Linux Prelab

This pre-lab is designed to get you comfortable with a Linux environment. These commands can all be run on any Linux machine you have access to. You can <u>SSH to the campus timeshare</u> if you do not have a Linux machine easily available. You can also set up the Mininet VM early (see Lab 1 in this PDF) and use that as a Linux environment. Within the VM, the Terminal application will provide you with a CLI.

Recommended resources for this lab:
<u>http://linux-training.be/index.php?nav=fundamentals</u>
<u>http://linuxcommand.org/lc3_writing_shell_scripts.php</u>

Feel free to also use online resources/Google/StackOverflow/etc. to help you find solutions to these questions. If you use an online resource, make sure to give credit. Providing the URL in your answer PDF is adequate.

Pre-lab Questions:

1. [5] What command will show you which groups you are a member of?
2. [5] What does the environmental variable "$?" hold? (Hint: the command 'echo $?' will should you this on your screen)
3. [5] What key combination will suspend a currently running process and place it as a background process?
4. [5] With what command (and arguments) can you find out your kernel version and the "nodename"? [The output should not include any other information]
5. [5] What is the difference between the paths ".", "..", and "~"? What does the path "/" refer to when not preceded by anything?
6. [5] What is a pid? Which command would you use to find the "pid" for a running process?
7. [20] Write a single command that will return every user's default shell. [You may chain commands using piping and redirects] (Hint: See 'Chapter 19: filters' of linux-training.be as well as the man page for the /etc/passwd file: <u>https://linux.die.net/man/5/passwd</u>)
8. [10] What is the difference between "sudo" and "su root"?
9. [10] How would you tell your computer to run a program or script on a schedule or set interval on Linux? E.g. Run this program once every 30 minutes.
10. [30] Write a shell script that only prints the even numbered lines of each file in the current directory. The output should be *filename: line* for each even numbered line. You do not need to print line numbers.

For example, let's say I write a script in a file called test.sh. I then create 3 files, as shown in the screenshot below:

```
mininet@mininet-vm:~/test$ cat file1
line 1
line 2
line 3
line 4
line 5
mininet@mininet-vm:~/test$ cat file2
line 1
line 2
line 3
line 4
line 5
mininet@mininet-vm:~/test$ cat file3
line 1
line 2
line 3
line 4
line 5
```

My directory now looks like the following:

```
mininet@mininet-vm:~/test$ ls -la
total 36
drwxrwxr-x  2 mininet mininet  4096 Jan 12 11:18 .
drwxr-xr-x 17 mininet mininet  4096 Jan 12 11:18 ..
-rw-rw-r--  1 mininet mininet    35 Jan 11 01:30 file1
-rw-rw-r--  1 mininet mininet    35 Jan 11 01:30 file2
-rw-rw-r--  1 mininet mininet    35 Jan 11 01:30 file3
-rwxrwxr-x  1 mininet mininet   203 Jan 11 01:39 test.sh
```

When I run the script, the output should look like the following.

```
mininet@mininet-vm:~/test$ ./test.sh
file1: line 2
file1: line 4
file2: line 2
file2: line 4
file3: line 2
file3: line 4
test.sh:
test.sh:
test.sh:
test.sh:    code
test.sh:
test.sh:
test.sh:
```

Submission:

You will submit 3 files for this assignment (student id is the part before '@' in id@ucsc.edu):
1. <your student id>-prelab1.pdf
    a. The PDF with all of your solutions to the Prelab.
2. <your student id>-script.sh

     a. The shell script you created in Prelab 1. This should be marked as executable.
3. README.txt
     a. A README file. This should describe the contents of each file you submit, and contain your name, e-mail, CruzID, and student ID number.