

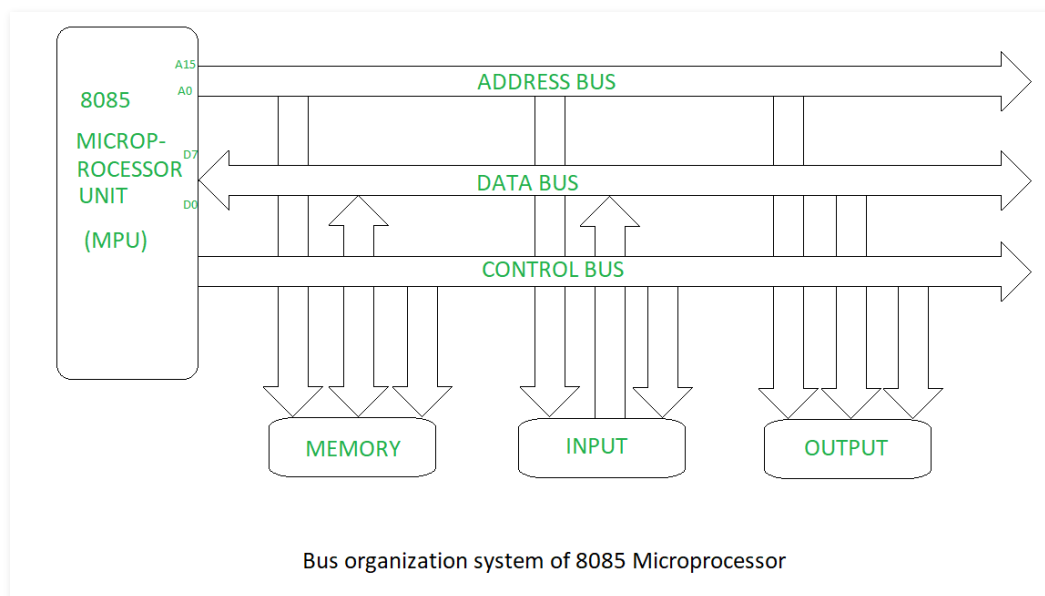
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Bus organization of 8085 microprocessor

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

Diagram to represent bus organization system of 8085 Microprocessor.



There are three types of buses.

1. 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.

The Length of the address bus determines the amount of memory a system can address. Such as a system with a 32-bit address bus can address 2^{32} memory locations. If each memory location holds one byte, the addressable memory space is 4 GB. However, the actual amount of memory that can be accessed is usually much less than this theoretical limit due to chipset and motherboard limitations.

2. 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).

When it is write operation, the processor will put the data (to be written) on the data bus, when it is read operation, the memory controller will get the data from specific memory block and put it into the data bus.

The width of the data bus is directly related to the largest number that the bus can carry, such as an 8 bit bus can represent 2 to the power of 8 unique values, this equates to the number 0 to 255. A 16 bit bus can carry 0 to 65535.

3. 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, that is what to do with selected memory location. Some control signals are:

- Memory read
- Memory write
- I/O read
- I/O Write
- Opcode fetch

If one line of control bus may be the read/write line. If the wire is low (no electricity flowing) then the memory is read, if the wire is high (electricity is flowing) then the memory is written.

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