

REGISTER ORGANIZATION

IN 8085 MICROPROCESSOR ARCHITECTURE

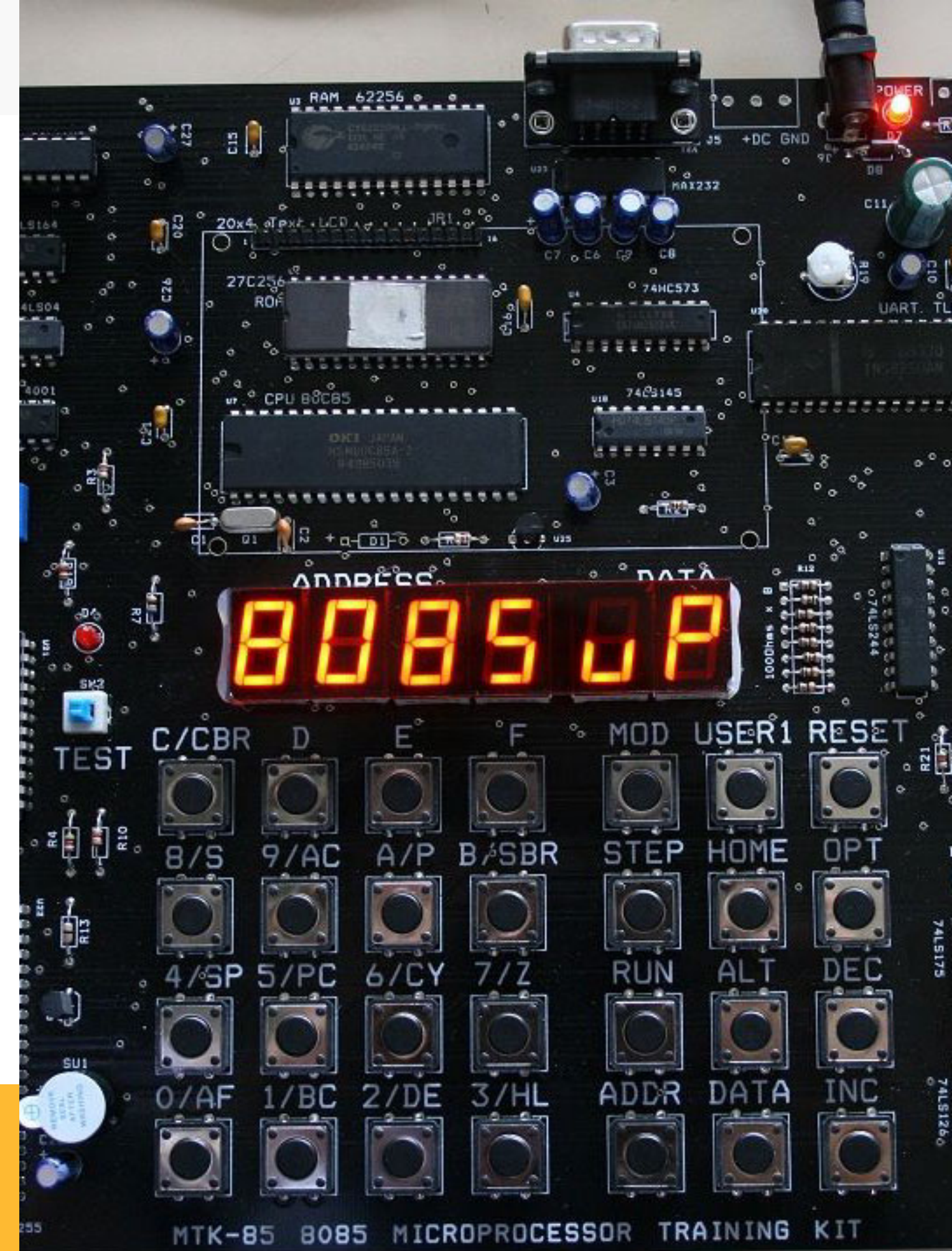
By:

Name: Harjot Kaur

URN: 2302718

WHAT IS MICROPROCESSOR

A microprocessor is a multipurpose, programmable, clock-driven, register-based electronic device that reads binary instructions from a storage device called memory, accepts binary data as input and processes data according to those instructions and provide results as output.



WHY USE REGISTERS IN 8085 MICROPROCESSOR ?

1

**TEMPORARY
STORAGE**

2

ADDRESSING

3

INPUT/OUTPUT

4

**STATUS
INFORMATION**

Registers in 8085:

A. GENERAL PURPOSE REGISTERS :

The 8085 has six general-purpose registers to store 8-bit data; these are identified as- B, C, D, E, H, and L. These can be combined as register pairs - BC, DE, and HL, to perform some 16-bit operation. These registers are used to store or copy temporary data, by using instructions, during the execution of the program.

Registers in 8085:

B). SPECIFIC PURPOSE REGISTERS :

- **Accumulator:** The accumulator is an 8-bit register (can store 8-bit data) that is the part of the arithmetic and logical unit (ALU). After performing arithmetical or logical operations, the result is stored in accumulator.
- **Flag Register:** It is a special purpose register and it is completely different from other registers in microprocessor. It consists of 8 bits. These 5 flags are set or reset (when value of flag is 1, then it is said to be set and when value is 0, then it is said to be reset) after an operation according to data condition of the result in the accumulator and other registers. The 5 flag registers are: Sign Flag, Zero Flag, Auxiliary Carry Flag, Parity Flag, Carry Flag
- **Instruction Register:** In a typical processor operation, the processor first fetches the opcode of instruction from memory (i.e. it places an address on the address bus and memory responds by placing the data stored at the specific address on the data bus). The CPU stores this opcode in a register called the instruction register.

Registers in 8085:

(C) MEMORY REGISTERS:-

- There are two 16-bit registers used to hold memory addresses. The size of these registers is 16 bits because the memory addresses are 16 bits. They are :-
 - **Program Counter:** This register is used to sequence the execution of the instructions. The function of the program counter is to point to the memory address from which the next byte is to be fetched. When a byte (machine code) is being fetched, the program counter is incremented by one to point to the next memory location.
 - **Stack Pointer:** It is used as a memory pointer. It points to a memory location in read/write memory, called the stack. It is always incremented/decremented by 2 during push and pop operation.

ADVANTAGES

- Fast Access
- Reduced memory access
- Specialized functionality
- Reduced complexity

DISADVANTAGES

- Limited storage capacity
- Complex addressing modes
- Context switching
- Lack of flexibility

