



CSE2005 OS – LAB 02

Advait Deochakke
20BCE1143

Calc, Create&Kill Process, I/O Sys Calls, Bootloader

→ Calculator

```
#!/bin/bash

echo 'Add Multi Sub Div'
echo 'enter 2 numbers'
read a
read b
c=$((a+b))
echo "sum is $a+$b = $c"
echo
d=$((a*b))
echo "multi is $a*$b = $d"
echo
e=$((a-b))
echo "Sub is $a-$b = $e"
echo
f=$((a/b))
echo "div is $a/$b = $f"
echo
```

```
$ add_multi.sh
1  #!/bin/bash
2
3  echo 'Add Multi Sub Div'
4  echo 'enter 2 numbers'
5  read a
6  read b
7  c=$((a+b))
8  echo "sum is $a+$b = $c"
9  echo
10 d=$((a*b))
11 echo "multi is $a*$b = $d"
12 echo
13 e=$((a-b))
14 echo "Sub is $a-$b = $e"
15 echo
16 f=$((a/b))
17 echo "div is $a/$b = $f"
18 echo
19
20 #Advait Deochakke 20BCE1143
```

```
advait@advait-VirtualBox: ~/Desktop/CS...
advait@advait-VirtualBox:~$ cd Desktop/CSE2005/LAB02
advait@advait-VirtualBox:~/Desktop/CSE2005/LAB02$ ./add_multi.sh
Add Multi Sub Div
enter 2 numbers
420
69
sum is 420+69 = 489

multi is 420*69 = 28980

Sub is 420-69 = 351

div is 420/69 = 6

advait@advait-VirtualBox:~/Desktop/CSE2005/LAB02$
```

→Create and Kill Process

```
advait@advait-VirtualBox: ~/Desktop/CSE2005/LAB01
advait@advait-VirtualBox:~/Desktop/CSE2005/LAB01$ gcc fork.c
advait@advait-VirtualBox:~/Desktop/CSE2005/LAB01$ ./a.out
Hello world!
19
46
35
6
38
advait@advait-VirtualBox:~/Desktop/CSE2005/LAB01$ 19
46
35
6
38
█
```

```
test.cpp  C fork.c  1 X
C fork.c > main()
1  #include <stdio.h>
2  #include <sys/types.h>
3  #include <unistd.h>
4  #include <stdlib.h>
5  #include <time.h>
6
7
8  int main()
9  {
10     //Advait Deochakke 20BCE1143
11     time_t t;
12     t=time(NULL);
13
14     printf("Hello world!\n");
15     fork();
16     srand(t);
17     for(int i=0; i<5; i++)
18     {
19         printf("%d\n", rand()%50);
20     }
21
22     return 0;
23 }
24
```

<next page>

```
advait@advait-VirtualBox: ~/Desktop/CSE2005/LAB02
advait@advait-VirtualBox:~/Desktop/CSE2005/LAB02$ ./create_kill_process.sh
fat lol
  PID TTY          TIME CMD
  4863 pts/0        00:00:00 bash
  4870 pts/0        00:00:00 bash
  4871 pts/0        00:00:00 ps
enter pid to kill lol
4871
./create_kill_process.sh: line 5: kill: (4871) - No such process
advait@advait-VirtualBox:~/Desktop/CSE2005/LAB02$ ./create_kill_process.sh
fat lol
  PID TTY          TIME CMD
  4863 pts/0        00:00:00 bash
  4875 pts/0        00:00:00 bash
  4876 pts/0        00:00:00 ps
enter pid to kill lol
4875
Killed
advait@advait-VirtualBox:~/Desktop/CSE2005/LAB02$ ./create_kill_process.sh
fat lol
  PID TTY          TIME CMD
  4863 pts/0        00:00:00 bash
  4877 pts/0        00:00:00 bash
  4878 pts/0        00:00:00 ps
enter pid to kill lol
4877
Killed
advait@advait-VirtualBox:~/Desktop/CSE2005/LAB02$
```

```
echo 'fat lol'
ps
echo 'enter pid to kill lol'
read a
kill -9 $a
```

<next page>

→I/O Sys Calls

1. cat> (filename) (create file) (Enter file contents line by line)

```
advait@advait-VirtualBox: ~/Desktop/CSE2005
advait@advait-VirtualBox:~/Desktop/CSE2005$ ls
LAB01  newfile.txt
advait@advait-VirtualBox:~/Desktop/CSE2005$ cat>newfile1.txt
^C
advait@advait-VirtualBox:~/Desktop/CSE2005$ ls
LAB01  newfile1.txt  newfile.txt
advait@advait-VirtualBox:~/Desktop/CSE2005$
```

```
advait@advait-VirtualBox:~/Desktop/CSE2005/LAB02$ ls
add_multi.sh  bootloaderYEP.asm  floppylab.img
boot.bin      create_kill_process.sh
advait@advait-VirtualBox:~/Desktop/CSE2005/LAB02$ cat>terminalinput.txt
Demonstrate how to input
with terminal
ctrl c to exit
^C
advait@advait-VirtualBox:~/Desktop/CSE2005/LAB02$ cat terminalinput.txt
Demonstrate how to input
with terminal
ctrl c to exit
advait@advait-VirtualBox:~/Desktop/CSE2005/LAB02$
```

2. cat (filename) (show file contents)

```
advait@advait-VirtualBox: ~/Desktop/CSE2005
advait@advait-VirtualBox:~/Desktop/CSE2005$ cat newfile.txt
This is newfile.txt
Advait Deochakke
20BCE1143
advait@advait-VirtualBox:~/Desktop/CSE2005$ cat newfile1.txt
```

3. cat (file 1) >> (file 2) (copy file contents) (ctrl c ctrl v)

```
advait@advait-VirtualBox:~/Desktop/CSE2005$ cat newfile.txt >> newfile1.txt
advait@advait-VirtualBox:~/Desktop/CSE2005$ cat newfile1.txt
This is newfile.txt
Advait Deochakke
20BCE1143
advait@advait-VirtualBox:~/Desktop/CSE2005$
```

<next page>

→Bootloader

[BITS 16]
[ORG 0x7C00]

MOV SI, Stringer
CALL PrintString
JMP \$

PrintCharacter:

MOV AH, 0x0E
MOV BH, 0x00
MOV BL, 0x07
INT 0x10
RET

PrintString:

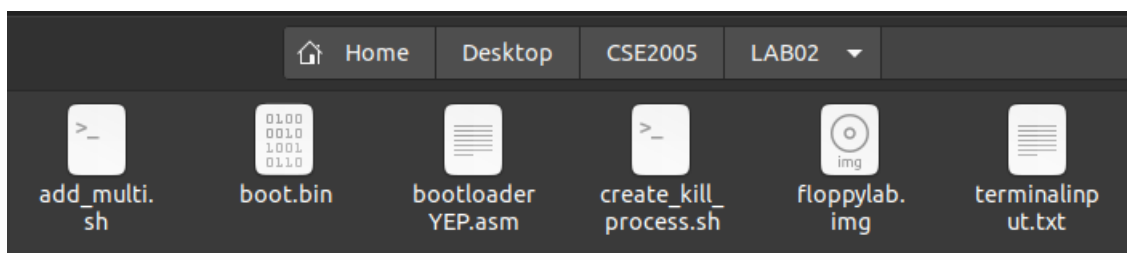
next_character:
MOV AL, [SI]
OR AL, AL
JZ exit_function
CALL PrintCharacter
JMP next_character
exit_function:
RET

;Data
Stringer db 'Advait', 0 ;
TIMES 510 - (\$ - \$\$) db 0
DW 0xAA55

<next page>


```
advait@advait-VirtualBox: ~/Desktop/CSE2005/LAB02
advait@advait-VirtualBox:~$ sudo apt-get install nasm
[sudo] password for advait:
Reading package lists... Done
Building dependency tree
Reading state information... Done
nasm is already the newest version (2.14.02-1).
The following package was automatically installed and is no longer required:
  libllvm11
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 2 not upgraded.
advait@advait-VirtualBox:~$ nasm bootloaderYEP.asm -f bin -o boot.bin
nasm: fatal: unable to open input file `bootloaderYEP.asm'
advait@advait-VirtualBox:~$ cd CSE2005
bash: cd: CSE2005: No such file or directory
advait@advait-VirtualBox:~$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  snap  Templates  Videos
advait@advait-VirtualBox:~$ cd Desktop
advait@advait-VirtualBox:~/Desktop$ ls
CSE1004  CSE2005
advait@advait-VirtualBox:~/Desktop$ cd CSE2005
advait@advait-VirtualBox:~/Desktop/CSE2005$ cd
advait@advait-VirtualBox:~$ cd Desktop
advait@advait-VirtualBox:~/Desktop$ cd CSE2005
advait@advait-VirtualBox:~/Desktop/CSE2005$ ls
LAB01  LAB02  LAB03
advait@advait-VirtualBox:~/Desktop/CSE2005$ cd LAB02
advait@advait-VirtualBox:~/Desktop/CSE2005/LAB02$ ls
add_multi.sh  bootloaderYEP.asm  create_kill_process.sh
advait@advait-VirtualBox:~/Desktop/CSE2005/LAB02$ nasm bootloaderYEP.asm -f bin -o boot.bin
advait@advait-VirtualBox:~/Desktop/CSE2005/LAB02$ dd if=boot.bin bs=512 of=floppylab.img
1+0 records in
1+0 records out
512 bytes copied, 0.000111108 s, 4.6 MB/s
advait@advait-VirtualBox:~/Desktop/CSE2005/LAB02$
```

→ boot.bin and floppyimage.img disc image filename



→ running on virtual box

