

**U18CO018**  
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**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
```

## Output:-

```
File Edit Search View Options Help
C:\TASM\FIRST.ASM
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
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 BEDB      MOV     DS,AX
076A:0005 B100      MOV     CL,00
076A:0007 A01000     MOV     AL,[0010]
076A:000A 02061100   ADD     AL,[0011]
076A:000E 7302      JNB     0012
076A:0010 FEC1      INC     CL
076A:0012 A20F00     MOV     [000F],AL
076A:0015 8B0E0E00   MOV     [000E],CL
076A:0019 B8004C      MOV     AX,4C00
076A:001C CD21      INT     21
076A:001E 0000     ADD     [BX+SI],AL
-g
```

Program terminated normally

```
-d 076B:000E
076B:0000                00 C4
076B:0010 80 44 00 80 0E 10 00 02-00 80 0E 00 00 00 00 81 .D.....
076B:0020 0E FF FF FF FF FF FF FF-FF FF FF FF FF FF FF ..
076B:0030 FF FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF ..
076B:0040 FF FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF ..
076B:0050 FF FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF ..
076B:0060 FF FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF ..
076B:0070 FF FF FF 26 00 FF FF FF-FF FF FF FF FF FF FF ..&.....
076B:0080 FF FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF ..
-
```

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**

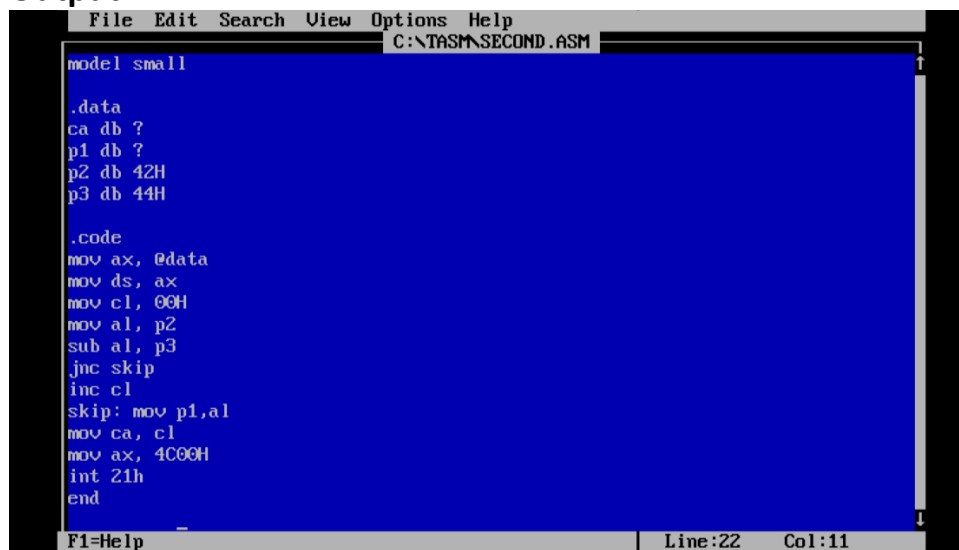
**mov ca, cl**

**mov ax, 4C00H**

**int 21h**

**end**

**Output:-**



```
File Edit Search View Options Help
C:\TASM\SECOND.ASM
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

F1=Help | Line:22 Col:11
```

```

076B:0040 FF FF FF FF FF FF FF-FF FF FF FF FF FF FF .....
076B:0050 FF FF FF FF FF FF FF-FF FF FF FF FF FF FF .....
076B:0060 FF FF FF FF FF FF FF-FF FF FF FF FF FF FF .....
076B:0070 FF FF FF 26 00 FF FF FF-FF FF FF FF FF FF FF ...&.....
076B:0080 FF FF FF FF FF FF FF-FF FF FF FF FF FF FF .....

```

-

-q

C:\TASM>edit second.asm

C:\TASM>tasm second.asm

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

Assembling file: second.asm

Error messages: None

Warning messages: None

Passes: 1

Remaining memory: 476k

C:\TASM>tlink second.obj

Turbo Link Version 2.0 Copyright (c) 1987, 1988 Borland International

Warning: no stack

C:\TASM>

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 B8B07      MOV     AX,076B
076A:0003 8ED8      MOV     DS,AX
076A:0005 B100      MOV     CL,00
076A:0007 A01000     MOV     AL,[0010]
076A:000A 2A061100    SUB     AL,[0011]
076A:000E 7302      JNB     0012
076A:0010 FEC1      INC     CL
076A:0012 A20F00     MOV     [000F],AL
076A:0015 8B0E0E00     MOV     [000E],CL
076A:0019 B8004C     MOV     AX,4C00
076A:001C CD21      INT     21
076A:001E 0000      ADD     [BX+SI],AL

```

-g

Program terminated normally

-

```

076A:0003 8ED8      MOV     DS,AX
076A:0005 B100      MOV     CL,00
076A:0007 A01000     MOV     AL,[0010]
076A:000A 2A061100    SUB     AL,[0011]
076A:000E 7302      JNB     0012
076A:0010 FEC1      INC     CL
076A:0012 A20F00     MOV     [000F],AL
076A:0015 8B0E0E00     MOV     [000E],CL
076A:0019 B8004C     MOV     AX,4C00
076A:001C CD21      INT     21
076A:001E 0000      ADD     [BX+SI],AL

```

-g

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.....
076B:0020 0E FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF .....
076B:0030 FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF .....
076B:0040 FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF .....
076B:0050 FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF .....
076B:0060 FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF .....
076B:0070 FF FF FF 26 00 FF FF FF-FF FF FF FF FF FF FF FF ...&.....
076B:0080 FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF .....

```

-

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**

## Output:-

```
File Edit Search View Options Help
C:\TASM\THIRD.ASM
p3 db 41H
p4 db 42H
p5 db 61H
p6 db 62H
.
.code
mov ax, 0data
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
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
076A:0000 B86C07      MOV     AX,076C
076A:0003 8ED8        MOV     DS,AX
076A:0005 B90000      MOV     CX,0000
076A:0008 8A260F00     MOV     AH,[000F]
076A:000C A01000      MOV     AL,[0010]
076A:000F 8A3E1100     MOV     BH,[0011]
076A:0013 8A1E1200     MOV     BL,[0012]
076A:0017 03C3        ADD     AX,BX
076A:0019 7301        JNB     001C
076A:001B 41          INC     CX
076A:001C 8B260D00     MOV     [000D],AH
-g
Program terminated normally
-
```

```

076A:0000 BB6C07      MOV     AX,076C
076A:0003 8ED8        MOV     DS,AX
076A:0005 B90000        MOV     CX,0000
076A:0008 8A260F00      MOV     AH,[000F]
076A:000C A01000        MOV     AL,[0010]
076A:000F 8A3E1100      MOV     BH,[0011]
076A:0013 8A1E1200      MOV     BL,[0012]
076A:0017 03C3        ADD     AX,BX
076A:0019 7301        JNB     001C
076A:001B 41          INC     CX
076A:001C 8B260D00      MOV     [000D],AH
-g

Program terminated normally
-d 076C:000C
076C:0000                                00 A2 A4 41          ...A
076C:0010 42 61 62 FF FF FF FF FF-FF FF FF FF FF FF FF FF FF Bab.....
076C:0020 FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF FF .....
076C:0030 FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF FF .....
076C:0040 FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF FF .....
076C:0050 FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF FF .....
076C:0060 FF FF FF 26 00 FF FF FF-FF FF FF FF FF FF FF FF FF ...&.....
076C:0070 FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF FF .....
076C:0080 FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF FF .....
-

```

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

```

Output:-

```

File Edit Search View Options Help
C:\TASM\FOURTH.ASM
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
F1=Help | Line:28 Col:4

```

```

076C:0030  FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF .....
076C:0040  FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF .....
076C:0050  FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF .....
076C:0060  FF FF FF 26 00 FF FF FF-FF FF FF FF FF FF FF FF ...&.....
076C:0070  FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF .....
076C:0080  FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF .....
-q

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:          1
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

```



```

Passes:      1
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
-u
076A:0000 BB6C07      MOV     AX,076C
076A:0003 8ED8      MOV     DS,AX
076A:0005 B90000      MOV     CX,0000
076A:0008 8A260F00     MOV     AH,[000F]
076A:000C A01000      MOV     AL,[0010]
076A:000F 8A3E1100     MOV     BH,[0011]
076A:0013 8A1E1200     MOV     BL,[0012]
076A:0017 2BC3      SUB     AX,BX
076A:0019 7301      JNB     001C
076A:001B 41      INC     CX
076A:001C 8B260D00     MOV     [000D],AH
-g
Program terminated normally
-d 076C:
```

```

076A:0000 B8C07 MDU AX,076C
076A:0003 B8D8 MDU DS,AX
076A:0005 B9000 MDU CX,0000
076A:0008 BA260F00 MDU AH,[000F]
076A:000C A01000 MDU AL,[0010]
076A:000F BA3E1100 MDU BH,[0011]
076A:0013 8A1E1200 MDU BL,[0012]
076A:0017 2BC3 SUB AX,BX
076A:0019 7301 JNB 001C
076A:001B 41 INC CX
076A:001C B8260D00 MDU [000D],AH
-g

Program terminated normally
-d 076C:000C
076C:0000 00 1D 35 65 .5e
076C:0010 67 48 32 FF FF FF FF FF-FF FF FF FF FF FF FF FF FF gHz.....
076C:0020 FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF FF .....
076C:0030 FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF FF .....
076C:0040 FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF FF .....
076C:0050 FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF FF .....
076C:0060 FF FF FF 26 00 FF FF FF-FF FF FF FF FF FF FF FF FF ...&.....
076C:0070 FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF FF .....
076C:0080 FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF FF .....

```