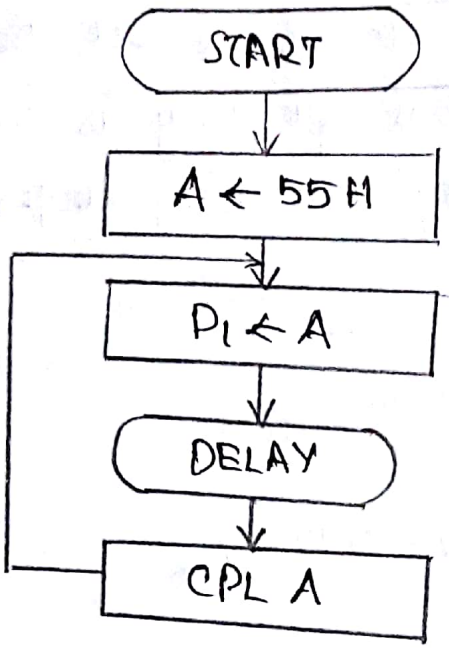
Unit - 3
part - C

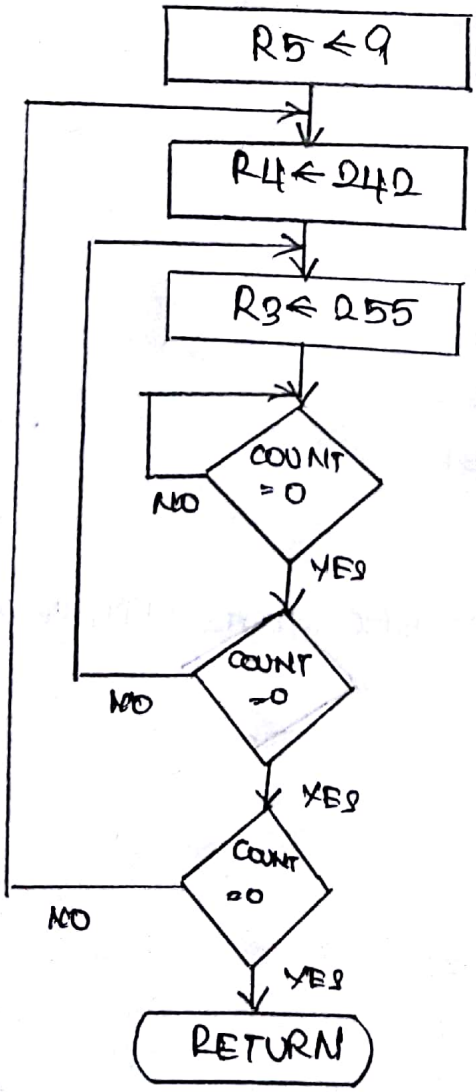
1. Write a program to toggle all the bits of P1 every 200ms. Assume crystal frequency is 11.0592 MHZ and the System is using DS89C420/30/40/50.

```
; Tested for DS89C420 of 11.0592 MHz.
        MOV   A, #55H
AGAIN : MOV   P1, A
        ACALL DELAY - 200 m
        CPL   A
        SJMP  AGAIN
;----- Time delay
DELAY_200 m;
        MOV  R5, #9
HERE 1: MOV  R4, #242
HERE 2: MOV  R3, #255
HERE 3: DJNZ R3, HERE3
        DJNZ R4, HERE 2
        DJNZ R5, HERE1
        RET
```

Delay $9 \times 242 \times 255 \times 4MC \times 90ns = 199,940\mu s$.



DELAY:



PART-C

UNIT-2

4. Develope a program using the ADI instruction to add two hexadecimal numbers 3AH and 48H and to display the answer at the output port.

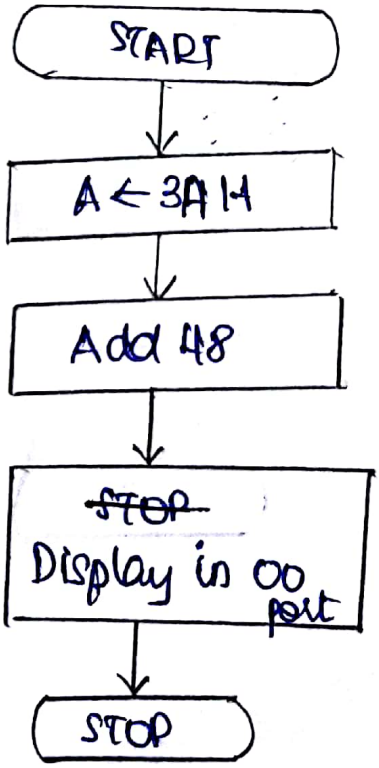
```
MVI   A,3AH
ADI   48H
OUT   00H
HLT.
```

3A - 0011 1010

48 - 0100 1000 (+)

01 1000 0010

PLOW CHART:



9. Write a program to transfer 50 bytes of data from memory location starting from 2000H to 3000H using the memory pointer concept in 8085 microprocessor.

```
        LXI  H, 2000H
        LXI  D, 3000H
        MVI  C, 32H (= 50)
Repeat  MOV  A, M
        STAX D
        INX  H
        INX  D
        DCR  C
        JNZ  Repeat
        HLT.
```

10 i) Assume the SP register contains 2099H, register B contains 32H and register C contains 57H. Write the instructions to save the contents of the BC register pair on the stack and specify the register contents (SP, B and C) after execution

```
LXI  SP,2099H
LXI  B,3257H
PUSH B
HLT
```

AFTER EXECUTION:

SP = SP - 2 = 2097H

B = 32H

C = 57H

MEMORY

2098 : 32H (B)

2097 : 57H (C)

ii) FIND THE TWO'S COMPLEMENT OF A 16bit DATA WITH EXAMPLE

```
LXI  B,2345H
MOV  A,C
CMA
MOV  E,A
MOV  A,B
CMA
MOV  D,A
LXI  H,0001H
DAD  D
SHLD 2000H
HLT
```

OPERATION:

23	45
B	C
0010 0011	0100 0101

CMA

D	E
1101 1100	1011 1010

H	L
0000 0000	0000 0001

DAD D

1101 1100	1011 1011
2001H	2000H
↓	↓
DC	BB