Instructions

Read all the instructions carefully before you begin.

Make sure you submit **before** the deadline!

Due date: 13:00 Wednesday Feb 15

During the exam:

- Your phone should be off/silenced and in your bag (not on your desk)
- Make sure you shut down all messaging and communication apps
    - You cannot communicate with anyone other than the exam invigilators during the exam
        - This includes AIs

About Screenshots:

- If you can fit everything into one screenshot, that is ok
- If you need to use one or two additional screenshots, that is also ok

The exam is open book:

- You may review your own notes and class notes

Questions:

P1. 1 point

Create a “midterm” directory in your home directory. Inside the new **midterm** directory, create a new file “**p1-file**”. Change the file permission so that it matches the permission below.

Include screenshots that demonstrate:

- How you made the changes
- That the changes were made successfully

```
-rwxr--r--
```

P2. 2 points

Using **only** the `ps` utility, sort all processes by resident set size. Display the command and resident set size.

Your output should look a little like this:

Include screenshots that demonstrate:

- The command that you used, include some output
- screenshots from the man page for `ps` that illustrate how you
  - displayed the correct fields
  - sorted the output

P3. 4 points

Create a new user. Your new user should have the following:

- a regular home directory in /home
- use bash as their login shell

Give your new user a password, or change their password if you have already created a password for your new user.

Create a new group named “midterm”. Use the man pages to find out how to do this.

Change the group owner of the “midterm” directory created in step 1 to the midterm group created above

Add your new user to the midterm group

Include screenshots that demonstrate:

- the commands that you used

    - to create your user
    - set your user's password
    - create a new group
    - change the group owner of the midterm directory
    - add your user to the group
- evidence that the above steps were successful
- the man page you used to create a group
- how you found that man page

P4. 3 points

Write a command that uses `grep` to find and print all the regular users on your system.

Only use grep. Assume that you don't know how many regular users there are.

Output should look a little like this (you will have more users on your system):

```
pond:x:1000:1000:pond:/var/home/pond:/bin/bash
```

- Hint: regular users are always within a range of numbers
- Hint 2: `grep` can search for a "range" using "Bracket Expressions" see man page

Include screenshots that demonstrate:

- Your command
- The output of your command, which should fit comfortably on the screen

P5. 2 points

Write a command, using `find`, that will find and count all the files in `/etc`.
Hide all the error messages, "Permission denied", by sending them to a file that doesn't store any data.

- You can use another utility for the counting.

Include screenshots that demonstrate:

- your command

P6. 1point

Run a command that will display the version of the kernel that your VM is using.

Include screenshots that demonstrate:

- your command

P7. 2 points

Copy the code below into a new file `$HOME/midterm/nfntlp`.
Make the file executable and run it as a background process, like this: `./nfntlp &`

Once the script is running, use `ps` and a filtering utility to find the PID of your awesome infinite loop script.

The output of your command should look a little like this:

```
nfntlp                52119
```

Include screenshots that demonstrate:

- Your command
- The output

```
#!/bin/bash

while true; do
        x=1
done
```

After completing, You can kill this process in a few ways:

- bring to foreground with the `fg` command and kill wit CTRL+c
- using the `pkill` utility `pkill -9 nfntlp`

Total Points: 15

Submission instructions

Make sure you submit **before** the deadline!

Submit: a .pdf using the dropbox on D2L

File name: your_name_midterm_2420.pdf