School of Computer Science, McGill University

COMP-206 Introduction to Software Systems, Winter 2020

Mini Assignment 1: Familiarizing with Linux

Due Date Jan 23rd, 23:55

This is an individual assignment. You need to solve these questions on your own. Use the discussion forum on Piazza if you have any questions. You can also reach out to the course email address, utilize TA/Instructors office hours as necessary. Late penalty is -5% per day. Even if you are late only by a few minutes it will be rounded up to a day. Maximum of 2 late days are allowed.

You MUST use `mimi.cs.mcgill.ca` to create the solution to this assignment. You must not use your Mac command-line, Windows command-line, nor a Linux distro installed locally on your laptop. You can ssh or putty from your laptop to `mimi.cs.mcgill.ca`, or you can go to the third floor of Trottier and use any of those labs to ssh to `mimi` to complete this assignment. All of your solutions should be composed of commands that are executable in `mimi.cs.mcgill.ca`.

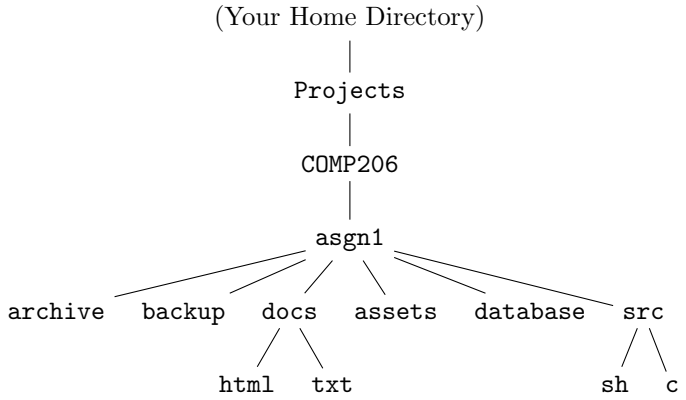
Questions in this exercise requires you to take screen shots of your work. This will serve as proof that you have done this assignment by yourself. Instructors/TAs upon their discretion may ask you to demonstrate/explain your solution. No points are awarded for commands that do not execute at all. (Commands that execute, but provide incorrect behavior/output will be given partial marks.) All questions are graded proportionally. This means that if 40% of the question is correct, you will receive 40% of the grade. **Please read through the entire assignment before you start working on it. You can loose up to 3 points for not following the instructions.**

Lab A and lab B will provide some background help for this mini assignment.

Total Points: 20

Ex. 1 — Familiarising with the File System (7 Points)

1. **(3 Points)** Your first task is to create a folder structure similar to the one given below, immediately under your home directory. The structure below represents a typical directory heirarchy that can be employed in developing complex software applications. Below, `Projects` is a subdirectory of your home directory, `COMP206` is a subdirectory of `Projects`, `asgn1` is a subdirectory of `COMP206`, and so forth. Nothing to be turned in for this question.



2. **(2 Points)** Next, starting from you home directory (i.e., `pwd` shows that you are in your home directory), perform the change directory command, `cd`, to the `asgn1` directory that you just created in the above step (i.e., now the `pwd` command should show that you are in the `asgn1` directory). You **MUST** perform this using a single `cd` command execution that will take you directly from your home directory to the `asgn1` directory.

3. **(2 Points)** Now use the `ls` command to list all the directories that are immediately under the `asgn1` directory. The listing should also include the permissions and the owner/group names associated each directory. (Therefore, this should demonstrate that you are the owner of these directories).
Turn in a screen shot of your shell that shows clearly that you executed the `cd` command from the previous question and the `ls` command. The screenshot must be an image, either EX1.PNG or EX1.JPG.

Answer (Ex. 1) —

1. The simple approach is to create each directory individually.

```
mkdir Projects
mkdir Projects/COMP206
mkdir Projects/COMP206/asgn1
mkdir Projects/COMP206/asgn1/archive
mkdir Projects/COMP206/asgn1/backup
mkdir Projects/COMP206/asgn1/docs
mkdir Projects/COMP206/asgn1/docs/html
mkdir Projects/COMP206/asgn1/docs/txt
mkdir Projects/COMP206/asgn1/assets
mkdir Projects/COMP206/asgn1/database
mkdir Projects/COMP206/asgn1/src
mkdir Projects/COMP206/asgn1/src/sh
mkdir Projects/COMP206/asgn1/src/c
```

   You can also create them using a single `mkdir` command.

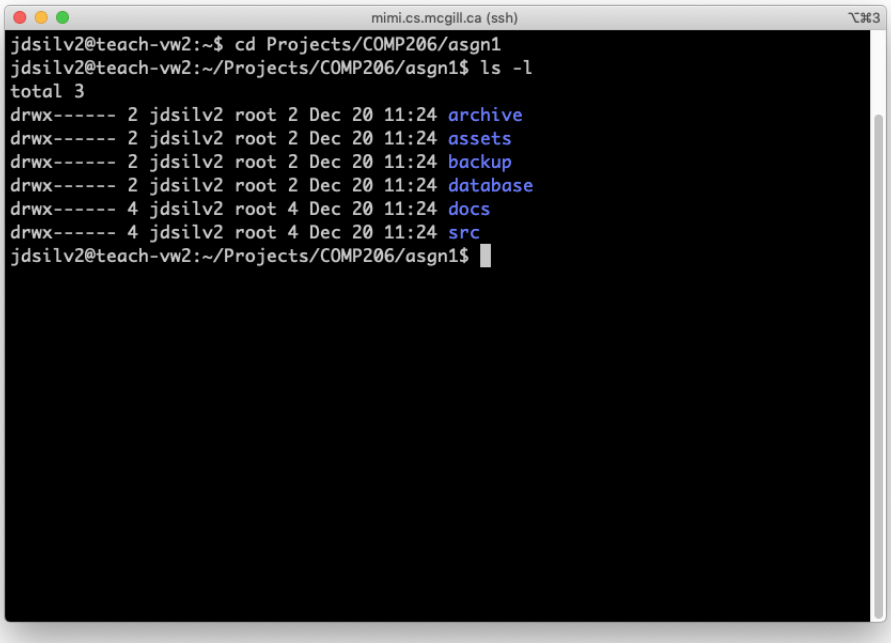
```
mkdir Projects Projects/COMP206 Projects/COMP206/asgn1 Projects/COMP206/asgn1/archive
    Projects/COMP206/asgn1/backup Projects/COMP206/asgn1/docs Projects/COMP206/asgn1/docs/
    html Projects/COMP206/asgn1/docs/txt Projects/COMP206/asgn1/assets Projects/COMP206/
    asgn1/database Projects/COMP206/asgn1/src Projects/COMP206/asgn1/src/sh Projects/
    COMP206/asgn1/src/c
```

   Also try exploring the `-p` option of the `mkdir` command.

2.
```
cd Projects/COMP206/asgn1
```

3.
```
ls -l
```

```
drwx------ 2 jdsilv2 root 2 Dec 20 11:24 archive
drwx------ 2 jdsilv2 root 2 Dec 20 11:24 assets
drwx------ 2 jdsilv2 root 2 Dec 20 11:24 backup
drwx------ 2 jdsilv2 root 2 Dec 20 11:24 database
drwx------ 4 jdsilv2 root 4 Dec 20 11:24 docs
drwx------ 4 jdsilv2 root 4 Dec 20 11:24 src
```



Ex. 2 — Editing Files with vi (9 Points)

1. (a) **(4 Points)** In the `docs` directory, create a file by name `license.txt` using the `vi` editor. Enter the following contents in it.

```
Copyright : <your full name>, <year> - All Rights Reserved
Email     : <your email address>
Dept      : <name of your department>
```

   (b) **(1 Point)** From inside the `docs` directory, execute the `pwd` command.

   (c) **(1 Point)** From within the `docs` directory, execute the `ls` command. Make sure that the `ls` command show that the file was created by your user id, and its time stamp.

   (d) **(1 Point)** Next, `cat` the license file you just created to display its contents.

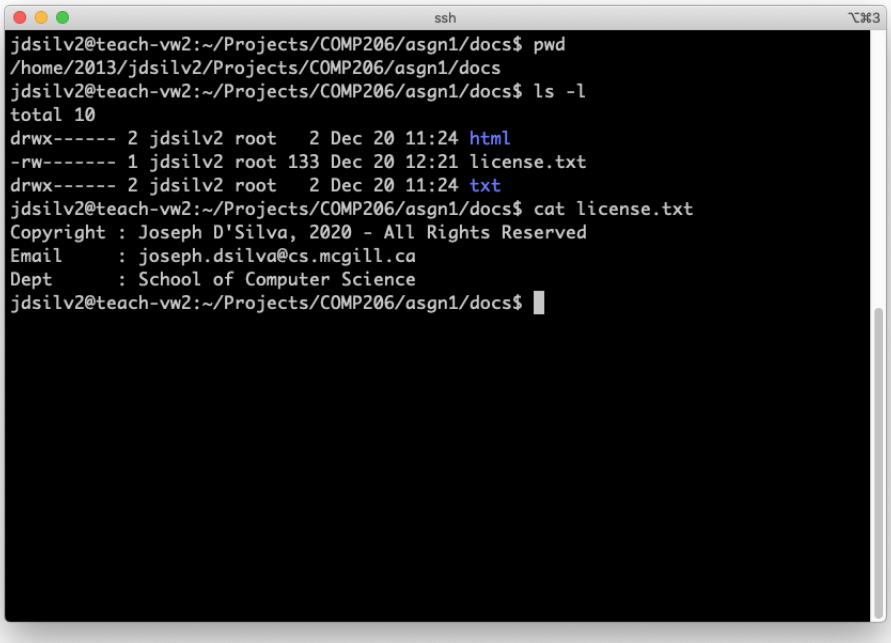
   Turn in a screen shot that shows the `pwd`, `ls`, and `cat` commands and the output that they produce. Include all of it in a single screen shot, EX2_1.PNG or EX2_1.JPG.

2. (a) **(1 Point)** From within the `docs` directory, execute the `pwd` command.

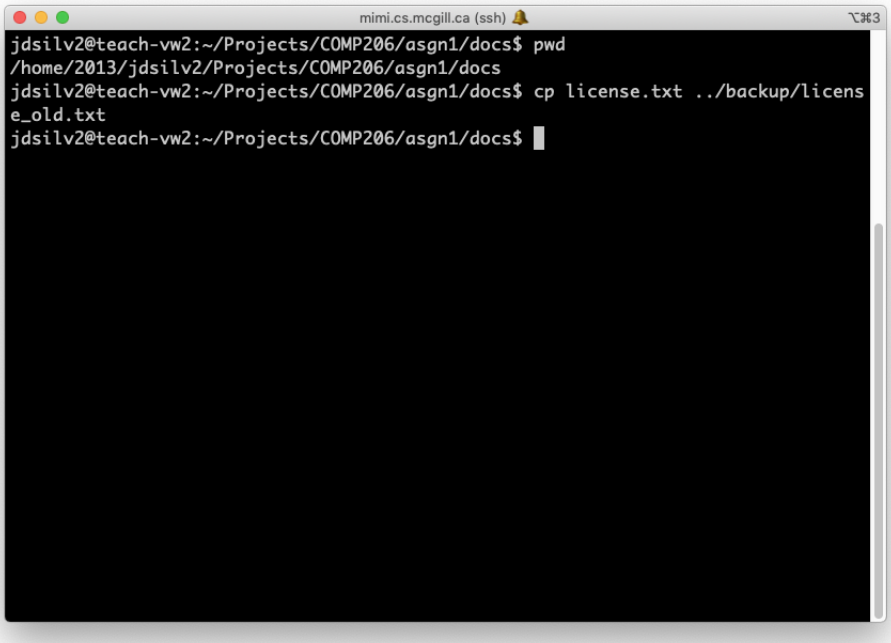
   (b) **(1 Point)** Now make a copy of the license file to the `backup` directory that you had created before, with a new name, `license_old.txt`, by using the `cp` command (You MUST execute the `cp` command from the `docs` directory).

   Turn in a screen shot that shows the `pwd`, `cp` commands and the output (if any) that they produce. Include all of it in a single screen shot, EX2_2.PNG or EX2_2.JPG.

Answer (Ex. 2) — 1. Use `vi` editor to create the file.



2. You can make use of `..` to traverse the parent directory.

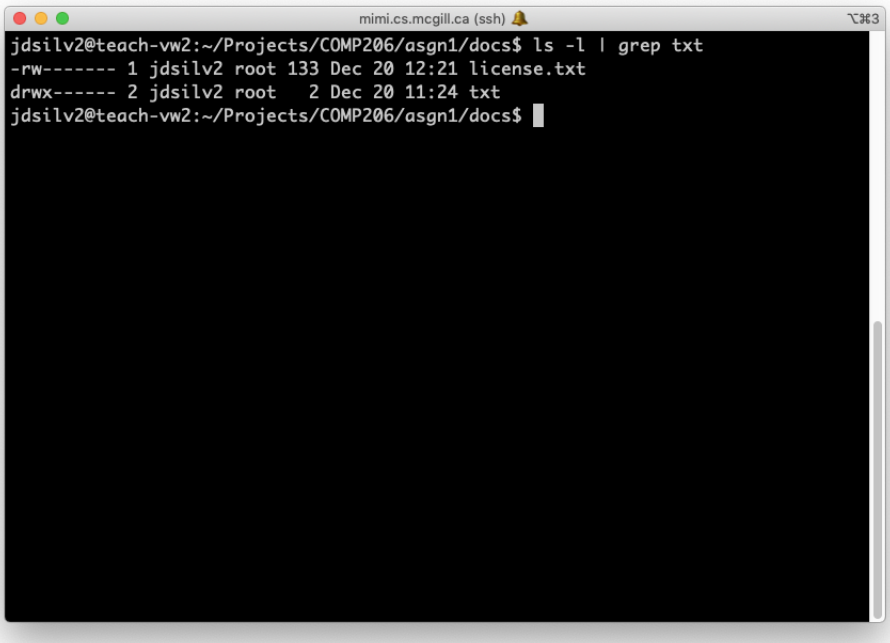


Ex. 3 — Using grep (4 Points)

From the `docs` directory, use pipe to make the `ls` and `grep` commands (with appropriate arguments to them) to interact such that it produces the following output. (You would of course have different owner/group names, permissions, file sizes and time stamp for your output. However, the names and order of the files and the content format of the output should be the same.)

```
-rw------- 1 jdsilv2 root 133 Dec 20 12:21 license.txt
drwx------ 2 jdsilv2 root   2 Dec 20 11:24 txt
```

Turn in a screen shot that shows the command you executed and the output that it produces as EX3.PNG or EX3.JPG.



Answer (Ex. 3) — 1.