EXERCISE 1: UNIX PROGRAMMING

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1)Create a file called hello.txt that contains the words "hello world". Can you use "cp" using "terminal" as the source file to achieve the same effect?

Yes, on Linux the current terminal is identified by the device /dev/tty, so we can do:

cp /dev/tty hello.txt

After that enter hello world and click Ctrl+D. Our file will be created.

2)How would you create and then delete a file called "$SHELL"? Try it.

We can't create a file named $SHELL Because terminal interpretes it as a shell script command.

3)What is the output of the command: echo {con,pre}{sent,fer}{s,ed}? Now, from your home directory, copy /etc/passwd and /etc/group into your home directory in one command given that you can only type /etc once.

a. consents consented confers confered presents presented prefers preferred
b. cp /etc{/passwd,/group} /home

4)Use find and grep and sort to display a sorted list of all files in the /home subdirectory tree that contain the word hello somewhere inside them.

find /home -type f -print0 | xargs -0 grep -li "hello" | sort

5)Type umask 000 and then create a file called world.txt containing the words "hello world". Look at the permissions on the file. What's happened? Now type umask 022 and create a file called world2.txt. When might this feature be useful?

The permissions for owner, group and reader are (666). When we use **umask 000,** it becomes (666 - 000= 666). So, anyone can read, write or modify the file. But with umask 022, it becomes (666 - 022 = 644) which implies that Owner has all the permissions bur Group and reader can just read the file.

6)Describe three different ways of setting the permissions on a file or directory to r--r--r--. Create a file and see if this works.

r--r--r-- denotes read-only permissions for User/owner, group as well as other. There are basically 3 ways to change the permissions:

Syntax: chmod permissions filename

c. Absolute (Numeric) Mode: The corresponding number for read-only permisssion in 4. So, the command becomes:

chmod 444 [filename]

d. Symbolic Mode: We can modify permissions for a specific user as well as we can use all to set the permission for all users.
   i. chmod a=r [filename]

   ii. Setting instructions one by one:

chmod u=r [filename]

chmod g=r [filename]

chmod o=r [filename]

7)Run sleep 15 in the foreground, suspend it with Ctrl-z and then put it into the background with bg. Type jobs. Type ps. Bring the job back into the foreground with fg.

```
harsh@harsh-Aspire-A515-51G:~$ sleep 15
^Z
[1]+  Stopped                 sleep 15
harsh@harsh-Aspire-A515-51G:~$ bg
[1]+ sleep 15 &
harsh@harsh-Aspire-A515-51G:~$ jobs
[1]+  Running                 sleep 15 &
harsh@harsh-Aspire-A515-51G:~$ ps
  PID TTY          TIME CMD
 4111 pts/0    00:00:00 bash
17060 pts/0    00:00:00 sleep
17074 pts/0    00:00:00 ps
harsh@harsh-Aspire-A515-51G:~$ fg
sleep 15
harsh@harsh-Aspire-A515-51G:~$
```

8)Run sleep 15 in the background using &, and then use kill to terminate the process by its job number. Repeat, except this time kill the process by specifying its PID.

```
harsh@harsh-Aspire-A515-51G:~$ sleep 15&
[1] 17455
harsh@harsh-Aspire-A515-51G:~$ kill 17455
[1]+  Terminated              sleep 15
```

9)Run sleep 15 in the background using &, and then use kill to suspend the process. Use bg to continue running the process.

```
harsh@harsh-Aspire-A515-51G:~$ sleep 15&
[1] 19139
harsh@harsh-Aspire-A515-51G:~$ kill -STOP 19139

[1]+  Stopped                 sleep 15
harsh@harsh-Aspire-A515-51G:~$ BG
BG: command not found
harsh@harsh-Aspire-A515-51G:~$ bg
[1]+ sleep 15 &
[1]+  Done                    sleep 15
harsh@harsh-Aspire-A515-51G:~$
```

10)Use grep to isolate the line in /etc/passwd that contains your login details.

grep -F "harsh" /etc/passwd