Lecture title: Relationship Between Hardware and Software

Lecturer Affiliation: *Iman Thannoon Sedeeq,* BSc, MSc, PhD
Assistant Professor, Department of Public Health
College of Veterinary Medicine, University of Mosul, Mosul, Iraq
https://orcid.org/0000-0001-5903-3593

Summary:

Relationship Between Hardware and Software

Hardware   vs   Software

Key Difference:

The fundamental difference lies in their nature: hardware is the tangible, physical aspect of a computer system, while software is the collection of instructions and data that operate on the hardware.

How Do they work?

Hardware and software work in tandem in a computer system.

Software is the set of instructions that tells the hardware what to do. Software runs on the hardware to perform various tasks, from basic to complex operations.

Relationship between Hardware and Software

- Hardware and software are mutually dependent on each other. Both must work together to make a computer produce a useful output

- Software cannot be utilized without supporting hardware

- Hardware without a set of programs to operate upon cannot be utilized and is useless

- To get a particular job done on the computer, relevant software should be loaded into the hardware

University of Mosul
Lecture No.: 2
College of Veterinary Medicine
Date: 2024-2025
Unit of Scientific Affairs
Website: https://uomosul.edu.iq/veterinarymedicine/

- A software acts as an interface between the user and the hardware

- Both are complementary to each other.

Hardware Types

1. CPU

The CPU is the brain of the computer, and it processes information and executes instructions.

2. Memory

Memory is where data and programs are stored. There are two kinds of memory—volatile and non-volatile.

3. Motherboard

A motherboard connects all the other components of the computer. The motherboard contains slots for expansion cards, sockets for devices such as modems, and connectors for video cards.

4. Hard Drive

Hard drives store files, music, pictures, videos, and other digital content.

5. Monitor

Monitors display images on a screen. Monitors vary in size, resolution, and price.

6. Power Supply

University of Mosul
Lecture No.: 2
College of Veterinary Medicine
Date: 2024-2025
Unit of Scientific Affairs
Website: https://uomosul.edu.iq/veterinarymedicine/

Central Processing Unit (CPU)

The CPU is a hardware component that is found in the circuit board or motherboard of a computer. While small in size, it holds great computing power due to its millions to billions of built-in transistors. A transistor is a binary switch that prevents or allows current to flow through, thereby conveying ones or zeros that translate into performing an action. Transistors are essentially what allows the CPU to make its calculations.

It is the brain of a computer. the speed of central processing unit (CPU) is measured by hertz (hz), which represents a CPU cycle. the speed of CPU is known as computer speed.

Parts of CPU:

1. **Control Unit CU** controls and coordinates all computer components.
2. **Arithmetic and Logic Unit ALU** executes all arithmetic and logic operations such as addition, subtraction, …, comparison
3. **Registers** very fast storage area.

University of Mosul
Lecture No.: 2
College of Veterinary Medicine
Date: 2024-2025
Unit of Scientific Affairs
Website: https://uomosul.edu.iq/veterinarymedicine/

Types of software

System software	Application software
Controlling and managing computer hardware components such as operating systems and some fundamental utilities	Helping users to performing a specific task
Dos, Windows, Linux, Unix, and Mac OSX	Chrome web browser, Microsoft word, excel and PowerPoint
Users do not interact	Users always interact
Working independently on application software	Cannot work without the presence of system software

University of Mosul
Lecture No.: 2
College of Veterinary Medicine
Date: 2024-2025
Unit of Scientific Affairs
Website: https://uomosul.edu.iq/veterinarymedicine/

Computer files extension

A computer file extension is commonly a three characters addition that follows the name of a file.

File extensions and programs

FILE EXTENSION	PROGRAM
.XLS	Excel
.DOC	Winword, MS-Word
.RTF	Winword, MS-Word
.BAT	Batchfile
.DAT	Data files
.INI	Initialization files, text files
.COM	Command interpretor
.TMP	Temporary files
.HTML	Internet explorer