ASM Laboratory

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Section: **A1**

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IT-UG2

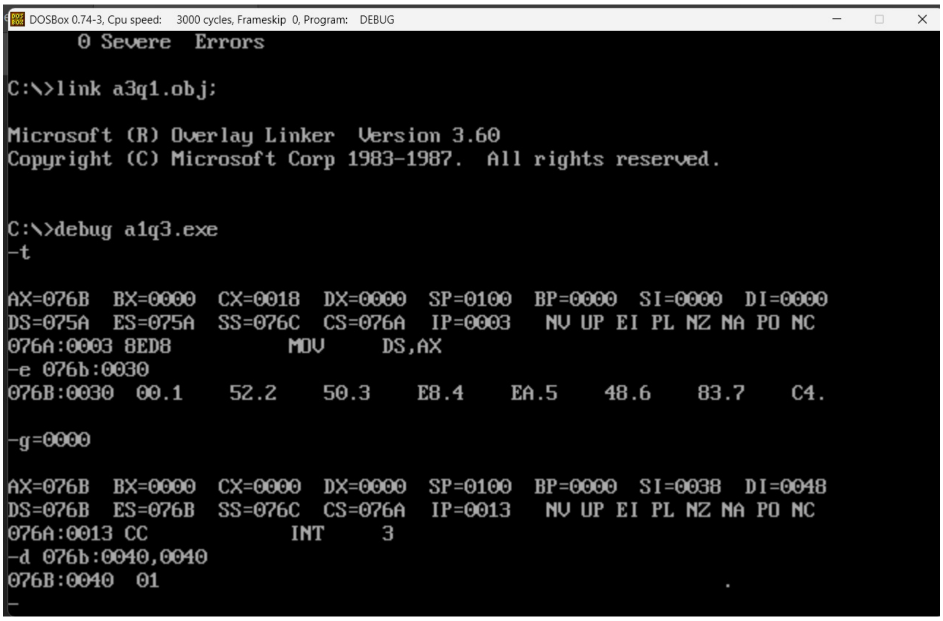
1. Write an Assembly Language Program to find the smallest number from a series of seven data bytes stored from DS: 0030H. Store the smallest number in DS: 0040H.

```
.model small
.stack 100h
.data
.code
main proc
        mov ax, @data
        mov ds, ax
        mov si, 0030h

        mov al, 0ffh
        mov cx, 0007h

l1:
        cmp al, [si]
        jc l2
        mov al, [si]

l2:
        inc si
        loop l1

mov si, 0040h
mov [si], al
```

int 03h

main endp

end main



DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: DEBUG

```
      0 Severe  Errors

C:\>link a3q1.obj;

Microsoft (R) Overlay Linker  Version 3.60
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C:\>debug a1q3.exe
-t

AX=076B  BX=0000  CX=0018  DX=0000  SP=0100  BP=0000  SI=0000  DI=0000
DS=075A  ES=075A  SS=076C  CS=076A  IP=0003   NV UP EI PL NZ NA PO NC
076A:0003 8ED8          MOV     DS,AX
-e 076b:0030
076B:0030  00.1    52.2    50.3    E8.4    EA.5    48.6    83.7    C4.

-g=0000

AX=076B  BX=0000  CX=0000  DX=0000  SP=0100  BP=0000  SI=0038  DI=0048
DS=076B  ES=076B  SS=076C  CS=076A  IP=0013   NV UP EI PL NZ NA PO NC
076A:0013 CC            INT     3
-d 076b:0040,0040
076B:0040  01                                                  .
-
```
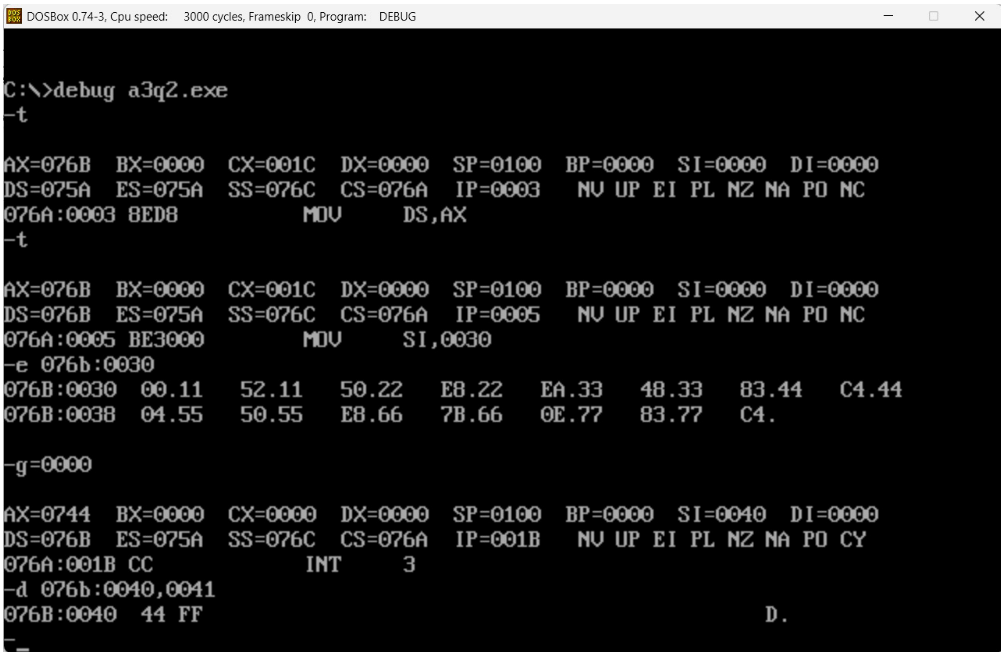

2. Write an Assembly Language Program to find the largest number from a series of 7 sixteen-bit numbers stored from DS: 0030H. Store the largest number in DS: 0040H.

```
.model small

.stack 100h

.data

.code

main proc

        mov ax, @data

        mov ds, ax

        mov si, 0030h


        mov al, 0000h
        mov cx, 0007h

l1:
        cmp al, [si]
        jnc l2
        mov al, [si]

l2:
        inc si
        loop l1

mov si, 0040h
mov [si], al

int 03h

main endp
end main
```

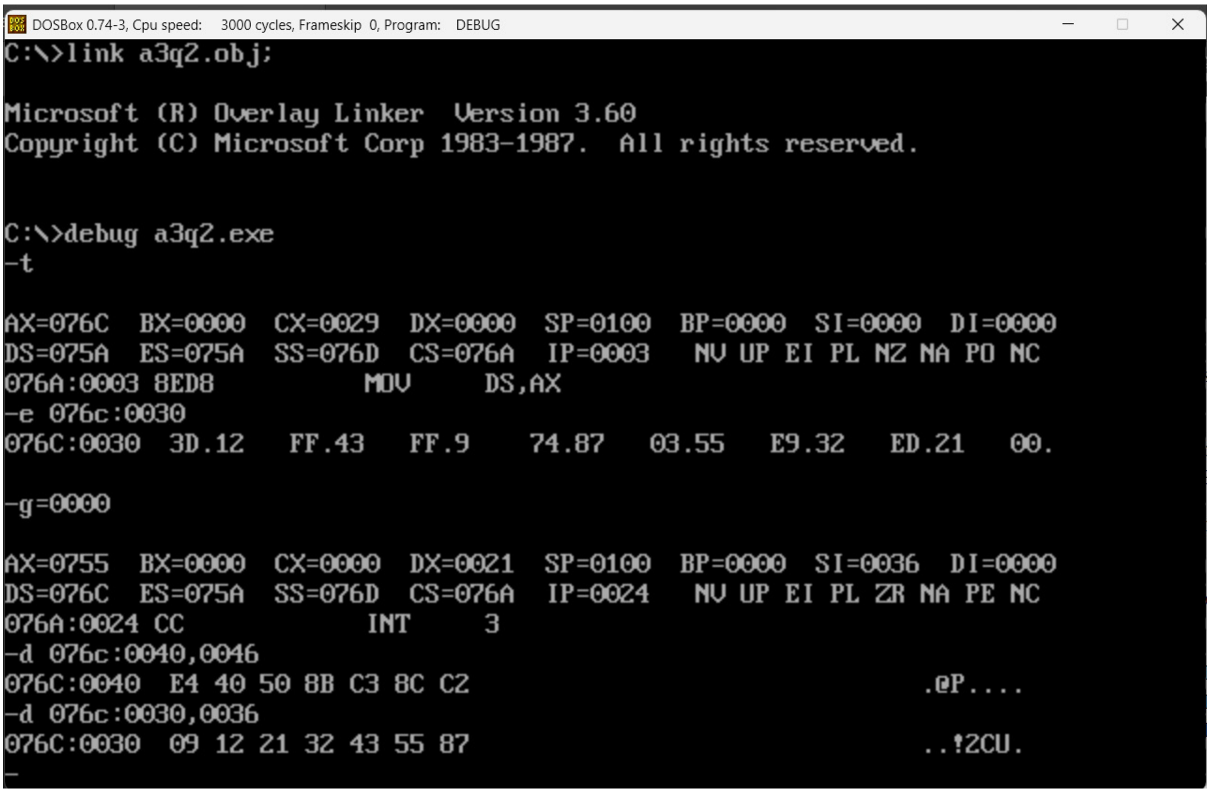

DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: DEBUG

```
C:\>debug a3q2.exe
-t

AX=076B  BX=0000  CX=001C  DX=0000  SP=0100  BP=0000  SI=0000  DI=0000
DS=075A  ES=075A  SS=076C  CS=076A  IP=0003   NV UP EI PL NZ NA PO NC
076A:0003 8ED8          MOV     DS,AX
-t

AX=076B  BX=0000  CX=001C  DX=0000  SP=0100  BP=0000  SI=0000  DI=0000
DS=076B  ES=075A  SS=076C  CS=076A  IP=0005   NV UP EI PL NZ NA PO NC
076A:0005 BE3000        MOV     SI,0030
-e 076b:0030
076B:0030  00.11   52.11   50.22   E8.22   EA.33   48.33   83.44   C4.44
076B:0038  04.55   50.55   E8.66   7B.66   0E.77   83.77   C4.

-g=0000

AX=0744  BX=0000  CX=0000  DX=0000  SP=0100  BP=0000  SI=0040  DI=0000
DS=076B  ES=075A  SS=076C  CS=076A  IP=001B   NV UP EI PL NZ NA PO CY
076A:001B CC            INT     3
-d 076b:0040,0041
076B:0040  44 FF                                           D.
-_
```

3. Write an Assembly Language Program to arrange a series of 7 data bytes stored from DS: 0030H in ascending order.

```
.model small
.stack 100h
.code

main proc
mov ax, @data
mov ds, ax

mov bl, 06h
l3:
mov si,0030h
mov cl,06h
l1:
mov al,[si]
inc si
cmp al,[si]
jc l2
mov dl,[si]
mov [si],al
dec si
mov [si],dl
inc si
l2:
loop l1
dec bl
```

```
cmp bl,00h
jnz l3


int 03h
mov ah,4ch
int 21h


main endp
end main
```



DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: DEBUG

```
C:\>link a3q2.obj;

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C:\>debug a3q2.exe
-t

AX=076C  BX=0000  CX=0029  DX=0000  SP=0100  BP=0000  SI=0000  DI=0000
DS=075A  ES=075A  SS=076D  CS=076A  IP=0003   NV UP EI PL NZ NA PO NC
076A:0003 8ED8          MOV     DS,AX
-e 076c:0030
076C:0030  3D.12   FF.43   FF.9    74.87   03.55   E9.32   ED.21   00.

-g=0000

AX=0755  BX=0000  CX=0000  DX=0021  SP=0100  BP=0000  SI=0036  DI=0000
DS=076C  ES=075A  SS=076D  CS=076A  IP=0024   NV UP EI PL ZR NA PE NC
076A:0024 CC            INT     3
-d 076c:0040,0046
076C:0040  E4 40 50 8B C3 8C C2                             .@P....
-d 076c:0030,0036
076C:0030  09 12 21 32 43 55 87                             ..!2CU.
-
```
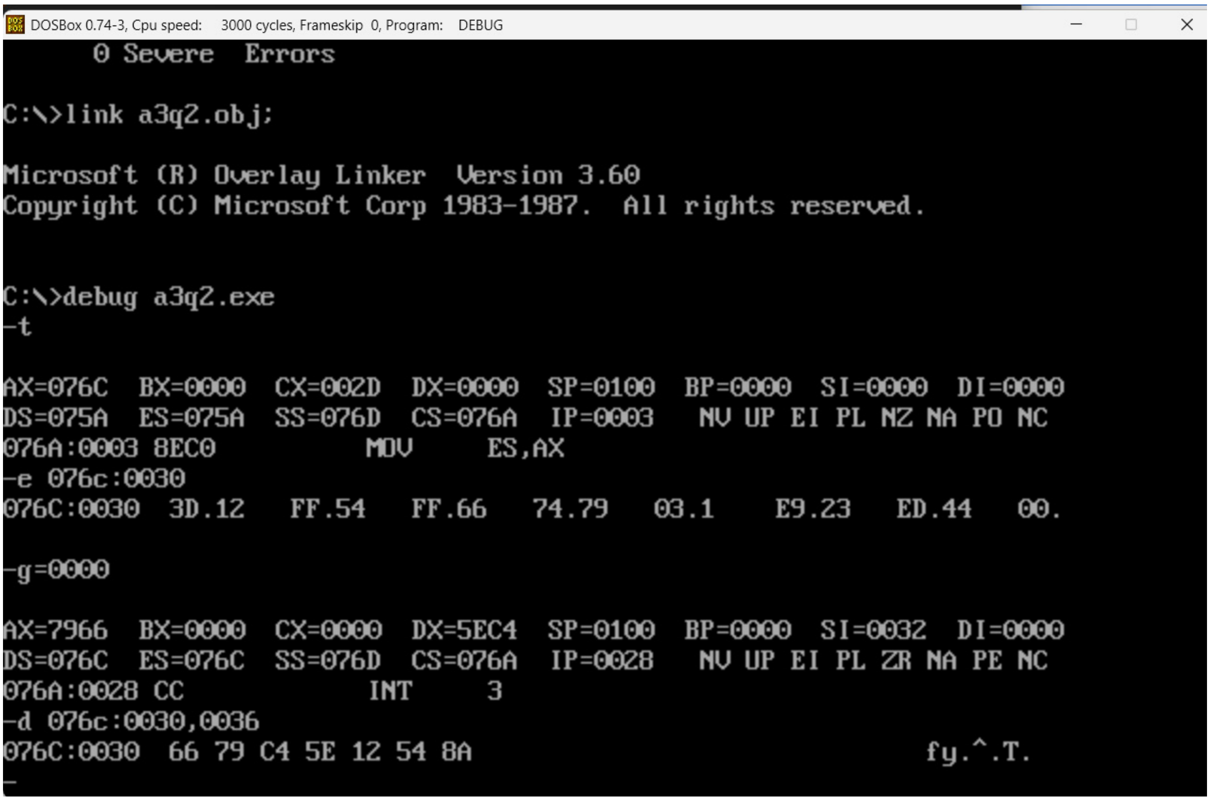

4. Write an Assembly Language Program to arrange a series of 7 sixteen-bits data stored from DS: 0030H in descending order.

```
.model small
.stack 100h
.data
.code
```

```
main proc
  mov ax, @data
  mov es, ax
  mov ds, ax
  mov si, 0030h
  mov cx, 0006h

l1:
  mov si, 0030h
  mov bx, cx

l2:
  mov ax, [si]
  mov dx, [si + 2]
  cmp ax, dx
  jnc l3

  mov [si], dx
  mov [si + 2], ax

l3:
  add si, 2
  dec bx
  jnz l2

  loop l1

  int 03h
```

```
   mov ah, 4ch

   int 21h


main endp

end main
```


DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: DEBUG

```
      0 Severe  Errors

C:\>link a3q2.obj;

Microsoft (R) Overlay Linker  Version 3.60
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C:\>debug a3q2.exe
-t

AX=076C  BX=0000  CX=002D  DX=0000  SP=0100  BP=0000  SI=0000  DI=0000
DS=075A  ES=075A  SS=076D  CS=076A  IP=0003   NV UP EI PL NZ NA PO NC
076A:0003 8EC0          MOV     ES,AX
-e 076c:0030
076C:0030  3D.12   FF.54   FF.66   74.79   03.1    E9.23   ED.44   00.

-g=0000

AX=7966  BX=0000  CX=0000  DX=5EC4  SP=0100  BP=0000  SI=0032  DI=0000
DS=076C  ES=076C  SS=076D  CS=076A  IP=0028   NV UP EI PL ZR NA PE NC
076A:0028 CC            INT     3
-d 076c:0030,0036
076C:0030  66 79 C4 5E 12 54 8A                             fy.^.T.
-
```

5. Write an Assembly Language program to find the square of a number stored in DS: 0030H using LOOK-UP table. Assume that the LOOK-UP table is stored from DS: 0040H that contains the square of the numbers 0 to 9. Store the square value in DS: 0050H.

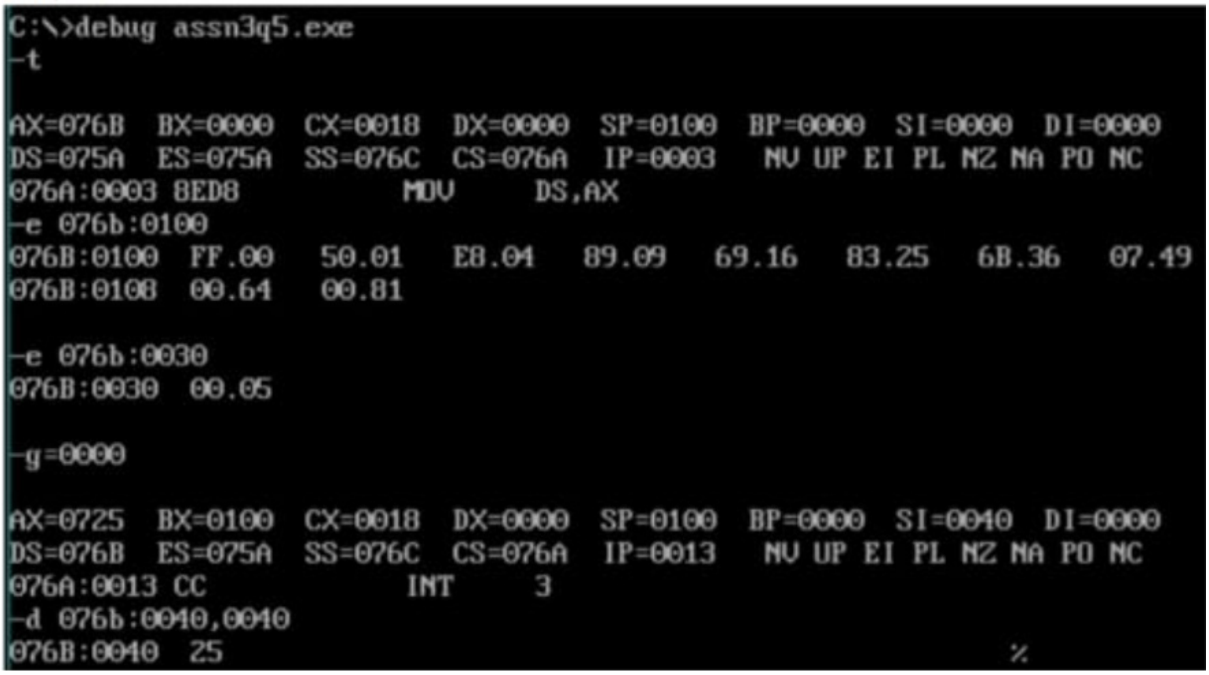
DS:0100H	00
DS:0101H	01
DS:0102H	04
DS:0103H	09
DS:0104H	16
DS:0105H	25
DS:0106H	36

DS:0107H	49
DS:0108H	64
DS:0109H	81

```
.model small
.stack 100h
.data
.code

main proc
   mov ax, @data
   mov ds, ax

   mov si, 0030h

   ;mov bl, [si]
   ;mov bh, 01h
   ;mov al, [bx]

   mov al, [si] ; taking input in al
   mov bx, 0100h ; moving to starting address of lookup table
   xlat

   mov si, 0040h
   mov [si], al

   int 03h
   mov ah, 4ch
   int 21h
```

main endp

end main



```
C:\>debug assn3q5.exe
-t

AX=076B  BX=0000  CX=0018  DX=0000  SP=0100  BP=0000  SI=0000  DI=0000
DS=075A  ES=075A  SS=076C  CS=076A  IP=0003   NV UP EI PL NZ NA PO NC
076A:0003 8ED8          MOV     DS,AX
-e 076b:0100
076B:0100  FF.00   50.01   E8.04   89.09   69.16   83.25   6B.36   07.49
076B:0108  00.64   00.81

-e 076b:0030
076B:0030  00.05

-g=0000

AX=0725  BX=0100  CX=0018  DX=0000  SP=0100  BP=0000  SI=0040  DI=0000
DS=076B  ES=075A  SS=076C  CS=076A  IP=0013   NV UP EI PL NZ NA PO NC
076A:0013 CC            INT     3
-d 076b:0040,0040
076B:0040  25                                                %
```