ASM LAB

NAME : SUMIT DE
SECTION : A2
ROLL NO. : 002211001109
IT UG-2

Q1. Write an Assembly Language Program to add two byte integers and store the result in DX register.

```
dosseg
.model small
.stack 100h

.data
   num1 db 02h
   num2 db 06h

.code
   main proc
   mov ax,@data
   mov ds,ax
   mov bl,num1
   mov al,num2
   add al,bl
   mov dl,al
   add dl,30h
   mov ah,02h
   int 21h
   mov ah,4ch
   int 21h
   main endp
   end main
```

```
C:\>masm add.asm;
Microsoft (R) Macro Assembler Version 5.00
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  51718 + 464826 Bytes symbol space free

      0 Warning Errors
      0 Severe  Errors

C:\>link add.obj;

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C:\>add.exe
8
```
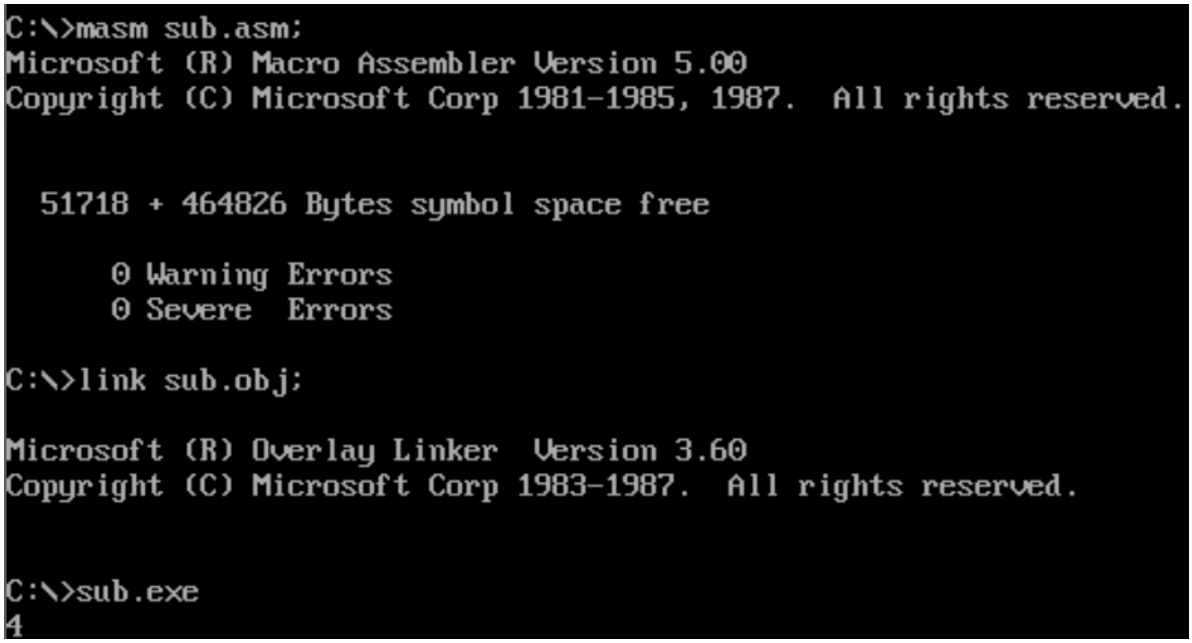
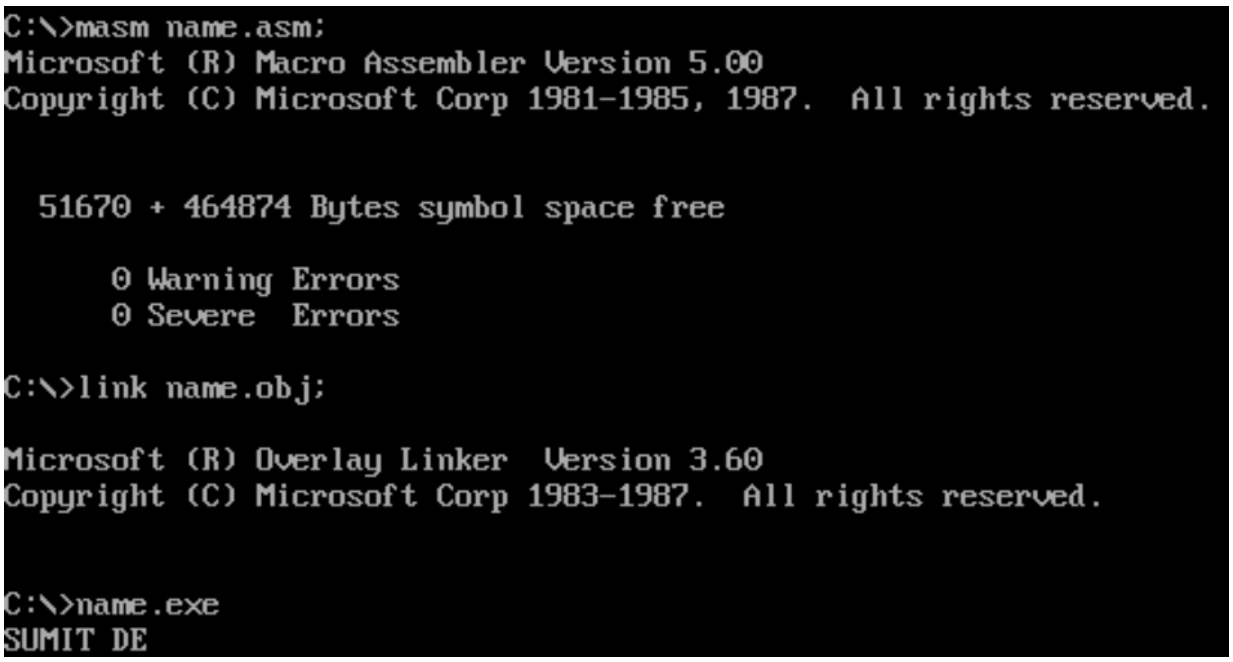

Q2. Write an 8086 Assembly Language Program to subtract two 8-bit signed integers. The numbers can be stored in the data segment.

```
dosseg
.model small
.stack 100h

.data
   num1 db 02h
   num2 db 06h

.code
   main proc
   mov ax,@data
   mov ds,ax
   mov bl,num1
   mov al,num2
   sub al,bl
   mov dl,al
   add dl,30h
   mov ah,02h
   int 21h
   mov ah,4ch
   int 21h
   main endp
end main
```



Q3. Write an Assembly Language Program to print your name, which is stored in memory as a string.

```
dosseg
.model small
.stack 100h

.data
   var1 db "SUMIT DE$"

.code
   main proc
   mov ax,@data
   mov ds,ax

   mov dx,offset var1
   mov ah,09h
   int 21h

   mov ah,4ch
   int 21h
   main endp
end main
```



Q4. Write an Assembly Language Program to reverse a string using stack and display the result.

```
dosseg
.model small
.stack 100h
.data
   var db "SUMIT$"
.code
   main proc
   mov ax,@data
   mov ds,ax
   mov si, offset var
   mov cx,5
   l1:
   mov bx,[si]
   push bx
   inc si
   loop l1
   mov cx, 5
   l2:
   pop dx
   mov ah, 2
   int 21h
   loop l2
   mov ah, 4ch
   int 21h
   main endp
end main
```

```
C:\>masm reverse.asm;
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  51622 + 464922 Bytes symbol space free

       0 Warning Errors
       0 Severe  Errors

C:\>link reverse.obj;

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C:\>reverse.exe
TIMUS
```

Q5. Write an 8086 Assembly Language Program which will ask for a number and the no. will be taken from keyboard. Print the number in binary and hexadecimal format.

```
dosseg
.model small
.stack 100h
.data
   d1 dw 16
.code
main proc far
   mov ax, @data
   mov ds, ax
   mov ax, d1
   call print
   mov ah, 4ch
   int 21h
main endp
print proc
   mov cx, 0
   mov dx, 0
label1:
   cmp ax, 0
   je print1
   mov bx, 2
   div bx
   push dx
   inc cx
   xor dx, dx
   jmp label1
print1:
   cmp cx, 0
   je exit
   pop dx
   add dx, 48
   mov ah, 02h
   int 21h
   dec cx
   jmp print1
exit:
   ret
print endp
end main
```

```
C:\>masm binary.asm;
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  51698 + 464846 Bytes symbol space free

      0 Warning Errors
      0 Severe  Errors

C:\>link binary.obj;

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C:\>binary.exe
10000
```

```
dosseg
.model small
.stack 100h

.data
   d1 dw 998

.code
   main proc far
   mov ax, @data
   mov ds, ax

   mov ax, d1
   call print
   mov ah, 4ch
   int 21h
   main endp

print proc
   mov cx, 0
   mov dx, 0
   label1:
        cmp ax, 0
        je print1
        mov bx, 16
```

```
        div bx
        push dx
        inc cx
        xor dx, dx
        jmp label1

        print1:
        cmp cx, 0
        je exit
      pop dx
      cmp dx, 9
        jle continue
        add dx, 7
        continue:
        add dx, 48
        mov ah, 02h
        int 21h
      dec cx
        jmp print1
   exit:
      ret
print endp
end main
```

```
C:\>masm convert.asm;
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  51698 + 464846 Bytes symbol space free

       0 Warning Errors
       0 Severe  Errors

C:\>link convert.obj;

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C:\>convert.exe
3E6
```
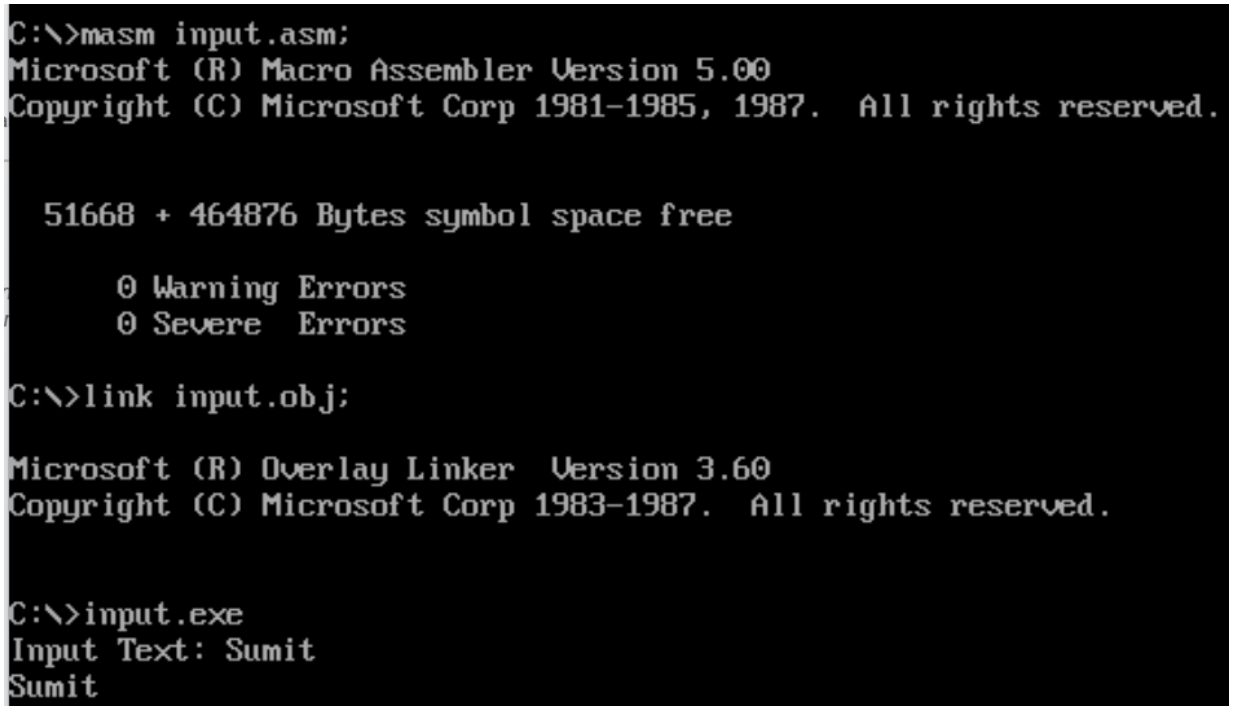

Q6. Now modify the program in Q2 so that it will ask for your name and takes the input from keyboard.

```
dosseg
.model small
.stack 100h
.data
   var1 db "input text: $",13
   var2 db 50 dup('$')
.code
   main proc
   mov ax,@data
   mov ds,ax
   mov dx, offset var1
   mov ah,09h
   int 21h
   mov si, offset var2
   call text
   mov ah,4ch
   int 21h
   main endp
   text proc
   input:
      mov ah,01h
      int 21h

      cmp al,13
      je ter

      mov [si],al
      inc si
   jmp input
   ter:
      mov [si],'$ '
      mov bx, offset var2
      mov dx, bx
      mov ah, 09h
      int 21h
      ret
   text endp
end main
```


C:\>masm input.asm;
Microsoft (R) Macro Assembler Version 5.00
Copyright (C) Microsoft Corp 1981-1985, 1987. All rights reserved.
51668 + 464876 Bytes symbol space free
0 Warning Errors
0 Severe Errors
C:\>link input.obj;
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C:\>input.exe
Input Text: Sumit
Sumit

Q7. Write an Assembly Language Program to check the length of a given string.

```
dosseg
.model small
.stack 100h
.data
   arr db 20 DUP('$')
   msg db 'Enter a string : $'
   msgg db 'Length of the entered string = $'
.code
   main proc
   mov ax,@data
   mov ds,ax
   mov ax,offset msg
   mov dx,ax
   mov ah,9
   int 21h
   mov cx,0
   mov si, offset arr
   lp:
   mov ah,1
   int 21h
   cmp al,13
   je progend
   mov [si],al
   inc cx
   inc si
   jmp lp
   progend:
   mov dx, offset msgg
   mov ah,9
   int 21h
   mov bx, cx
   add bx, 48
   mov dx, bx
   mov ah, 2
   int 21h
   mov ah,4ch
   int 21h
   main endp
end main
```

```
C:\>masm letter.asm;
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  51658 + 464886 Bytes symbol space free

      0 Warning Errors
      0 Severe  Errors

C:\>link letter.obj;

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C:\>letter.exe
Enter a string : Sumit
Length of the entered string = 5
```