The point of today's lab is to get comfortable scripting in other languages while still taking advantage of the GNU utilities that come with Linux.

Programming with Bash

1. type: bash –version

2. Create a new file and enter this code into the file:

```
#!/bin/bash

echo "Starting bash script"

ls -al /home/msconroy

if [ "10" -gt "9" ]
then
echo "The laws of mathematics still hold!!!!"
else
echo "Something has gone horribly wrong in the universe!"
fi

echo "Exiting the bash program"
```

3. Save and exit the file, set it's permissions to executable,

4. Run the file.

Programming with Python

1. type python3 –version

2. Create a new file and enter the following code:

```
#!/usr/bin/python3

import subprocess

print("Starting Python program!")


output = subprocess.check_output(["ls", "-al", "/home/msconroy"])

for line in output.splitlines():
	print(line);


if (10 > 9):
	print("The laws of mathematics still hold!!!!!!")
else:
	print("Something has gone horribly wrong in the universe!")


print ("Exiting Python program")
```

3. Save the file and edit its permissions to be executable.

4. Run the file

Programming with Node.js (Javascript)

1. Install Node.js onto your system by typing:

sudo dnf install nodejs

2. check the version by typing node –version

3. create a new file and add the following code

```
#!/opt/node/bin/node
const util = require('util')
const exec = require('child_process').exec;

console.log("Beginning the Node.js program");

dir = exec("ls -al /home/msconroy", function(err, stdout, stderr) {
  if (err) {
    console.log(err);
    console.log(stderr);
  }
  console.log(stdout);
});

dir.on('exit', function (code) {
  console.log(code);
});

if(10 > 9){
console.log("The mathematical laws of the universe still hold!!!!");
} else{
console.log("Something has gone horribly wrong in the world!");
}

console.log("The program has ended");
```

4. Set the executable bit and run the program

Programming with PHP

1. Type php –version

2. Create a new file and add the following code:

```
#!/usr/bin/php

<?php

echo "Starting the PHP program \n";

$output = shell_exec('ls -al /home/msconroy');
echo "$output";

if(10 > 9){
echo "The mathematical laws of the universe still hold\n";
} else{
echo "Something has gone horribly wrong in the universe!\n";
}

echo "The php program has ended.\n";
?>
```

3. Set the execution bit and run the program.

Programming in C

1. Create a new file with a .c extension, c-lab.c

2. Enter this code into the file:

```
#include <stdio.h>
#include <stdlib.h>

int main(){

printf("The C program has started running!\n");

int status = system("ls -al /home/msconroy");

if(10 > 9){
printf("The laws of the universe still hold.\n");
} else{
printf("Something has gone horribly wrong in the universe!\n");
}

printf("The C program has ended.\n");

return 0;

}
```

3. Run the following command:
gcc c-lab.c -o c-lab

4. Execute the file c-lab