



University of Central Punjab

(Incorporated by Ordinance No. XXIV of 2002 promulgated by Government of the Punjab)

FACULTY OF INFORMATION TECHNOLOGY

Computer Organization and Assembly Language

Lab 07	
Topic	<ul style="list-style-type: none">Arithmetic & Logical instructionsSelective bit setting/clearing/complimentingExtended addition, subtraction, shifting and rotationMultiplication Algorithms

Examples (bit setting/clearing/complimenting):

Let the binary of a number (0XABCD) is 1010 1011 1100 1101.

a) Set the fourth bit. (counting from 0 L.S.B)

```
mov ax,0xABCD
or ax,00000000000010000b
mov ax,0x4c00
int 21h
```

b) Clear the L.S.B.

```
mov ax,0xABCD
and ax,1111111111111110b
mov ax,0x4c00
int 21h
```

c) Invert the M.S.B.

```
mov ax,0xABCD
xor ax,1000000000000000b
mov ax,0x4c00
int 21h
```

Note: logical operations are bitwise operations.



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Problem #1:

Write a program which adds two 32-bit numbers.

Num1: dd 0x0001FFFF

Num2: dd 0x00010002

SUM: dd 0

Problem #2:

Write a program which subtracts two 32-bit numbers.

Num1: dd 0x0001FFFF

Num2: dd 0x00010002

Difference: dd 0

Problem #3:

Write a program to implement extended Arithmetic Shift right (SAR).

INPUT: dd 0xAABBCCDD

shiftCount: db 3

Note: shiftCount variable tells how many shifts are to be done.



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Problem #4:

Write a program which implements 4-bit and 16-bit multiplication algorithm.