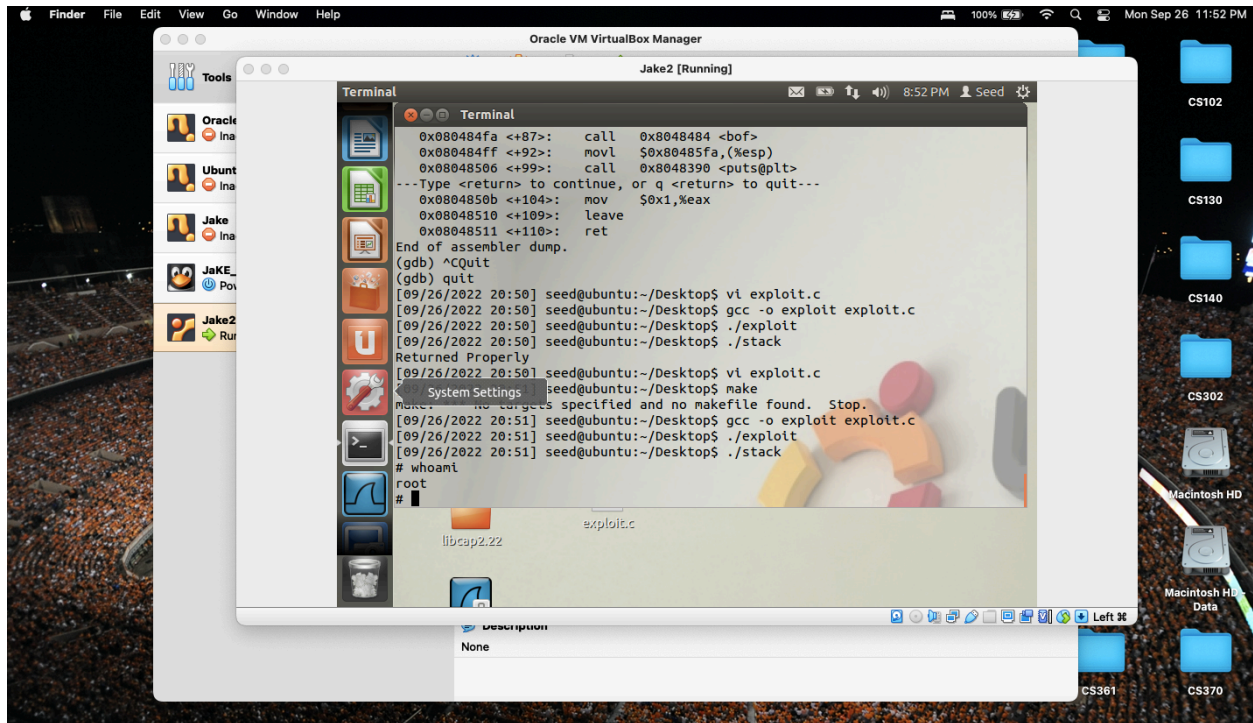


Kenneth Woodard

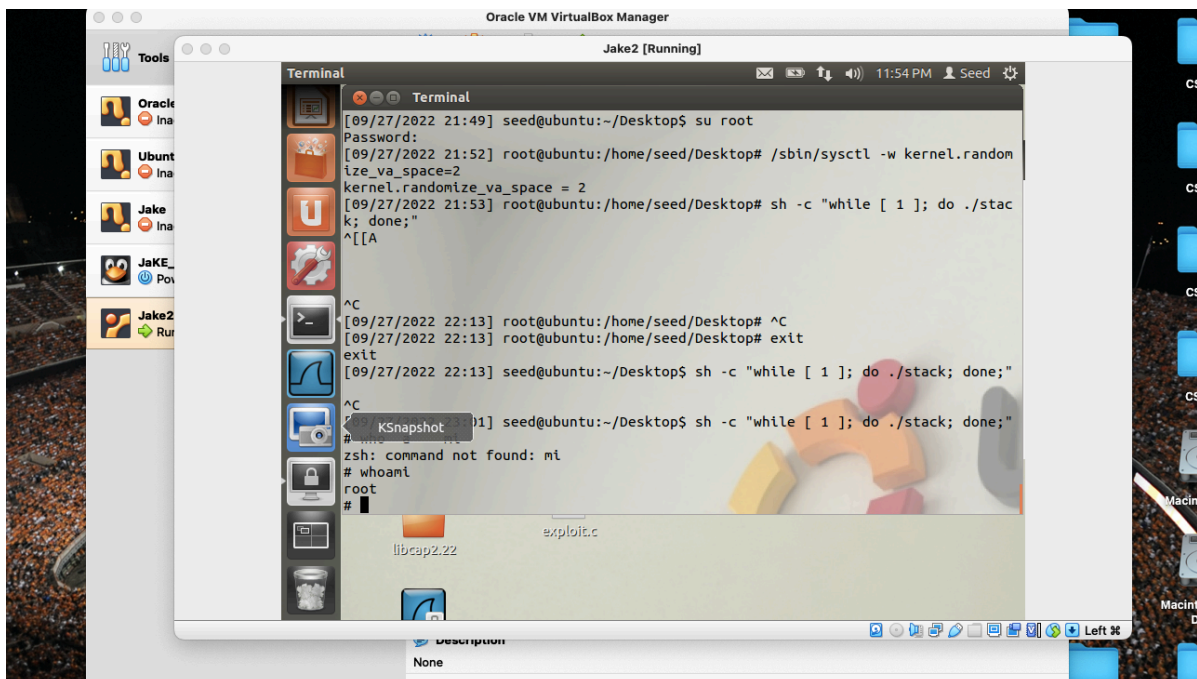
## Programming Assignment 1

### Task 1



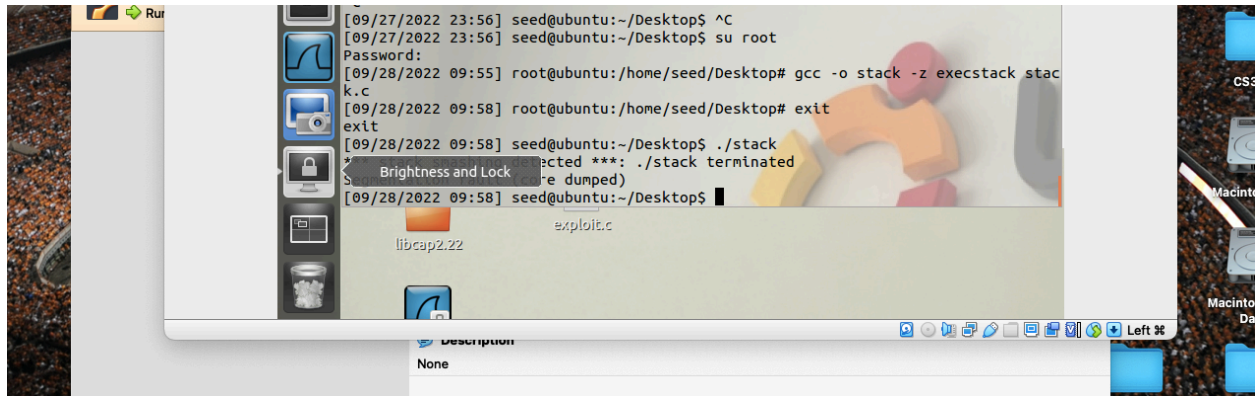
### Task 2

During this task the address of the stack changes each time we run the program. If we run the program continuously in a while loop, eventually the address will line up. How? Well, the range of the addresses that it can be is not very wide.



### Task 3

During the final task, I did not succeed in opening a new kernel in the root account. I got an error “stack smashing detected ./program terminated.”



The screenshot shows a terminal window on a Linux desktop. The terminal output is as follows:

```
[09/27/2022 23:56] seed@ubuntu:~/Desktop$ ^C
[09/27/2022 23:56] seed@ubuntu:~/Desktop$ su root
Password:
[09/28/2022 09:55] root@ubuntu:/home/seed/Desktop# gcc -o stack -z execstack stack.c
[09/28/2022 09:58] root@ubuntu:/home/seed/Desktop# exit
exit
[09/28/2022 09:58] seed@ubuntu:~/Desktop$ ./stack
***stack smashing detected ***: ./stack terminated
(Use Ctrl-C at any time to quit this debugger)
[09/28/2022 09:58] seed@ubuntu:~/Desktop$
```

The error message "\*\*\*stack smashing detected \*\*\*: ./stack terminated" is visible. The desktop background features a colorful geometric pattern. The terminal window has a title bar with "Description" and "None" buttons. The system tray at the bottom right shows various icons and the text "Left".