

Practical13

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global _start
_start:
;macros
%macro sysread 2
mov rax,0
mov rdi,0
mov rsi,%1
mov rdx,%2
syscall
%endmacro
%macro dispmsg 2
mov rax,1
mov rdi,1
mov rsi,%1
mov rdx,%2
syscall
%endmacro
%macro sysexit 0
mov rax,60
mov rdi,0
syscall
%endmacro
;-----section .text-----
section .text
dispmsg msg1,len1
sysread input,3 ; Read user input into 'input' variable
dispmsg input_msg, input_len ; Display the input message
dispmsg input, 3 ; Display the user input
call convert2
mov [no],al
;If number is 0 or 1 then display its factorial as 1
cmp al,01h
ja l1
dispmsg msg3,len3
jmp exit
;Calculate factorial of no > 1
l1:
; Display message
push rax
dispmsg msg2,len2
pop rax
;rcx as counter that is rax - 1
mov rcx,rax
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dec rcx
;push contents and decrement till rax becomes 1
l2:push rax
dec rax
cmp rax,01
ja l2
;Pop the elements and multiply so final result will be in rax
l3:pop rbx
mul rbx
dec rcx
jnz l3
;call display procedure of 16 digits
call display
dispmsg msg4,len4
exit:
sysexit
;convert procedure for 2 digits
convert2:
mov rsi,input
mov al,[rsi]
cmp al,39h
jbe l4
sub al,07h
l4: sub al,30h
ROL al,04h
mov bl,al
inc rsi
mov al,[rsi]
cmp al,39h
jbe l5
sub al,07h
l5: sub al,30h
add al,bl
ret
;display procedure for 16 digits
display:
mov rsi,arr+15
mov rcx,16
l6: mov rdx,0
mov rbx,10h
div rbx
cmp dl,09h
jbe n1
add dl,07h
n1: add dl,30h

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mov [rsi],dl
dec rsi
dec rcx
jnz l6
dispmsg arr,16
ret
;-----
section .data
msg1 db 10,"Enter 2-digit Hexadecimal Number : "
len1 equ $-msg1
msg2 db 10,"Factorial is: "
len2 equ $-msg2
msg3 db "Factorial is : 01h"
len3 equ $-msg3
msg4 db "h"
len4 equ $-msg4
nLine db 10
lnLine equ $-nLine
input_msg db 10,"You entered: "
input_len equ $-input_msg
;-----
section .bss
arr resb 16
input resb 3 ; User input
no resb 3

```

OUTPUT:

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rllab@fedora:/home/liveuser$ nasm -f elf64 prathamesh13.nasm
rllab@fedora:/home/liveuser$ ld -o prathamesh13 prathamesh13.o
rllab@fedora:/home/liveuser$ ./prathamesh13

Enter 2-digit Hexadecimal Number : 108

You entered: 108
Factorial is: 0000130777758000hrllab@fedora:/home/liveuser$
rllab@fedora:/home/liveuser$

```