

تجميعات وملخص – لكتشر 1.1

Part 01: Hardware - Key Points

- Computer hardware consists of visible, physical components.
- **CPU (Central Processing Unit):** The "brain" that executes instructions. Speed measured in MHz (millions of cycles per second).
- **Memory (RAM):** Volatile storage for active data and program instructions. Measured in bytes.
- **Storage Devices:** Non-volatile (permanent) storage for programs and data (e.g., hard disks, USB drives).
- **Input Devices:** Used to insert data into the computer (e.g., keyboard, mouse).
- **Output Devices:** Used to display or present results from the computer (e.g., monitor, printer).
- **Communication Devices:** Enable network connectivity (e.g., network interface cards).

Part 02: Software - Key Points

- Software provides invisible instructions that control the hardware.
- **System Software (Operating System - OS):** Manages and controls the computer's activities (e.g., memory management, file storage). Loads first when the computer starts. Examples: Windows, Linux, macOS.
- **Application Software:** Performs specific tasks for the user (e.g., web browser, word processor). Requires an OS to run.
- Without software, hardware is an "empty machine."

Part 03: Programming Languages - Key Points

- **Machine Language:** The computer's native language in binary code (0s and 1s). Difficult for humans.

- **Assembly Language:** Uses mnemonics (e.g., ADD, SUB) to represent machine code. Requires an **assembler** to translate.
 - **High-Level Language:** English-like and easy to learn (e.g., Python, Java, C++). Requires a **compiler** to translate the entire source code into machine code.
 - **Source Code:** The original program written in a high-level language.
 - **Compiler:** A tool that translates source code into an executable machine-code file.
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Questions

Multiple Choice Questions:

1. What is the collective term for the physical, tangible components of a computer?

- a) Software
- b) Hardware
- c) Firmware
- d) Source code

Answer: b) Hardware

2. Which component is known as the "brain" of the computer and is responsible for executing instructions?

- a) RAM
- b) Hard Drive
- c) CPU
- d) Compiler

Answer: c) CPU

3. Which of the following is a volatile form of memory?

- a) USB Flash Drive
- b) Solid State Drive (SSD)
- c) RAM

d) Hard Disk Drive (HDD)

Answer: c) RAM

4. A web browser like Chrome or Firefox is an example of:

- a) System Software
- b) Application Software
- c) Hardware
- d) An Operating System

Answer: b) Application Software

5. What is the name of the software that manages and controls a computer's activities and is essential for running application software?

- a) A Compiler
- b) An Assembler
- c) An Operating System
- d) A Source Program

Answer: c) An Operating System

6. Which of the following languages is written in binary code (0s and 1s) and is the only language a computer understands natively?

- a) Assembly Language
- b) High-Level Language
- c) Machine Language
- d) Source Language

Answer: c) Machine Language

7. A program written in a high-level language is called:

- a) Machine Code
- b) An Executable
- c) Source Code
- d) System Code

Answer: c) Source Code

8. What is the purpose of a compiler?

- a) To manage the computer's memory
- b) To execute a program
- c) To translate assembly language into machine code
- d) To translate high-level source code into machine code

Answer: d) To translate high-level source code into machine code

9. Which device is used to display information from the computer to the user?

- a) Input Device
- b) Output Device
- c) Storage Device
- d) Communication Device

Answer: b) Output Device

10. The statement `ADDF3 R1, R2, R3` is most likely an example of:

- a) A High-Level Language
- b) Machine Language
- c) Assembly Language
- d) Source Code for a compiler

Answer: c) Assembly Language

True/False Questions:

11. True or False: Without software, computer hardware is completely useless.

Answer: True

12. True or False: The operating system (OS) is a type of application software.

Answer: False. It is system software.

13. True or False: Data stored in RAM is permanently saved, even when the computer is turned off.

Answer: False. RAM is volatile memory.

14. True or False: A keyboard is an example of an output device.

Answer: False. It is an input device.

15. True or False: An assembler is used to translate a program written in Python into machine code.

Answer: False. An assembler is for assembly language. A compiler (or interpreter) is used for high-level languages like Python.

16. True or False: The CPU's speed is measured in megabytes (MB) or gigabytes (GB).

Answer: False. CPU speed is measured in Hertz (e.g., GHz). MB/GB are units of storage.

17. True or False: A hard disk drive is considered an input device.

Answer: False. It is a storage device.

18. True or False: The source code is the final, executable file that a user runs.

Answer: False. The source code is the original human-readable code. The final executable is the machine code file.

19. True or False: Linux, Windows, and macOS are all examples of application software.

Answer: False. They are all operating systems (system software).

20. True or False: A program must be loaded into the CPU before it can be executed.

Answer: False. A program is loaded into memory (RAM), and the CPU fetches instructions from memory to execute them.

21. True or False: High-level programming languages are easier for humans to understand than machine language.

Answer: True

22. True or False: A network interface card (NIC) is categorized as a communication device.

Answer: True

23. True or False: The compiler is a piece of hardware that helps the CPU run faster.

Answer: False. A compiler is a software tool.

24. True or False: The equation `area = 5 * 5 * 3.1415;` is an example of a machine language instruction.

Answer: False. It is an example of a high-level language statement.

25. True or False: Both system software and application software are required for a user to play a video game on a computer.

Answer: True. The game is application software, and it requires an operating system (system software) to run.