Assignment_Week1

The Day Of Judgement:- A Unix Journey: Ctrl+Alt+Delight

May 2024

1 Perhaps you are the Kwisatz Haderach

We don't have a gom jabbar to shift you from a screen. What we present here is just a little exercise to train you and introduce you to the very wonder of the command in line tools, in case you haven't seen them yet. Hopefully, you will enjoy it. But be aware that "It's about being truthfull to own".

2 Fear is the mind-killer

"A beginning is the time for taking the most delicate care that the balances are correct. This every sister of the Bene Gesserit knows." Hence, we start with an extension to what was hinted at in the reference, in the part where you're required to complete and correct the command.

You are supposed to write a command using plain `grep` with the help of regex(no options, no pipelines, no redirection, no sequentially and concurrency) equivalent to "`grep -w`".
You are supposed to reach or even improve "`grep -w`" So your first aim should be achieving "`grep -w`" and improving it without compromising the good features of "`grep -w`".

Hint: Be careful of escaping the characters(either you can use a reference or just hit and trial) But here is a list:

```
\{ \}
\+
 *
\|
[?.\!]
\?
\(\)
[^ ]
[a-z]
 ^
```

3 A Basic File Manager(Just Get Into The Mode)

3.1 First, a bit of warm-up:

Problem: Try to create a file named `"demo.txt;this/is/path"` if you try to do it, you're most likely going to face fortunate failure, but try it; what if you're able to do it? If that's the case, you're exempted from this assignment(but you can try for fun:).

Now, with that in mind, we have two cases:

- *baigans*: if you were able to create a file name with "demo.txt;this/is/path"

- *aayeins*: if you weren't able to create a file name with "demo.txt;this/is/path"

Now, from here, we will consider both of the cases, and if you failed the first warm-up, don't worry, because most of us will, and don't try it too much useless you're a **MARAD**.

The rest of the questions can be answered with that, also :)

3.2 Get Used To:

The next sub-problem is related to writing `for` loops(which is actually part of scripting, but it will serve idea for next week).

So how to write a `for` loop? Well, the simple syntax is this:

```
$ for some in $(cmd1); do cmd2;done
```

where `$(x)` is used to get the value of variable x. Now the above syntax is much like writing `for` loops in Python, which iterates over each output(generally distinguished by spaces) of `cmd1` and stores it in the variable "`some`", which can be accessed using `$(some)`, then run `cmd2` for every "`some`".

Here, we restrict ourselves to just iterating to over outputs of a command But you can do more, like say you want to run a "`cmd2`" thrice, then you can do either:

```
$ cmd2 & cmd2 & cmd2 (or cmd2 && cmd2 && cmd2)
              Or
$ for i in $(echo "1 2 3"); do cmd2;done
              Or
$ for i in $(echo -e "1\n2\n3\n"); do cmd2;done
```

Disclaimer: This assignment is only to improve your knowledge, so try to restrict to what has been given in reference or in this assignment. You can use things apart from this, but we will not grade them equally. Also note even if the solution is partially correct, don't hesitate to submit it; we will weigh it more than a correct solution using some external references because we have the solutions that worked using just the resources so far given to you; what we mean is that we don't restrict you to use only the option that we mentioned,

you can always use `man` pages(sorry to not mention it in the reference, but see the group chat, one of you discussed this), and what we restrict is the use of only commands mentioned by us).

So, let's talk about some work so now you know how to write a for-loop. With that, we will create a basic, automated file manager.

Problem: For this part, you need to write a command that reads through every line of a file called `path.txt`(each line having entry as a name in the same format as warm-up, i.e., "some_name;path" format), and then we will create files with those names in the current directory.

Now, you can be either a *baigan*, then no *aayein*, go with it! But if you are *aayein*, then you're allowed to create files with the name "some_name;path" for "some_name;path" where "pathi" is obtained from "path" by replacing every occurrence of "/" with "&."

A Hint: To create a file with the name i(that value stored in the variable i(which in our case will be an object for each iteration of the `for` loop)), you use:

```
touch $(echo $i)
```

And that's it, so go ahead, now be calm and relaxed, because the next part might be a devil to beginners

3.3   Let's Get On With It:

This is the final part of this question: You are once again given the `path.txt` file and the files that you created previously. Your task is to write a command to move the file with the name "some_name;path"(for *baigans*) or "some_name;pathi"(for *aayeins*) to the place/directory indicated by the "path"(for *baigans*) or "path"(the corresponding "path" for "pathi")(for *aayeins*) then rename that file from "some_name;path"(for *baigans*) or "some_name;pathi"(for *aayeins*) to "some_name".

Now, here you can assume that ";" occurs just once in each line of `path.txt`, "&" doesn't appear in any line of `path.txt`, "/" can occur in any line, only in the "path" part and also in the "path" is to separate the parent-child directories that is in the "path" you can't have a directory who's name has "/" in it(this is related to warm up: a hint to warm up). In short, everything is simply a usual name of a file followed by ";" then followed by a path. Also, it's up to you to consider or not the cases when the names of directories or files have space or special characters. And don't forget that `path` might not exist.

And that is it, remember that the logic is simple; you need to use the ideas from the previous parts.

4 Time for bonus

Bonus question for fun: (And don't use anything extra mentioned in this part, in the previous parts)

Here again, we have *baigans*(non-mac users) and *aayeins*(mac user) here *baigans* are **MARAD**, then can go ahead with the full generalization of this problem, for *aayein* they will have to restrict to a folder in "/temp" or any other equivalent directory having no issue with the permission and internal security. Now, the idea for this part is to use the things created in the previous part.

You're supposed to create two cron jobs; one does the work of creating an entry in `path.txt` and a file for that entry(as mentioned in the first part of the last question). For this, you will be provided with another file, "install.txt," which will have all these entries. Hence, the first cron job will write only 5 entries into `path.txt`(for this `read`, `tail`, and `head` commands can be used(not to be used for the previous parts)). Then, the second cron job will be to do part b of the last question.

- Cronjob1 runs every minute while cronjob2 runs every 2 minute.

- Note: You must maintain synchronization between the two jobs. This can be achieved by placing a mark to `path.txt`(possibly using the first line for this and writing data from the second line), and this can be achieved in many ways(one is using the if-else block from scripting just like we used the for loop, other is to an idea like copy and rename).

- You will also be required to modify the files install.txt and path.txt without using other commands (although it's a bonus question. You can achieve this using sed/awk, but you can also use ideas like copy and rename).

- **Disclaimer**: This part hasn't been tested yet, but you can try and wonder at different possibilities.

5 Submission

You can either create your own `path.txt`, or you can download a template from here(note: for the bonus question, `install.txt` is just `path.txt`, we add a condition that `path.txt` can have only 10 entries at most).

For now the deadline in $23:59, 2^{nd}$ June,2024. You must submit a .txt or .pdf or any other text document containing all the commands(note: for every part of the questions, you must submit just one command)

and their explanation(just a little bit to justify your method). Mostly, a Google form will be circulated for submission, or you can email it at `22b1025@iitb.ac.in`.