CS2211a Lab No. 2
Introduction to UNIX
Tuesday September 29, 2015 (sections 3 and 2),
Wednesday September 30, 2015 (sections 6 & 8), and
Thursday October 1, 2015 (sections 9 and 5)

Location: ***MC10*** lab

The objective of this lab is:
- to get familiar with Unix Files and Directories, and
- to practice Unix Input-Output Redirection

If you would like to leave, and at least 30 minutes have passed, raise your hand and wait for the TA.
Show the TA what you did. If, and only if, you did a reasonable effort during the lab, the TA will give you the lab mark.

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- Create a directory **dir1** under your home directory
- Create a text file **test.txt** in **dir1** (you may use **gedit**, **pico**, **vi**, **emacs**, **xemacs**, or **nedit** Unix commands)

- Remove your own write permission of **test.txt**
- Make some changes to **test.txt** with an editor and *try* to save it
- *Try* to delete the file **test.txt**

- Remove your own read permission of **test.txt**
- *Try* to display the content of **test.txt** (you may use **cat** Unix command)
- Restore your own read permission of **test.txt**

- How do you delete a file called **abc** under your home directory that has a permission of 000?

- How do you delete a directory called **def** under your home directory that has a permission of 000?

- Try creating a directory in the system directories **/bin** and **/tmp** and explain your observations

- Create a directory **~/dir2**
  - What is the permission of **~/dir2**?
  - What argument is provided to **umask** under your **.cshrc** file?
  - How does **umask** argument relate to the generated permission?

- Copy **test.txt** to **~/dir2/test2.txt**
- Remove your own 'r' permission of **dir2**
  - *Try* to **ls ~/dir2**
  - *Try* to **cat ~/dir2/test2.txt**
  - *Try* to **cd ~/dir2**
  - *Try* to **ls**

- Set your own permission of **~/dir2** to be **r-x**
  - *Try* to copy **test.txt** to **~/dir2/test3.txt**
  - *Try* to delete **~/dir2/test2.txt**
  - *Try* to edit the file **~/dir2/test2.txt** using an editor and save the changes

- Set your own permission of **~/dir2** to be **rwx**
  - **ls ~/dir2**
  - **"ls" ~/dir2**
  - **'ls' ~/dir2**
  - **`ls` ~/dir2**
  - **\l\s ~/dir2**
  - **ls \~/dir2**
  - **ls ~\/dir2**
  - **ls ~/\dir2**
  - **ls ~/dir\2**
  - **ls ~/d\ir2**

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- Create three files called **.A*"?'\`A -ABC[D-F]** and **~abc)(** under your home directory
- Use **ls** command to display just these three files
- How do you delete these three file?

- Create a file under your home directory (you may use **touch** Unix command)
  - Create a hard link for that file
  - Check the number of inode to each of these two files
  - Create a symbolic link to original file
  - Check the number of inode to each of these three files
  - Create a symbolic link to the generated hard link file
  - Check the number of inode to each of these four files
  - Delete the original file
  - Check the number of inode to each of these three files
  - Delete the first symbolic link that you generated
  - Check the number of inode to each of these two files
  - Delete the hard link
  - Check the number of inode to one lifted file

- What is the difference between the following two commands?
  - **echo ***
  - **ls -d ***

- Create a file under your home directory called **abc** and write in it a couple of text lines
- Make sure that you do not have any file called **def** under your home directory
- Execute the following command **cat abc def**
  - Redirect the output of the **cat abc def** command to a file call **output_file_1** and the error to a file called **error_file_1**
  - Redirect both of output and error of the **cat abc def** command to a file called **output_and_error_file_1**
  - Append the output of the **cat abc def** command to a file call **output_file_1** and the error to a file called **error_file_1**
  - Append both of output and error of the **cat abc def** command to a file called **output_and_error_file_1**
- Execute the command **sh** to change your shell to *sh* shell
- Execute the following command **cat abc def**
  - Redirect the output of the **cat abc def** command to a file call **output_file_2** and the error to a file called **error_file_2**
  - Redirect both of output and error of the **cat abc def** command to a file called **output_and_error_file_2**
  - Append the output of the **cat abc def** command to a file call **output_file_2** and the error to a file called **error_file_2**
  - Append both of output and error of the **cat abc def** command to a file called **output_and_error_file_2**

- Read **man uniq** and **man sort**
- How do you remove repeated lines from an unsorted file where the repeated lines are
  - Contiguous
  - Not contiguous

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