



# COMSATS University Islamabad, Islamabad Campus

Department of Computer Science

## Assignment 1 - Fall 2025

**Subject:** CSC101 - Applications of Information and Communication Technologies

**Instructor :** Mr. Muhammad Haris

**Total Marks:** **30**

(CLO-3: *Describe the fundamental concepts of ICT domains.*)

**Assignment Overview:** In this assignment, you will explore the fundamental components of computer systems and their functionalities. You will explore the mechanisms behind how computers process data, focusing on the Central Processing Unit (CPU), memory, buses, and ports.

Assignment Tasks:

### Question 1: Central Processing Unit (CPU):

- i. Explain the role and functions of the Control Unit within the CPU.
- ii. Discuss the significance of the Arithmetic and Logic Unit (ALU) in executing computational tasks.
- iii. Describe the relationship between the System Clock and the Machine Cycle, explaining how they coordinate the operations of the CPU.

### Question 2 : Memory:

- iv. Differentiate between Volatile and Non-Volatile Memory, providing examples of each type.
- v. Explore the concept of Flash Memory and its applications in modern computing devices.
- vi. Discuss the importance of Registers and Cache Memory in enhancing CPU performance.
- vii. Draw the hierarchical structure of the memory and its relation with the CPU

### Question 3: Bus and Types:

- viii. Define the term "Bus" in the context of computer architecture, highlighting its role in data transfer.
- ix. Classify the different types of buses used in computer systems and explain their respective functions.
- x. Illustrate with diagrams the data flow within a computer system using buses.

### Question 4: Ports:

- xi. Identify and explain the purpose of various types of ports commonly found in computer systems (e.g., USB, HDMI, Ethernet).
- xii. Discuss the similarities and differences between serial and parallel ports, highlighting their advantages and limitations.
- xiii. Provide real-world examples of scenarios where specific ports are utilized for data communication.

### Assignment Deliverables:

- A comprehensive written report covering all the tasks mentioned above. Ensure clarity, coherence, and depth of explanation in your responses.
- Diagrams and illustrations where necessary to explain concepts, especially concerning the architecture and data flow within a computer system.
- Any additional research or references utilized in preparing the assignment.

### Evaluation Criteria:

1. Understanding of fundamental concepts related to CPU, memory, buses, and ports.
2. Depth of explanation and clarity in presenting complex ideas.
3. Accuracy and relevance of examples provided.
4. Quality and relevance of diagrams and illustrations.
5. Overall coherence and organization of the written report.
6. Assignment should be your own work.
7. *ZERO* tolerance policy on Plagiarism of any sort.