U20CS110
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mode-3

Tut-6

Eg-1 Write an assembly language program in 8085 which generates 1KHz square wave form by using counter 1 as a binary counter if clock frequency is 2MHz for 8253/8254

Eg-2 Write a control word for counter 1 of 8253/8254 that select the following option
→ Load the least significant byte only, mode 5 of operation and binary counting. then write an instruction sequence that will load the control word into 8253/8254 that is located at the address 0100 Hex of memory address space assume that 8253/8254 is attached to input output bus of the CPU. and the address input a_0 and a_1 are supplied by a_2 and a_3 respectively

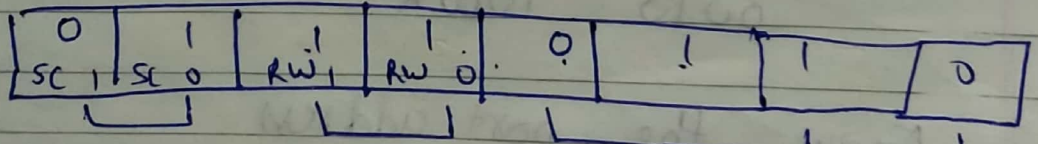
Sol-1

output frequency = 1KHz = 10^3 Hz
input frequency = 2MHz = 2×10^6 Hz

$$\text{count value} = \frac{2\text{MHz}}{1\text{KHz}} = 2000 = (07D0H)$$

counter

0 0 – 0
0 1 – 0 → work with this counter



counter 2 | R/W higher lower byte | M0M1M2 | for binary counter

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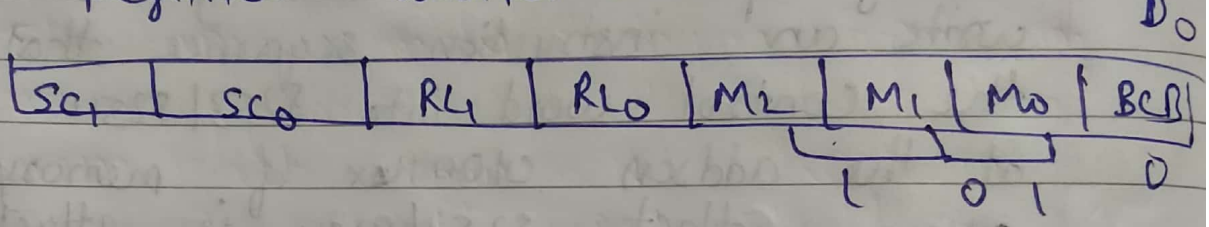
8085 program

```
MVI   A, 76H
OUT   83
MVI   A, 00H
out   87
MVI   A, 07H
out   87
```

Sol-2 Register counter (RC)



working mode = 5

$M_2 M_1 M_0 = 101$

For binary counter

$D_0 = 0$

for loading most memory byte

$(RL_1\ RL_0) = (1\ 0)$

The word becomes

0010 1010 H

Know the port address

CS is enabled when $A_7 = 1$

Control Register selected while A_1 & $A_0 = 1$

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Assuming unemployed lines A_6 to A_2 are at logic

~~Control~~ ~~Counter~~

Counter 01 Register = 83H

Counter 2 Register = 82H

```
MVI     A, B0H
out     83H
MVI     A, Low Byte
out     82H
MVI     A, High byte
out     82H
loop:   MVI   A, 80H
        Out   83H
        IN    82H
        MOV   D, A
        IN    82H
        ORA   D
        JNZ   Loop
        HLT
```

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