Republic of Iraq
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8085 Microprocessor

Lecture 8

المدرس ضرغام الخفاف الاسدي

Third Year lecture notes

Avionics Engineering Dept.

Engineering Technical College/ NAJAF 2020-2021

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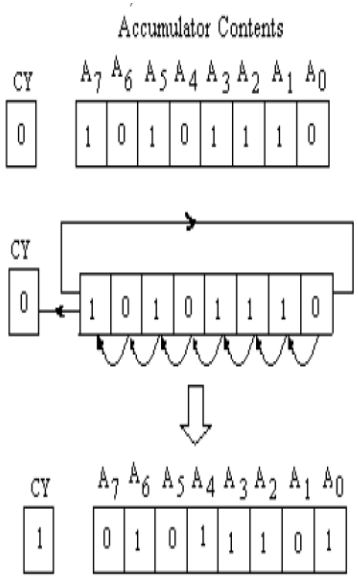
Example

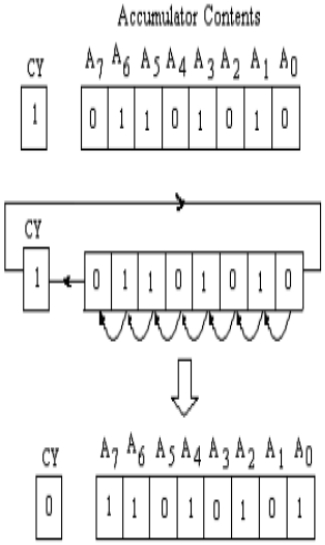
Rotate the content of the accumulator to the left, if the accumulator has 43 H, then the result rotates it to the right.

Just to remember

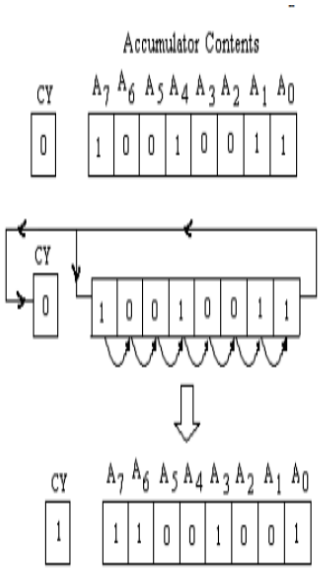
RLC



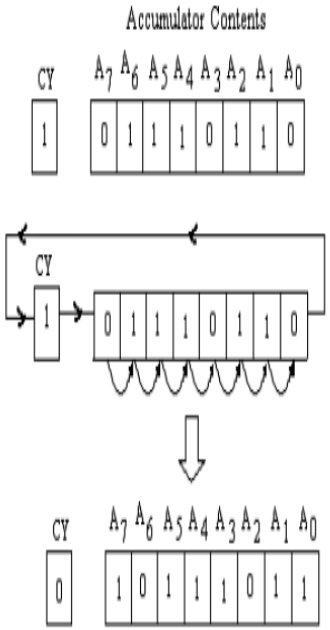
RAL



RRC



RAR



A= 43 H = 0 1 0 0 0 0 1 1

If cy=0, the Left rotation using RAL and RLC

A = 1 0 0 0 0 1 1 0 = 86 H & cy=A7=0 using **RLC**

A = 1 0 0 0 0 1 1 0 = 86 H & cy=A7=0 using **RAL**

If cy = 1, the left rotation using RAL and RLC

A = 1 0 0 0 0 1 1 0 = 86 H & cy= 0 using **RLC**

A = 1 0 0 0 0 1 1 1 = 87 H & cy= 0 using **RAL**

The result is 86 cy=1/0 using RAL & the result is 86 if cy =0 and 87 if cy=1,

we will take A= 86 H = 1 0 0 0 0 1 1 0

1	0	0	0	0	1	1	0

If cy=0, the right rotation using RAR and RRC

A= 0 1 0 0 0 0 1 1 =43H & cy=0 using **RRC**

A= 0 1 0 0 0 0 1 1 = 43H & cy=0 using **RAR**

If cy = 1, the right rotation using RAR and RRC

A= 0 1 0 0 0 0 1 1 =43H & cy=0 using **RRC**

A= 1 1 0 0 0 0 1 1 = C3H & cy=0 using **RAR**

The Conclusion:

After analysis the results, what you understand ?

- Which instruction can run the multiplication process and what is the condition?
- Which instruction can run the division process and what is the condition?

SERIAL INPUT AND OUTPUT DATA TRANSFER

As already discussed in the architecture of 8085, two pins (Pin Nos. 4 and 5) are provided for SOD (Serial Out Data) and SID (Serial In Data) lines. These lines are used for serial data transfer. The data transfer to or from the SID or SOD lines is possible using the Instructions RIM (Read Interrupt Mask) and SIM (Set Interrupt Mask). The data on the SID line (Pin 5 of 8085) is loaded into accumulator at bit D7 whenever a RIM instruction is executed. In other words a RIM instruction may be executed each time a new bit arrives at the SID input. For example, let a bit '1' arrives at the SID input. RIM instruction is now executed. After the execution of RIM instruction D7 bit of the accumulator will be 1 as shown in figure 7.25. Further to input 8 bit data serially through SID line, RIM instruction is executed 8 times and each time D7 bit may be isolated and saved for the conversion of serial data into parallel data.

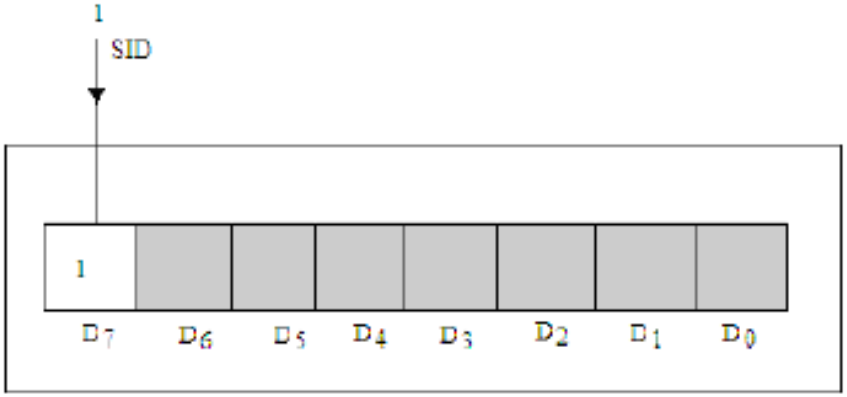


Fig. 7.25

The SIM instruction sends the D7 bit of the accumulator to the SOD line of 8085.For this transfer, D6 bit (SOE) of the accumulator must be high as shown in figure 7.26.

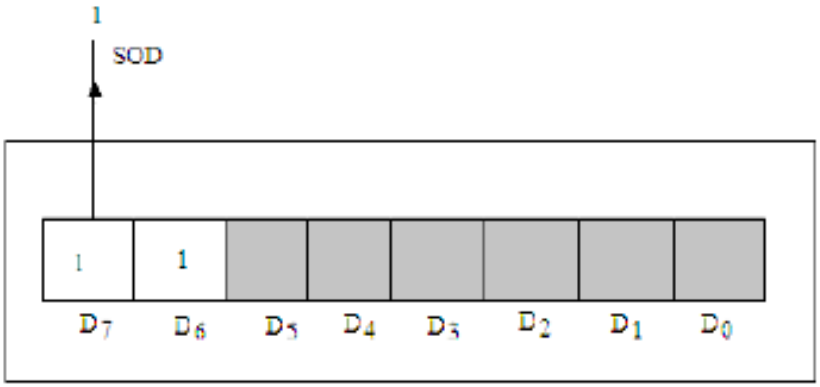


Fig. 7.26

Suppose we wish to send a '0' bit to the SOD line, this can be done as:

MVI A, 40 H

SIM

Similarly, to send a '1' bit to the SOD line, we use

MVI A, C0 H

SIM

The rotate or other instructions may used to convert 8 bit parallel data to serial data stream at the SOD output.

Thank you