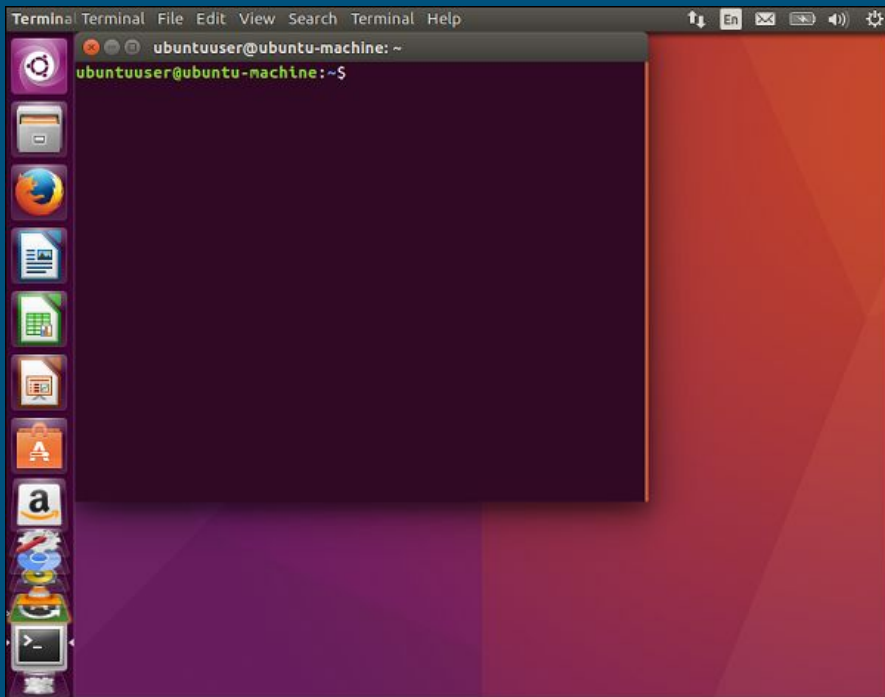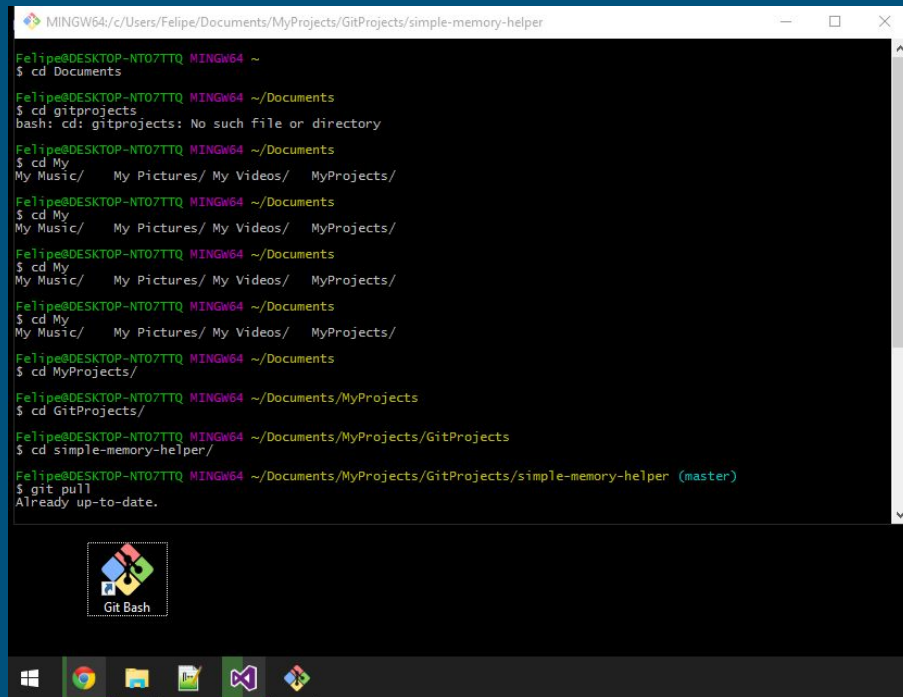# Open Up Your Terminal

Ctrl + Alt + T -- Linux Terminal   Git Bash (windows)

Directory (Folder) Path

This is the location of a directory or file. It lists the various directories that the file is inside. This will make it so that the computer will be able to differentiate between 2 files as long as you put them in separate folders eg. directory/sub-directory/file.

- ~ represents the path to your home directory
- / represents the directory for your computer hard drive (contains all the files on your computer)
- . represents the directory you are currently in
- .. represents the parent directory

Absolute Path: This is the path you will be able to use this regardless of which directory you are currently in

Relative Path: This is the path that uses the location of your current directory as a starting point

Terminal Commands

ls: Lists all the files in the current directory (folder)
cd <*directory path*>: Moves you into the specified directory (no workey for files)
Tab key: Auto completes file/directory name
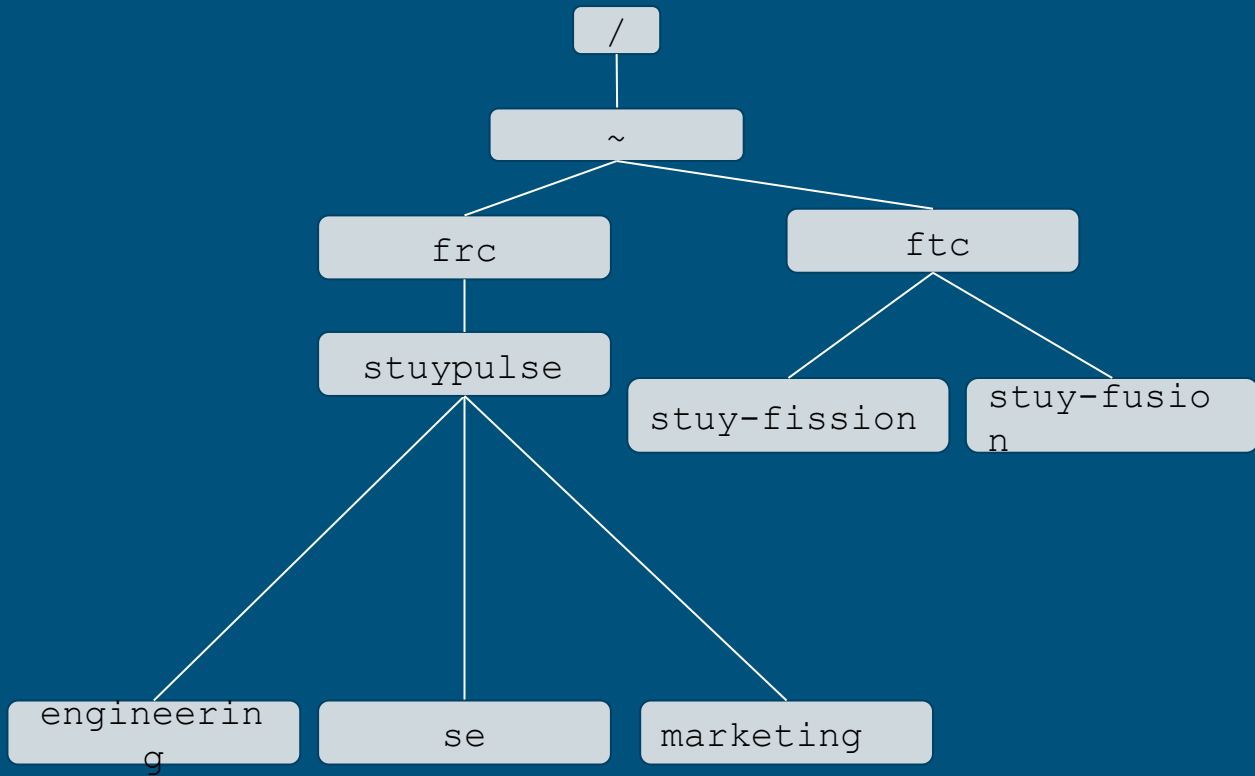gedit <*filename*>: Creates a file using text editor gedit (Linux)
notepad <*filename*>: Creates a file using text editor notepad (Windows)

Note that these are the exact same no matter the operating system
Warning: As spaces are reserved for something else, in order to create a file with spaces, you must add a "\" before each space

Navigating Directories Exercise

Problems:
find the absolute and relative path...
- from ~ to se

- from stuy_fission to stuypulse

- from marketing to engineering

- from ftc to se

- from frc to ftc

- from stuy_fusion to /

Make your computer print out this information in a java file

Using Text Editors

Instead of typing code directly into the terminal, programmers frequently use text editors. The one we will use is called gedit.

You can use the terminal to create a new text file in gedit. By default, it will create .txt files

gedit <filename>

Activities

Create a .txt file in the Documents folder titled "SEIsTheBest" using the terminal.

In the file, list all of the files and directories in your "/" ("/c") folder

Raise your hand if you need help

For bonus points: after you finish the last 2 tasks, rant to the person next to you about a teacher you hate. If you don't have a teacher you hate, criticize the teacher teaching this lesson (or the person that wrote these slides).

Making a Java File:

Java files end with .java

<u>gedit</u>: This is a text editor in Linux. Typing the terminal command opens the text editor, and it will create and open the file specified

IN TERMINAL

```
gedit filename.java
```

TRY IT

make a java file named HelloWorld

How to Run Programs

```
javac <program name.java>
```

Compiles the code and turns the code into a class file in *java byte code* which is interpreted by the JVM into binary when run. This allows the computer to read the code.

```
java <class name>
```

The machine now reads and executes the code.

Writing the "Hello World" program

```java
public class HelloWorld {

    public static void main(String[] args){

        System.out.println("Hello world!");

    }

}
```

Deciphering the hello world program

```
public class HelloWorld {

    //beep boop I am a comment

    /*

    This is a multiline comment

    */

}
```

The main code goes in between the { }s. Don't worry about what `public` and `class` mean for now.

Deciphering the hello world program

```
public static void main(String [] args) {

    /* Initiate Robot Takeover Here */

}
```

The program only executes the code that is in the main function.

Deciphering the Hello World Program

```
System.out.println("Hello World");
```

This method outputs the text "Hello World" in the terminal.

Assignment

Make a new java file, have it print something besides "Hello World". Play around with it :)

```java
public class HelloWorld{

    public static void main(String[] args){

        System.out.println("Praise Dean Kamen");

    }

}
```

Terminal Commands

ls   Lists all files in current folder

cd <directory path>   Moves you into the specified directory

tab   Auto completes file/directory name

ctrl + c   Terminates the current running process

~   Home directory

/   Root directory

.   Current directory

..   Parent directory

If you're using your own laptop, gedit might not work for you. In that case, just use another text editor (atom, wordpress, etc.)

Navigating Directories Exercise
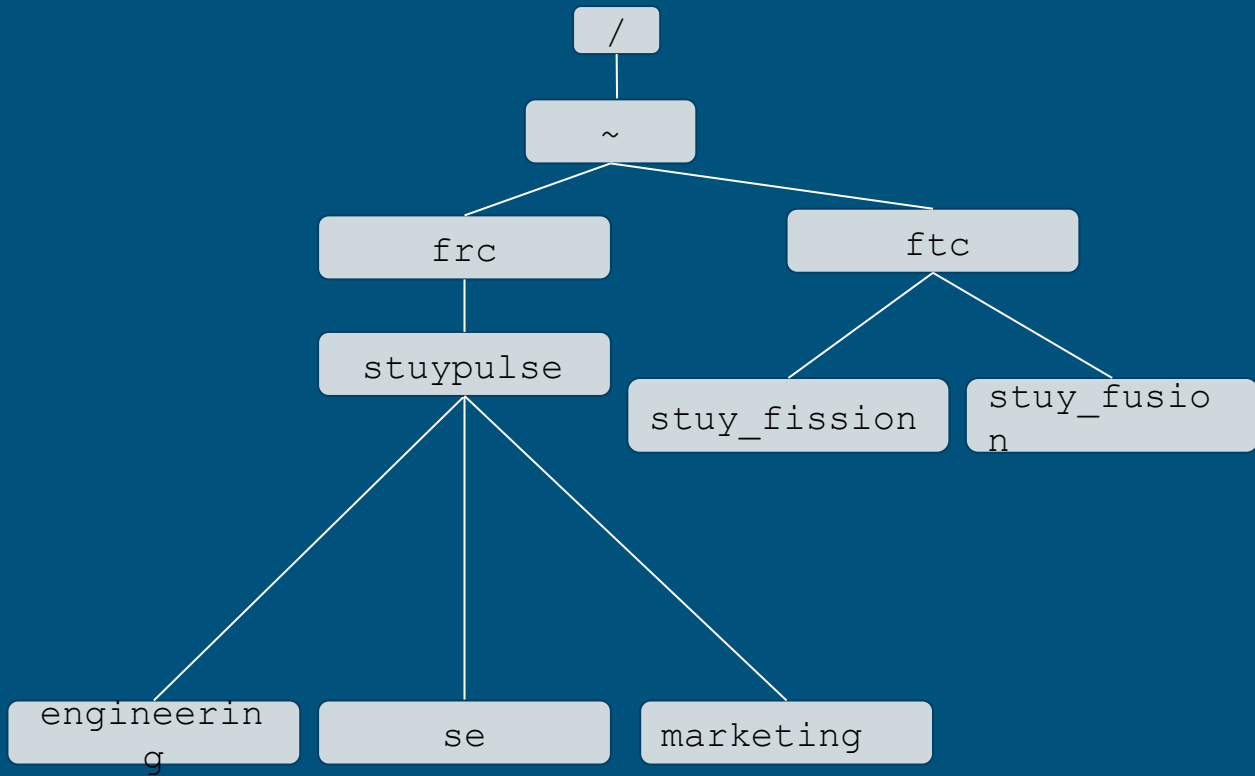
Problems:
find the absolute and relative
path...
- from ~ to se

- from stuy_fission to
  stuypulse

- from marketing to
  engineering

- from ftc to se

- from frc to ftc

- from stuy_fusion to /

Make your computer print out this
information in a java file
Also print a common interest you
have with the person next to you.

Variables

Primitive Data Types

int: Stores an integer ($-2^{31} < x < 2^{31}-1$), will ignore decimal

double: Stores a real number (ie: doesn't have to be an integer)

boolean: Stores a *true* or *false* value

How to Use a Primitive Data Type

First declare a variable, or set it.

```
int x;
```

this line creates variable *x* of type *int*

then, give it a value

```
x = 1;
```

this line sets variable *x*'s value to *1*

How to Use a Primitive Data Type

Box analogy

`int x;` → *new box!*

`x = 24;` → *value inserted!*

Strings

Strings are another data type not included in the set of primitive data types.

Strings are literally combinations of characters; they're sentences, phrases, words.

```
String SEpresident = "Huimin";
```

This line creates a String called SEpresident with a value of Huimin.

Operators In Java

Math Operators: +, - , * (multiplication), / (division)

```
int stuypulse = 690 + 4;

System.out.println(stuypulse);
```

output: 694

```
int stuyfission = 360 - 50;

System.out.println(stuyfission);
```

output: 310

Math Operators

Addition (**+=**): Adds numbers/strings to another. Ex: a += b (a = a + b)

Subtraction (**-=**): Subtracts a number from another. Ex: a -= b (a = a - b)

Multiplication (***=**): Multiplies a number with another. Ex: a *= b (a = a * b)

Division (**/=**): Divides a number from another. Ex: a /= b (a = a / b)

In/decrements(**++** , **- -**): Increases/decreases a number by one. Ex: a++ , b--

Exercise

1. Create a file called "PrathamShouldGetAHairCut.java"

2. Print the sum of two integers, *a* and *b*.

3. Create a string called "StuyPulse is the best robotics team". Then print this, after Adding a number to the end.