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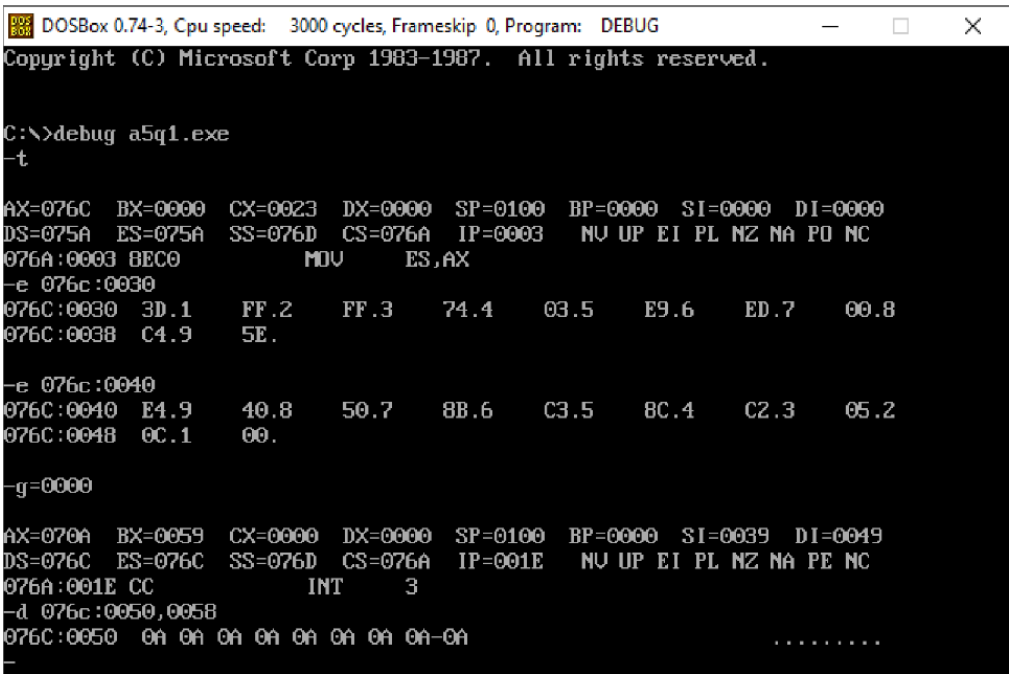
Section: A1
Dept: INFORMATION TECHNOLOGY
Year: UG2 Sem 1

ASM lab assignment – 4

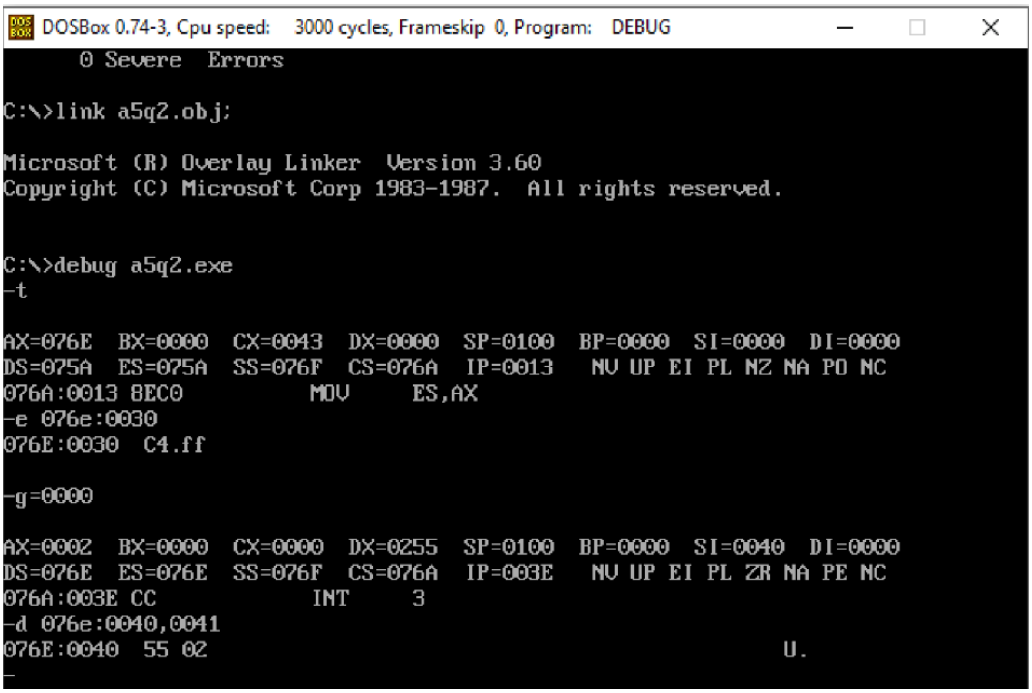
1. Write an Assembly Language Program to add 3 X 3 matrices. Assume the matrices are stored in the form of lists (row wise). First matrix is stored from DS:0030H and the second matrix is stored from DS:0040.Store the result of the addition in the third lists starting from DS:0050H.

```
.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]
mov 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.

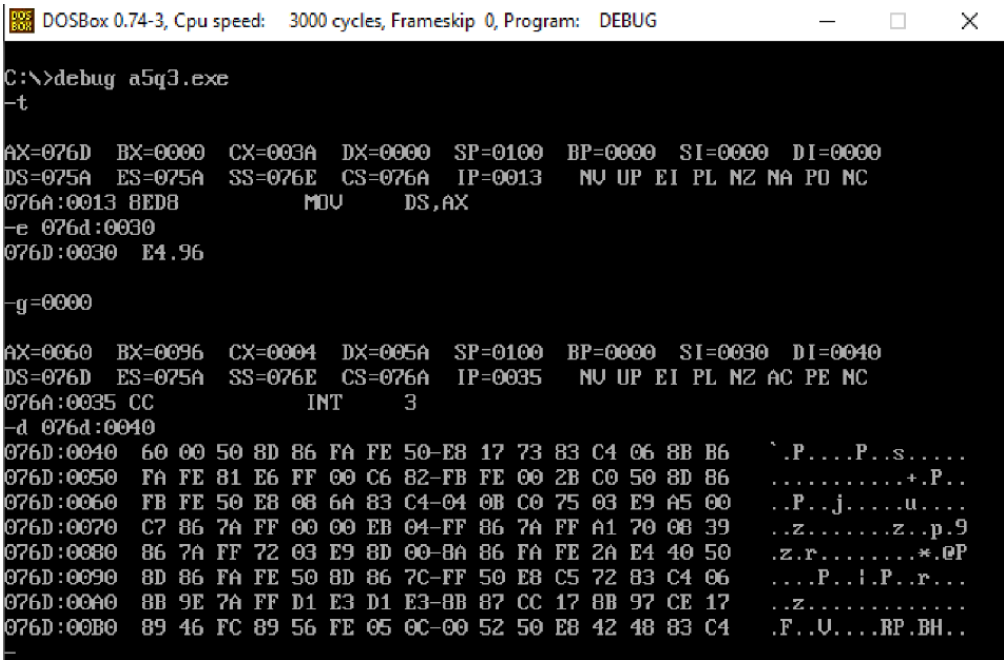
```
.model small
.stack 100h
.data
.code

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,00hs
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.

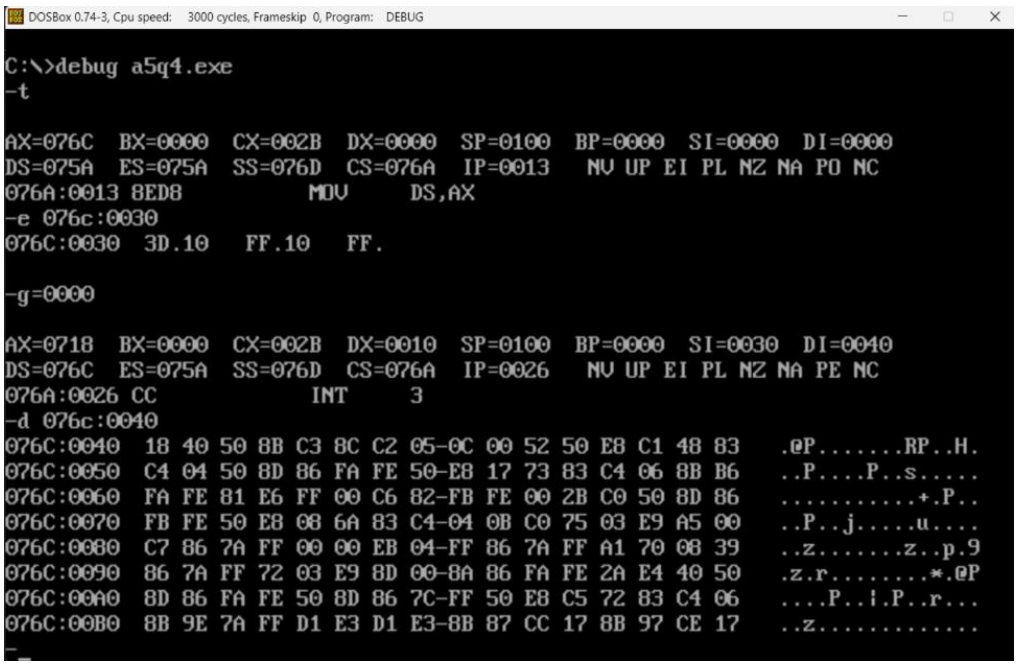
```
dosseg
.model small
.stack 100h
.data
.code
```

```
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
```



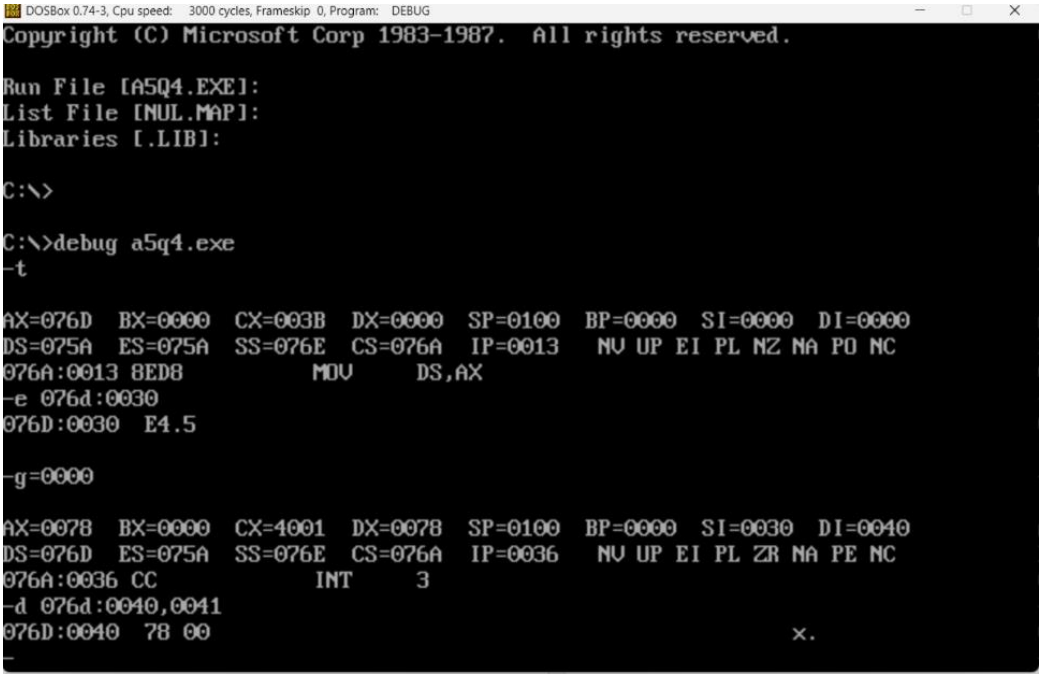
4. Write an Assembly program to convert a binary number stored in DS:0030H into its equivalent gray code. Stored the result in DS:0040H.

```
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 is hex for 120 in decimal and 5! = 120)