CS322- Lab 3

Assembly language Programming

The goal of this is to familiarize the students with x86 assembly language features.

Part 1 : 16 bit Assembly language programming

In this section we use emulator to run 16 bit assembly

Step1: install: DOSBox
First, run dosbox.exe,   You have to basically set that as new directory just for DOSBox.
Essentially, it's going to become the C:\> drive of 8086 . So, type:

Z:\>MOUNT C C:\8086
Drive C mounted as local directory C:\8086

 Now have to compile the program.
> masm **Yourfilename.asm**
> l**ink Yourfilename.obj**
>debug Yourfilename.exe

Exercise 1:

> masm **avr.asm**
> l**ink avr.obj**
>debug avr.exe

Exercise 1:
 Computer the debug tutorial

Your assignment:

P1_1:
Write an assembly language program to find sum of 5 numbers.
Ans here:

.model small
.stack 64
.data
a db 01h,02h,02h,02h,02h

.code

```
start: mov ax,@data
      mov ds,ax
      mov cl,5
      lea si,a
      mov ax,0000h
again: add ax,[si]
      inc si
      dec cl
      jnz again
          mov dx,ax
          add dx,30h
          mov ah,02h
          int 21h
          mov ah,4ch
          int 21h
      end start
      .end
```

P1_2:
Write an assembly language program to find average of the given set of numbers.

Ans here:

```
.model small
.stack 64
.data
a db 02h,02h,02h,02h,02h,02h,02h,02h,02h,02h

.code

start: mov ax,@data
      mov ds,ax
      mov cl,10
      lea si,a
      mov ax,0000h
again: add al,[si]
      inc si
      dec cl
      jnz again
      mov cl,0ah
      div cl
          mov dx,ax
          add dx,30h
          mov ah,02
          int 21h
```

```
        mov ah,4ch
        int 21h
        end start
        .end
```

P1_3:
Write an assembly language program to   sort the given set of numbers.

Ans here:

```
.model small
.stack
.data

a db 02h,01h,04h,08h,06h

.code

start: mov ax,@data
       mov ds, ax
       mov ch,04h

up2:mov cl,04h
        lea si,a

up1:mov al,[si]
        mov bl,[si+1]
        cmp al,bl
        jc down
        mov dl,[si+1]
        xchg [si],dl
        mov [si+1],dl

down:inc si
        dec cl
        jnz up1
        dec ch
        jnz up2

        lea si,a
        mov cl,5h
        again:mov dx,[si]
```

```
        add dx,30h

        mov ah,02
        int 21h
        inc si
        dec cl
        jnz again

        mov ah,4ch
        int 21h
        end start
        .end
```

P1_4

Select three small problems of your own and write three assembly language programs to solve them. (submit   P1_4a.asm, P1_4b.asm, and P1_4c.asm,;   include problem at the beginning of the asm file as comment statements)

Q1 : Make the program to reverse a string.
Q2 : Make the program to find the fibonnaci sequence.
Q3 : Make the program to multiply two numbers .

Your Lab Assignment 3 (50 points)
Submission :
 Fill about problems and   Course work submission through cs322.iitp@gmail.com with subject: YourrollNo_Lab3. **Due on** 10th August 5 PM **.**