# U18CO018 Shubham Shekhaliya MIT

# Assignment-8 Programming in 8086

1-> Write 8086 ALP for addition of two 8-bit numbers.

# Code:-

# model small

.data

ca db?

p1 db?

p2 db 80H

p3 db 44H

#### .code

mov ax, @data

mov ds, ax

mov cl, 00H

mov al, p2

add al, p3

jnc skip

inc cl

skip: mov p1, al

mov ca, cl

mov ax, 4C00H

int 21h

end

```
File Edit Search View Options Help

C:\TASM\FIRST.ASM

.data
ca db ?
p1 db ?
p2 db 86H
p3 db 44H

.code
mov ax, 9data
mov ds, ax
mov c1, 96H
mov al, p2
add al, p3
jnc skip
inc c1
skip: mov p1, al
mov ca,c1
mov ax, 4C60H
int 21h
end

F1=Help

Line:1 Col:11
```

```
For Compiling your files tasm "yourfilename".asm use without quotes
e.g for compiling add.asm command is: tasm add.asm
For Linking and debugging same as 32 bit: tlink,td

Complink,DPMIload and TasmX also available using 32bit commands

C:\TASM>edit first.asm

C:\TASM>tasm first.asm

Turbo Assembler Version 3.0 Copyright (c) 1988, 1991 Borland International

Assembling file: first.asm

Error messages: None
Warning messages: None
Passes: 1

Remaining memory: 476k

C:\TASM>tlink first.obj

Turbo Link Version 2.0 Copyright (c) 1987, 1988 Borland International
Warning: no stack

C:\TASM>
```

```
076A:0003 BED8
076A:0005 B100
076A:0007 A01000
                                                                                                                                                      CL,00
AL,[0010]
AL,[0011]
0012
                                                                                                                  MOV
                                                                                                                  MOV
076A:000A 02061100
076A:000E 7302
076A:0010 FEC1
                                                                                                                  ADD
                                                                                                                   JNB
                                                                                                                                                        CL.
                                                                                                                   TNC
 076A:001Z AZ0F00
                                                                                                                                                         [000F],AL
                                                                                                                  MOV
 076A:0015 880E0E00
                                                                                                                  MOV
                                                                                                                                                         [000E],CL
 076A:0019 B8004C
                                                                                                                  MOV
                                                                                                                                                        AX,4C00
076A:001C CD21
076A:001E 0000
                                                                                                                   INT
                                                                                                                                                         [BX+SI1,AL
                                                                                                                  ADD
Program terminated normally
-d 076B:000E
076B:0000

      076B:09090
      09
      04
      00
      08
      04
      00
      08
      0E
      10
      00
      02-09
      80
      0E
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      09
      18
      19
      19
      19
      19
      19
      19
      19
      19
      19
      19
      19
      19
      19</td
                                                                                                                                                                                                                                                                                                ...&.......
```

2-> Write 8086 ALP for subtraction of two 8-bit numbers.

### Code:-

model small

.data ca db ? p1 db ? p2 db 42H p3 db 44H

.code
mov ax, @data
mov ds, ax
mov cl, 00H
mov al, p2
sub al, p3
jnc skip
inc cl
skip: mov p1,al
mov ca, cl
mov ax, 4C00H
int 21h
end

```
File Edit Search View Options Help

C:\text{NTASM\SECOND.ASM}

model small

.data
ca db ?
p1 db ?
p2 db 42H
p3 db 44H

.code
mov ax, @data
mov ds, ax
mov cl, @@H
mov al, p2
sub al, p3
jnc skip
inc cl
skip: mov p1,al
mov ca, cl
mov ax, 4C@@H
int 21h
end

F1=Help

Line:22 Col:11
```

```
Remaining memory: 476k
C:\TASM>tlink second.obj
Turbo Link Version 2.0 Copyright (c) 1987, 1988 Borland International
Warning: no stack
C:\TASM>debug second.exe
-u
076A:0000 B86B07
                                                 AX,076B
                                    MOU
9764:9999 BBBB97
9764:9995 B199
9764:9997 A91999
9766:9994 2A961199
                                     MOV
                                                 DS,AX
                                                 CL,00
AL,[0010]
AL,[0011]
0012
                                     MOV
                                     MOV
                                     SUB
076A:000E 7302
076A:0010 FEC1
076A:0012 A20F00
                                     JNB
                                     INC
                                                 CL
                                     MOV
                                                 1000F1,AL
076A:0015 880E0E00
                                     MOV
076A:0019 B8004C
076A:001C CD21
076A:001E 0000
                                     MOV
                                                 AX,4000
                                    INT
ADD
                                                 [BX+SI],AL
Program terminated normally
```

```
076A:0003 8ED8
                   MOV
076A:0005 B100
                   MOV
                         CL,00
076A:0007 A01000
                   MOV
                         AL,[0010]
076A:000A ZA061100
                         AL,[0011]
                   SUB
076A:000E 7302
                   JNB
                         0012
076A:0010 FEC1
                         CL
                   INC
076A:001Z AZ0F00
                   MOV
                         [000F],AL
076A:0015 880E0E00
076A:0019 B8004C
                         [000E],CL
                   MOV
                   MNU
                         AX,4000
076A:001C CD21
                   INT
                         [BX+SI],AL
076A:001E 0000
                   ADD
Program terminated normally
-d 076B:000E
076B:0000
                                         01 FE
076B:0010 42 44 00 80 0E 10 00 02-00 80 0E 00 00 00 00 81
                                                BD . . . . . . . . . . . . . . . . . .
FF FF
076B:0080
```

# 3-> Write 8086 ALP for addition of two 16-bit numbers

# Code:-

# model small

.data
ca db ?
p1 db ?
p2 db ?
p3 db 41H
p4 db 42H
p5 db 61H
p6 db 62H

.code mov ax, @data mov ds, ax mov cx, 0000H mov ah, p3 mov al, p4 mov bh, p5 mov bl, p6 add ax, bx jnc skip inc cx skip: mov p1, ah mov p2, al mov ca, cl mov ax, 4C00H int 21H

end

```
File Edit Search View Options Help

p3 db 41H
p4 db 42H
p5 db 61H
p5 db 62H

.code
mov ax, @data
mov ds, ax
mov cx, 0000H
mov ah, p3
mov al, p4
mov bh, p5
mov bl, p6
add ax, bx
jinc skip
inc cx
skip: mov p1, ah
mov p2, al
mov ca, cl
mov ax, 4C00H
int 21H
end

F1=Help

Line:11 Col:5
```

```
C:\TASM>tasm third.asm
Turbo Assembler Version 3.0 Copyright (c) 1988, 1991 Borland International
Assembling file: third.asm
Error messages: None
Warning messages: None
Passes: 1
Remaining memory: 476k

C:\TASM>tlink third.obj
Turbo Link Version 2.0 Copyright (c) 1987, 1988 Borland International
Warning: no stack

C:\TASM>debug third.exe_
```

```
Passes: 1
Remaining memory: 476k

C:\TASM>tlink third.obj
Turbo Link Version 2.0 Copyright (c) 1987, 1988 Borland International
Warning: no stack

C:\TASM>debug third.exe
-u
676a:0000 B86C07 MDU AX,676C
676a:0003 BEDB MDU DS.AX
676a:0005 B90000 MDU CX,6000
676a:0006 80260F00 MDU AH,1000F1
676a:000C A01000 MDU AL,100101
676a:000F B03E1100 MDU BH,100111
676a:000F B03E1100 MDU BH,100111
676a:0017 03C3 ADD AX,BX
676a:0017 7301 JNB 001C
676a:0018 2360D00 MDU L000D1,AH
-g
Program terminated normally
```

```
076A:0003 8ED8
                                                                              MOV
MOV
                                                                                                        DS,AX
CX,0000
076A:0005 B90000
076A:0008 BA260F00
                                                                               MOV
                                                                                                         AH,[000F]
076A:0000 6A1000
076A:0000 8A3E1100
076A:0001 8A1E1200
076A:0017 03C3
076A:0019 7301
                                                                                                        AL,[0010]
BH,[0011]
                                                                               MOV
                                                                               MOV
                                                                              MOV
                                                                                                        BL,[0012]
                                                                              ADD
JNB
                                                                                                        AX,BX
001C
076A:001B 41
076A:001C 88260D00
                                                                                                         [000D],AH
Program terminated normally
-d 076C:000C
076C:0000
076C:0010 42 61 62 FF FF FF
09 A2 A4 41
076C:0909
                                                                                                                                                                                                       Bab . . . . . . . . . . . . . .
```

**4->** Write 8086 ALP for subtraction of two 16-bit numbers **Code:-** model small

.data
ca db ?
p1 db ?
p2 db ?
p3 db 65H
p4 db 67H
p5 db 48H
p6 db 32H

.code
mov ax, @data
mov ds, ax
mov cx, 0000H
mov ah, p3
mov al, p4
mov bh, p5
mov bl, p6
sub ax, bx
jnc skip
inc cx

skip: mov p1, ah

mov p2, al mov ca, cl mov ax, 4c00H int 21h end

```
File Edit Search View Options Help
                                C:\TASM\FOURTH.ASM
p3 db 65H
p4 db 67H
p5 db 48H
p6 db 32H
.code
mo∨ ax, @data
mov ds, ax
mov cx, 0000H
mov ah, p3
mov al, p4
mov bh, p5
mo∨ bl, p6
sub ax, bx
jnc skip
inc cx
skip: mov p1, ah
mov p2, al
mov ca, cl
mo∨ ax, 4c00H
int 21h
end
F1=Help
                                                           Line:28 Col:4
```

```
. . . & . . . . . . . . . . . .
\mathbf{p}
C:\TASM>edit fourth.asm
C:\TASM>tasm fourth.asm
Turbo Assembler Version 3.0 Copyright (c) 1988, 1991 Borland International
Assembling file:
                 fourth.asm
Error messages:
                 None
Warning messages:
                 None
Passes:
Remaining memory: 476k
C:\TASM>tlink fourth.obj
Turbo Link Version 2.0 Copyright (c) 1987, 1988 Borland International
Warning: no stack
C:\TASM>debug fourth.exe
```

```
Remaining memory: 476k
C:\TASM>tlink fourth.obj
Turbo Link Version 2.0 Copyright (c) 1987, 1988 Borland International
Warning: no stack
C:\TASM>debug fourth.exe
076A:0000 B86C07
                           MOV
                                    AX,076C
076A:0003 8ED8
                                    DS,AX
CX,0000
                           MOV
                           MOV
076A:0005 B90000
076A:0008 8A260F00
                           MOV
                                    AH,[000F]
076A:000C A01000
076A:000F 8A3E1100
                                    AL,[0010]
BH,[0011]
                           MOV
                           MOV
076A:0013 8A1E1200
                           MOV
                                    BL,[0012]
076A:0017 ZBC3
076A:0019 7301
                                    AX,BX
001C
                           SUB
                           JNB
076A:001B 41
                           INC
                                    cx
076A:001C 88260D00
                                    [000D],AH
                           MOV
Program terminated normally
-d 076C:
```

```
076A:0000 B86C07
076A:0003 BED8
                   MOV
                         DS,AX
076A:0005 B90000
                   MOV
                         CX,0000
                         AH,[000F]
076A:0008 8A260F00
                   MOV
076A:000C A01000
                         AL,[0010]
                   MOV
076A:000F 8A3E1100
                   MOV
                         BH,[0011]
                         BL,[0012]
AX,BX
076A:0013 8A1E1200
                   MOV
076A:0017 ZBC3
                   SUB
076A:0019 7301
                         001C
                   JNB
                         CX
[000D],AH
076A:001B 41
                   INC
076A:001C 88260D00
                   MOV
Program terminated normally
-d 076C:000C
0760:0000
                                     00 1D 35 65
076C:0010 67 48 32 FF FF FF FF FF-FF FF FF FF FF FF FF
                                                gH2.....
...&.......
```