Name: Prabodh Wankhede

Roll no. 57

Class: SE(B)

Batch – B3

Assignment No. 6

Problem Statement: Write x86 ALP to show the contents of GDT, LDT,IDT, Task Register,Machine Status Word(MSW).

**Code:**

section .data

rmodemsg db 10,"Processor is in read mode"

rmodemsg\_len equ $-rmodemsg

pmodemsg db 10,"Processor is in protected mode"

pmodemsg\_len equ $-pmodemsg

gdtmsg db 10,"GDT contents are::"

gdtmsg\_len equ $-gdtmsg

ldtmsg db 10,"LDT contents are::"

ldtmsg\_len equ $-ldtmsg

idtmsg db 10,"IDT contents are::"

idtmsg\_len equ $-idtmsg

trmsg db 10,"Task Register contents are::"

trmsg\_len equ $-trmsg

mswmsg db 10,"Machine Status Word::"

mswmsg\_len equ $-mswmsg

colmsg db ":"

newline db 10

section .bss

gdt resb 6

idt resb 6

ldt resw 1

tr resw 1

cr0\_data resd 1

dispbuff resb 4

%macro display 2

mov rax,01

mov rdi,01

mov rsi,%1

mov rdx,%2

syscall

%endmacro

section .text

global \_start

\_start:

smsw eax

mov[cr0\_data],eax

bt eax,0

jc prmode

display rmodemsg, rmodemsg\_len

jmp next1

prmode: display pmodemsg, pmodemsg\_len

next1: sgdt[gdt]

sidt[idt]

sldt[ldt]

str[tr]

;---display gdt data---

display gdtmsg, gdtmsg\_len

mov bx,[gdt+4]

call display16\_proc

mov bx,[gdt+2]

call display16\_proc

display colmsg,1

mov bx,[gdt+2]

call display16\_proc

display colmsg,1

mov bx,[gdt]

call display16\_proc

;---display idt data---

display idtmsg, idtmsg\_len

mov bx,[idt+4]

call display16\_proc

mov bx,[idt+2]

call display16\_proc

display colmsg,1

mov bx,[idt]

call display16\_proc

;---display ldt data---

display ldtmsg,ldtmsg\_len

mov bx,[ldt]

call display16\_proc

;---display task register data---

display trmsg, trmsg\_len

mov bx,[tr]

call display16\_proc

;---display machine status word data---

display mswmsg, mswmsg\_len

mov bx,[cr0\_data+2]

call display16\_proc

mov bx,[cr0\_data]

call display16\_proc

display newline,1

mov rax,60

mov rdi,00

syscall

display16\_proc:

mov edi, dispbuff

mov ecx,4

up2:

rol bx,4

mov dl,bl

and dl,0Fh

cmp dl,09h

jbe skip2

add dl,07h

skip2:

add dl, 30h

mov[edi], dl

inc edi

loop up2

display dispbuff,4

ret

**OUTPUT:**

hl-5@hl5-OptiPlex-390:~$ nasm -f elf64 descriptor.asm

hl-5@hl5-OptiPlex-390:~$ ld -o descriptor descriptor.o

hl-5@hl5-OptiPlex-390:~$ ./descriptor

Processor is in protected mode

GDT contents are::0024A000:A000:007F

IDT contents are::FF576000:0FFF

LDT contents are::0000

Task Register contents are::0040

Machine Status Word::80050033

hl-5@hl5-OptiPlex-390:~$