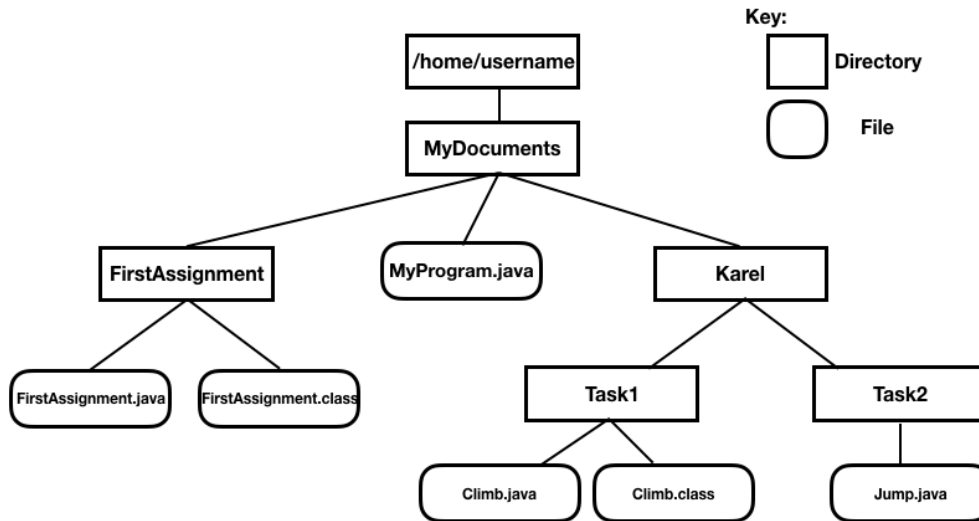


The lab computers use a version of the LINUX operating system. LINUX is similar, in many ways, to the original UNIX operating system developed in the 1970's. The Terminal application runs a version of the **bash** command line.

UNIX File System

UNIX/LINUX has a file system structure similar to Windows and Mac OS. It looks like an inverted tree structure (see figure below). UNIX calls a folder a **directory**. On our lab computers, a terminal window will automatically put you into the directory **"/home/username/MyDocuments"**. "username" is your login name.



Create file names and directory names only with alphanumeric characters (A-Z and 0-9) to avoid confusion. The dot (".") and underline ("_") characters are also allowed. The suffix of a file name, preceded by a dot ".", denotes the file type. For example, the suffix ".java" means the file contains Java source and the suffix ".class" means the file contains Java bytecode.

Important directories:

- /home/username/MyDocuments** starting directory
- ~/MyDocuments** shorthand for "/home/username/MyDocuments"
- .** current directory
- ..** parent directory

List Files - ls

The terminal window is always starts in the directory /home/username/MyDocuments. To list the files in this directory use "ls". Using the diagram above, if you want to see what is inside the directory "FirstAssignment", type "ls FirstAssignment". If you want to see the files inside the "Task1" directory shown above, type "ls Karel/Task1".

Here are some helpful "flags" (options) that will give you more information.

- F** list file names, and list directories preceded by "/"
- s** list files and directory names with file sizes in Kb
- l** list files and directory names with lots of information including file sizes

Example: `ls -l FirstAssignment`

Other Commands

cd directoryname	change directory
cp oldfile newfile	copy file
du -s <filename> <directoryname>	disk usage (filename and directoryname are optional)
mkdir directory	make directory
mv oldfile newfile	change file name
mv file directory	move file into directory
rm file	remove file (delete)
rmdir directory	remove directory (delete), directory must be empty

Sending Files Through Email

UNIX can compress files and directories into one file that can be sent over email. The compression program is called **zip**. The advantage of using **zip** is being able to send a whole directory of files in one attached email file. Both the files and the directory structure are transported verbatim.

Another powerful use of **zip** is to free up space in your lab computer directory. You only get 25MB of disk for the year. By the second semester, students start running out of space. You can use **zip** to compress your directories and files into one smaller file; therefore, you can remove the space-wasting files and free up space for future work.

Create an archived and compressed zip file:

```
zip -r archiveFileName.zip directoryName
```

Extract the directory and files from a compressed file:

```
unzip archiveFileName.zip
```