OPERATION ON 16BIT DATA

Experiment No 2 Date:

Roll No: 5077

Aim: To perform arithmetic operation on 16 bit data

Theory:

Under arithmetic operation 8086, provider addition, subtraction, multiplication and division There all operations are performed on the operand (data)

1] Addition

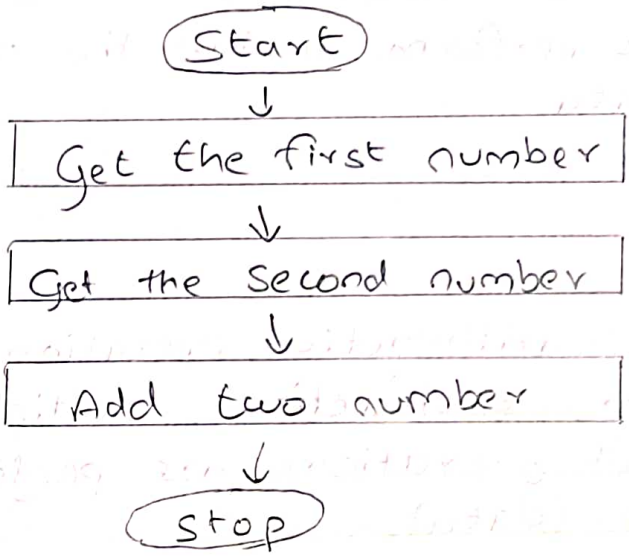
ADD - Add byte or word:
- This instruction adds a number from source and puts the result to specific destination.

Program : Addition of two 16 bit numbers

→ Algorithm

Step1 : Initialize the data segment
Step2 : Get the first number in AL register
Step 3 : Get the second number in BL register
step 4 : Add the two numbers
step 5 : Display result
Step 6 : Stop

→ flowchart

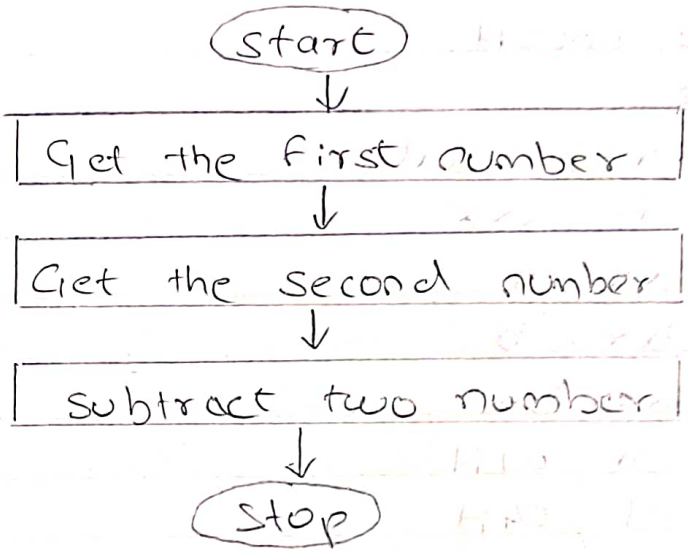


→ Output

```
C:\> tasm filename.asm
C:\> tlink filename.obj
C:\> filename
0004
```

→
```
.model small
.data
a dw 0002H
b dw 0002H
.code
Mov ax, @data
Mov ds, ax
Mov ax, a
Mov bx, b
Add ax, bx
Mov ch, 04H
Mov cl, 04H
Mov bx, ax
I2: rol bh, cl
    mov dl, bh
    and dl, 0FH
    cmp dl, 09
    jbe I4
    add dl, 07
I4: add dl, 30H
    Mov ah, 02H
    int 21H
    dec ch
    jnz I2
    Mov ah, 4CH
    int 21H
    End
```

→ Flowchart



→ Output

```
C:\> tasm filename.asm
c:\> tlink filename.obj
c:\> filename
0000
```

2] Subtraction

SUB - Sub byte or word
- This instruction subtract a number from source to number from destination and puts the result to specific destination

→ Mnemonic : SUB Destination , Source
SUB Operand 1, Operand 2

Program : Subtraction of two numbers (16 bit)

→ Algorithm

Step 1 : Initialize the data segment
Step 2 : Get the first number in Ax register
step 3 : Get the Second number in Bx register
step 4 : Subtract the two number
step 5 : Display result
step 6 : Stop

→
```
.model small
.data
a dw 0002H
b dw 0002H
.code
Mov ax,@data
Mov dx, ax
```

```
Mov ax, a
Mov bx, b
Sub ax, bx
Mov ch, 04H
Mov cl, 04H
I2: rol bx, cl
Mov dl, bh
And dl, 0FH
cmp dl, 09
jbe I4
Sub dl, 07H
I4: Sub dl, 30H
Mov ah, 02H
int 21H
dec ch
jnz I2
Mov ah, 4ch
int 21H
end
```

Conclusion: Hence, we performed arithmetic operation on 16 bit data.