**Assignment number:6**

**Subject: MICROPROCESSOR LAB**

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Class: ***SECOND YEAR ENGINEERING***

Division: ***B***

Roll no: ***222008***

Batch: ***B1***

**PROBLEM STATEMENT:**

Write X86/64 ALP to switch from real mode to protected mode and display the values of GDTR, LDTR, IDTR, TR and MSW Registers.

**Code:**

%macro scall 4

mov rax,%1

mov rdi,%2

mov rsi,%3

mov rdx,%4

syscall

%endmacro

section .data

m1 db "Protected mode is enabled",10

m1l equ $-m1

m2 db "Already in Protected mode ",10

m2l equ $-m2

m3 db "the contents of GDTR are ",10

m3l equ $-m3

m4 db "the contents of LDTR are",10

m4l equ $-m4

m5 db "the contents of IDTR are",10

m5l equ $-m5

m6 db "the contents of TR are",10

m6l equ $-m6

m7 db ":"

m7l equ $-m7

m8 db "",10

m8l equ $-m8

section .bss

gdtr resb 6

idtr resb 6

ldtr resb 2

tr resb 2

buf resb 4

section .text

display:

ab:

rol rbx,04

mov dl,bl

and dl,0fh

cmp dl,09h

jbe nex

add dl,07h

nex: add dl,30h

mov [rsi],dl

inc rsi

dec rcx

jnz ab

ret

global \_start

\_start:

smsw eax

bt eax,31

jc l1

jmp abc

mov rdx,0h

l1: scall 1,1,m2,m2l

abc: sgdt [gdtr]

sidt [idtr]

sldt [ldtr]

str [tr]

scall 1,1,m3,m3l

mov bx,[gdtr+4]

mov rsi,gdtr

mov rcx,4

call display

scall 1,1,gdtr,4

scall 1,1,m7,m7l

mov bx,[gdtr+2]

mov rsi,gdtr

mov rcx,4

call display

scall 1,1,gdtr,4

scall 1,1,m7,m7l

mov bx,[gdtr]

mov rsi,gdtr

mov rcx,4

call display

scall 1,1,gdtr,4

scall 1,1,m8,m8l

scall 1,1,m5,m5l

mov bx,[idtr+4]

mov rsi,idtr

mov rcx,4

call display

scall 1,1,idtr,4

scall 1,1,m7,m7l

mov bx,[idtr+2]

mov rsi,idtr

mov rcx,4

call display

scall 1,1,idtr,4

scall 1,1,m7,m7l

mov bx,[idtr]

mov rsi,idtr

mov rcx,4

call display

scall 1,1,idtr,4

scall 1,1,m8,m8l

scall 1,1,m4,m4l

mov bx,[ldtr]

mov rsi,ldtr

mov rcx,4

call display

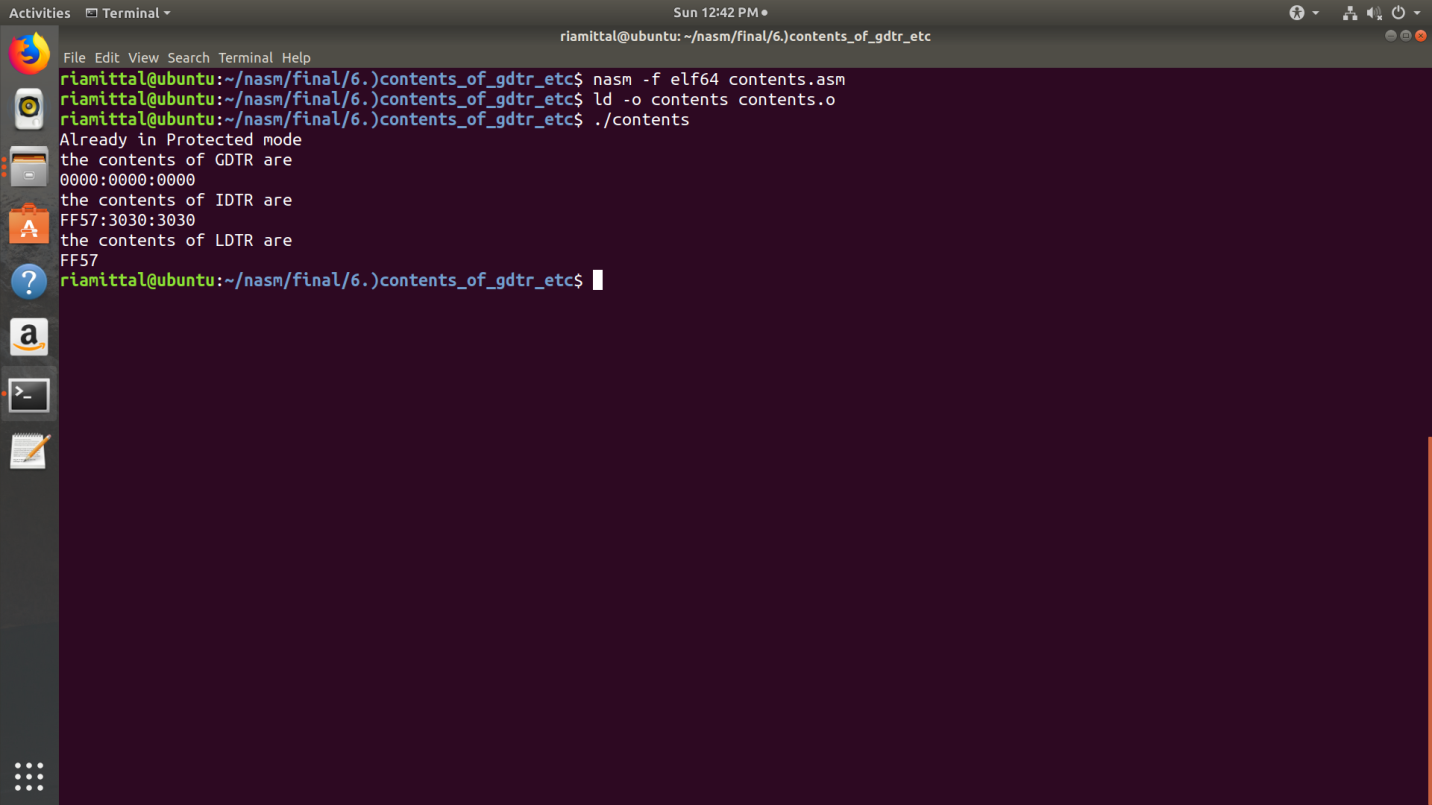
scall 1,1,ldtr,4

scall 1,1,m8,m8l

exit: mov rax,60

mov rdi,0

syscall

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