

```
%macro write 2
mov rax,1
mov rdi,1
mov rsi,%1
mov rdx,%2
syscall
%endmacro
```

```
section .data
msg1 db 10,'System is in Real Mode',10
msg1_len equ $-msg1
msg2 db 10,'System is in Protected Mode',10
msg2_len equ $-msg2
msg3 db 10,'Contents of GDTR:',10
msg3_len equ $-msg3
msg4 db 10,'Contents of LDTR:',10
msg4_len equ $-msg4
msg5 db 10,'Contents of IDTR:',10
msg5_len equ $-msg5
msg6 db 10,'Contents of TR:',10
msg6_len equ $-msg6
msg7 db 10,'Contents of MSW:',10
msg7_len equ $-msg7
msg8 db 10,'Type of CPU:',10
msg8_len equ $-msg8
```

```
section .bss
gdt resd 1
    resw 1
ldt resw 1
idt resd 1
    resw 1
tr resw 1
CR0_data resd 1
result resb 4
cp resb 4
```

```
section .text
global _start
_start:
cpuid
write msg8, msg8_len
mov bx, [cp+2]
call Disp
```

```
mov bx, [cp]
call Disp
SMSW eax
mov [CR0_data], eax
bt eax, 0
jnc rmode
```

```
write msg2, msg2_len
SGDT [gdt]
SLDT [ldt]
SIDT [idt]
STR [tr]
```

```
write msg3, msg3_len
mov bx, [gdt+4]
call Disp
mov bx, [gdt+2]
call Disp
mov bx, [gdt]
call Disp
```

```
write msg4, msg4_len
mov bx, [ldt]
call Disp
```

```
write msg5, msg5_len
mov bx, [idt+4]
call Disp
mov bx, [idt+2]
call Disp
mov bx, [idt]
call Disp
```

```
write msg6, msg6_len
mov bx, [tr]
call Disp
```

```
write msg7, msg7_len
mov bx, [CR0_data+2]
call Disp
mov bx, [CR0_data]
call Disp
call exit
rmode:
```

write msg1, msg1\_len

exit:

mov rax,60

mov rdi,0

syscall

Disp:

mov cx, 04H

mov rdi, result

l3:

rol bx, 04H

mov al,bl

and al, 0FH

cmp al, 09H

jb l4

add al, 30H

jmp skp

l4:

add al, 37H

skp:

mov [rdi], al

inc rdi

dec cx

jnz l3

write result,04

ret

```
cns@cns-System-Product-Name: ~/Desktop
cns@cns-System-Product-Name:~$ cd Desktop
cns@cns-System-Product-Name:~/Desktop$ nasm -f elf64 A7.asm
cns@cns-System-Product-Name:~/Desktop$ ld -o A7 A7.o
cns@cns-System-Product-Name:~/Desktop$ ./A7

Type of CPU:
00000000
System is in Protected Mode

Contents of GDTR:
FFFE00000000
Contents of LDTR:
0000
Contents of IDTR:
FFFF00000000
Contents of TR:
0040
Contents of MSW:
8005FFFFcns@cns-System-Product-Name:~/Desktop$
```