

CSE 391, Winter 2020

Assignment 3: Even More Unix Shell!

Due Tuesday, January 28, 2020, 2:00 PM

This assignment continues to practice using the `bash` shell and basics of combining commands using redirection and pipes. For Task 0 there is nothing to submit. For Tasks 1 and 2 you will submit your responses to Gradescope.

Some parts of this assignment depend on compiling and running Java programs from the command line. Many distributions of Linux do not include Sun's Java Development Kit (JDK). You may need to install JDK or use a different Linux machine that already has JDK installed, such as the CSE Virtual Machine (VM), CSE basement lab machines or the shared `attu` server. See the course web site for directions about how to install JDK on your own Linux machine.

Task 0: Log in and prepare a directory

First, **log in to a machine running Linux** and launch a **Terminal** window as described previously in Homework 1.

We have set up a ZIP archive full of support files that you must download to your Linux machine. Download/unzip it to a directory on your system.

```
wget http://courses.cs.washington.edu/courses/cse391/20wi/homework/3/hw3.zip
unzip hw3.zip
```

Task 1: Getting Comfortable With a Text Editor (Copy + Cut + Paste)

The following are exercises and questions are meant to help you become more comfortable with a text editor that is built into the command line. You can choose either `vim` or `emacs`. While the answers to the questions themselves are relatively easy to find by simply looking them up, **the real learning will come from you actually practicing these commands yourself**. While we won't be able to know whether you've really been practicing, this is not for our benefit, it's for yours. We also recommend getting even more practice by writing the answers to your `task1.txt`, `task2.sh` and `task3.sh` files using this editor ☺

For all of these questions, you will be using the text editor of your choice to practice navigating around the `mobydick.txt` file in the `hw3` directory.

1. What is the command to cut or delete 5 lines of text, starting from your current cursor position?
2. What is the command to paste the 5 lines of text you just cut in the previous question?
3. What is the command to copy 8 lines of text, starting from your current cursor position?

Task 2: Bash shell commands

For this task you will use shell commands to process the class' responses to the introductory survey, as well as the previous quarter's responses to the same introductory survey. The results are stored in the `hw3` folder in the files `intro_survey_19au.csv` and `intro_survey_20wi.csv`. Similar to last week, one of the goals of this assignment is to show you that a few simple commands can be used to process and analyze data.

For each item below, **determine a single bash shell statement that will either perform the operation(s) requested or provide the answer to a question**. Each solution must be a one-line shell statement, but you may use operators such as `>`, `>>`, `<`, `|`, `&&`, and `;`. For all commands, do not create any files except those indicated. In response to each question, **write the command that will perform the task described, not the output that the command produces**. You can assume you are in the `hw3` directory when doing these problems.

Write your answers in on the indicated lines in the `task2.sh` file in the `hw3` folder.

1. The `cut` command performs a similar operation as the `ParseColumn` java program from last week's homework. What is the command to extract the column with the answers to "What's your favorite candy?" from the 20wi survey data?

2. We want to be able to analyze the combined results of the survey for both 19au and 20wi quarters. Write the command that will create a `combined_results.csv` file, containing the results from 19au, followed by the results from 20wi. The `combined_results.csv` file should have the header at the top but should not have the header from the `intro_survey_20wi.csv` file in the middle.
3. How many students from both quarters who had “noodles”, case-insensitively, as part of their answer to “What's your favorite restaurant on the ave?” prefer cats?
4. *Challenge question:* What are the three most popular candies (case-insensitively) from 20wi in order of popularity? Similar to last week’s question about the popularity of cats and dogs your command should output the count as well as the names of the candies, as in


```
XX Candy1
XX Candy2
XX Candy3
```
5. *Creative question:* Come up with your own question about the data from the intro survey that you would like to answer using any of the commands taught in the course so far. Write your question as a comment inside the function (comments begin with a #), then write your command, uncommented, beneath your comment on the following line.

Task 3: More bash shell commands; Developing the FAANG website

Welcome to your first day at FAANG! FAANG is a budding startup that, once it grows in popularity, will no longer reference Facebook, Apple, Amazon, Netflix Google but in fact this unicorn company. (The investors are sure of this.) You were hired to work on the system administration team, and the recruiter was particularly impressed by your knowledge of Linux. Your first day on the job will be helping some front-end developers getting the company website up to date. The `hw3` directory contains a `site.zip` file that contains the contents of the company website. Unzip the `site.zip` to create a `site` directory. You can assume you are inside the `site` directory when doing these problems.

For this task, you can work from the VM or copy the `site` directory to your local machine so that you can view the contents of the website in a web browser. You may find this helpful, although it is not required. To do so, from a file browser either double-click on `site/index.html` and it should automatically open in a web browser. You can also right click on `site/index.html`, select Open With > your favorite web browser.

For each item below, **determine a single bash shell statement that will either perform the operation(s) requested or provide the answer to a question.** Each solution must be a one-line shell statement, but you may use operators such as `>`, `>>`, `<`, `|`, `&&`, and `;`. For all commands, do not create any files except those indicated. In response to each question, **write the command that will perform the task described, not the output that the command produces.**

6. The old web development team had different subdirectories for each product that the company makes named `dir1`, `dir2`, ..., `dir10`, etc. These directories are no longer wanted and should be deleted to save space on the server. Write a command that will delete all directories that are prefixed with "dir". You will want to read the `man` pages for `find` to find only files that are directories. Your function should be generic and not specific to the directories inside of the zip you are provided. As a reminder, if you accidentally remove the wrong files you can re-download `hw3.zip` from the course website.
7. Now that the old directories have been deleted, it is time to create new directories. There will be one directory for each product simply named `1`, `2`, `3`, etc. Write a command to create directories 1 through 9. You may find the `seq` command, which prints a sequence of numbers helpful. Note, your function should be generic and should not simply enumerate the directories needed to be created using `&&` or `;`
8. One of the backend developers wrote a program called `CheckTransactions` that outputs information about transactions made recently on the website. There seems to be a bug with the site, however, and they are having trouble locating it. The developer thinks it would be useful if all of the transactions which produced errors were printed to a separate file. Write a command that compiles `CheckTransactions.java`, and if it compiles successfully, runs `CheckTransactions` and redirects all output from standard error to a file named `err.log`.