ourdiu.com | Shared by Md. Mehedi Hasan

Daffodil International University

Department of Software Engineering

Faculty of Science & Information Technology

Quiz-1 , Spring 2026

Course Code: SE222, Course Title: Computer Architecture

Section: 44 I

Marks: 15

---

1. A program executes instructions on a 2 GHz processor with the following instruction set:

Instruction	Instruction Count	Processor Clock Cycle
Integer arithmetic	320,000	3
Load	110,000	2
Store	430,000	1
Branch	240,000	2

ourdiu.com

a) **Calculate** the average CPI , MIPS of the processor using the given instruction mix. **(4 marks)**

b) A second processor executes the same program at a clock rate of 2.6 GHz. However, the load instruction requires 4 cycles instead of 2, while all other instructions retain the same number of clock cycles as in the first processor. **Analyze** the MIPS and **determine** which can execute more instructions per second. **(4 marks)**

ourdiu.com | Shared by Md. Mehedi Hasan

c) In the year 2020, the first processor contained 10×10^6 transistors. Assume that the number of transistors doubles every 4 years. **Evaluate** the expected number of transistors in the year 2035. **(4 marks)**

2. A CPU executes a program that reads a number from input, checks if it is an integer and shows the result as output. **Identify** and **describe** the functional units of the CPU that are active during the execution of this program. **(3 marks)**