Assignment 11

TITLE : Implement x86 program to find the factorial of a number.

CODE:

```
%macro scall 4 ;macro for read/write system
call mov rax,%1 mov rdi,%2 mov rsi,%3 mov
rdx,%4 syscall
%endmacro
;---------- DATA SECTION ----------
-Section .data title:db "------ Factorial Program ---
---",0x0A
db "Enter Number : ",0x0A
title_len: equ $-title factMsg: db
"Factorial is :", 0x0A
factMsg_len: equ $-factMsg cnt:
db 00H cnt2:db 02H num_cnt:
db 00H
;---------- BSS SECTION ----------
Section .bss number:resb 2 factorial:resb 8
;---------- TEXT SECTION ----------
Section .text global _start _start:
scall 1,1,title,title_len scall 0,0,number,2
mov rsi,number ;convert no.from ascii to
hex call AtoH ;converted number is stored
in "bl" mov rax,rbx FACTORIAL: cmp
rax,01H jbe exit;;code to complete call
fact_proc mov rbx,rax mov rdi,factorial call
HtoA_value
scall 1,1,factorial,8
;Exit System call
exit:
mov rax,60
mov rdi,0
syscall
;---------- FACT PROCEDURE -----
fact_proc:
```

```
cmp bl,01H
jne do_calc
mov ax,1 ret
do_calc:
push rbx dec
bl call
fact_proc
pop rbx mul
bl
ret
;---------- ASCII to HEX Conversion Procedure ----------
-AtoH: ;result hex no is in bl mov byte[cnt],02H mov bx,00H hup:
rol bl,04 mov al,byte[rsi] cmp al,39H JBE HNEXT SUB al,07H
HNEXT:
sub al,30H
add bl,al
INC rsi
DEC byte[cnt]
JNZ hup
ret
;------HEX TO ASCII CONVERSION METHOD FOR VALUE(2 DIGIT) ----------
HtoA_value: ;hex_no to be converted is in ebx //result is stored in rdi/user defined
variable mov byte[cnt2],08H aup1: rol ebx,04 mov cl,bl and cl,0FH CMP CL,09H jbe
ANEXT1 ADD cl,07H ANEXT1:
add cl, 30H
mov
byte[rdi],cl
INC rdi dec
byte[cnt2] JNZ
aup1 ret
```

OUTPUT:


stes@stes: ~
(base) stes@stes:~$ nasm -f elf64 Exp11.asm
(base) stes@stes:~$ ld -o Exp11 Exp11.o
(base) stes@stes:~$ ./Exp11
------ Factorial Program ------
Enter Number :
12
00000000(base) stes@stes:~$
(base) stes@stes:~$