CS 2204 Lab 2

your name here (please print):

your student ID number here:

WARM UP:

1. Open up a shell and type the command `unalias rm` (never mind about the output and if UNIX complains). All questions in this lab assignment must be done only after the above command is executed. If you open up a new shell during the course of this assignment, please ensure that you type this command again.

2. Navigate to your home directoy, create a subdirectory called 'lab2', and inside that subdirectory create a file called 'cscourses' (using UNIX `touch`). Then invoke the `emacs` editor on this file by typing `emacs cscourses` and place the following four lines in it. Notice that each line has three fields, separated by a single space character.

   ```
   cs2204 Mon Naren
   cs2304 Tue Lupoli
   cs4984 Wed Harrison
   cs5984 Tue Harrison
   ```

   After saving and exiting, do a `cat -n cscourses` and verify that the file has exactly four lines. If there are extra lines at the end (maybe because you typed one too many Enters), go back to `emacs` and edit them out.

3. Experiment with the UNIX command `cut` to determine what it does. For instance, try the following commands (in the same directory as above):

   ```
   cut -c1 cscourses
   cut -c5 cscourses
   cut -c2-4 cscourses
   cut -c2-4,8 cscourses
   ```

   For completeness, type `man cut` and convince yourself that you understand what is going on.

4. Type the command `od -c cscourses` and again try to understand what is going on using a mix of eyeballing and reading the `man` pages.

QUESTIONS TO ANSWER:

First, navigate to the 'lab2' subdirectory that you created.

1. (2 points) Write out the `cut` command necessary to print out only the first and third columns from the `courses` file, so that each of the four lines merely lists a course and its instructor (separated by a space, as usual).

2. (1 point) Type the command `wc cscourses`. Explain what the three mysterious numbers mean.

3. (2 points) Determine what option you can give to `wc` so that it prints only the third number instead of the three numbers as in the previous question.

4. (4 points) Write UNIX `touch` commands to create the following files:

   - %jajaa$
   - humpty_dumpty
   - thisisaverylongfilenameindeed!
   - midsummer night's dream

   (note the spaces in the last item above!)

5. (2 points) Create a file and give it the name of your favorite professor. Use `emacs` and put some text inside this file. Then create a symbolic link called 'FavoriteProfessor' and link it to the file you just created using the `ln -s` command. Recall that this command takes two arguments; read the `man` pages and refresh your memory about the order of the arguments. Write your command below.

6. (2 points) Now open the original file (not 'FavoriteProfessor') in `emacs` and add some new text in it. Exit `emacs` and use a `cat` to see if 'FavoriteProfessor' has changed. Do the reverse (update the link and see if the linked-to file has changed). Now assume you are given two files called `a` and `b` and you are told one of them is a symbolic link and the other is the linked-to file. Using only the `rm` and `cat` commands, how will you determine which is which?

7. (2 points) Create two files each of which symbolically links to the other (i.e., neither must be a real file that you create using `touch` or `emacs`). Does UNIX allow you to do this? If yes, state the commands you used. If yes, what happens when you try to `cat` either of these files? If no, what messages do you get?

8. (2 points) Create two directories each of which symbolically links to the other. To tell UNIX that you want directories instead of files (as in the previous question) suffix each directory name with '/'. Does UNIX allow you to do this? If yes, state the commands you used. If yes, what happens when you try to `cd` into either of these directories? If no, what messages do you get?

9. (1 point) This question has two parts. (i) Assume you have a file called `b` and `a` is a symbolic link to that file. Write a UNIX `cp` command to create a copy of `a` called `c`. (ii) Using only the `rm` and `cat` commands, how will you determine if `c` is another symbolic link or a regular file?

10. (1 point) This question has two parts. (i) Assume you have a file called `b` and `a` is a symbolic link to that file. Write a UNIX `mv` command to move `a` to `c`. (ii) Is `c` also a symbolic link?

11. (Difficult!; 1 point) Inspect the `od -c` output and attempt to state what the numbers in the first column mean.