U19CS076 MIT ASSIGNMENT 10

Write 8086 Program for the following:

1. Program to add two numbers.

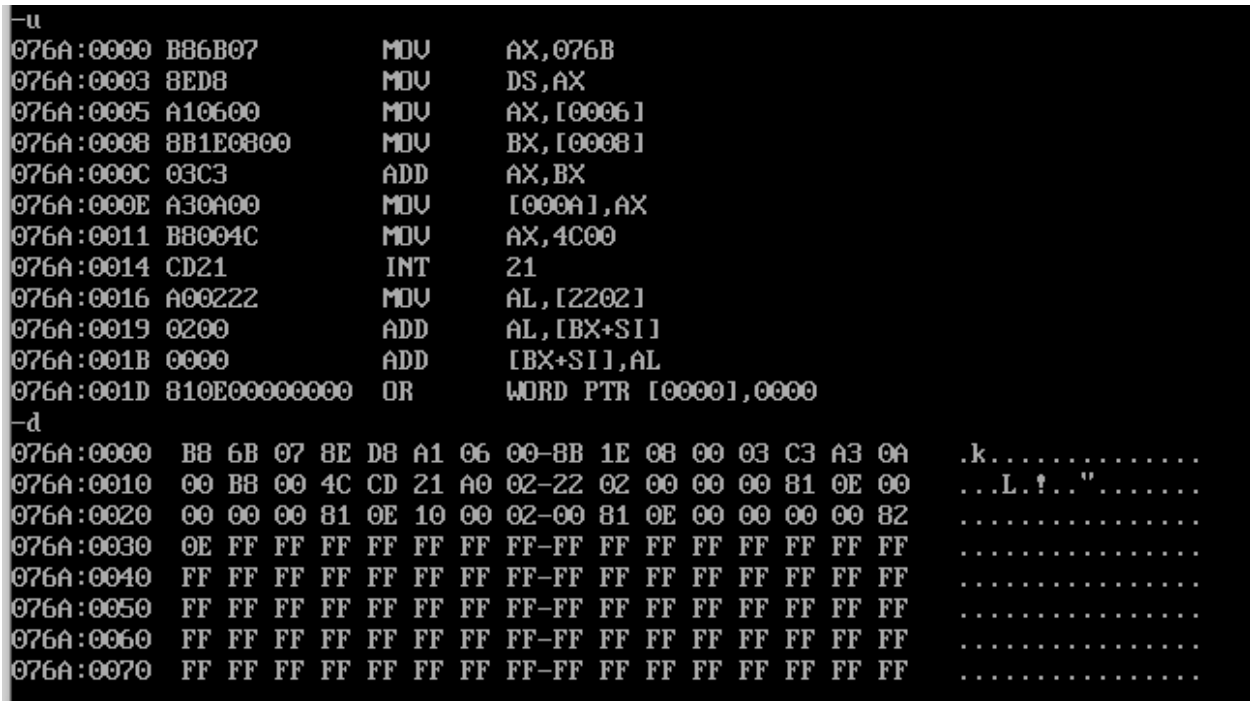
a) 16 bit addition

```
;Assignment 10 q1 16 bit addition

dosseg

model small

.8086


.data

p1 dw 02A0H

p2 dw 0222H

p3 dw ?


.code

mov ax,@data

mov ds,ax


mov ax,p1

mov bx,p2

add ax,bx

mov p3,ax
```

mov ax,4c00h

int 21h

end



b) 32 bit addition

;Assignment 10 q1 32 bit addition

dosseg

model small

.8086

.data

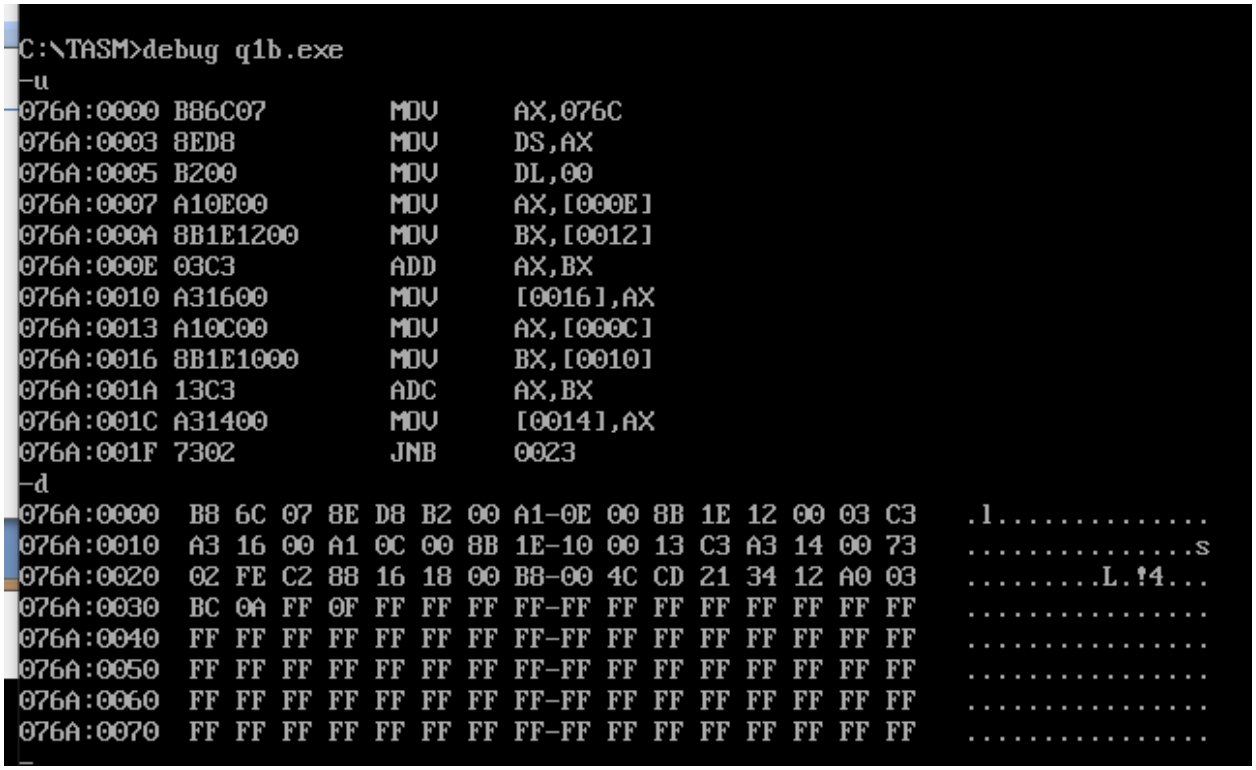
n11 dw 1234H

n12 dw 03A0H

n21 dw 0ABCH

n22 dw 0FFFH

```
n31 dw ?
n32 dw ?
car db ?
.code
mov ax,@data
mov ds,ax

mov dl,00h
mov ax,n12
mov bx,n22
add ax,bx
mov n32,ax
mov ax,n11
mov bx,n21
adc ax,bx
mov n31,ax
jnc move
inc dl
move: mov car,dl

mov ax,4c00h
int 21h
end
```



c) 32 bit addition using DD directives.

;Assignment 10 q1 32 bit addition using dd

dosseg

model small

.8086

.data

n1 dd 123403A0H

n2 dd 0ABC0FFFH

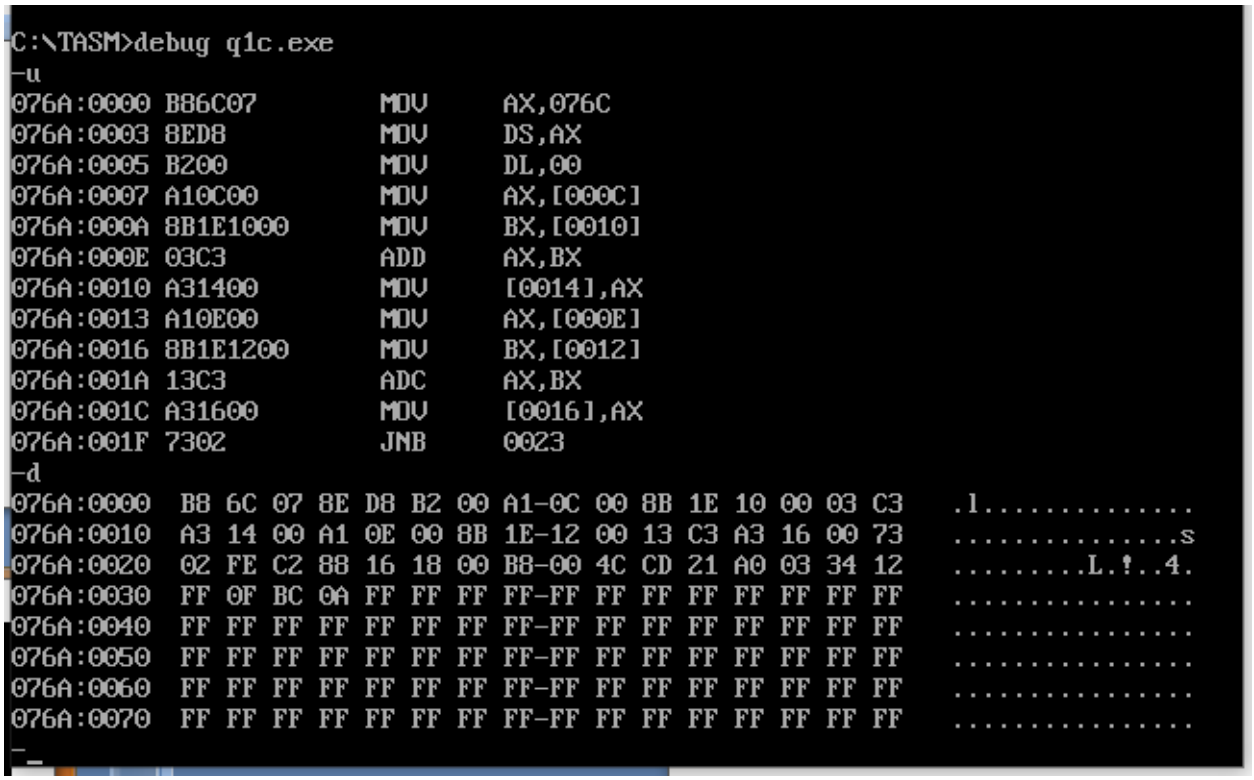
n3 dd ?

car db ?

.code

mov ax,@data

```
mov ds,ax


mov dl,00h
mov ax,word ptr n1
mov bx,word ptr n2
add ax,bx
mov word ptr n3,ax
mov ax,word ptr n1+2
mov bx,word ptr n2+2
adc ax,bx
mov word ptr n3+2,ax
jnc move
inc dl
move: mov car,dl



mov ax,4c00h
int 21h
end
```



2. Program to subtract two numbers.

a) 16 bit subtraction

;Assignment 10 q1 16 bit addition

dosseg

model small

.8086

.data

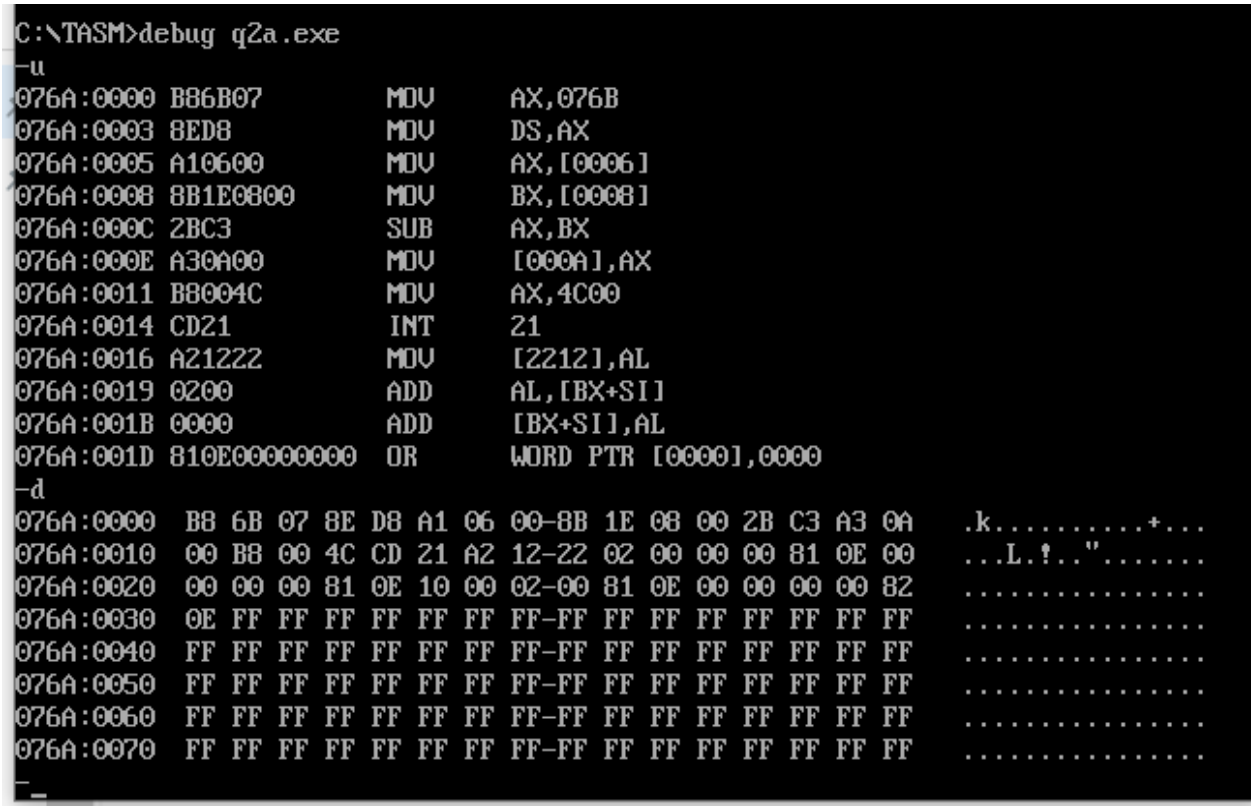
p1 dw 12A2H

p2 dw 0222H

p3 dw ?

.code

```
mov ax,@data

mov ds,ax


mov ax,p1

mov bx,p2

sub ax,bx

mov p3,ax



mov ax,4c00h

int 21h

end
```



b) 32 bit subtraction

```
;Assignment 10 q1 32 bit Subtraction
dosseg
model small
.8086
.data
n1 dd 123403A0H
n2 dd 0ABC0FFFH
n3 dd ?
car db ?
.code
mov ax,@data
mov ds,ax

mov dl,00h
mov ax,word ptr n1
mov bx,word ptr n2
sub ax,bx
mov word ptr n3,ax
mov ax,word ptr n1+2
mov bx,word ptr n2+2
sbb ax,bx
mov word ptr n3+2,ax
jnc move
```

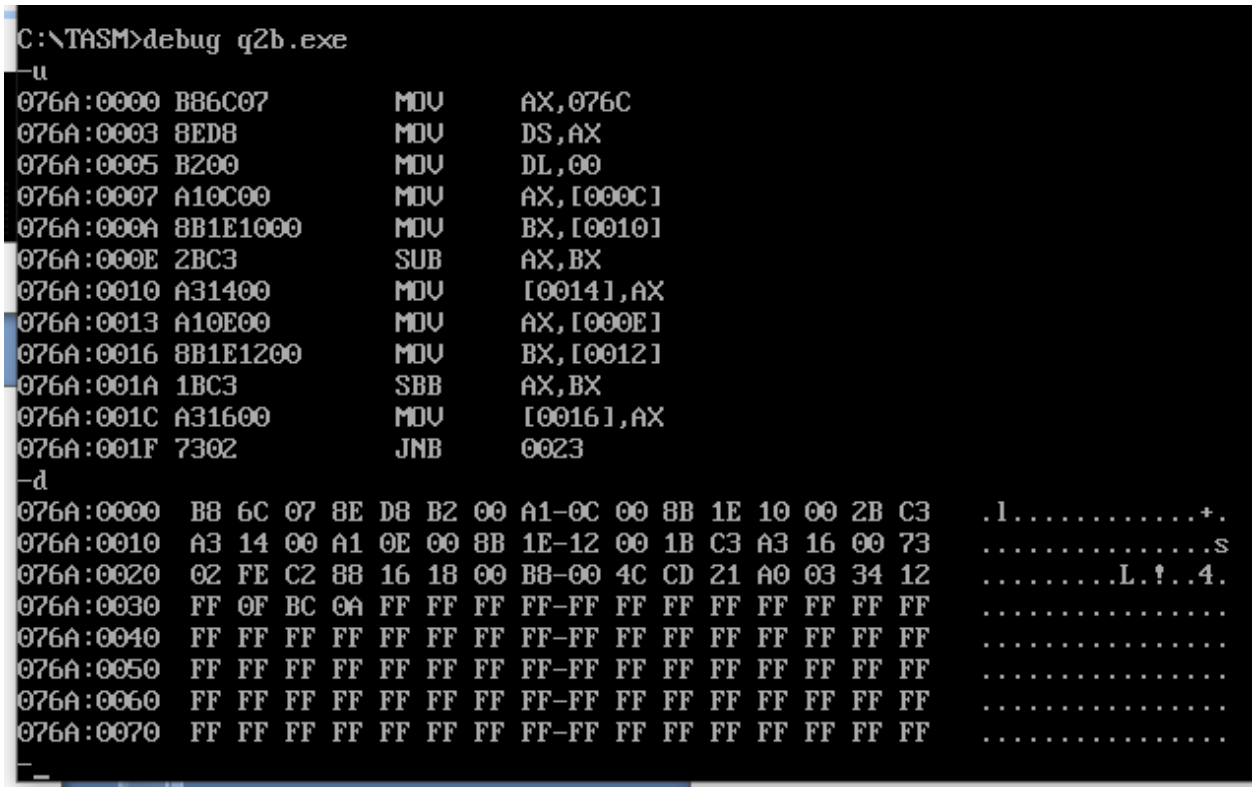
inc dl

move: mov car,dl

mov ax,4c00h

int 21h

end



3. Program to multiply signed 16-bit numbers

;Assignment 10 q3 16 bit signed multiplication

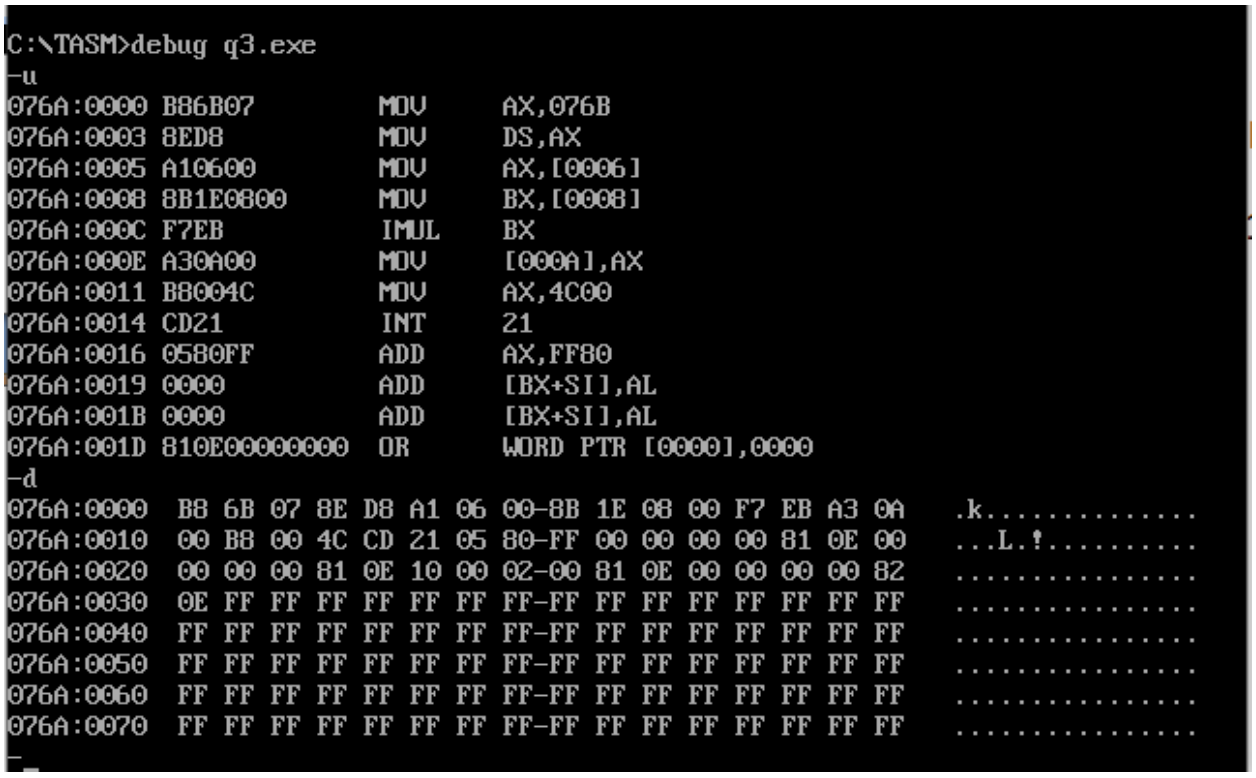
dosseg

model small

.8086

.data

```
p1 dw 8005H

p2 dw 00FFH

p3 dw ?


.code

mov ax,@data

mov ds,ax


mov ax,p1

mov bx,p2

imul bx

mov p3,ax



mov ax,4c00h

int 21h

end
```



4. Program to multiply unsigned 16-bit numbers

```
;Assignment 10 q3 16 bit signed multiplication

dosseg

model small

.8086


.data

p1 dw 00A5H

p2 dw 003FH

p3 dw ?


.code

mov ax,@data
```

```
mov ds,ax


mov ax,p1

mov bx,p2

mul bx

mov p3,ax



mov ax,4c00h

int 21h

end
```

```
C:\TASM>debug q4.exe
-u
076A:0000 B86B07        MOV     AX,076B
076A:0003 8ED8          MOV     DS,AX
076A:0005 A10600        MOV     AX,[0006]
076A:0008 8B1E0800      MOV     BX,[0008]
076A:000C F7E3          MUL     BX
076A:000E A30A00        MOV     [000A],AX
076A:0011 B8004C        MOV     AX,4C00
076A:0014 CD21          INT     21
076A:0016 A5            MOVSW
076A:0017 003F          ADD     [BX],BH
076A:0019 0000          ADD     [BX+SI],AL
076A:001B 0000          ADD     [BX+SI],AL
076A:001D 810E00000000  OR      WORD PTR [0000],0000
-d
076A:0000  B8 6B 07 8E D8 A1 06 00-8B 1E 08 00 F7 E3 A3 0A   .k..............
076A:0010  00 B8 00 4C CD 21 A5 00-3F 00 00 00 00 81 0E 00   ...L.!..?.......
076A:0020  00 00 00 81 0E 10 00 02-00 81 0E 00 00 00 00 82   ................
076A:0030  0E FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF   ................
076A:0040  FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF   ................
076A:0050  FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF   ................
076A:0060  FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF   ................
076A:0070  FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF   ................
-
```

5. Program for division of unsigned 8-bit numbers

```
;Assignment10 q5
; 8 bit unsigned division
dosseg
model small
.8086

.data
p1 db 0A5H
p2 db 03FH
q db ?
r db ?
.code
mov ax,@data
mov ds,ax

mov al,p1
mov bl,p2
mov ah,00h
div bl
mov q,al
mov r,ah

mov ax,4c00h
```

int 21h

end

```
-u
076A:0000 B86B07        MOV     AX,076B
076A:0003 8ED8          MOV     DS,AX
076A:0005 A00C00        MOV     AL,[000C]
076A:0008 8A1E0D00      MOV     BL,[000D]
076A:000C B400          MOV     AH,00
076A:000E F6F3          DIV     BL
076A:0010 A20E00        MOV     [000E],AL
076A:0013 88260F00      MOV     [000F],AH
076A:0017 B8004C        MOV     AX,4C00
076A:001A CD21          INT     21
076A:001C A5            MOVSW
076A:001D 3F            AAS
076A:001E 0E            PUSH    CS
076A:001F 0000          ADD     [BX+SI],AL
-d
076A:0000  B8 6B 07 8E D8 A0 0C 00-8A 1E 0D 00 B4 00 F6 F3   .k..............
076A:0010  A2 0E 00 88 26 0F 00 B8-00 4C CD 21 A5 3F 0E 00   ....&....L.!.?..
076A:0020  00 00 00 81 0E 10 00 02-00 81 0E 00 00 00 00 82   ................
076A:0030  0E FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF   ................
076A:0040  FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF   ................
076A:0050  FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF   ................
076A:0060  FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF   ................
076A:0070  FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF   ................
-_
```

6. Program for division of unsigned 16-bit numbers

;Assignment 10 q6 16 bit unsigned division

dosseg

model small

.8086

.data

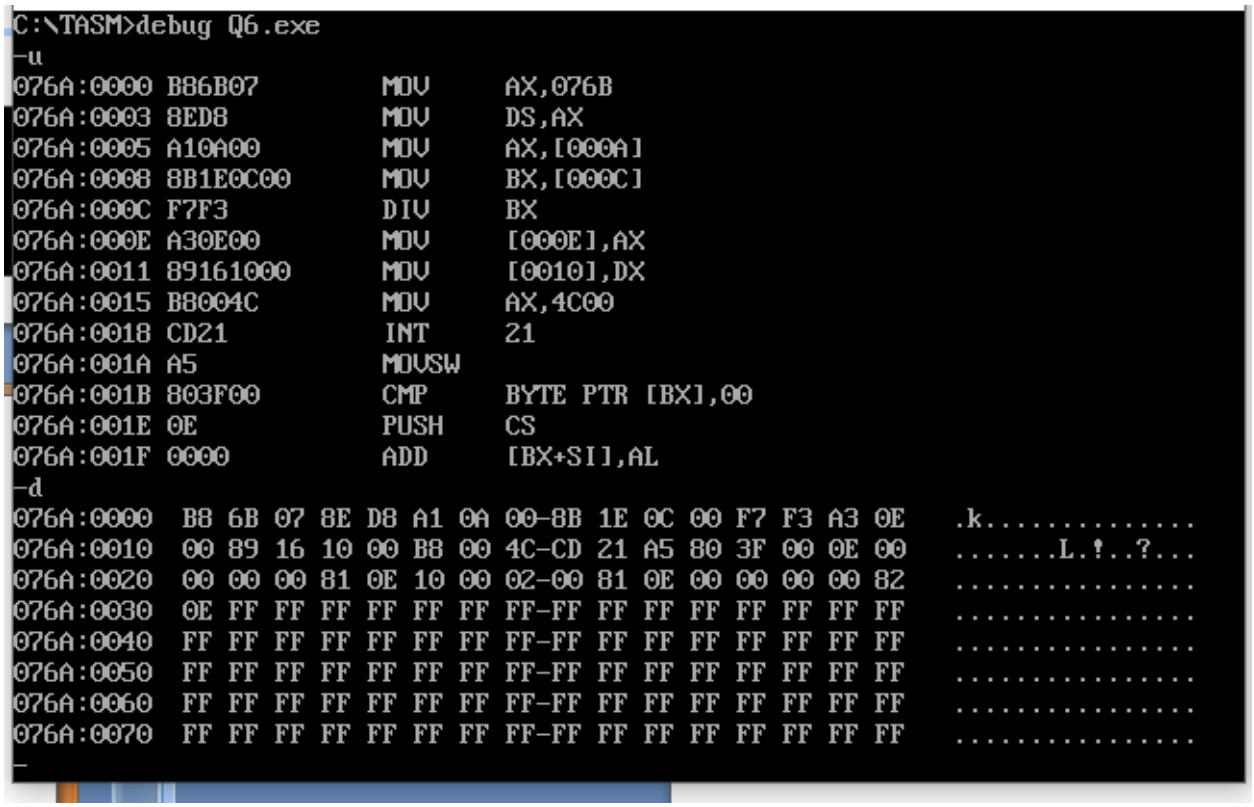
p1 dw 80A5H

p2 dw 003FH

p3 dw ?

p4 dw ?

```
.code

mov ax,@data

mov ds,ax


mov ax,p1

mov bx,p2

div bx

mov p3,ax

mov p4,dx


mov ax,4c00h

int 21h

end
```



7. Program for division of signed 8-bit numbers

```
;Problem 7
Dosseg
model small
.8086
.stack 10h

.data
a db -03H
b db 05H
c dw ?

.code
start:
mov ax,@data
mov ds,ax

mov al,a
cbw
idiv b
mov c,ax

mov ah,4ch
int 21h
```

end

```
-u
076A:0000 B86B07        MOV     AX,076B
076A:0003 8ED8          MOV     DS,AX
076A:0005 A00400        MOV     AL,[0004]
076A:0008 98            CBW
076A:0009 F63E0500      IDIV    BYTE PTR [0005]
076A:000D A30600        MOV     [0006],AX
076A:0010 B44C          MOV     AH,4C
076A:0012 CD21          INT     21
076A:0014 FD            STD
076A:0015 05007F        ADD     AX,7F00
076A:0018 0E            PUSH    CS
076A:0019 0000          ADD     [BX+SI],AL
076A:001B 0000          ADD     [BX+SI],AL
076A:001D 820E000000    OR      BYTE PTR [0000],00
-d
076A:0000  B8 6B 07 8E D8 A0 04 00-98 F6 3E 05 00 A3 06 00   .k........>.....
076A:0010  B4 4C CD 21 FD 05 00 7F-0E 00 00 00 00 82 0E 00   .L.!............
076A:0020  00 00 00 82 0E 10 00 02-00 82 0E 00 00 00 FF FF   ................
076A:0030  0E FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF   ................
076A:0040  FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF   ................
076A:0050  FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF   ................
076A:0060  FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF   ................
076A:0070  FF FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF   ................
-_
```

8. Program for division of signed 16-bit number

```
;Problem 8

.model small

.8086

.stack 10h

.data

a dw -3ff0h

b dw 0511h

c dw ?

r dw ?

.code

start:
```

```
mov ax,@data

mov ds,ax

mov ax,a

cwd

idiv b

mov c,ax

mov r,dx

mov ah,4ch

int 21h

end start
```