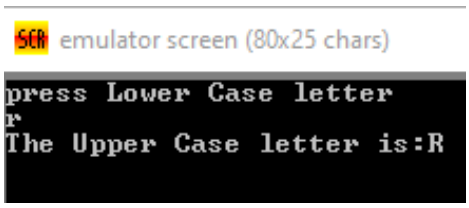
Experiment No.1: Write an assembly language program to convert a lowercase letter to an uppercase letter or vice versa.

Source Code:

```
.model small
print macro msg
   mov ah,09
   lea dx,msg
   int 21h
endm
.stack 100h
.data
a db 'press Lower Case letter',10,13,'$'
b db 10,13,'The Upper Case letter is:$'
.code
main proc
mov ax,@data
mov ds,ax
print a
mov ah,01
int 21h
mov bl,al
print b
sub bl,32
mov dl,bl
mov ah,02
int 21h
exit:
mov ah,4ch
int 21h
main endp
end main
```

Input/Output:

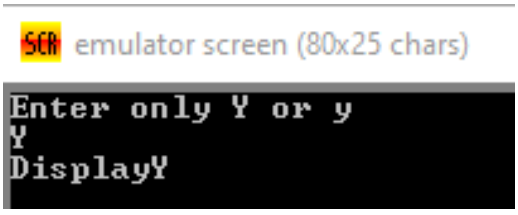


Experiment No.2: Write an assembly language program to read a character. if it is 'y' or 'Y', display it otherwise terminates the program.

Source code:

```
.model small
.stack 100h
.data
a db 'Enter only Y or y',10,13,'$'
b db 10,13,'Display$'
.code
main proc
   mov ax,@data
   mov ds,ax

   mov ah,09
   lea dx,a
   int 21h

   mov ah,01
   int 21h
   mov bl,al

   cmp bl,'Y'
   je display
   cmp bl,'y'
   jne exit

   display:
   mov ah,09
   lea dx,b
   int 21h

   mov ah,02
   mov dl,bl
   int 21h

   exit:
   mov ah,04ch
   int 21h
   main endp
end main
```

Input\Output:



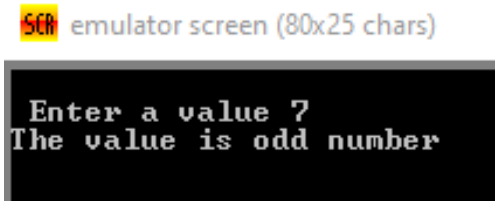
Experiment No.3: Write an assembly language program to determine whether a number is odd or even.

Source code:

```
.model small
.stack 100h

print macro msg

lea dx,msg
mov ah,9
int 21h
endm
.data

 msg1 db 0dh,0ah," Enter a value $"
 msg2 db 10,13,"The value is even number$"
 msg3 db 10,13,"The value is odd number$"
 .code
 main proc
    mov ax,@data
    mov ds,ax

    print msg1
    mov ah,1
    int 21h

    mov ah,0
    mov dl,2
    div dl
    cmp ah,0
    jne odd

   even:
   print msg2
   jmp exit

   odd:
   print msg3

   exit:
   mov ah,4ch
   int 21h
```

```
main endp
end main
```

Input/Output:



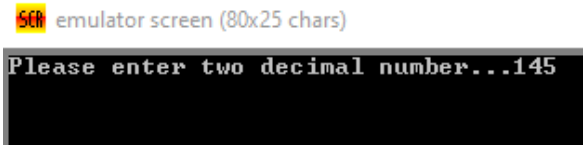
Experiment No.4: Write an assembly language program to add two decimal number

Source code:

```
. .model small
.stack 100h
.data
msg db 'Please enter two decimal number…$'
.code
main proc
   mov ax,@data
   mov ds,ax

   mov ah,09
   lea dx,msg
   int 21h

   mov ah,01
   int 21h
   mov bl,al

   mov ah,01
   int 21h
   mov bh,al

   add bl,bl
   sub bl,48

   mov ah,02
   mov dl,bl
   int 21h
```

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

Input/Output:



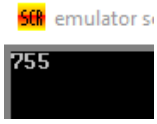
Experiment No.5: Write an assembly language Program to input two numbers, compare them and display the smaller one.

Source code:

```
.model small
.stack 100h
.code
main proc
  mov ah,01
  int 21h
  mov bl,al

  mov ah,01
  int 21h
  mov bh,al

  cmp bl,bh
  jg level

  mov ah,02
  mov dl,bl
  int 21h
  jmp exit

  level:
```

```
   mov ah,02
   mov dl,bh
   int 21h

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

Input/Output:



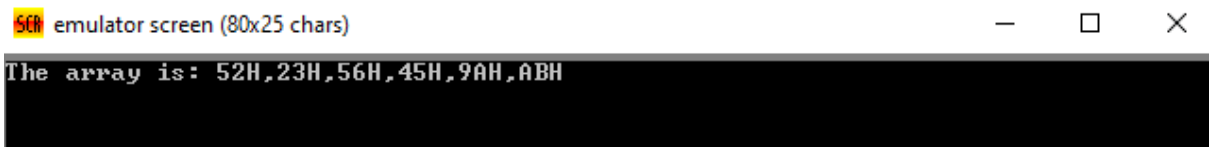
Experiment No.6: Write an assembly language program to find the largest element of the array.

Source code:

```
.MODEL SMALL
 READ MACRO MSG
   MOV AH,0AH
   LEA DX,MSG
   INT 21H
 ENDM

PRINT MACRO MSG
   MOV AH,09H
   LEA DX,MSG
   INT 21H
ENDM
.STACK 100H

ASSUME CS:CODE, DS:DATA
DATA SEGMENT

 CR EQU 0DH
 LF EQU 0AH
   MSG1 DB "The array is: 52H,23H,56H,45H,9AH,ABH$"
   MSG2 DB CR,LF,"The largest number is: $"
   LIST DB 52H,23H,56H,45H,45H,9AH,0ABH
   COUNT EQU 0Fh
   LARGEST DB 04H DUP (?)

DATA ENDS

CODE SEGMENT
```

```
START:
      MOV AX,DATA
      MOV DS,AX

      PRINT MSG1
      MOV SI,OFFSET LIST
      MOV CL,COUNT
      MOV AL,[SI]

AGAIN:  CMP AL,[SI+1]
      JNL NEXT
      MOV AL,[SI+1]

NEXT:   INC SI
      DEC CL
      JNZ AGAIN

      MOV SI,OFFSET LARGEST
      MOV [SI],AL
      MOV AH,4CH
      INT 21H
CODE ENDS
END START
```

Input/Output:



Experiment No.7: Write an assembly language program to calculate the average of n number.

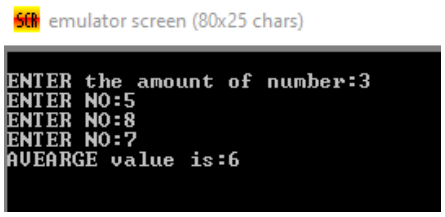
Source code:

```
.MODEL SMALL
.DATA

VAL1    DB      ?
NL1     DB      0AH,0DH, 'ENTER the amount of number:','$'
NL2     DB      0AH,0DH,'ENTER NO:','$'
NL3     DB      0AH,0DH,'AVEARGE value is:','$'

.CODE
```

```
MAIN    PROC

MOV AX,@DATA
 MOV DS,AX

LEA DX,NL1
MOV AH,09H
INT 21H

MOV AH,01H
INT 21H
SUB AL,30H

MOV CL,AL
MOV BL,AL
MOV AL,00
MOV VAL1,AL

LBL1:

LEA DX,NL2
MOV AH,09H
INT 21H

MOV AH,01H
INT 21H
SUB AL,30H
ADD AL,VAL1
MOV VAL1,AL
 LOOP LBL1

LBL2:
LEA DX,NL3
 MOV AH,09H
 INT 21H


MOV AX,00
MOV AL,VAL1
DIV BL
ADD AX,3030H
 MOV DX,AX
 MOV AH,02H
 INT 21H

MOV AH,4CH
INT 21H
```

```
MAIN ENDP
END MAIN
```

Input/Output:



Experiment No.8: Write an assembly language program to calculate the factorial of integer number.

Source code:

```
.model small
.stack 100h
.code
main proc
   mov cl,3
   mov al,1

   level:
   mul cl
   dec cl
   jnz level

   add al,48
   mov dl,al
   mov ah,02
   int 21h

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

Input/Output:

Experiment No.9: Write an assembly language program to find the largest element of the array.

Source code:

```
Md. Shahadot Hosen
ASSUME CS : CODE, DS : DATA
CODE SEGMENT
MOV AX, DATA
MOV DS, AX
MOV DX, COUNT - 1
BACK : MOV CX, DX
MOV SI,OFFSET LIST
AGAIN : MOV AX, [SI]
CMP AX, [SI + 2]
JC GO
XCHG AX, [SI + 2]
XCHG AX, [SI]
GO:INC SI
INC SI
LOOP AGAIN
DEC DX
JNZ BACK
HLT
CODE ENDS
DATA SEGMENT
LIST DW 05H, 04H, 01H, 03H, 02H
COUNT EQU 05H
DATA ENDS
END
```

Experiment No.10: Write an assembly language program to accept a string from keyboard and display the string in reverse order.

Source code:

```
Data Segment
  str1 db 'Bangladesh','$'
     strlen1 dw $-str1
  strrev db 20 dup(' ')
```

```
Data Ends

Code Segment
  Assume cs:code, ds:data
  Begin:
    mov ax, data
    mov ds, ax
    mov es, ax
    mov cx, strlen1
    add cx, -2
    lea si, str1
    lea di, strrev
    add si, strlen1
    add si, -2
    L1:
      mov al, [si]
      mov [di], al
      dec si
      inc di
      loop L1
      mov al, [si]
      mov [di], al
      inc di
      mov dl, '$'
      mov [di], dl
    Print:
      mov ah, 09h
      lea dx, strrev
      int 21h
Exit:
      mov ax, 4c00h
      int 21h
Code Ends
End Begin
```

Input/Output: