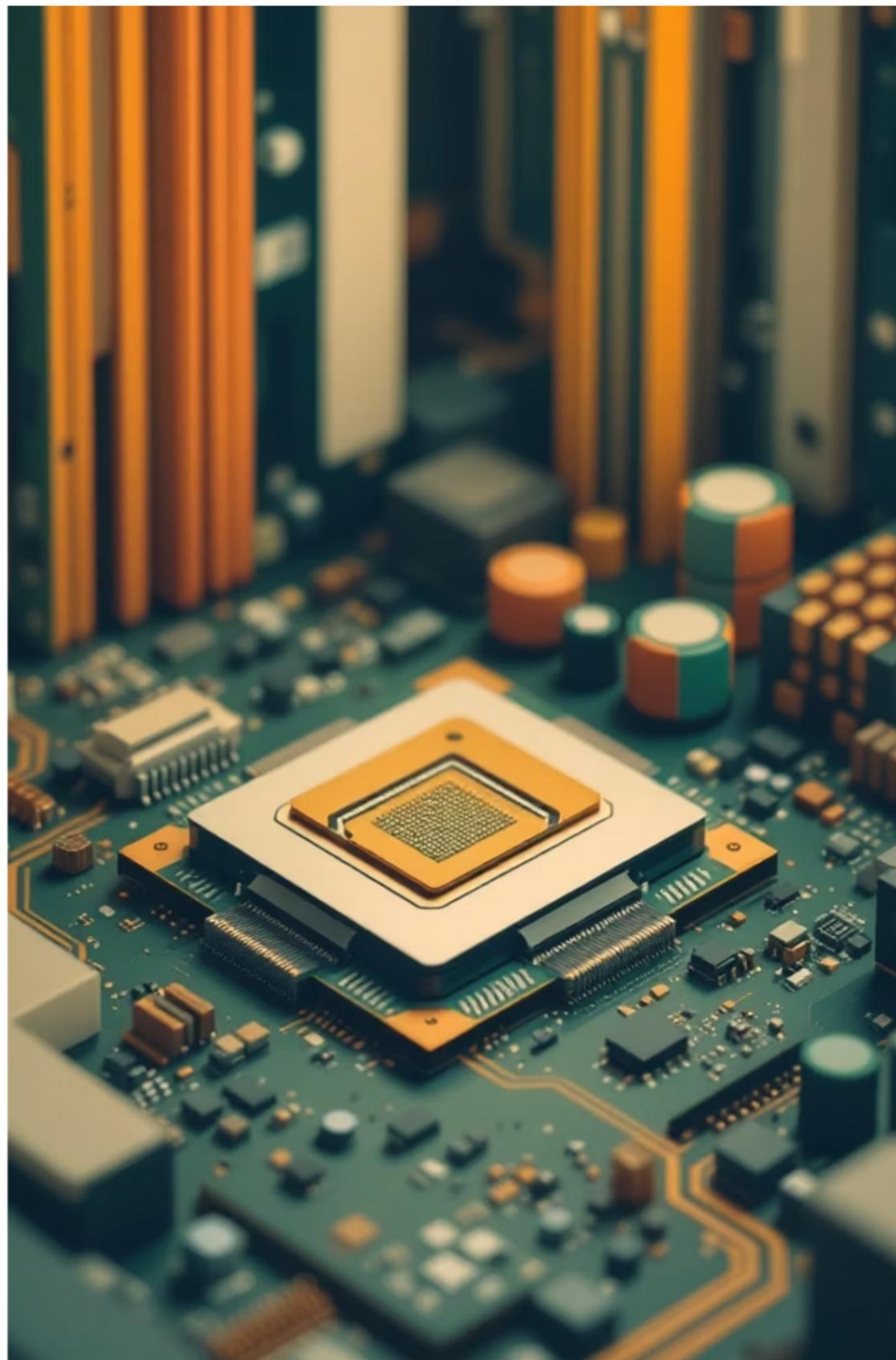
Inputs audio and voice commands

Mouse

Essential Functions:

- Moves the cursor or pointer on screen
- Selects items by clicking
- Opens programs and files
- Scrolls through documents and web pages





CPU – The Brain of the Computer

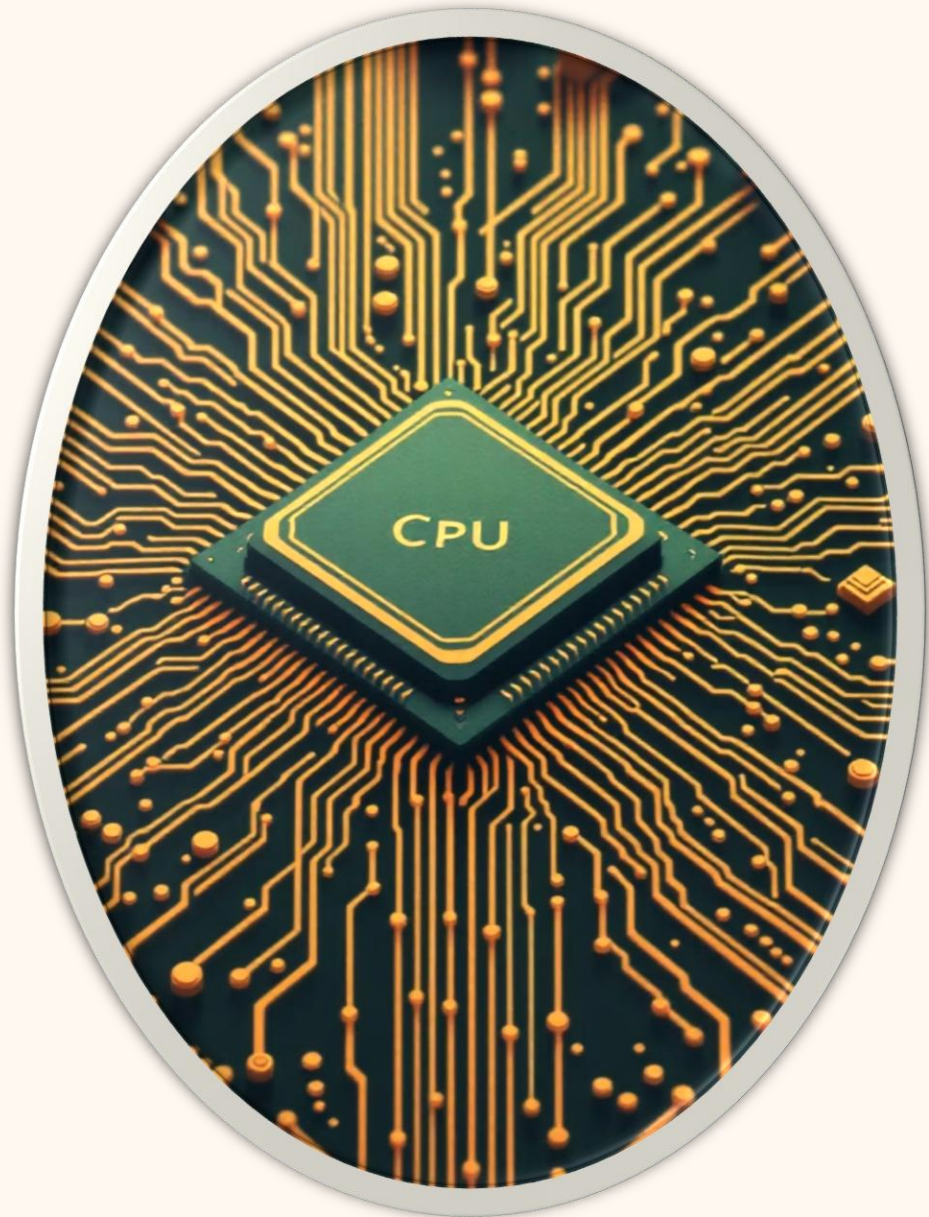
Central Processing Unit

The CPU is often called the brain of the computer because it performs all the calculations and processes all the instructions.

What It Does

The CPU fetches instructions from memory, decodes what they mean, and then executes them. It can perform millions of calculations every second.

How the CPU Processes Data



Simple Example:

$$5 + 3 = ?$$

The CPU receives this mathematical operation, performs the calculation, and returns the result:

$$5 + 3 = 8$$

This demonstrates how the CPU processes data by performing calculations and following instructions.

Coming Up Next

In the next part of this lecture, we'll explore the remaining hardware components and software basics:



Output Devices

How computers display information



Storage Devices

Where data is saved permanently



Software

Programs that control hardware

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Output Devices

Output devices display information to the user in a form that can be understood and used.

Monitor

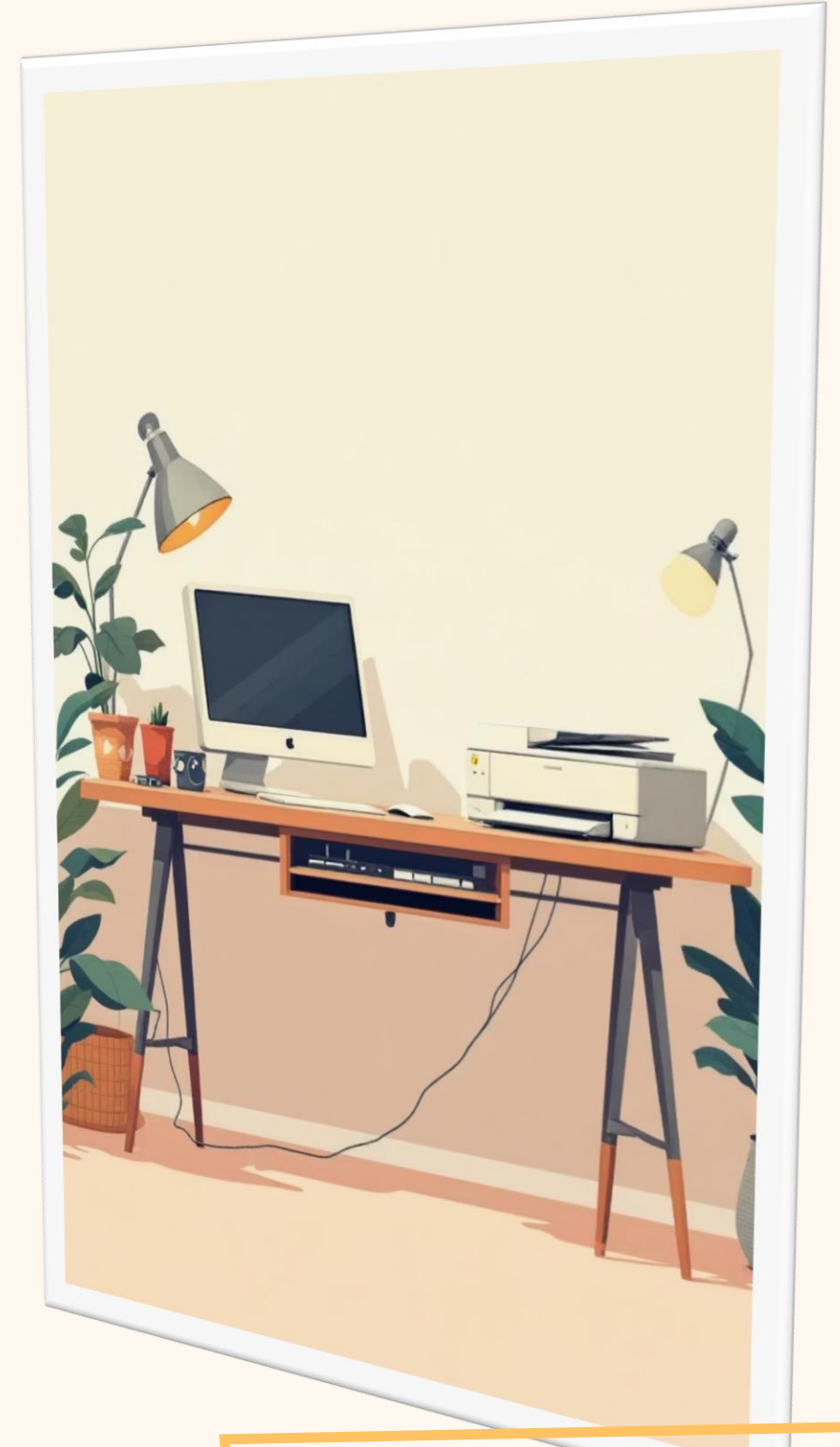
Displays text, images, and video content

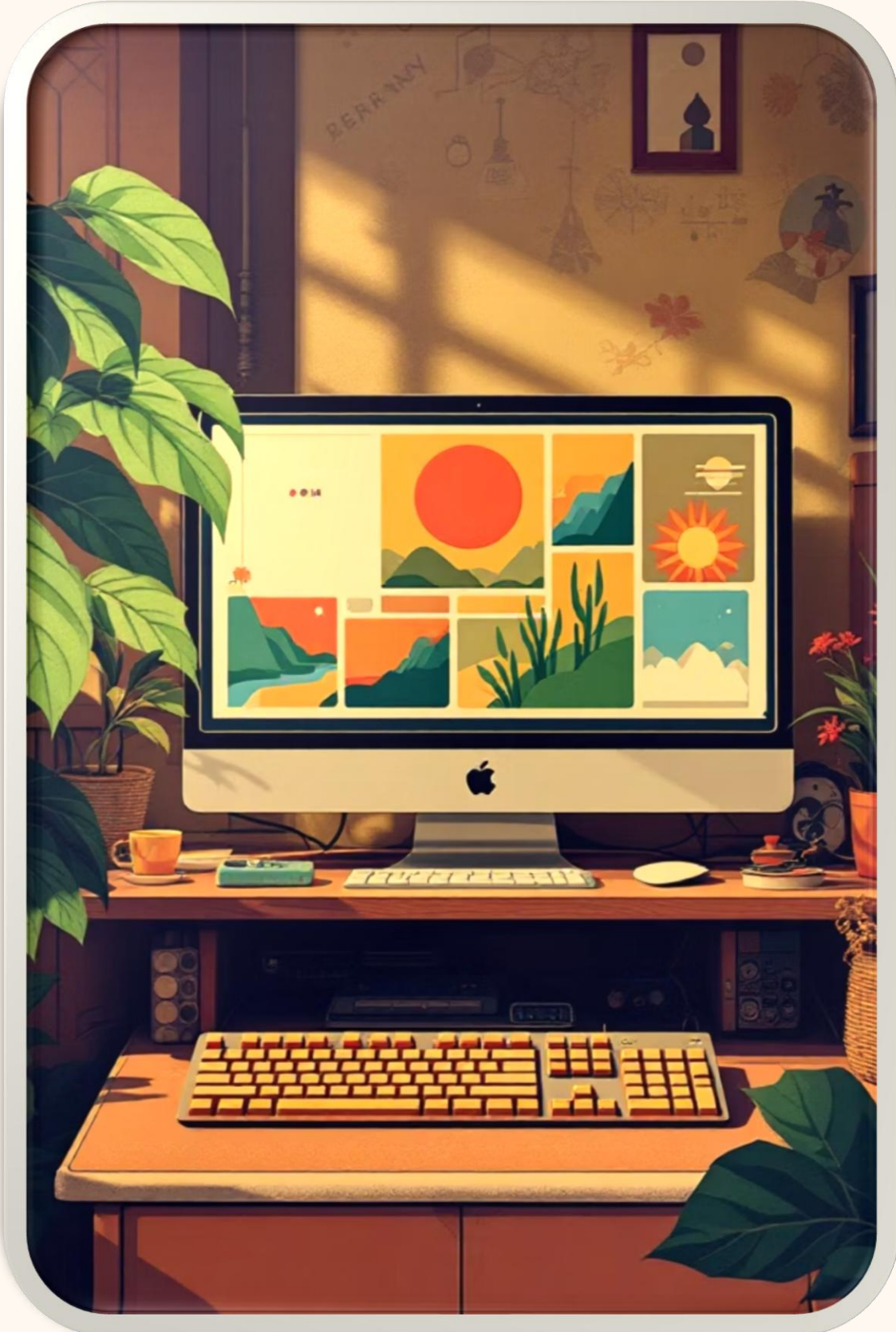
Printer

Produces physical copies of documents

Speakers

Outputs audio and sound information





Monitor

What It Displays

- Text and documents
- Images and photographs
- Videos and animations

Key Features

Monitors use pixels to create images and come in various sizes and resolutions for different needs.



Printer

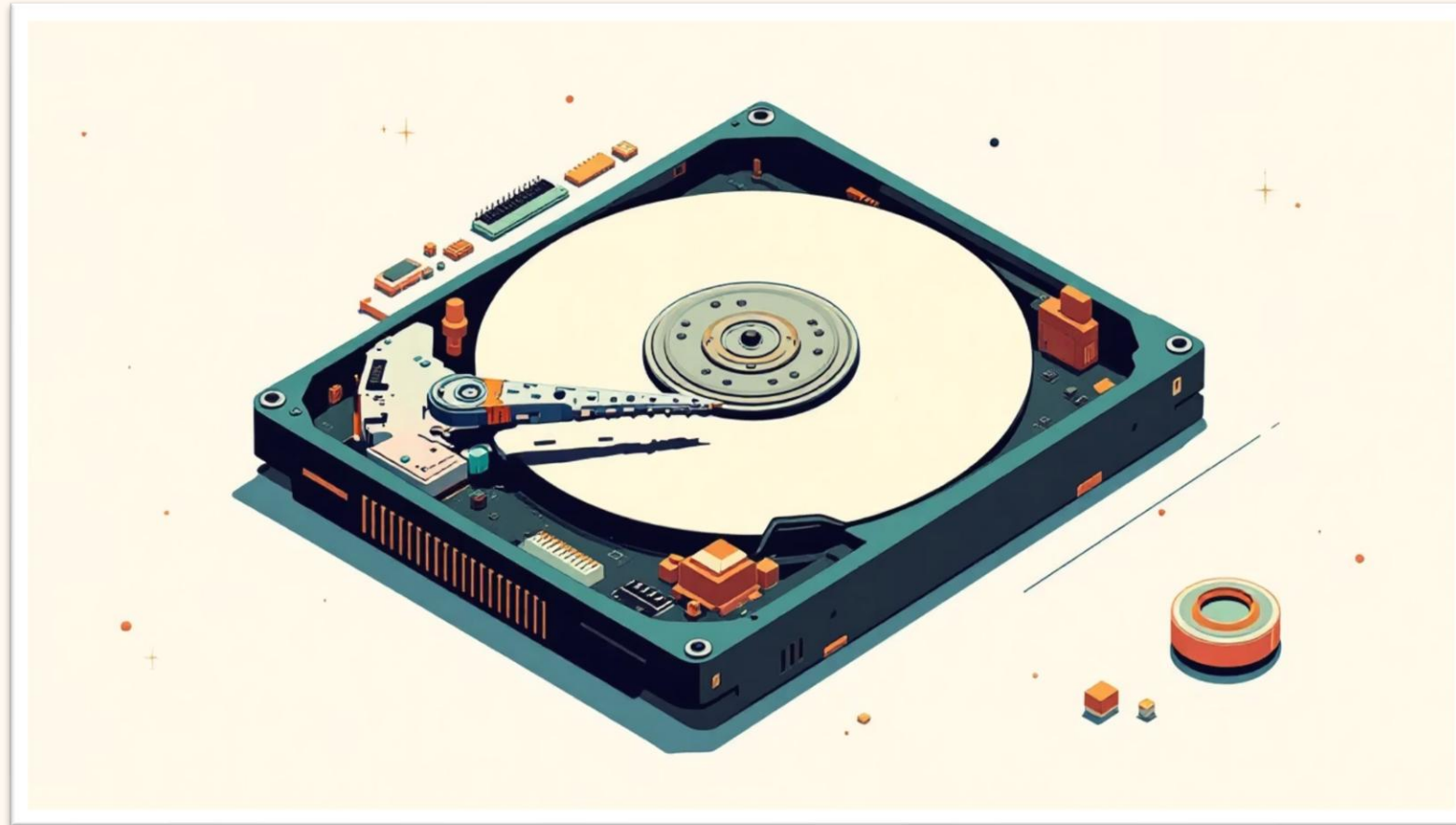
Function

Printers produce hard copies of digital documents, allowing information to be shared in physical form.

Common Uses

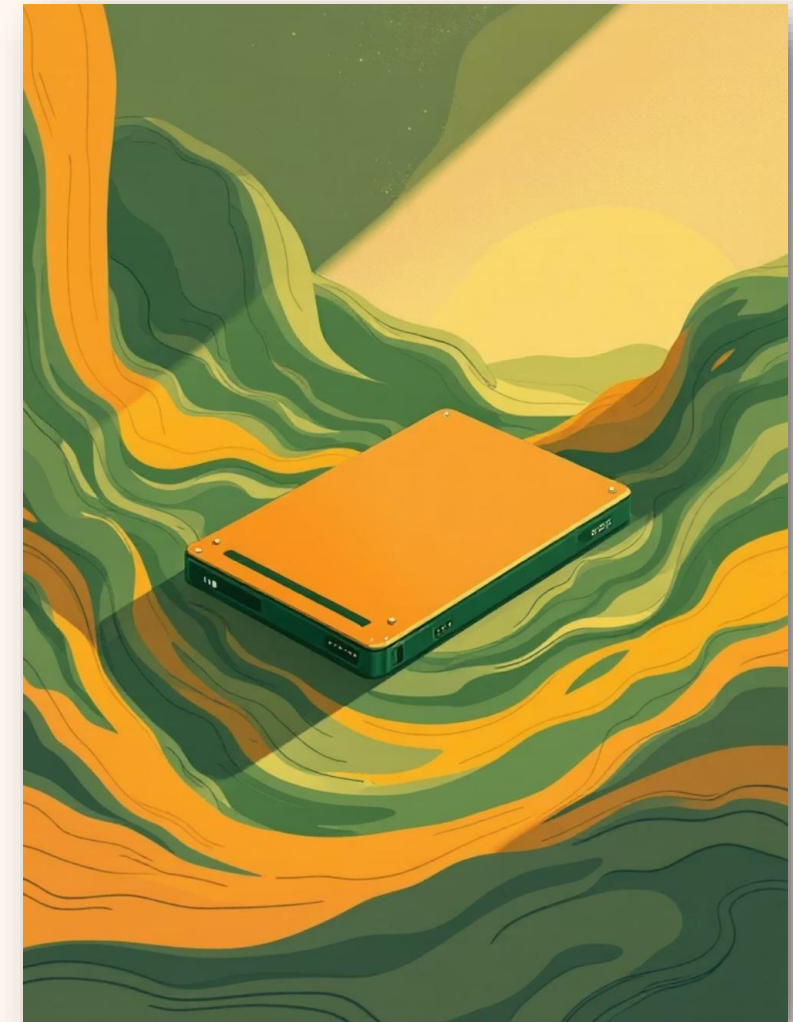
- Office documentation
- University assignments
- Professional reports

Hard Disk vs SSD



Hard Disk (HDD)

Traditional storage using spinning magnetic disks. Slower but more affordable for large capacities.



Solid State Drive (SSD)

Modern storage using flash memory. Faster, more reliable, and quieter than traditional hard disks.



What is Software?

Software consists of programs that tell the computer what to do.

Without software, a computer is just a collection of hardware components that cannot perform useful tasks. Software provides the instructions that make hardware functional and useful.

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Types of Software



System Software

Manages computer hardware and provides a platform for running applications. Includes operating systems like Windows, macOS, and Linux.



Application Software

Allows users to perform specific tasks such as writing documents, browsing the web, or editing photos. Examples include word processors and web browsers.



Summary and Review

Hardware

The physical components of a computer system that you can touch and see

Review Questions

- What is hardware?
- What is the CPU and why is it important?
- Name two input devices and their functions.
- Name two storage devices and their differences.

Software

Programs that tell the computer what to do and make hardware functional



Thank You!

We appreciate your attention and participation in this introduction to computer components.

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