

INDIAN INSTITUTE OF INFORMATION TECHNOLOGY SONEPAT

Microprocessor and Interfacing Lab (CSC508)

Practical Lab File

Submitted To:

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Practical 1: - Write a program for addition of two 8 bit numbers

CODE:

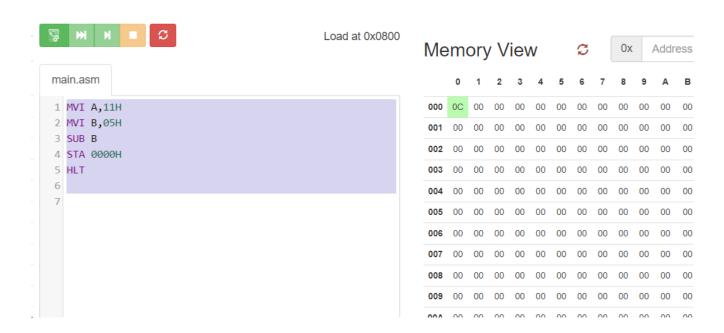


| iviernory view | | | | | | | | Ü | | UX | | | | | |
|----------------|------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Α | В | С | D |
| 00 | 0 0 |)6 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 00 | 1 (| 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 00 | 2 (| 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 00 | 3 (| 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 00 | 4 (| 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 00 | 5 (| 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |

Practical 2: - Write a program for subtraction of two 8 bit numbers

CODE:

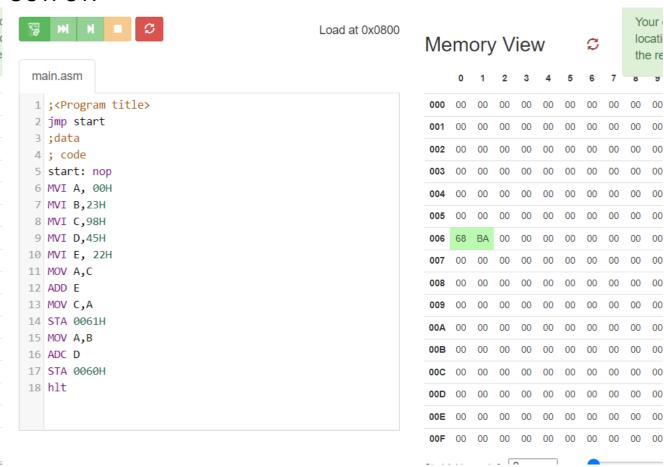
```
MVI A,11H
MVI B,05H
SUB B
STA 0000H
HLT
```



Practical 3: - Write a program for addition with a carry of two 8 bit numbers

CODE:

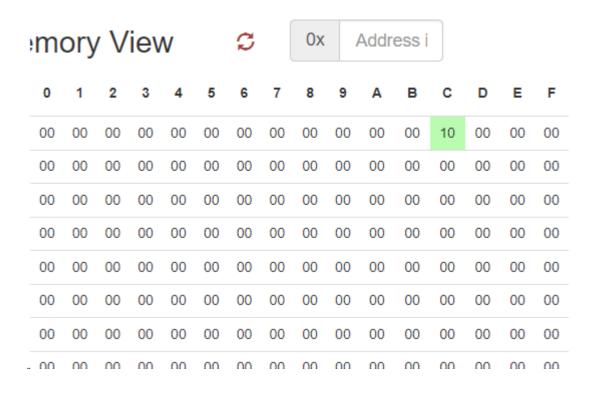
```
MVI B,23H
MVI C,98H
MVI D,45H
MVI E, 22H
MVV A,C
ADD E
MVV C,A
STA 0061H
MVV A,B
ADC D
STA 0060H
hlt
```



Practical 4: - Write a program for subtraction of two 8 bit numbers with borrow.

CODE:

MVI A, 8DH
MVI B, 7DH
MOV C, A
SUB B
JC SUBTRACT
SUBTRACT: STA RESULT
RESULT: DB 00H
HLT;



Practical 5: - Write a program for multiplication of two 8 bit numbers using repeated addition.

CODE:

```
MVI c,04h

MVI a, 00h

MVI d,00h

loop: add b

jnc skip

inr d

skip: dcr c

jnz loop

mov b,d

mov c,a

mov a,c

sta 0000h

hlt
```

| IV | iviemory view | | | | | | | Ø | OX Address I | | | | | | | | |
|----|---------------|----|----|----|----|----|----|----|--------------|----|----|----|----|----|----|----|----|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Α | В | С | D | E | F |
| 0 | 00 | 80 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 0(| 01 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 0 | 02 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 0 | 03 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 00 | 04 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 00 | 05 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 00 | 06 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 00 | 07 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 00 | 80 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 0 | 09 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 00 | 0A | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |

Practical 6: - Write a program for multiplication of two 8 bit numbers using bit rotation method

CODE:

```
MVI D,06H
MVI A,05H
LXI H,0000H

LOOP: RRC
    JNC SKIP
    DAD D

SKIP: XCHG
    DAD H
    XCHG
    DCR C
    JNZ LOOP
    HLT
```

| A/PSW | 0x 05 56 | main.as | m |
|-------|----------|----------------|-------------------|
| ВС | 0x 00 00 | 1 MVI 2 MVI | |
| DE | 0x 00 00 | | Н,0000Н |
| HL | 0x 1E 00 | 5 LOOP | |
| SP | 0x FF FF | 6 7 | JNC SKIP DAD D |
| PC | 0x 08 14 | 8 9 SKIP | : XCHG |
| | | 10 | DAD H |
| | | 11 | XCHG |
| Flags | S | 12 | DCR C |
| 75.35 | | 13 | JNZ LOOP |
| 7 | • | 14 | HLT |

Practical 7: - Write a program for division of two 8 bit numbers by repeated addition method.

CODE:

```
MVI A, 27H

MVI B, 05H

MVI C, 00H

MVI D, 00H

LOOP: SUB B

JC DONE

INR C

JMP LOOP

DONE: MOV E, A

HLT
```

| A/PSW | 0x FF 97 | main.asm |
|-------|----------------|------------------------------|
| ВС | 0x 05 07 | 1 MVI A, 27H 2 MVI B, 05H |
| DE | 0x 00 FF | 3 MVI C, 00H 4 MVI D, 00H |
| HL | 0x 00 00 | 5 LOOP: SUB B |
| SP | 0x FF FF | 6 JC DONE 7 INR C |
| PC | 0x 08 12 | 8 JMP LOOP 9 DONE: MOV E, A |
| | | 10 HLT |
| Flags | ${\mathcal G}$ | |

Practical 8: - Write a program for division of two 8 bit numbers using by bit rotation method.

CODE:

```
MVI E,00H;
   LHLD 0008H;
   LDA 0007H;
   MOV B,A;
   MVI C,08H;
NEXT: DAD H;
   MOV A,E;
   RLC
   MOV E,A;
   MOV A,H;
   SUB B;
   JC SKIP;
   MOV H,A;
    INR E;
SKIP:DCR C;
    JNZ NEXT;
   MOV A,E;
   STA 0033H;
   MOV A,H;
    STA 0034H;
   HLT;
```

| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Д |
|--|-----|----|----|----|----|----|----|----|----|----|----|----|
| | 000 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 01 |
| | 001 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 01 |
| | 002 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 01 |
| | 003 | 00 | 00 | 00 | FF | 00 | 00 | 00 | 00 | 00 | 00 | 01 |
| | 004 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 01 |
| | 005 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 01 |
| | 006 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 01 |
| | 007 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 01 |
| | 800 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 01 |
| | 009 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 01 |
| | | | | | | | | | | | | - |