CSE2005 – Operating System

LAB EXERCISE-2

BOOTLOADER
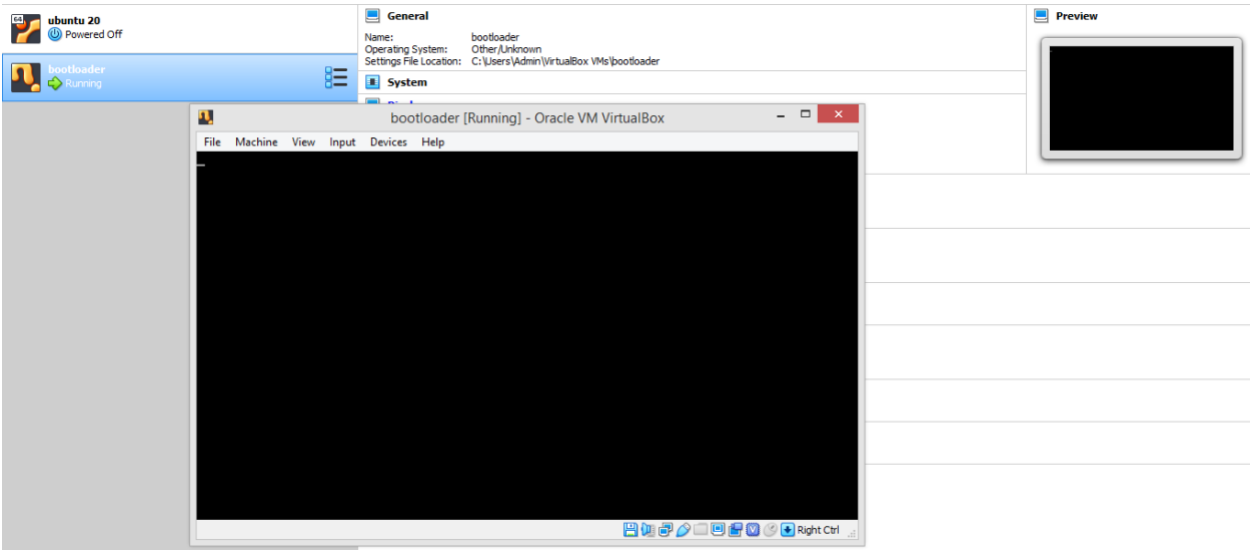## ILAKKIYA V – 19BCE1699

Program 1:

ASM CODE:

```
[BITS 16]
[ORG 0x7C00]
JMP $
TIMES 510-($-$$) db 0
DW 0xAA55
```

TERMINAL:

```
ilakkiya@ilakkiya:~$ sudo apt install nasm
[sudo] password for ilakkiya:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  nasm
0 upgraded, 1 newly installed, 0 to remove and 438 not upgraded.
Need to get 362 kB of archives.
After this operation, 3,374 kB of additional disk space will be used.
Get:1 http://in.archive.ubuntu.com/ubuntu focal/universe amd64 nasm amd64 2.14.
02-1 [362 kB]
Fetched 362 kB in 2s (211 kB/s)
Selecting previously unselected package nasm.
(Reading database ... 180783 files and directories currently installed.)
Preparing to unpack .../nasm_2.14.02-1_amd64.deb ...
Unpacking nasm (2.14.02-1) ...
Setting up nasm (2.14.02-1) ...
Processing triggers for man-db (2.9.1-1) ...
ilakkiya@ilakkiya:~$ nasm first.asm -f bin -o boot.bin
ilakkiya@ilakkiya:~$ ls
boot.bin  Documents  first.asm  Pictures  Templates
Desktop   Downloads  Music      Public    Videos
ilakkiya@ilakkiya:~$ dd if=boot.bin bs=512 of=floppy.img
1+0 records in
1+0 records out
512 bytes copied, 0.00487965 s, 105 kB/s
```
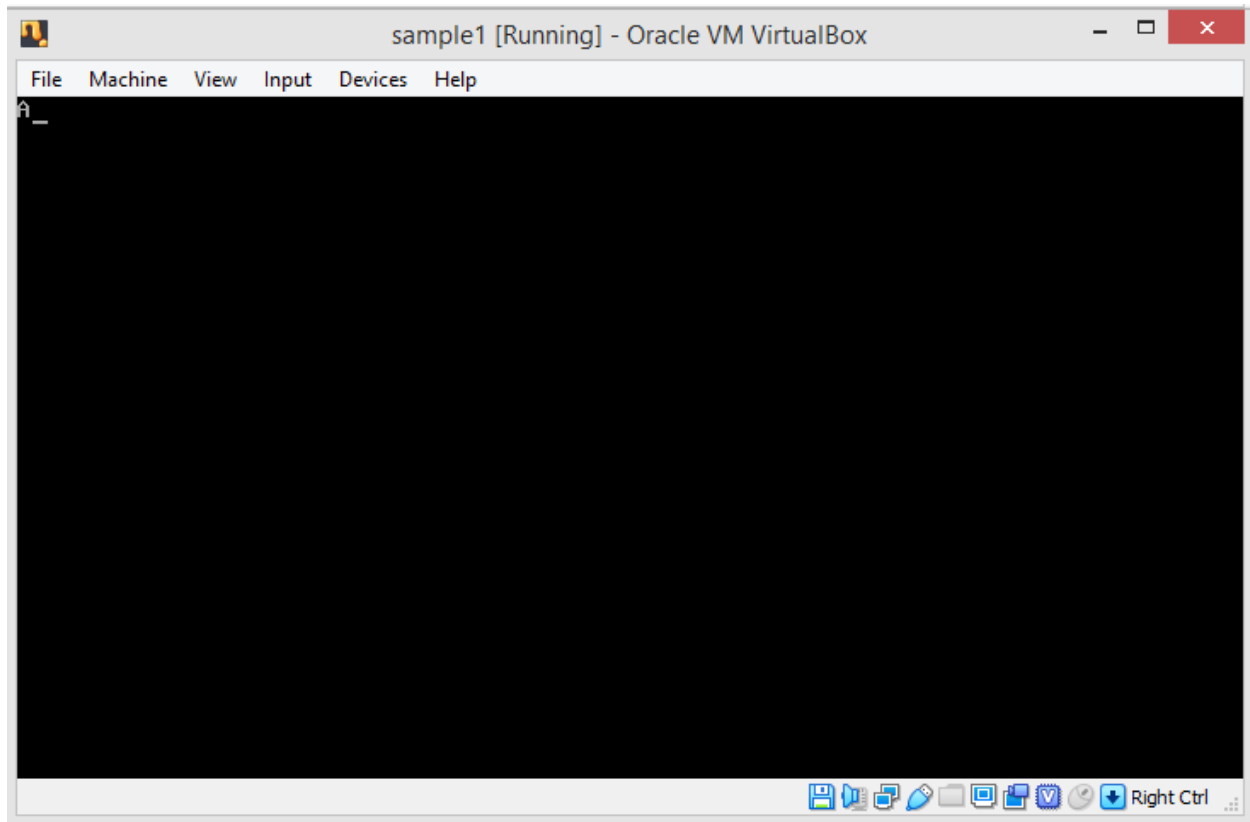
BOOTLOADER CREATED:

Program 2:

ASM CODE:

```asm
1 [BITS 16]
2 [ORG 0x7C00]
3 MOV AL,65
4 CALL PrintCharacter
5 JMP $
6
7 PrintCharacter:
8 MOV AH,0x0E
9 MOV BH,0x00
10 MOV BL,0x07
11 INT 0x10
12 RET
13 TIMES 510-($-$$) db 0
14 DW 0xAA55
```

TERMINAL:

```
ilakkiya@ilakkiya:~$ nasm second.asm -f bin -o boot2.bin
ilakkiya@ilakkiya:~$ ls
boot2.bin   Desktop     Downloads  floppy.img  Pictures   second.asm  Videos
boot.bin    Documents   first.asm  Music       Public     Templates
ilakkiya@ilakkiya:~$ dd if=boot2.bin bs=512 of=boot.img
1+0 records in
1+0 records out
512 bytes copied, 0.00456786 s, 112 kB/s
ilakkiya@ilakkiya:~$ ls
boot2.bin   boot.img   Documents   first.asm   Music      Public      Templates
boot.bin    Desktop    Downloads   floppy.img  Pictures   second.asm  Videos
```

BOOTLOADER CREATED:

Program 3:

ASM CODE:

```
1 [BITS 16]
2 [ORG 0x7C00]
3 MOV SI,HelloString
4 CALL PrintString
5 JMP $
6 PrintCharacter:
7 MOV AH,0x0E
8 MOV BH,0x00
9 MOV BL,0x07
10 INT 0x10
11 RET
12
13 PrintString:
14 next_character:
15 MOV AL,[SI]
16 INC SI
17 OR AL, AL
18 JZ exit_function
19 CALL PrintCharacter
20 JMP next_character
21 exit_function:
22 RET
23
24 HelloString db 'Hello World',0
25 TIMES 510-($-$$) db 0
26 DW 0xAA55
```

TERMINAL:

```
ilakkiya@ilakkiya:~$ nasm third.asm -f bin -o boot3.bin
ilakkiya@ilakkiya:~$ ls
boot2.bin  boot.img   Downloads   Music      second.asm  Videos
boot3.bin  Desktop    first.asm   Pictures   Templates
boot.bin   Documents  floppy.img  Public     third.asm
ilakkiya@ilakkiya:~$ dd if=boot3.bin bs=512 of=boot2.img
1+0 records in
1+0 records out
512 bytes copied, 0.00449793 s, 114 kB/s
ilakkiya@ilakkiya:~$ ls
boot2.bin  boot.bin   Documents   floppy.img  Public      third.asm
boot2.img  boot.img   Downloads   Music       second.asm  Videos
boot3.bin  Desktop    first.asm   Pictures    Templates
```

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