

## CSCD 240

### Lab 2

**NOTE: Capture means copy and paste from a command line into a text editor. “Capture command xyz” means to capture the xyz command AND its resulting output. If the question does not say capture still capture all the commands. You must complete this lab via ssh into cslinux.eastern.ewu.edu**

1. Capture the results of the `uname -a` command.

```
jaimew@cslinux:~$ uname -a
Linux cslinux 3.2.0-53-generic #81-Ubuntu SMP Thu Aug 22 21:01:03 UTC 2013 x86_64
x86_64 x86_64 GNU/Linux
```

2. Clearly explain why programs should be placed in `/bin` or `/usr/bin`.

In linux that is the suggested location for executables.

3. You are asked to use a program named `mystery` which you have never used before. Explain how you would find information on the program and what it does. List all the ways (Google/Bing is not an option)

```
jaimew@cslinux:/bin$ ls -al less
-rwxr-xr-x 1 root root 149384 Aug 10 2011 less
```

```
jaimew@cslinux:/bin$ less --help
```

```
jaimew@cslinux:/bin$ man less
```

```
jaimew@cslinux:/bin$ file less
less: ELF 64-bit LSB executable, x86-64, version 1 (SYSV), dynamically linked (uses shared
libs), for GNU/Linux 2.6.15, BuildID[sha1]=0x55c84d30c5d1103947ba0dfd
8c4b597c49fa1b66, stripped
```

```
jaimew@cslinux:/bin$ stat less
File: `less'
Size: 149384      Blocks: 296      IO Block: 4096   regular file
Device: 801h/2049d Inode: 187      Links: 1
Access: (0755/-rwxr-xr-x)  Uid: ( 0/  root)  Gid: ( 0/  root)
Access: 2013-09-30 14:10:18.956482395 -0700
Modify: 2011-08-10 13:29:07.000000000 -0700
Change: 2012-05-21 10:21:23.779991935 -0700
Birth: -
```

4. There are many other environment variables available to the user. Capture the printenv command. Describe 3 of the environment variables.

```
PATH=/usr/local/jdk1.7.0_25/bin:/usr/local/jdk1.7.0_25/jre/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games This variable alerts the system to where executables live.  
PWD=/home/EASTERN/jaimew The system default working directory for this user.  
HOME=/home/EASTERN/jaimew The system default home directory for this user.
```

5. In class we discussed the use of the accent (back tick) for when it comes to executing the date command. Can you use the accent on the ls command? How would you use the accent on the ls command? Capture the usage of the accent on the ls command.

```
jaimew@cslinux:~$ file `ls`  
csd240: directory  
Desktop: directory  
Documents: directory  
Downloads: directory  
findld.txt: ASCII text  
Music: directory  
netstorage: symbolic link to `/mnt/ns-jaimew'  
Pictures: directory  
Public: directory  
Templates: directory  
Videos: directory
```

6. Capture the output of the file command on the chmod executable. (Where does chmod live?) Explain the information being displayed.

```
jaimew@cslinux:/bin$ file chmod  
chmod: ELF 64-bit LSB executable, x86-64, version 1 (SYSV), dynamically linked (uses shared  
libs), for GNU/Linux 2.6.24, BuildID[sha1]=0xe4ff3d82af4ea88dda49e132dce7e17c28908eea,  
stripped
```

chmod is an executable and linkable format, 64 bit Linux Standard Base model for standardization runs both on 32 and 64 bit machines, uses shared libraries and for security has a SHA1(encryption) signature.

7. Capture the output of the stat command on the chmod executable. Explain the information being displayed.

```
jaimew@cslinux:/bin$ stat chmod
File: `chmod'
Size: 51760      Blocks: 104      IO Block: 4096  regular file
Device: 801h/2049d  Inode: 16446    Links: 1
Access: (0755/-rwxr-xr-x)  Uid: (  0/   root)  Gid: (  0/   root)
Access: 2013-09-30 08:38:47.334147814 -0700
Modify: 2012-11-19 14:25:16.000000000 -0800
Change: 2012-12-18 15:39:42.698032970 -0800
Birth: -
```

8. Try and delete chmod. Did it delete why or why not?

```
jaimew@cslinux:/bin$ rm chmod
rm: remove write-protected regular file `chmod'? y
rm: cannot remove `chmod': Permission denied
```

9. Try and delete chmod and capture the output from standard error to a file named err.txt

```
jaimew@cslinux:/bin$ rm chmod 2> ../home/EASTERN/jaimew/cscd240/lab2/err.txt
y
jaimew@cslinux:/bin$ cd ~
jaimew@cslinux:~$ cd cscd240/lab2/
jaimew@cslinux:~/cscd240/lab2$ ls
err.txt
jaimew@cslinux:~/cscd240/lab2$ cat err.txt
rm: remove write-protected regular file `chmod'? rm: cannot remove `chmod': Permission
denied
```

10. Capture the command to create test1, test2, test3, test33, stu1, stu2, stu22.

```
jaimew@cslinux:~/cscd240/lab2$ touch test1 test2 test3 test33 stu1 stu2 stu22
```

11. Using meta characters and a single ls command list all files named test.

```
jaimew@cslinux:~/cscd240/lab2$ ls test*
test1 test2 test3 test33
```

12. Using meta characters and a single ls command list only the files with the number 2 or 22 in them.

```
jaimew@cslinux:~/cscd240/lab2$ ls *2*  
stu2  stu22  test2
```

13. **Using** meta characters and a single ls command list only the files with a single 2 not 22 in them.

14. In your home directory, capture the ls command piped to more, and the output from more.

```
jaimew@cslinux:~$ ls | more 1> more.txt  
jaimew@cslinux:~$ ls  
cscd240 Desktop Documents Downloads findld.txt more.txt Music netstorage Pictures  
Public Templates Videos  
jaimew@cslinux:~$ cat more.txt  
cscd240  
Desktop  
Documents  
Downloads  
findld.txt  
more.txt  
Music  
netstorage  
Pictures  
Public  
Templates  
Videos
```

15. Issue the which command on ls. Was and where was the command found?

```
jaimew@cslinux:~$ which ls  
/bin/ls
```

16. **Issue** the which command on pthread.h. Was the command found? If it was not found why not? How would you modify this.

17. Using only octal values add executable access to test1, test2, test3.

```
jaimew@cslinux:~/cscd240/lab2$ date.txt
jaimew@cslinux:~/cscd240/lab2$ ls -al test?
-rwxr-xr-x 1 jaimew IT-GenericLinuxGroup 0 Sep 30 22:23 test1
-rwxr-xr-x 1 jaimew IT-GenericLinuxGroup 0 Sep 30 22:23 test2
-rwxr-xr-x 1 jaimew IT-GenericLinuxGroup 0 Sep 30 22:23 test3
```

18. Using only alphanumeric characters remove read access from stu1 and stu2.

```
jaimew@cslinux:~/cscd240/lab2$ chmod -r stu1 stu2
jaimew@cslinux:~/cscd240/lab2$ ls -al stu?
--w----- 1 jaimew IT-GenericLinuxGroup 0 Sep 30 22:23 stu1
--w----- 1 jaimew IT-GenericLinuxGroup 0 Sep 30 22:23 stu2
```

19. Execute help set

```
jaimew@cslinux:~$ help set
set: set [-abefhkmnptuvxBCHP] [-o option-name] [--] [arg ...]
Set or unset values of shell options and positional parameters.
```

Change the value of shell attributes and positional parameters, or display the names and values of shell variables.

Options:

- a Mark variables which are modified or created for export.
- b Notify of job termination immediately.
- e Exit immediately if a command exits with a non-zero status.
- f Disable file name generation (globbing).
- h Remember the location of commands as they are looked up.
- k All assignment arguments are placed in the environment for a command, not just those that precede the command name.
- m Job control is enabled.
- n Read commands but do not execute them.

...

...Exit Status:

Returns success unless an invalid option is given.

20. Set the noclobber option on err.txt

```
jaimew@cslinux:~/cscd240/lab2$ set -C err.txt
```

21. Issue an `ls -al` redirected to `err.txt`. What was the output and why?

```
jaimew@cslinux:~/cscd240/lab2$ ls -al > err.txt
-bash: err.txt: cannot overwrite existing file
noclobber prevented overwriting of the file.
```

22. Remove the `noclobber` option from `err.txt`

```
jaimew@cslinux:~/cscd240/lab2$ set +C err.txt
```

23. **Explain** the `--help` option for a program.

24. **Explain** double quotes, single quotes and the accent

25. Using the **man** page describe what is output by the **env** command with no arguments.

Prints the resulting environment.

26. **Show** a shell command that will add the current directory to the **PATH** (without removing any existing variables from the current value of **PATH**.)

27. Describe what you would have to do to make a change to the Shell permanent.

Redefine the environment variables particular to your desired change, script it up in `.bashrc` so that when user loads shell environment variables particular to that user are modified.

28. **Explain** how to make a Shell change permanent for all sessions including your current session. (i.e. how do I reload my current session without closing and reopening)

29. Capture the output from the **echo** “**Current time and date is `date`**” command.

```
jaimew@cslinux:~$ echo "Current time and date is `date`"
Current time and date is Fri Oct 4 11:04:04 PDT 2013
```

30. Issue the **date** command and capture its output. Now, capture the output from the **echo** **'Current time and date is `date`'** command. Note that the ``` character is an accent NOT an apostrophe '. Explain why the output is different in particular to the single and double quotes. Also explain what the ``` character does.

```
jaimew@cslinux:~$ echo "Current time and date is `date`"
Current time and date is Fri Oct 4 11:04:04 PDT 2013
jaimew@cslinux:~$ date
Fri Oct 4 11:05:09 PDT 2013
```

The double quotes are a string and the accent allows for literal string commands.

31. Create a symbolic link called **almost** that links to the **lab1** directory. Capture the output

```
jaimew@cslinux:~$ ln -s ~/cscd240/lab1 almost
jaimew@cslinux:~$ ll almost
lrwxrwxrwx 1 jaimew IT-GenericLinuxGroup 33 Oct 4 11:14 almost ->
/home/EASTERN/jaimew/cscd240/lab1/
```

32. Change to **almost** and capture the output.

```
jaimew@cslinux:~$ cd almost
jaimew@cslinux:~/almost$ ll
total 16
drwxr-xr-x 2 jaimew IT-GenericLinuxGroup 4096 Sep 29 08:28 ./
drwxr-xr-x 4 jaimew IT-GenericLinuxGroup 4096 Sep 30 22:11 ../
-rw-r--r-- 1 jaimew IT-GenericLinuxGroup 238 Sep 29 07:57 files.tgz
-rw-r--r-- 1 jaimew IT-GenericLinuxGroup 0 Sep 29 07:46 nothing
-rw-r--r-- 1 jaimew IT-GenericLinuxGroup 0 Sep 29 07:46 something
-rw-r--r-- 1 jaimew IT-GenericLinuxGroup 0 Sep 29 07:46 test
-rw-r--r-- 1 jaimew IT-GenericLinuxGroup 14 Sep 29 07:47 test1
-rw-r--r-- 1 jaimew IT-GenericLinuxGroup 0 Sep 29 07:46 test21
-rw-r--r-- 1 jaimew IT-GenericLinuxGroup 0 Sep 29 07:46 test3
```

33. Use "help" to get information on how to use the alias command.  
a. What information is provided in from "help"?

```
jaimew@cslinux:~$ help alias
alias: alias [-p] [name[=value] ... ]
Define or display aliases.
```

Without arguments, ``alias`` prints the list of aliases in the reusable form ``alias NAME=VALUE`` on standard output.

Otherwise, an alias is defined for each NAME whose VALUE is given. A trailing space in VALUE causes the next word to be checked for alias substitution when the alias is expanded.

Options:

-p      Print all defined aliases in a reusable format

Exit Status:

alias returns true unless a NAME is supplied for which no alias has been defined.

- b. When do should you use “help” compared to when you should use “man”?

When it is a shell specific command? When man does not work.

34. Create an alias named LA that is ls -al. Capture the output and show it worked.

```
jaimew@cslinux:~$ alias LA='ls -al'
jaimew@cslinux:~$ LA cscd240/
total 16
drwxr-xr-x  4 jaimew IT-GenericLinuxGroup 4096 Sep 30 22:11 .
drwx----- 26 jaimew IT-GenericLinuxGroup 4096 Oct  4 11:14 ..
drwxr-xr-x  2 jaimew IT-GenericLinuxGroup 4096 Sep 29 08:28 lab1
drwxr-xr-x  2 jaimew IT-GenericLinuxGroup 4096 Oct  1 17:57 lab2 q
```

35. Capture the command to redirect your output from #17 to a file named date.txt.

```
jaimew@cslinux:~/cscd240/lab2$ ls -al test? >> date.txt
```

36. Issue the more or less command on date.txt and capture the output.

```
jaimew@cslinux:~/cscd240/lab2$ date.txt | less
-rwxr-xr-x 1 jaimew IT-GenericLinuxGroup 0 Sep 30 22:23 test1
-rwxr-xr-x 1 jaimew IT-GenericLinuxGroup 0 Sep 30 22:23 test2
-rwxr-xr-x 1 jaimew IT-GenericLinuxGroup 0 Sep 30 22:23 test3
```

37. Capture the long listing of date.txt.

```
jaimew@cslinux:~/cscd240/lab2$ ll date.txt
-rw-r--r-- 1 jaimew IT-GenericLinuxGroup 186 Oct  4 11:30 date.txt
```



38. Modify date.txt to add executable privileges to date.txt for the owner, Capture the command and proof that the permissions were changed. No other permissions will be changed. You must do this with the octal values.

```
jaimew@cslinux:~/cscd240/lab2$ chmod 744 date.txt
jaimew@cslinux:~/cscd240/lab2$ ll date.txt
-rwxr--r-- 1 jaimew IT-GenericLinuxGroup 186 Oct  4 11:30 date.txt*
```

39. Modify date.txt to remove w from the group. Capture the command and proof that the permissions were changed. No other permissions will be changed. You must do this without using the octal values.

```
jaimew@cslinux:~/cscd240/lab2$ ll date.txt
-rwxr--r-- 1 jaimew IT-GenericLinuxGroup 186 Oct  4 11:30 date.txt*
jaimew@cslinux:~/cscd240/lab2$ chmod g+w date.txt
jaimew@cslinux:~/cscd240/lab2$ ll date.txt
-rwxrw-r-- 1 jaimew IT-GenericLinuxGroup 186 Oct  4 11:30 date.txt*
jaimew@cslinux:~/cscd240/lab2$ chmod g-w date.txt
jaimew@cslinux:~/cscd240/lab2$ ll date.txt
-rwxr--r-- 1 jaimew IT-GenericLinuxGroup 186 Oct  4 11:30 date.txt*
```

40. Capture the command echo \$SHELL.

```
jaimew@cslinux:~$ echo $SHELL
/bin/bash
```

- What shell are you using? bash
- Where do the “shells” live? In Hevan
- Capture the command to switch to a different shell
- Capture the command echo \$SHELL.
- What shell are you using? Why is the shell different than you expected?
- Capture the command to leave the different shell

## TO TURN IN:

- A PDF file - Name this text file your last name, first letter of your first name lab2.pdf. This file will contain all your answers. I want the question copied and then the answer to the question below it.
- A zip file that contains your pdf, and all text and files created for this lab.

You zip will be named your last name first letter of your first name lab2.zip (example steinerslab2.zip)

