Sétif 1 University
Faculty of Sciences
Common Core Mathematics and Computer Science

1st semester (year 2025/26)
Machine Structures 1 course
Kara Abdelaziz professor

Problem set 1
(Introduction to Computer Science)

Exercise 1:

Answer the following questions:

1. What are the 3 main aspects studied in Computer Science?
2. What are the main components a "Computer System" is composed of? And how do they interact with each other?
3. Which architecture is most well-known for Personal Computers (PCs)? And list its main components?
4. What is the main function of the CPU (Central Processing Unit) in a computer architecture?
5. What is the RAM, and what are the two kinds of information stored in it?
6. What is the role of the I/O Units?
7. Explain the difference between 'data' and 'information'.
8. What is the smallest possible unit of information, and what is its physical implementation in electricity?
9. What are the North Bridge and South Bridge, and what is their primary function? What are they collectively called?
10. Explain the role and difference between the Primary memory and the Secondary memory.

Exercise 2:

Question 1: Draw the schematic of Von Neumann's architecture.

Question 2: Describe the data flow of information through the architecture in a PC used like in the following scenarios:

1. A teacher using an application on his PC to calculate his student's average marks.
2. A person browsing the internet.
3. A person watching a movie with his PC (using DMA).

Exercise 3:

Question 1: Trace a table to perform the following data quantities conversion to B, KB, MB, GB, TB respectively: 8 GB RAM**,** 1 TB HDD**,** 32 GB flash drive.

Question 2: Trace a second table to perform the following transfer speed conversion to b, Kb, Mb respectively: 10 Mbps ADSL, 5 Gbps USB 3.0.