



SNS COLLEGE OF ENGINEERING

(Autonomous)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING



19EC401 – MICROPROCESSORS AND MICROCONTROLLERS



Guess Today's Topic????





What is Microprocessor?



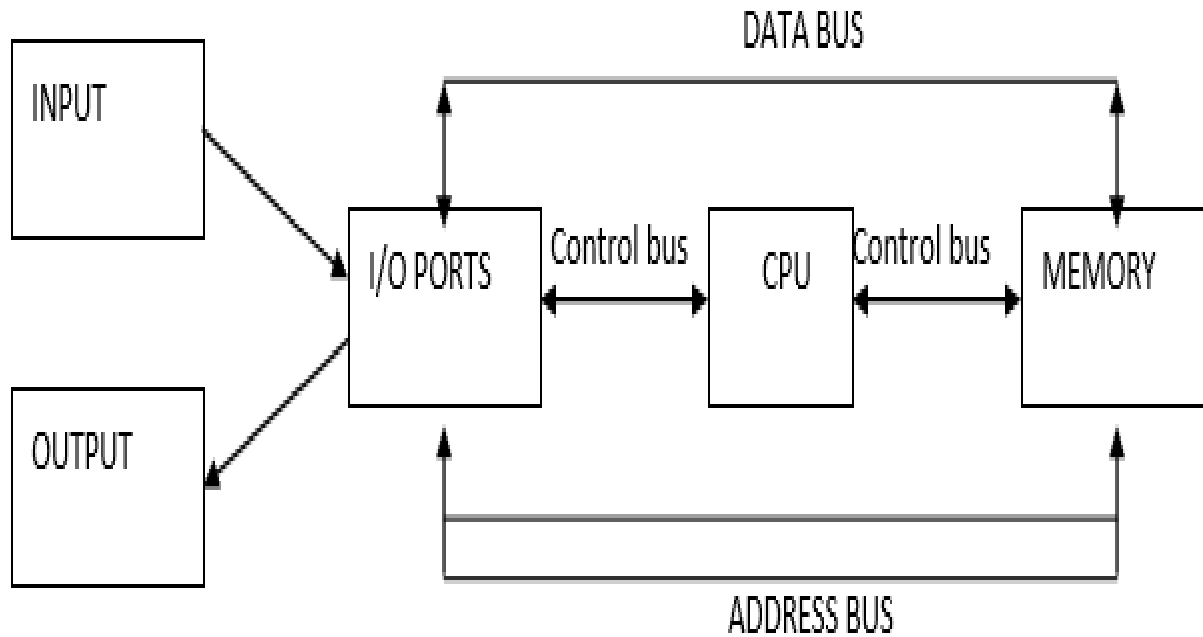
Processor means a device that processes numbers, specifically binary numbers, 0's and 1's.

Microprocessor is a multipurpose, programmable device that accepts digital data as input, processes it according to instructions stored in its memory, and provides results as output.





Introduction of Microprocessors





The 8085 Architecture



The 8085 is an **8-bit general purpose** microprocessor that can address **64K Byte of memory**.

It has **40 pins** and uses +5V for power. It can run at a **maximum frequency of 3 MHz**.

The pins on the chip can be grouped into 6 groups:

Address Bus.

Data Bus.

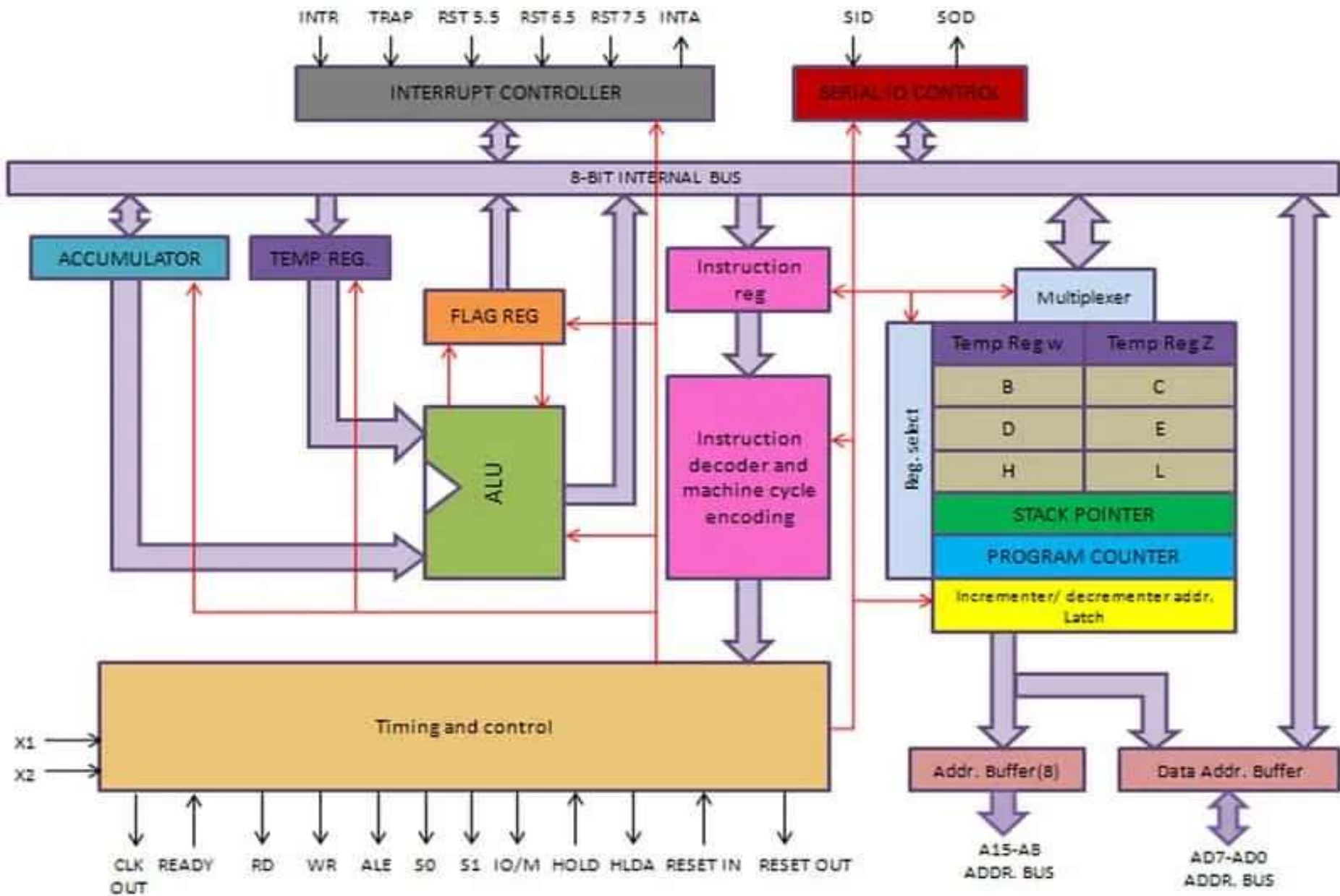
Control and Status Signals.

Power supply and frequency.

Externally Initiated Signals.

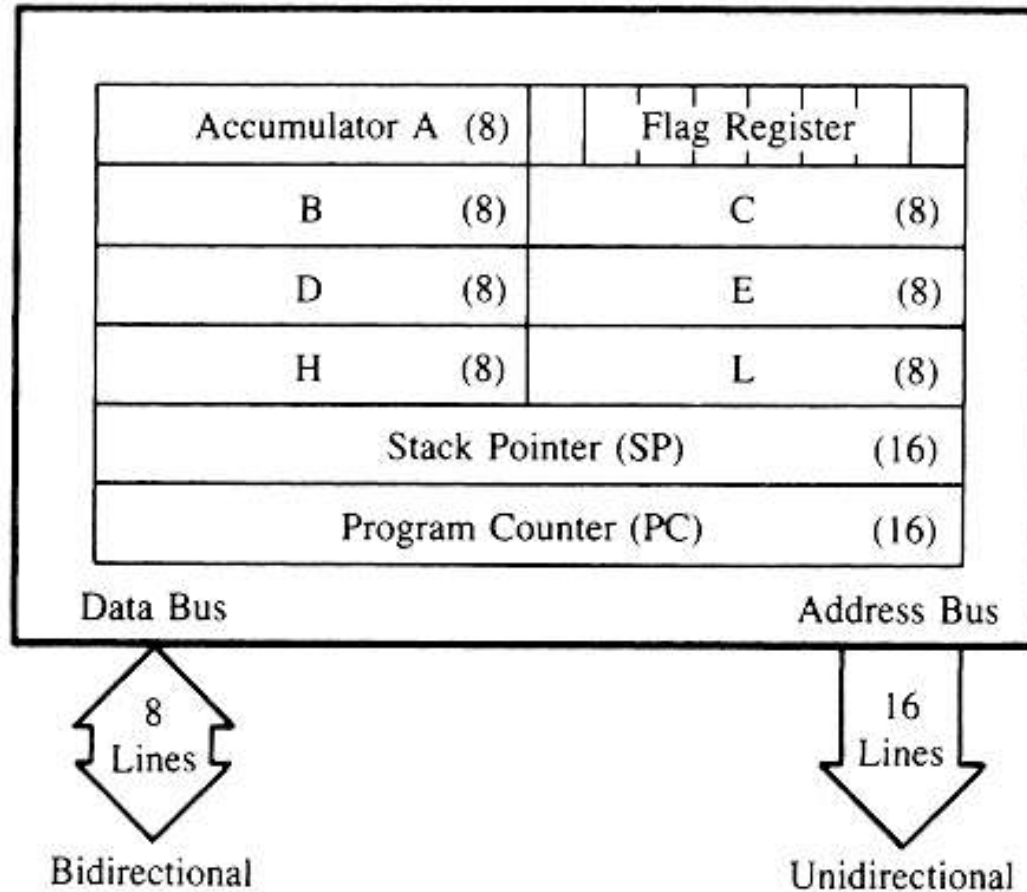
Serial I/O ports.







Register Organisation





Flag Registers



- **Flag Register:** It is a group of 5 flip flops used to know status of various operations done and is given by:



- **S:** Sign flag is set when result of an operation is negative.
- **Z:** Zero flag is set when result of an operation is 0.
- **AC:** Auxiliary carry flag is set when there is a carry out of lower nibble or lower four bits of the operation.
- **CY:** Carry flag is set when there is carry generated by an operation.
- **P:** Parity flag is set when result contains even number of 1's.
Rest(X) are don't care flip flops.
- 8085 uses these flags in decision-making process.

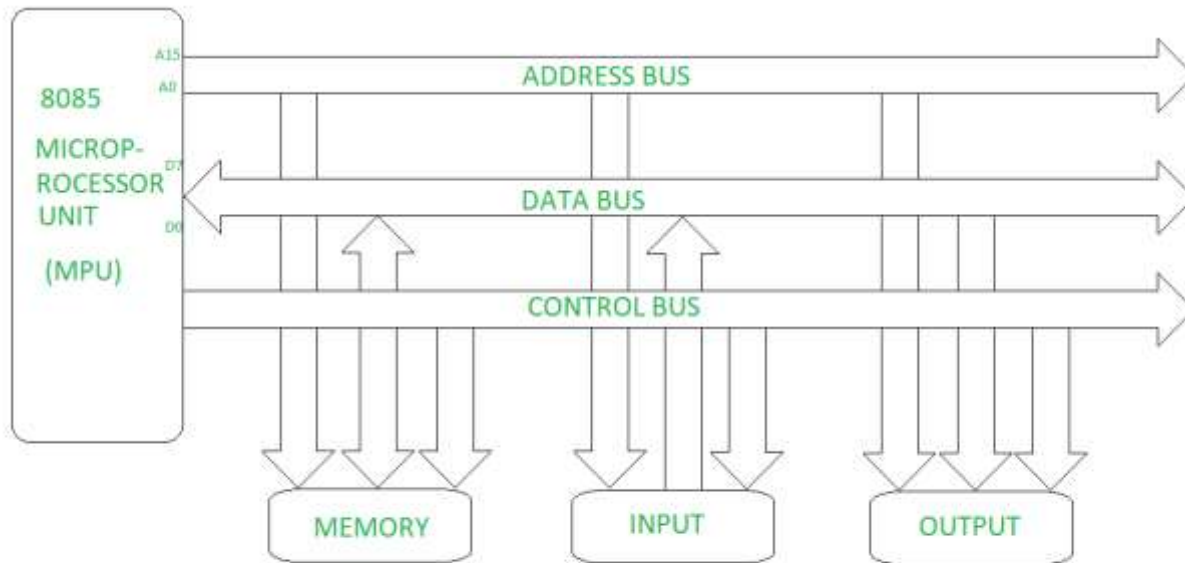




Bus organization of 8085 microprocessor



Bus is a group of conducting wires which carries information, all the peripherals are connected to microprocessor through Bus.



Bus organization system of 8085 Microprocessor





Address bus



- It is a group of conducting wires which carries address only.
- Address bus is unidirectional because data flow in one direction, from microprocessor to memory or from microprocessor to Input/output devices (That is, Out of Microprocessor).
- Length of Address Bus of 8085 microprocessor is 16 Bit (That is, Four Hexadecimal Digits), ranging from 0000 H to FFFF H, (H denotes Hexadecimal).
- The microprocessor 8085 can transfer maximum 16 bit address which means it can address 65, 536 different memory location.





Data bus



- It is a group of conducting wires which carries Data only.
- Data bus is bidirectional because data flow in both directions, from microprocessor to memory or Input/Output devices and from memory or Input/Output devices to microprocessor.
- Length of Data Bus of 8085 microprocessor is 8 Bit (That is, two Hexadecimal Digits), ranging from 00 H to FF H. (H denotes Hexadecimal).





Control Bus



- It is a group of conducting wires, which is used to generate timing and control signals to control all the associated peripherals, microprocessor uses control bus to process data.
- Some control signals are

Memory read

Memory write

I/O read

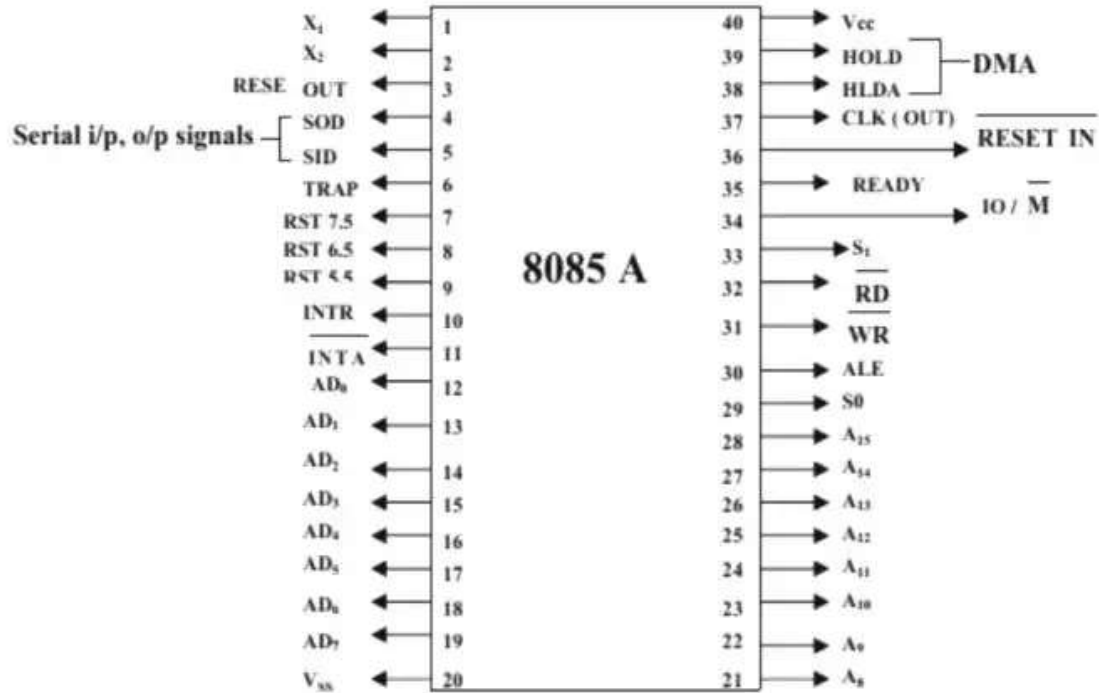
I/O Write

Opcode fetch





Pin diagram of 8085 microprocessor



Pin Diagram of 8085





1. In 8085, 16-bit address bus, which can address upto?
16KB, B. 32KB, C. 64KB, D. 128KB

2. There are _____ general purpose registers in 8085 processor
A.5 B. 6 C. 7 D. 8

3. What is true about Program counter?
 - A. It is an 8-bit register, which holds the temporary data of arithmetic and logical operations.
 - B. When an instruction is fetched from memory then it is stored in the program counter
 - C. It provides timing and control signal to the microprocessor
 - D. It is a 16-bit register used to store the memory address location of the next instruction to be executed.





THANK YOU

