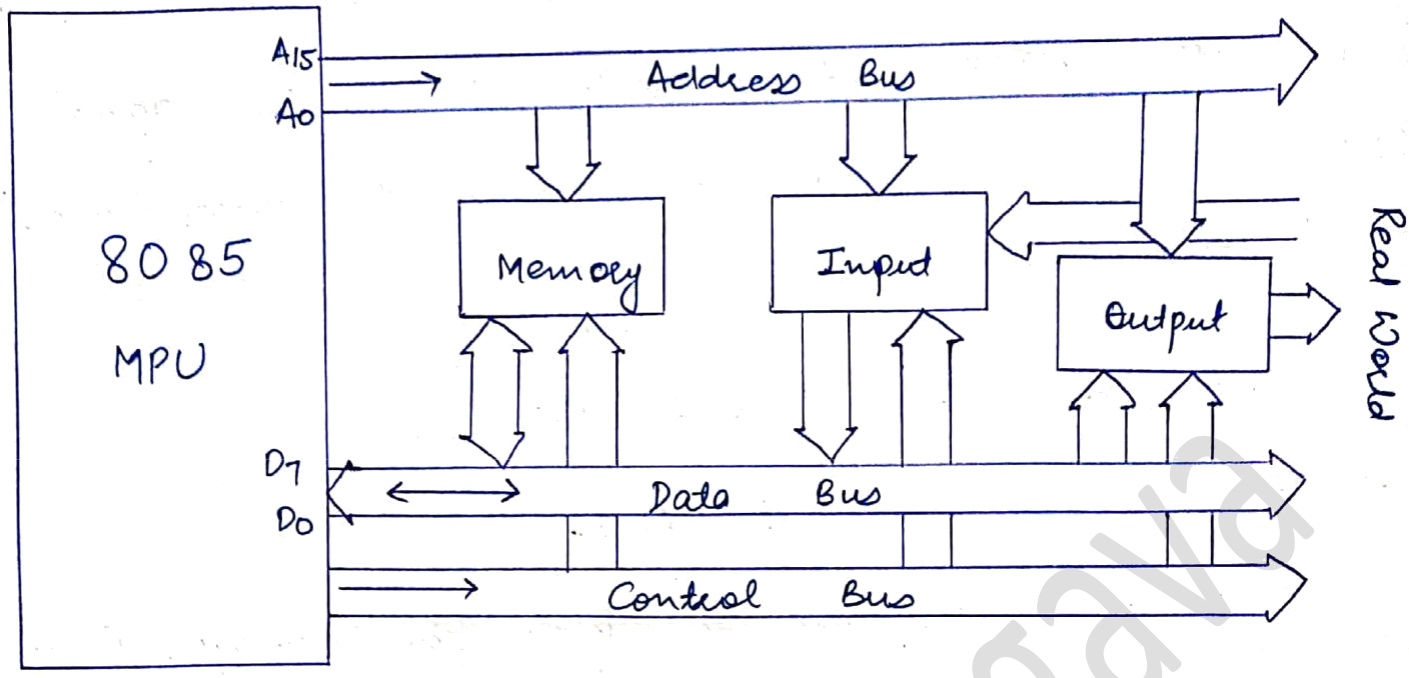
Microprocessor Bus Structure



Address Bus

→ It is a group of 16 lines generally identified as $A_0 - A_{15}$.

→ It is unidirectional, bit flows in one direction i.e. from MPU to peripheral devices.

→ The MPU uses address bus to perform the function: Identify peripheral device or Memory location.

Data Bus

→ It is a group of eight lines for data flow.

→ These lines are bidirectional i.e data flows in both direction between MPU & Memory & peripheral devices.

→ The MPU use data bus to perform: transferring binary information

Note :- → The 8085 MPU with its 16 address lines is capable of addressing $2^{16} = 65536$ (generally known as 64 K) of memory location.

→ The 8 bit Data ranging from 00 to FF ($2^8 = 256$)

The largest number that appear on data bus is

1 1 1 1 1 1 1 1 (255_{10}).

Control Bus

→ It provide timing signal.

→ It compose of various single lines that carry synchronization signals.

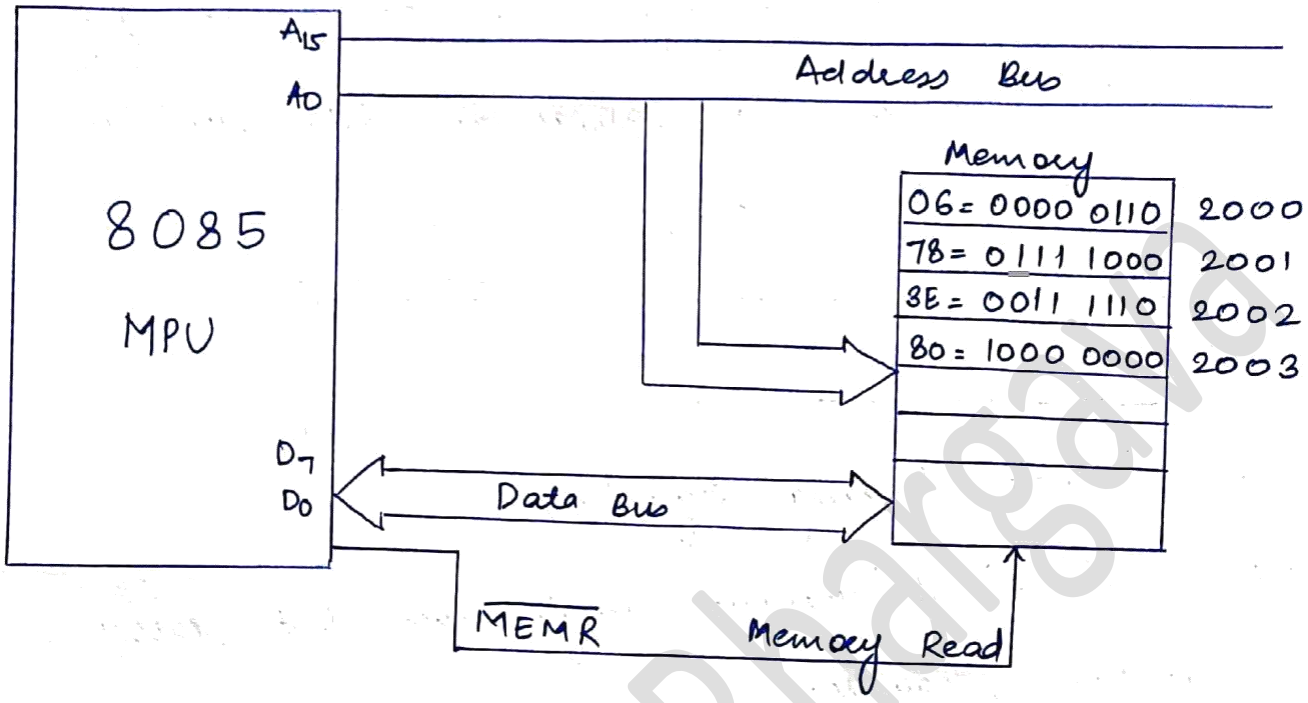
Therefore, to communicate with peripheral or memory, the MPU needs to perform the following steps

Step 1) Identify the peripheral or memory location. (Address Bus)

Step 2) Transfer binary information. (data bus)

Step 3) Provide timing or synchronization signals. (control Bus)

Example: To communicate with memory, to read an instruction from memory location - the MPU places the 16-bit address on the address bus.



- The address on bus is decoded by external logic circuit.
- The MPU sends a pulse called Memory Read as the control signal.
- The pulse activates the memory chip, and the content of memory location are placed on the data bus and brought inside the microprocessor.