



**INDIAN INSTITUTE OF INFORMATION TECHNOLOGY
SONEPAT**

Microprocessor and Interfacing Lab
(CSC508)

Practical Lab File

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

CODE:

MVI A,01H

MVI B,05H

ADD B

STA 0000H

HLT

OUTPUT:

Memory view

	0	1	2	3	4	5	6	7	8	9	A	B	C	D
000	06	00	00	00	00	00	00	00	00	00	00	00	00	00
001	00	00	00	00	00	00	00	00	00	00	00	00	00	00
002	00	00	00	00	00	00	00	00	00	00	00	00	00	00
003	00	00	00	00	00	00	00	00	00	00	00	00	00	00
004	00	00	00	00	00	00	00	00	00	00	00	00	00	00
005	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

OUTPUT:

Load at 0x0800

main.asm

```
1 MVI A,11H
2 MVI B,05H
3 SUB B
4 STA 0000H
5 HLT
6
7
```

Memory View

	0	1	2	3	4	5	6	7	8	9	A	B
000	0C	00	00	00	00	00	00	00	00	00	00	00
001	00	00	00	00	00	00	00	00	00	00	00	00
002	00	00	00	00	00	00	00	00	00	00	00	00
003	00	00	00	00	00	00	00	00	00	00	00	00
004	00	00	00	00	00	00	00	00	00	00	00	00
005	00	00	00	00	00	00	00	00	00	00	00	00
006	00	00	00	00	00	00	00	00	00	00	00	00
007	00	00	00	00	00	00	00	00	00	00	00	00
008	00	00	00	00	00	00	00	00	00	00	00	00
009	00	00	00	00	00	00	00	00	00	00	00	00
00A	00	00	00	00	00	00	00	00	00	00	00	00

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

CODE:

```
MVI A, 00H
MVI B, 23H
MVI C, 98H
MVI D, 45H
MVI E, 22H
MOV A, C
ADD E
MOV C, A
STA 0061H
MOV A, B
ADC D
STA 0060H
hlt
```

OUTPUT:

Load at 0x0800

main.asm

```
1 ;<Program title>
2 jmp start
3 ;data
4 ; code
5 start: nop
6 MVI A, 00H
7 MVI B, 23H
8 MVI C, 98H
9 MVI D, 45H
10 MVI E, 22H
11 MOV A, C
12 ADD E
13 MOV C, A
14 STA 0061H
15 MOV A, B
16 ADC D
17 STA 0060H
18 hlt
```

Memory View

	0	1	2	3	4	5	6	7	8	9
000	00	00	00	00	00	00	00	00	00	00
001	00	00	00	00	00	00	00	00	00	00
002	00	00	00	00	00	00	00	00	00	00
003	00	00	00	00	00	00	00	00	00	00
004	00	00	00	00	00	00	00	00	00	00
005	00	00	00	00	00	00	00	00	00	00
006	68	BA	00	00	00	00	00	00	00	00
007	00	00	00	00	00	00	00	00	00	00
008	00	00	00	00	00	00	00	00	00	00
009	00	00	00	00	00	00	00	00	00	00
00A	00	00	00	00	00	00	00	00	00	00
00B	00	00	00	00	00	00	00	00	00	00
00C	00	00	00	00	00	00	00	00	00	00
00D	00	00	00	00	00	00	00	00	00	00
00E	00	00	00	00	00	00	00	00	00	00
00F	00	00	00	00	00	00	00	00	00	00

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;

OUTPUT:

Memory View															
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	00	00	00	00	00	00	00	00	00	00	00	10	00	00	00
00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

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

CODE:

```
MVI b,02h
MVI c,04h
MVI a, 00h
MVI d,00h
loop: add b
jnc skip
inc d
skip: dcr c
jnz loop
mov b,d
mov c,a
mov a,c
sta 0000h
hlt
```

OUTPUT:

Memory view

0x

Address 1

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
000	08	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
001	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
002	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
003	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
004	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
005	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
006	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
007	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
008	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
009	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00A	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
```

OUTPUT:

A/PSW	0x 05 56
BC	0x 00 00
DE	0x 00 00
HL	0x 1E 00
SP	0x FF FF
PC	0x 08 14
Flags 	
7	

main.asm	
1	MVI D,06H
2	MVI A,05H
3	LXI H,0000H
4	
5	LOOP: RRC
6	JNC SKIP
7	DAD D
8	
9	SKIP: XCHG
10	DAD H
11	XCHG
12	DCR C
13	JNZ LOOP
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
```

OUTPUT:

A/PSW	0x FF 97
BC	0x 05 07
DE	0x 00 FF
HL	0x 00 00
SP	0x FF FF
PC	0x 08 12

Flags 

main.asm

```
1 MVI A, 27H
2 MVI B, 05H
3 MVI C, 00H
4 MVI D, 00H
5 LOOP: SUB B
6       JC DONE
7 INR C
8 JMP LOOP
9 DONE: MOV E, A
10 HLT
```

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;

```

OUTPUT:

```

main.asm
1 start: nop
2   MVI E,00H;
3   LHLD 0008H;
4   LDA 0007H;
5   MOV B,A;
6   MVI C,08H;
7   NEXT:DAD H;
8   MOV A,E;
9   RLC
10  MOV E,A;
11  MOV A,H;
12  SUB B;
13  JC SKIP;
14

```

	0	1	2	3	4	5	6	7	8	9	A
000	00	00	00	00	00	00	00	00	00	00	00
001	00	00	00	00	00	00	00	00	00	00	00
002	00	00	00	00	00	00	00	00	00	00	00
003	00	00	00	FF	00	00	00	00	00	00	00
004	00	00	00	00	00	00	00	00	00	00	00
005	00	00	00	00	00	00	00	00	00	00	00
006	00	00	00	00	00	00	00	00	00	00	00
007	00	00	00	00	00	00	00	00	00	00	00
008	00	00	00	00	00	00	00	00	00	00	00
009	00	00	00	00	00	00	00	00	00	00	00