ASM Laboratory

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Section: **A1**

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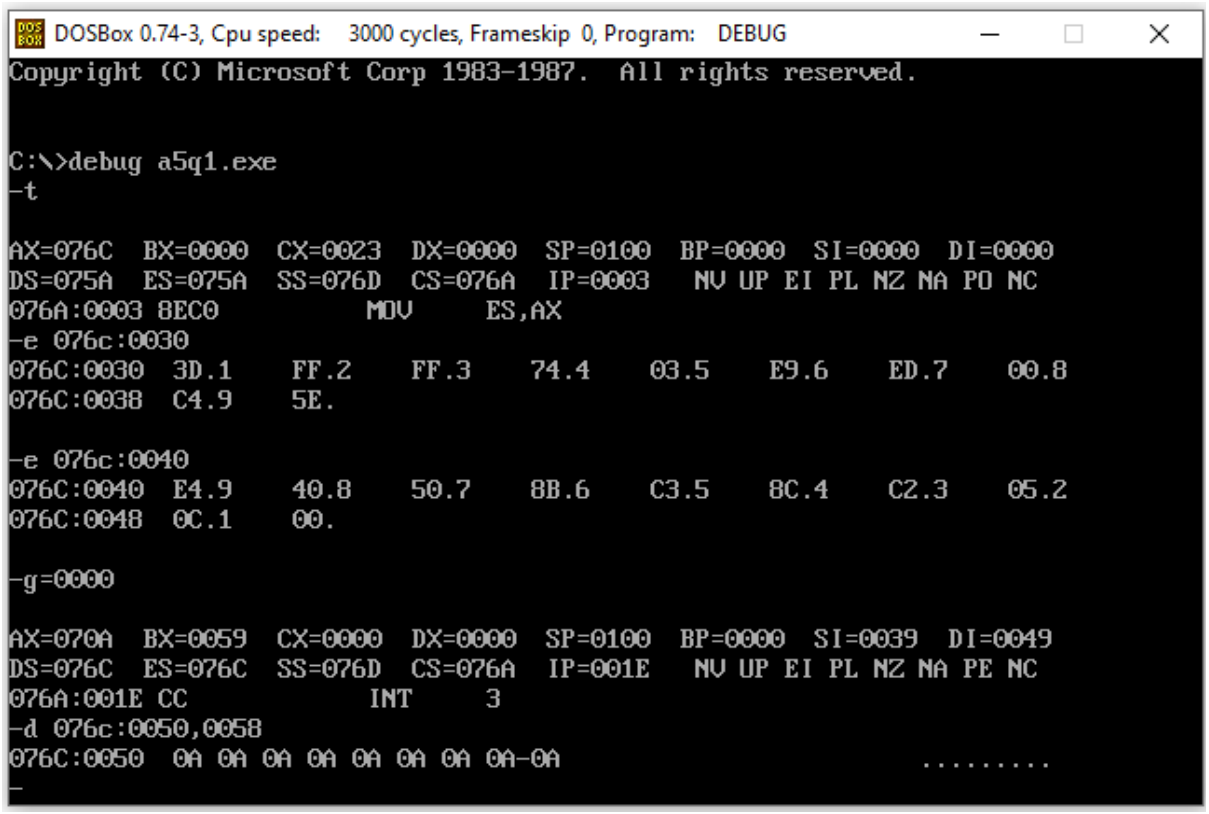
IT-UG2

1. Write an Assembly Language Program to add 3 X 3 matrices. Assume the matrices are stored in the form of lists (row wise). First matrix is stored from DS:0030H and the second matrix is stored from DS:0040.Store the result of the addition in the third lists starting from DS:0050H.

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

main proc
mov ax,@data
mov es,ax
mov ds, ax
mov si,0030h
mov di,0040h
mov bx,0050h
mov cx,0009h

l1:
    mov al,[si]
    add al,[di]
    mov [bx],al
    inc di
    inc bx
    inc si
    loop l1

int 03h
```

```
mov ah,4ch

int 21h

main endp

end main
```



2. Write an Assembly Language Program to convert an eight bit binary number stored in DS:0030H into its equivalent BCD number. Stored the result in DS:0040H.

```
; Problem 2

dosseg

.model small

.stack 100h

.data

.code
```

```
main proc
mov ax,@data
mov es,ax
mov ds, ax
mov si,0030h
mov dx,0000h
mov ax,0000h
mov cl,[si]
l2:
        cmp cl,00
        jz l1
        dec cl
        mov al,dl
        add al,01h
        daa
        mov dl,al
        mov al,dh
        adc al,00h
        daa
        mov dh,al
        jmp l2

l1:
        mov si,0040h
        mov[si],dx
```

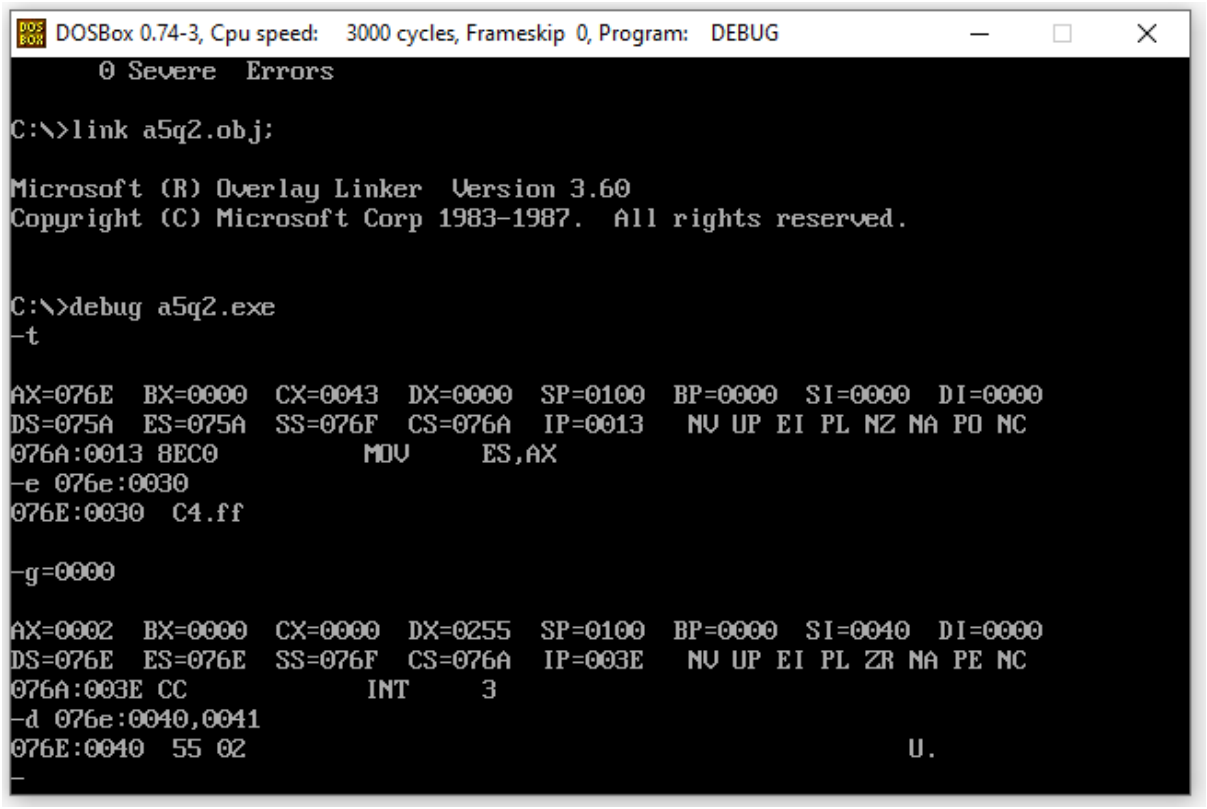
int 03h

mov ah,4ch

int 21h

main endp

end main



3. Write an Assembly program to convert a BCD number stored in DS:0030H into its equivalent hexadecimal number. Stored the result in DS:0040H.

; Problem 3

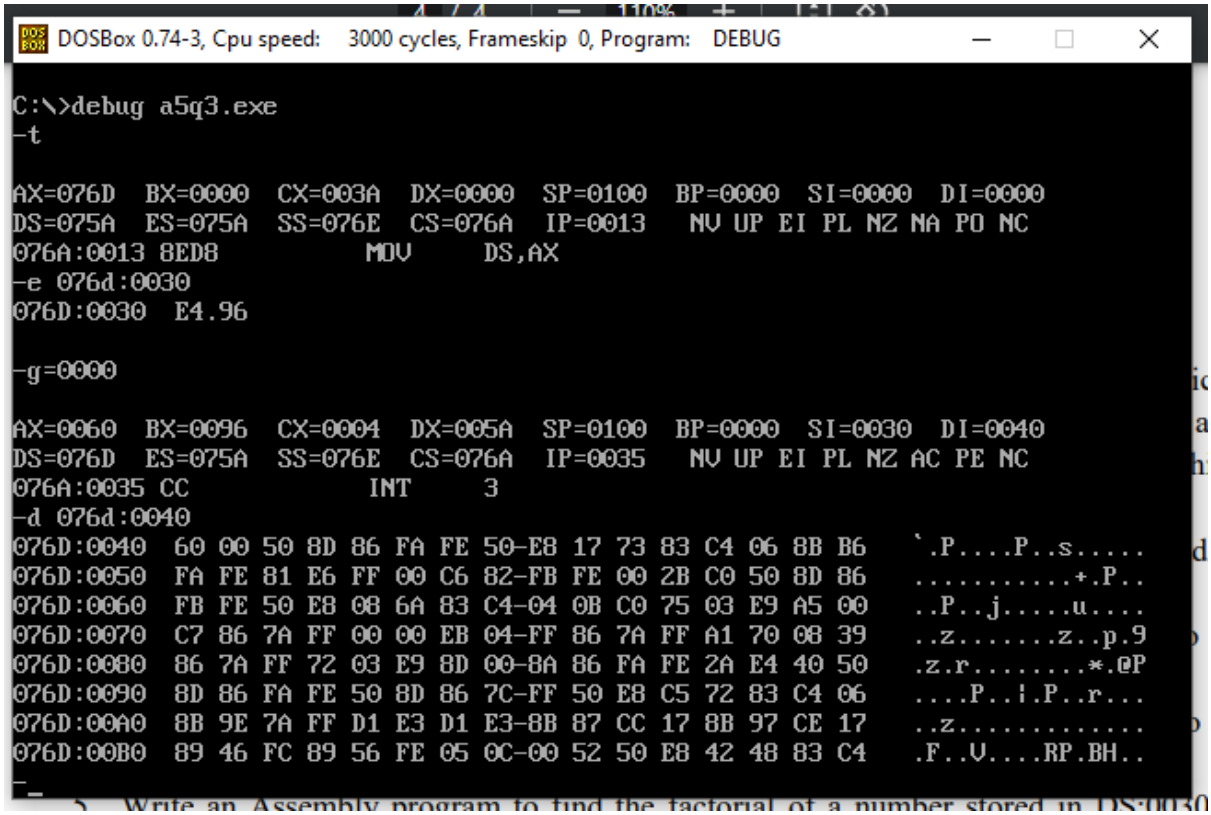
dosseg

.model small

.stack 100h

.data

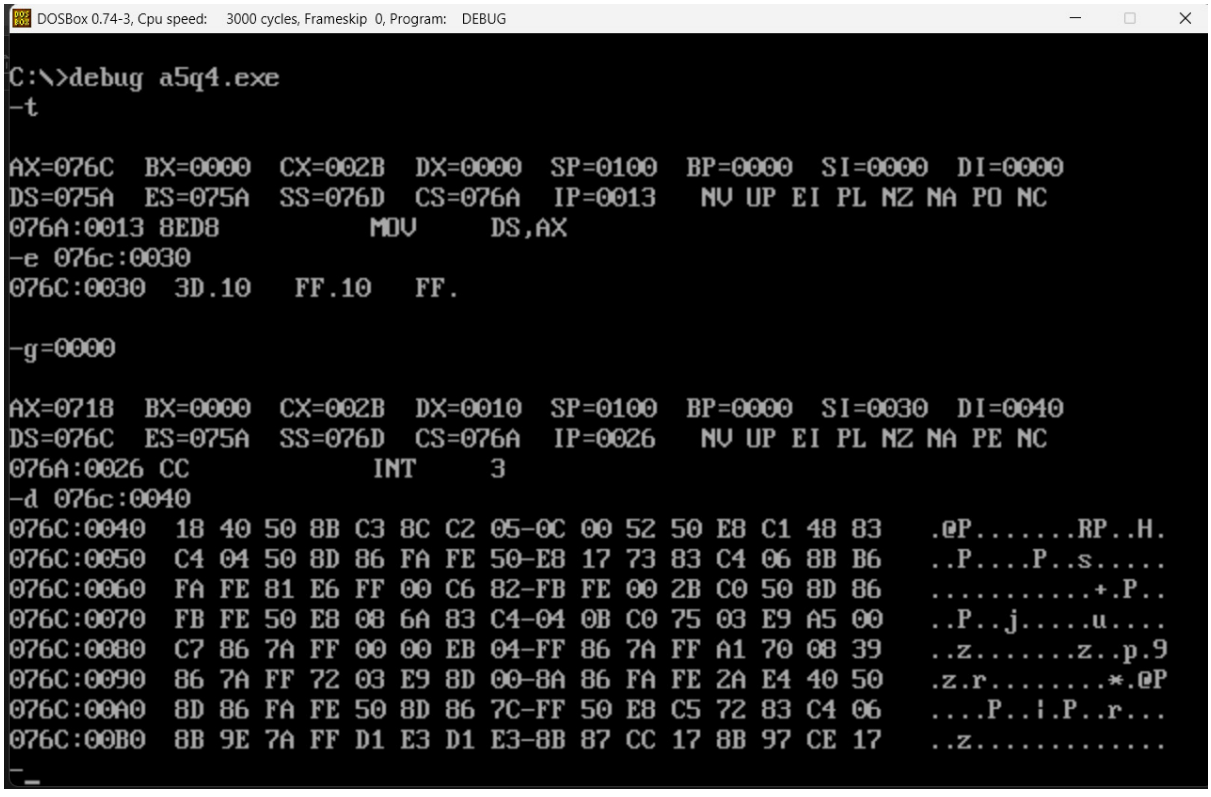
```
.code

main proc
mov ax,@data
mov ds,ax
mov si,0030h
mov di,0040h
mov al,[si]
mov bl,al
and al,0f0h
mov cl,04h
ror al,cl
mov dl,0ah
mul dl
mov dx,ax
mov al,bl
and al,0fh
mov ah,00h
add ax,dx
mov [di],ax
int 03h
mov ah,4ch
int 21h
main endp
end main
```



4. Write an Assembly program to convert a binary number stored in DS:0030H into its equivalent gray code. Stored the result in DS:0040H.

```
dosseg

.model small

.stack 100h

.data

.code

main proc

mov ax,@data

mov ds,ax

mov si,0030h

mov di,0040h

mov al,[si]
```

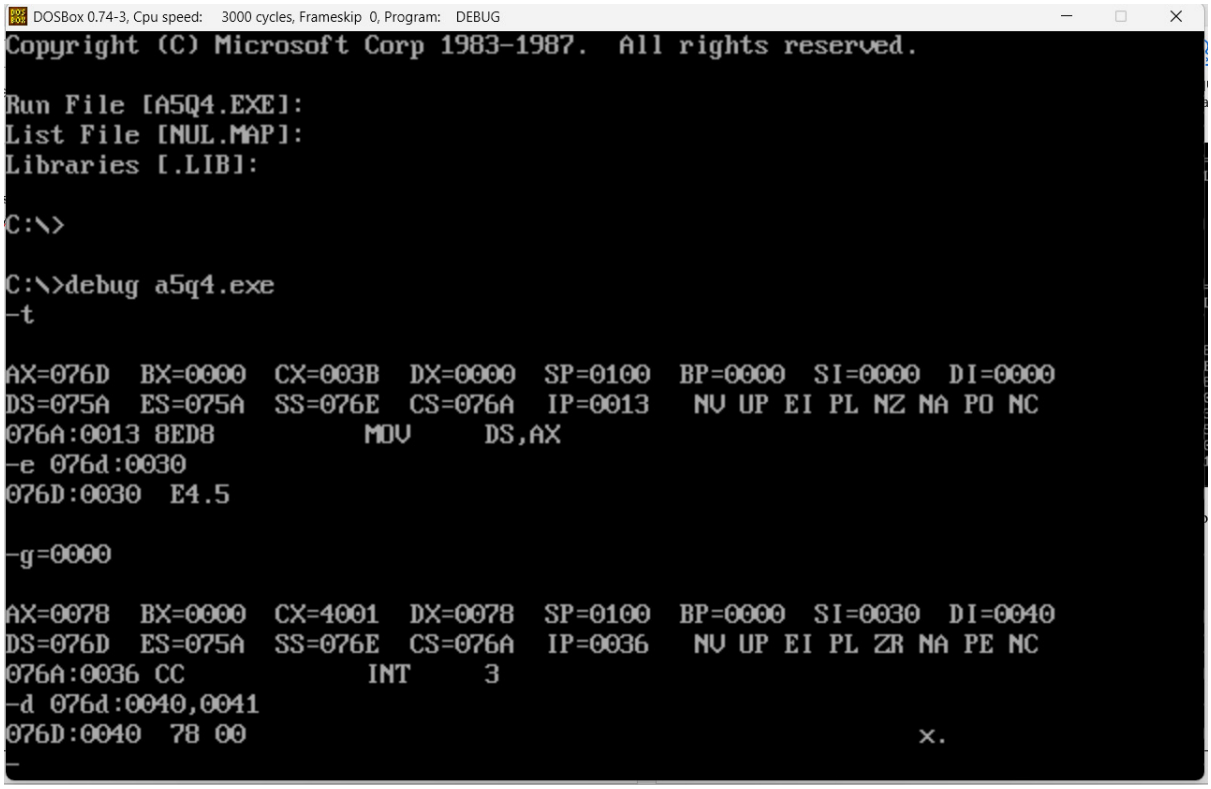
```
mov dl,[si]

clc

rcr al,01

xor al,dl

mov [di],al

int 03h

mov ah, 4ch

int 21h

main endp

end main
```



5. Write an Assembly program to find the factorial of a number stored in DS:0030H. Stored the result in DS:0040H.

```
dosseg

.model small

.stack 100h
```

```
.data
.code
main proc
mov ax,@data
mov ds,ax
mov si,0030h
mov di,0040h
mov bx,0000h
mov ax,0000h
mov al,[si]
mov cx,[si]
mov bl,al
l1:
        dec bl
        cmp bl,00h
        jz l2
        mul bx
        mov dx,ax
        loop l1
l2:     mov [di],dx
int 03h
mov ah, 4ch
int 21h
main endp
end main
```



(note: 78 in hex is 120 in decimal and 5! = 120)