8085 programming :-

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Task :-

① Load Register B with 37 H

```
MVI B, 37H
```

② Copy the no. B to A.

```
MOV A, B
```

③ Send the no. to the output port.

```
OUT 01H
```

④ END of a program.

⑤ Write a program to perform following function & verifying the output :-

① Load the no. 8BH in register D.
② Load the no. 6FH in register C.
③ Increment the content of register C by 1.
④ Add the content of register C & D and display the sum at the output port 1.

Ans:- FBH

```
                                     6          F
                                    8421       8421
          MVI D, 8B H               0110       1111
          MVI C, 6F H                       +     1
                                   ------------------
          INR  C                    0111       0000
                                     7          0H
          MOV  A, C                 8421       8421
          ADD  D                    0111       0000
                                     8            B
          OUT  PORT 1             + 1000       1011
                                   ------------------
          HLT                       1111  (FBH) 1011
```

⑥ Load the no. 30H in register B & 39H in register
Subtract 39H from 30H.
Display the answer of PORT 1.

~~MOV~~

```
MVI B, 30 H
MVI C, 89 H
MOV A, B
SUB C
OUT PORT 1
HLT
```

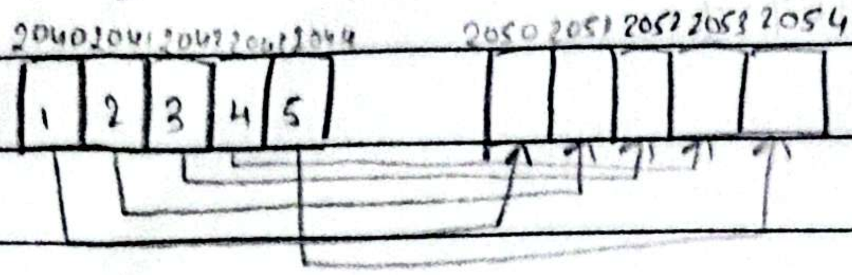
(7) Two 8-bit data are stored at memory location 2040 H & 2041 H respect., Write an assembly level program to add these two value & store the result at 2042 H.

```
LDA 2040 H
MOV B, A
LDA 2041H
ADD B
STA 2042
HLT
```

(8) Write a program to calculate the 2's complement of given 8-bit no. stored at memory location 2000 H.

```
LDA 2000H      (load to acc)
XRI FFH        ( doing X-OR-with FFH → changes to
                 1's complement)
ADI 01H        (adding 1 change to 2's.
HLT            stop
```

⑨ Five no. of 8-bit data are stored at memory location starting from 2040 H. Write an assembly language program to transfer those data at memory location starting from 2050 H.



```
       LXI H    2040H
       LXI D    2050H
       MVI C    05H
level: MOV A,M
       STAX     D
       INX  H
       INX  D
       DCR  C
       JNZ  level
       HLT
```

ON Reverse

```
        LXI H  2040H
        LXI D  2054H
        MVI C  05H
level:  MOV A,M
        STAX D
        INX  H
        DNX  D
        DCR  C
        JN2  level
        HLT
```

✗ Write a program to count the no. of zeros in a 8-bit no.

Write an assembly language program to multiply two 8-bit numbers

```
=>   LXI H,2005OH          21H,050H,20H
     MOV B, M              46,
     INX H                 23
     MOV C, M              4E
     MVI A, 00H            3E, 00
     MVI D, 00H            16, 00
XX: ADD B                  80
```

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```
       JNC YY              D2
       INR D               14
YY:    DCR C               0D
       JNZ XY              C2
       STA 2060H           32, 60H, 20H
       MOV A,D             7A
       STA 2061H           32, 61H, 20H
       HLT                 EF
```

Write an assembly language program to interchange (swap) the content of two memory location 2100H, 2101H.

~~LXI H 2100H~~
~~MOV A,M~~
~~ST~~

```
LDA 2100H       (load Acc)-21
MOV B,A         (move B reg)21
LDA 2101H       (load Acc)-210
STA 2100H       2101-Store-2100  6 -> 6
MOV A B         2100 data 5 - acc मा जान
STA 2101H       2100 Data 5  Store -> 2101  5
HLT             stop
```

2100	2101
5	6

2100	2101
6	5

Rotate operation

RLC
- Rotate Accumulator left

RAL
- Rotate Accumulator left through carry

RRC
- Rotate Accumulator Right

RAR
- Rotate Accumulator Right through carry

Write a program to count the no. of zeros in a 8-bit no.

```
     LXI H ,0030 H
     MOV A,M
     MVI C,00H
     MVI B,08H
YY:  RAR
     JC XX
     INR C
     DCR B
XX:  JNZ YY
     MOV A,C
     STA 0040H
     HLT
```

Write an assembly language program to find the minimum value which is stored in consecutive memory location.

Steps:-

Move the data from memory locations inside the register of µp.

Compare two data

Store the maximum of two data at memory location

```
      LXIH 0050 H         ( Memory load&
                            memory to Acc)
      MOV  A,M
      MVI  C,0A H          Counter set
~~YY~~  INX H               ( Increase Addres which HL pair point
      MOV B,M             Increase Add मा B reg le pair I J
~~YY~~: CMP B               B sanga Acc मा भएको cmp hu
      JC XX               carry आएमा (XX) मा जान्छ  max carry
                            (No execute)
      MOV A,B             ~~[illegible] max [illegible] Store~~
                            जाई
XX: ~~DCR C~~ STA 0052H                 Stop
```

for min

```
     LXIH  0050H        ( Memory load &
                          memory to Acc )
     MOV   A, M
     MVI   C, 0AH       ( counter )
YY!  INX H              ( increase pointed add)
     MOV   B, M         move to Reg. B
     CMP   B            compare (increase) with Acc val.
     JNC   XX           carry आएमा भने min huxa & loc
     MOV   A, B         (no execute)
XX!  DCR C              C घटाउने (check गरिरहने)
     JNZ   YY           zero नहुञ्जेलसम्म
     STA   0052 H       store huxa त्यो add मा
     HLT                stop.
```

Write Assembly language program to find factorial ~~of~~ of a no.

```
LXI H, 5100 H           4! = 4 ⊗ 3 * 2 * 1
MOV B, M                 4  = 1 + 1 + 1 + 1
MVI D, 01 H             4 + 4 + 4 . = 12
CALL MULT               12 + 12 = 24
                         24 = 24
```

Add two no.

```
                              Assume o.
 MVI C, 00H                   (carry flag 0)
 LDA  2000H
 MOV  B, A
 LDA  2001H
 ADD  B
 JNC  XX:                     (carry xaina xx)
 INR C                         (C ↑)
XX: STA 2002H                  (store) Acc & sum)
  MOV  A, C                    Carry move A
  STA  2003H                    store to 2003
  HLT
```

Write Assembly language to find factorial.

In microprolessor there is no direct instructors exists to multiply.
So,

4x3 = 4+4+4

Load 04H in D reg. → Add 04H 3 times
→ D reg. now contains 0CH → Add 0CH 2 times
→ D reg. now contains 18h → Add 18H 1 time
→ D reg. now contain 18h → output 18H

Algorithms

1. Load the data into reg. B
2. To start mul. set D to 01H
3. Jump to step 7
4. Decrements B to multiply prev. no.
5 Jump to step 3 till value of B > 0
6 Take memory pointor to next location & store result.
7 Load E with content of B and clear accumulator
8. Repeatedly add contents of D to acc. E times

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4321
4*

9 Store acc. content to D
10 Goto Step 4.

Address	Label	Mnemonic	Comment.
200 H	Data		Data Byte
2001 H	Result		Result of fact.
2002 H		LXI H, 2000H	Load data from memory
2005 H		MOV, B,M	Load data to B reg.
2006 H		MOV D,01 H	Set D reg. 1
2008 H	Factorial	CALL MULTIPLY	Subroutine call for mult. .
200B H		DCR B	Decrement B
200C H		JNZ FActorial	Call factorial till B becomes
200F H		INX H	Increment memory
2010 H		MOV M, D	Store result in memor
2011 H		HLT	Halt
2100H	MULTIPLY	MOV E, B	Transfer content of B to E
2101 H		MVI A, 00H	Clear Acc to store resul
2103 H	MULTIPLYLOOP	ADD D	Add content of D to A
2104 H		DCR E	Decrement E
2105 H		JNZ: MULTIPLY LOOP	Repeat Addn
2108 H		MOV D, A	Transfer content of A to
2109 H		RET	Return from subroutin

B मा Data set गर्ने

D लाई set गर्ने Data ले (by calling subroutine) 1 tim

B, D घटाउने I D sanga B लाई जोड्ने (calling MUL

subroutine as 4*3 = 4+4+4. (i.e. 3 times)

B '0' नहुञ्जेलसम्म Repeat

Result D मा आउछ which is Store in memory