



LECTURE THREE

Interfacing The 8085 Microprocessor (I/O & Memory Interfacing)

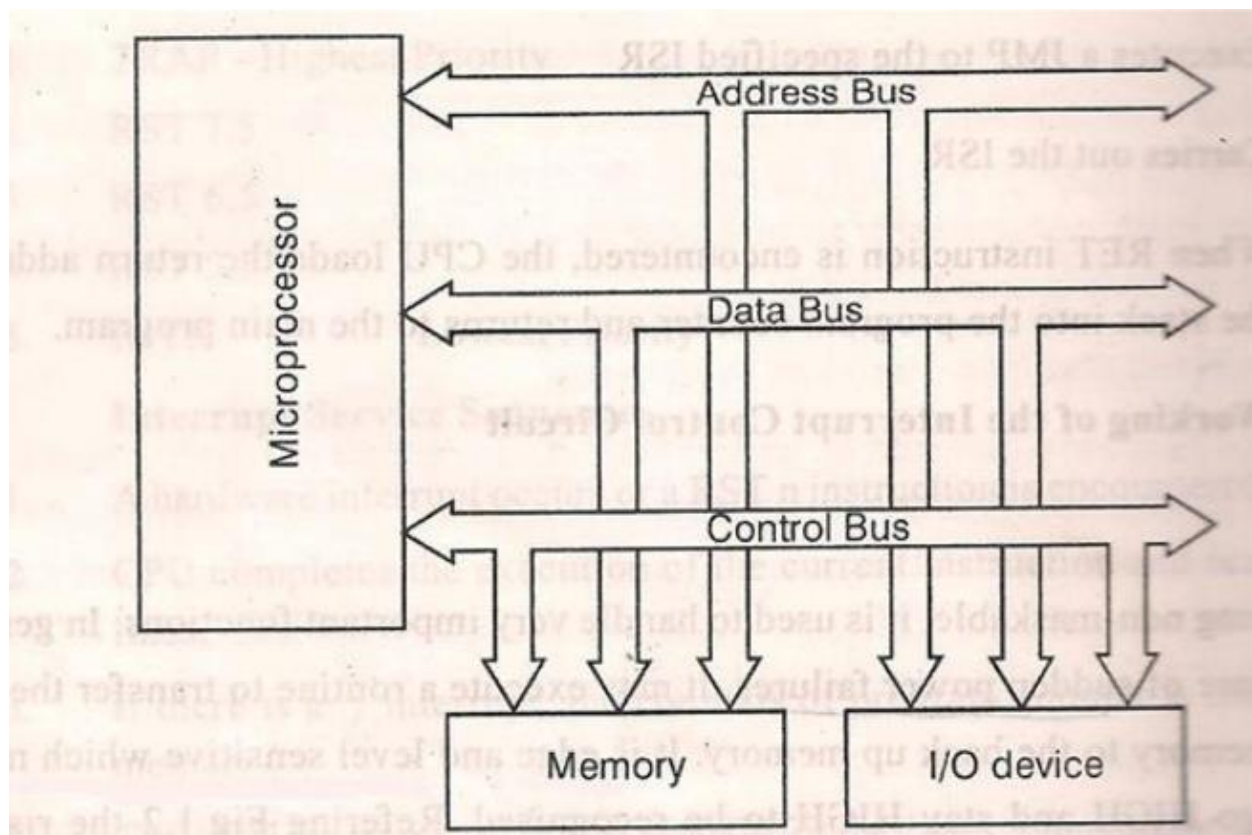
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Interfacing the 8085 microprocessor:

A microprocessor is the CPU of a computer. A microprocessor can perform some operation on a data and give the output. But to perform the operation we need an input to enter the data and an output to display the results of the operation. So we are using a keyboard and monitor as Input and output along with the processor. Microprocessors engineering involves a lot of other concepts and we also interface memory elements like ROM, EPROM to access the memory.





Interfacing Types:

There are two types of interfacing in context of the 8085 Microprocessor.

Memory Interfacing & I/O Interfacing.

1. Memory Interfacing:

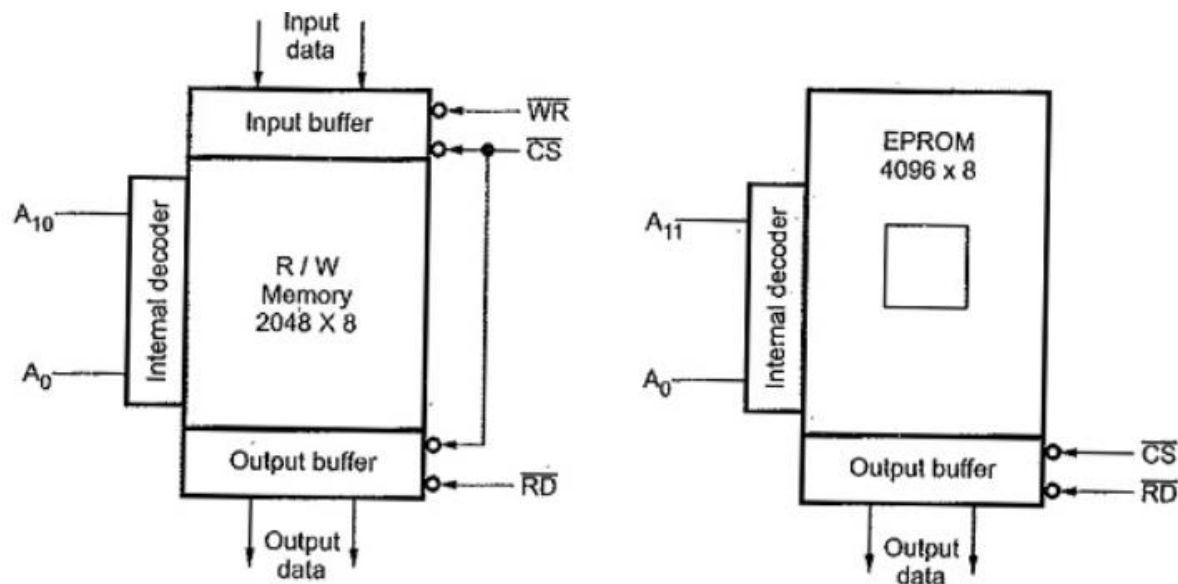
Memory is an integral part of a microprocessor system, and in this section, we will discuss how to interface a memory device with the microprocessor. The Memory Interfacing in 8085 is used to access memory quite frequently to read instruction codes and data stored in memory. This read/write operations are monitored by control signals. The microprocessor activates these signals when it wants to read from and write into memory.

In the last section we have already seen the memory read and memory write machine cycles, and status of the RD, WR and IO/M status signals for read/write operation. In the following section we will see memory structure and its requirements, concepts in Memory Interfacing in 8085 and interfacing examples.



Memory Structure and its Requirements:

As mentioned earlier, read/write memories consist of an array of registers, in which each register has unique address. The size of the memory is $N \times M$ as shown in Figure below where N is the number of registers and M is the word length, in number of bits.



Basic Concepts in Memory Interfacing:

For Memory Interfacing in 8085, following important points are to be kept in mind.



1. Microprocessor 8085 can access 64Kbytes memory since address bus is 16-bit. But it is not always necessary to use full 64Kbytes address space. The total memory size depends upon the application.
2. Generally EPROM (or EPROMs) is used as a program memory and RAM (or RAMs) as a data memory. When both, EPROM and RAM are used, the total address space 64Kbytes is shared by them.
3. The capacity of program memory and data memory depends on the application.
4. It is not always necessary to select 1 EPROM and 1 RAM. We can have multiple EPROMs and multiple RAMs as per the requirement of application.
5. We can place EPROM/RAM anywhere in full 64 Kbytes address space. But program memory (EPROM) should be located from address 0000H since reset address of 8085 microprocessor is 0000H.
6. It is not always necessary to locate EPROM and RAM in consecutive memory For example: If the mapping of EPROM is from 0000H to OFFFH, it is not must to locate RAM from 1000H. We can locate it



anywhere between 1000H and FFFFH. Where to locate memory component totally depends on the application.