PAMANTASAN NG LUNGSOD NG MAYNILA
(University of the City of Manila)
Intramuros, Manila

MICROPROCESSOR (LECTURE)

Activity No. 2
Microprocessor and its Architecture

Score

Submitted by:
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Submitted to:

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Instruction:

A. Briefly describe the enumerated categories.

1. Microcontrollers are categorized according to the following:

a. Number of bits - Microcontrollers come in a variety of bit sizes, including 4-bit, 8-bit, 64-bit, and 128-bit.

b. Memory - Memory is where data and program code are kept. An 8051 microcontroller has 4Kb on-chip programmable ROM for storing program code and 128 bytes on-chip RAM for temporary data storage.

c. Instruction set - Microcontrollers have many instruction sets that define the commands they may perform. Reduced Instruction Set Computing (RISC) and Complex Instruction Set Computing (CISC) are examples of common instruction sets.

d. Applications - Microcontrollers are intended for use in a variety of applications, including automotive, industrial control, consumer electronics, and others. A microcontroller's features and peripherals are tuned to match the requirements of a certain application.

2. Problems arise on the electrical characteristics of a bus. Discuss how noise immunity differs from bus loading.

The capacity of a device to prevent noise on its input from being transferred to its output is referred to as *noise immunity*. It is essential for guaranteeing consistent operation in loud environments. *Bus loading*, on the other hand, refers to the effect of connected devices on the electrical characteristics of the bus. When several devices are linked to a bus, its overall capacitance and resistance rise, influencing its electrical properties. Signal integrity must be maintained in the presence of external interference, and bus loading must be regulated to ensure proper signal transmission inside the system.

3. How is bus buffering technique being done?

The bus buffering approach involves the use of buffers to isolate the bus lines from the load of the linked devices. Buffers function as amplifiers, giving the necessary driving capability to overcome the effects of bus loading. Buffering, by isolating the bus lines, helps to maintain signal integrity and reduces the impact of linked devices on the electrical properties of the bus. This technique is often employed in systems with several devices connected to a bus to ensure reliable signal delivery.

4. Why is flags register necessary in the operation of the microprocessor? Please

The flags register in a microprocessor is required for various operations and conditional branching. It includes status flags that indicate the conclusion of arithmetic and logic operations, such as zero, carry, overflow, and sign flags. These flags are utilized by the processor to make decisions during program execution, such as branching based on the result of a comparison or making conditional jumps. The flags register is critical in managing the flow of execution and implementing decision-making logic within the microprocessor.

B. Cite your References below.

- https://www.elprocus.com/microcontrollers-types-and-applications/
- https://embeddedschool.in/different-types-of-microcontroller-programming-used-in-embedded-systems/
- https://www.ti.com/lit/an/snoa382/snoa382.pdf
- https://www.st.com/resource/en/application_note/cd00003833-designing-with-microcontrollers-in-noisy-environments-stmicroelectronics.pdf