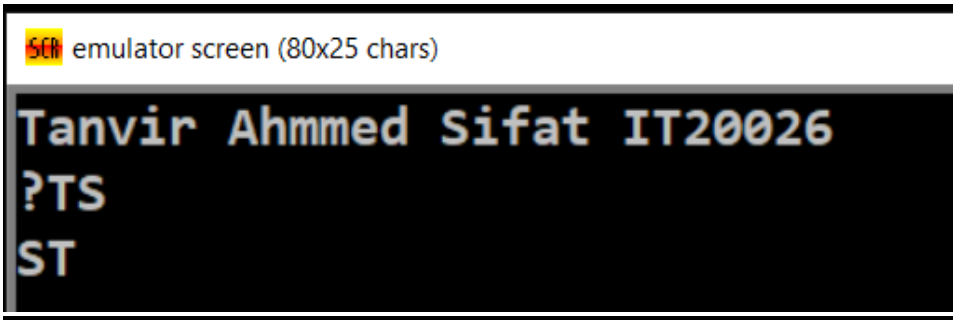
<u>Exercise 8</u>:Write a program to display a “?” , read two capital letters, and display them on the next line in alphabetical order.

```
.model small
.stack 100h
.data
msg1 db "Tanvir Ahmmed Sifat IT20026$"
msg2 db 10,13,"$"
.code
main proc
mov ax,@data
mov ds,ax
mov ah,9
lea dx,msg1
int 21h
lea dx,msg2
int 21h
mov ah,2
mov dl,'?'
int 21h
mov ah,1
int 21h
mov bl,al
int 21h
mov cl,al
mov ah,2
 mov dl,10
 int 21h
 mov dl,13
 int 21h
cmp bl,cl
jl nxt
mov dl,cl
int 21h
mov dl,bl
int 21h
jmp dos_exit
nxt:
mov dl,bl
int 21h
mov dl,cl
int 21h
dos_exit:
mov ah,4ch
int 21h
main endp
end main
```

Output:



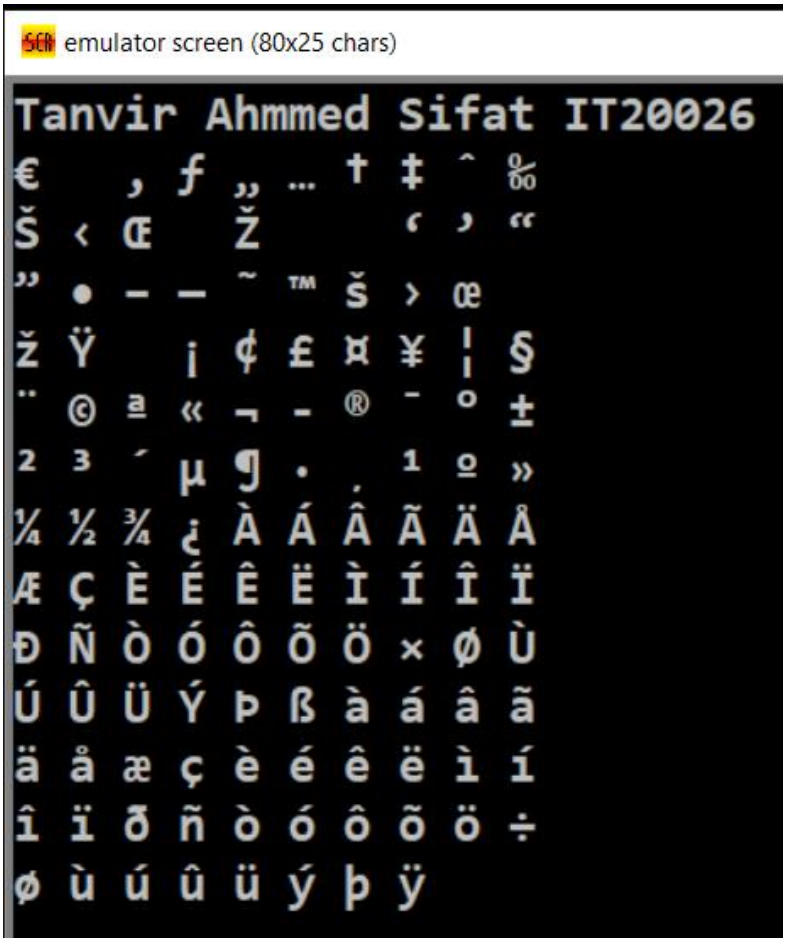
Exercise 9: Write a program to display the extended ASCII characters. Display 10 characters per line, separated by blanks. Stop after the extended character have been displayed once.

Solution:

```
.model small
.stack 100h
.data
msg1 db "Tanvir Ahmmed Sifat IT20026$"
msg2 db 10,13,"$"
.code
main proc
mov ax,@data
mov ds,ax
mov ah,9
lea dx,msg1
int 21h
lea dx,msg2
int 21h
mov cx,127
mov bl,0
show:
mov ah,2
inc cx
cmp cx,255
jg dos_exit
mov dx,cx
int 21h
mov dx,32
int 21h
jmp go
go:
inc bl
cmp bl,10
```

```
je print
jmp show
print:
mov ah,2
mov dl,10
int 21h
mov dl,13
int 21h
mov bl,0
jmp show
dos_exit:
mov ah,4ch
int 21h
main endp
end main
```

Output:



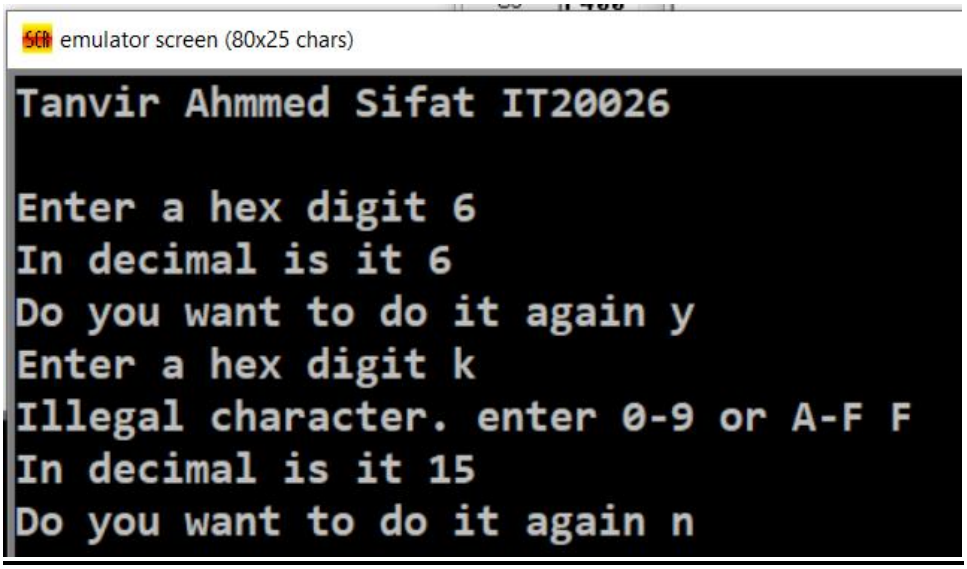
Exercise - 10: Write a program that will prompt the user to enter a hex digit character (“0” ….”9” or “A” ..”F”) display it on the next line in decimal, and ask the user if he or she wants to do it again. If the user types anything else, the program terminates. If the user enters an illegal character, prompt the user to try again.

Solution:

```
.model small
.stack 100h
.data
a db 'Tanvir Ahmmed Sifat IT20026$'
b db 10,13,'$'
mg1 db 10,13,'Enter a hex digit $'
mg2 db 10,13,'In decimal is it $'
mg3 db 10,13,'Do you want to do it again $'
mg4 db 10,13,'Illegal character. enter 0-9 or A-F $'
.code
main proc
mov ax,@data
mov ds,ax
mov ah,9
 lea dx,a
 int 21h
 lea dx,b
 int 21h
again:
mov ah,9
lea dx,mg1
int 21h
mov ah,1
int 21h
mov bl,al
jmp do
do:
cmp bl,'9'
jg hex
je num
jl num
hex:
cmp bl,'F'
jg illegal
mov ah,9
lea dx,mg2
int 21h
mov dl,49
```

```
mov ah,2
int 21h
mov ah,2
sub bl,17
mov dl,bl
int 21h
jmp inp
inp:
mov ah,9
lea dx,mg3
int 21h
mov ah,1
int 21h
mov cl,al
cmp cl,'Y'
je again
cmp cl,'y'
je again
jmp exit
num:
cmp bl,'0
jl illegal
lea dx,mg2
int 21h
mov ah,9
int 21h
mov dl,bl
mov ah,2
int 21h
jmp inp
illegal:
lea dx,mg4
mov ah,9
int 21h
mov ah,1
int 21h
mov bl,al
jmp do
exit:
mov ah,4ch
int 21h
main endp
end main
```

Output:



Exercise 11*:* Do programming exercise 10, except that if the user fails to enter a hex-digit character in three tries, display a message and terminate the program.

Solution:

```
.model small
.stack 100h
.data
a db 'Tanvir Ahmmed Sifat IT20026$'
b db 10,13,'$'
mga db 10,13,'ENTER A HEX DIGIT:$'
mgb db 10,13,'IN DECIMAL IS IT:$'
mgc db 10,13,'DO YOU WANT TO DO IT AGAIN?$'
mgd db 10,13,'ILLEGAL CHARACTER- ENTER 0-9 OR A-F:$'
mge db 10,13,'Too Many Try$'
.code
main proc
mov ax,@data
mov ds,ax
mov ah,9
 lea dx,a
 int 21h
 lea dx,b
 int 21h
again:
mov cx,0
```

```
lea dx,mga
mov ah,9
int 21h
mov ah,1
int 21h
mov bl,al
jmp go
go:
cmp bl,'9'
jg hex
jl num
je num
hex:
cmp bl,'F'
jg illegal
lea dx,mgb
mov ah,9
int 21h
mov dl,49d
mov ah,2
int 21h
sub bl,17d
mov dl,bl
mov ah,2
int 21h
jmp inp
inp:
lea dx,mgc
mov ah,9
int 21h
mov ah,1
int 21h
mov cl,al
cmp cl,'y'
je again
cmp cl,'Y'
je again
jmp exit
num:
cmp bl,'0'
jl illegal
lea dx,mgb
mov ah,9
int 21h
mov dl,bl
mov ah,2
int 21h
jmp inp
illegal:
inc cx
```

```
cmp cx,3
je i2
lea dx,mgd
mov ah,9
int 21h
mov ah,1
int 21h
mov bl,al
jmp go
i2:
lea dx,mge
mov ah,9
int 21h
jmp exit
exit:
mov ah,4ch
int 21h
main endp
end main
```

Output:

Exercise 12: Write a program that reads a string of capital letters, ending with a carriage return, and displays the longest sequence of consecutive alphabetically increasing capital letters read.

Solution:

```
.MODEL SMALL
.STACK 100H
.DATA
 x DB 'Tanvir Ahmmed Sifat IT20026$'
 y DB 10,13,'$'
 inmsg DB 'Enter a String of Capital Letters : $'
 outmsg DB 0DH,0AH,'The longest consecutive increasing string is : $'
.CODE
MAIN PROC
 MOV AX,@DATA
 MOV DS,AX
 MOV AH,9
 LEA DX,x
 INT 21H
 LEA DX,y
 INT 21H
 MOV CH,0
 MOV AH,9
 LEA DX,inmsg
 INT 21H
INPUT_1:
MOV AH,1
INT 21H
CMP AL,0DH
JE END_
MOV CL,1
MOV BL,AL
MOV DH,AL
INPUT_2:
INT 21H
CMP AL,0DH
JE END_
INC BL
CMP BL,AL
JNE INIT
INC CL
JMP INPUT_2
INIT:
CMP CH,CL
JL UPDATE
MOV CL,1
MOV BL,AL
```

```
MOV DH,AL
JMP INPUT_2
UPDATE:
MOV CH,CL
MOV BH,DH
MOV CL,1
MOV BL,AL
MOV DH,AL
JMP INPUT_2
END_:
CMP CH,CL
JL RUPDATE
JMP END_2
RUPDATE:
MOV CH,CL
MOV BH,DH
JMP END_2
END_2:
MOV AH,9
LEA DX,outmsg
INT 21H
MOV AH,2
MOV DL,BH
OUTPUT:
CMP CH,0
JE FINISH
DEC CH
INT 21H
INC DL
JMP OUTPUT
FINISH:
MOV AH,4CH
INT 21H
MAIN ENDP
END MAIN
```

Output: