# Physics 129AL: Problem Set 1

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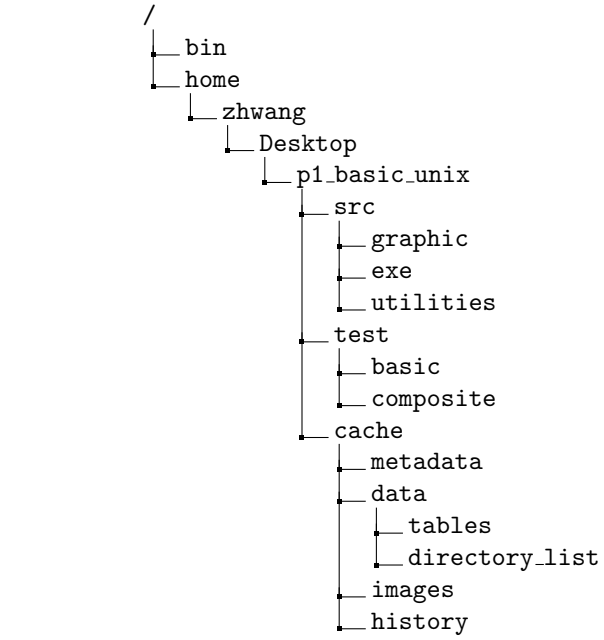
## Problem 1: Basic UNIX File Management

In most projects, a directory tree is an essential tool for file management. Here, we will construct a directory tree and explore basic Linux commands. Below is an example of a complete directory tree, starting from the root "/".

Please submit **all** your commands (including errors) in a text file named "P1_cmd_history.txt" in the directory "/p1_basic_unix". For example, if you want to select the last 10 commands you entered and append them to a file, you can use the following 'history' command: "history | tail -n 10 >> P1_cmd_history.txt". Please note that by doing this, the last command in the text file is **guaranteed** to be the 'history' command above.



## A

1. Construct the directory tree in your VM. Hint: you do not need to start from the root.
2. Move to "/p1_basic_unix", and add 3 **empty** ".txt" files: test_1.txt, test_2.txt, test_3.txt, to the directory "/p1_basic_unix/test/basic".
3. Stay in "/p1_basic_unix", and use the **echo** command to print your name and today's date to test_1.txt.
4. Stay in "/p1_basic_unix", use the **cat** command to print test_1.txt to the terminal.
5. Stay in "/p1_basic_unix", use the **ls -l** command to print test_1.txt to test_2.txt.
6. Stay in "/p1_basic_unix", make the test_1.txt file executable with **chmod +x**, and **append** the result of **ls -l** to test_2.txt.

## B

1. Download the compressed tar file "P1_B.tar.gz" from the course website under Problem Sets, Downloads. Extract the tar file to the directory "/p1_basic_unix". Hint: use the "wget ..." command. **Please check the sha256sum!**
2. Stay in "/p1_basic_unix", move example.sh from "P1_B" to "/p1_basic_unix".
3. Stay in "/p1_basic_unix", rename two existing files in the directory "P1_B" from example_1.txt and example_2.txt to demo_1.txt and demo_2.txt.
4. Stay in "/p1_basic_unix", move those two newly named files to "/p1_basic_unix/src/exe" and "/p1_basic_unix/cache/data/tables".
5. Stay in "/p1_basic_unix", remove the directory "P1_B".
6. Stay in "/p1_basic_unix", create a symbolic link for the file demo_1.txt with the name demo_link.
7. Set an alias "ll" that defines the operation "ls -l".

## C

1. Stay in "/p1_basic_unix", use **grep** to search for the keyword "statistics" in demo_1.txt, and using pipelines, print the result to a new file named "grep_stat_demo1.txt". Place the new file into the directory "/p1_basic_unix/src/utilities".
2. Stay in "/p1_basic_unix", perform a **grep** search for the keyword 'statistics' across all directories. Utilize pipelines to redirect the results into a new file named 'grep_stat_all.txt,' placing it within the directory "/p1_basic_unix/cache/images".

3. Stay in "/p1_basic_unix", use the **find** command to locate all files with a ".txt" extension and print them to the test_3.txt file.

4. Stay in "/p1_basic_unix", employ both the **find** and **grep** commands to search for the keyword 'statistics' within all files of the '.txt' format across all directories.

## Submission

1. Using the **tar** command, compress the directory "/p1_basic_unix" into a **single** ".tar.gz" file named "p1_basic_unix.tar.gz".

2. Obtain the sha256sum by running "sha256sum p1_basic_unix.tar.gz".

3. Upload "p1_basic_unix.tar.gz" to Canvas, and in the comment section, paste your sha256sum.