Lab Purpose

This lab will give you practice using *BGLinux* commands, the *pico* editor and working with C++ programs.

When you are finished with this lab you should be able to do the following on BGLinux:

- login and logout of your *BGLinux* account
- use basic *unix* commands like cat, cd, cp, cslpr, ls, photo, pwd
- get to your class directory and back to your personal directory
- copy a file from the class library to your class account
- use the *pico* editor to create or open a C++ file, modify it and save it
- compile a C++ program and run it

The ***BGLinux* documentation** listed below will answer many of your questions about working on *BGLinux*. Links to these documents are available from https://www.bgsu.edu/arts-and-sciences/computer-science/cs-documentation.html

- Obtaining a BGLinux account
- Getting Started on BGLinux
- Configuring your BGLinux account
- Unix file structure
- Using BGLinux
- Quick reference for the pico text editor

Always bring to lab

1. Lecture notes, handouts from Canvas, and/or the Gaddis book.
2. USB Flash drive(s) or other storage media.

Mandatory Instructions

Part A: Configure your *BGLinux* account (It is assumed you already obtained your BGLinux account otherwise follow instructions from lecture 0 which is on Canvas).

1. Turn on the computer and login using your BGSU user name and password.
2. Start a *BGLinux* session using PuTTY terminal emulator.
3. Execute the two commands below by typing each one at the $ prompt and pressing the **Enter** key. The first command sets up the compiler flags needed for computer science classes. The second command sets up your class directory. These need to be done only **one time.**

```
cs-config
class  -join  cs2020-jc
```

4. Logout of *BGLinux* by typing **exit** (or **logout)** and pressing the **Enter** key.

Part B: Create a sample file using the **pico** text editor.

1. Start a *BGLinux* session again.
2. Go to your class directory by typing: **cd cs2020-jc**
3. Create a small text file using the *pico* text editor. Start by typing the command: **pico sample.txt**

Note: If you are using the Mac OS you will need to change one of the settings so the pico commands are interpreted correctly. From the *Terminal* menu, select *Preferences*. Click the *Advanced* tab on the right. Under *Emulation, Delcare terminal as:*, choose **vt100**, then close the *Settings* dialog box.

4. Type in the lines of text shown below, pressing the **Enter** key at the end of each line:

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5. Exit *pico* and save your file using these steps:

   Press **[Ctrl]-x** (press the **Ctrl** and the **x** key at the same time)
   Type "**y**" in response to the question "Save modified buffer …?"
   Press the **[Enter]** key in response to "File Name to write: …" You should see the $ prompt again.

6. Type the **ls (lower case L followed by lower case S)** command. You should see the filename **sample.txt** on the screen.

Part C. Use the photo utility on BGLinux.

Read the description on the left. Then type in the command on the right and observe the results. If you make minor mistakes while typing in the commands given, you do not need to start your photo session over, just retype the command.

Description	Command you type
1. Currently you should be in the cs2020-jc directory (i.e., see $cs2020-jc prompt) Go to your personal (home) directory by typing the command shown in the next column.	**cd ..**
2. Display the current directory "path" name: (pwd stands for "present working directory" or I like to remember it as "please what directory")	**pwd**
3. Go to your class directory:	**cd cs2020-jc**
4. Display the current directory "path" name again:	**pwd**
5. Start the photo session with the command: This will create a file called *sample.log*. All of the characters that appear on the screen will also be written to this file until you end the photo session, i.e., it captures the terminal session.	**photo sample.log**
6. Delete the file: *sample.txt*:	**rm sample.txt** **(enter "y" to confirm)**
7. List the files in the class library account:	**ls lib**
8. Copy the file *lab0.cpp* from the class library to your class directory:	**cp lib/lab0.cpp lab0.cpp**
9. Display the list of files in the "long" format: (Type the letter l (a lower case L not the number one) in this command.) You should see the *lab0.cpp* file listed but not *sample.txt* which you deleted earlier in step 6.	**ls –l**
10. Display the file *lab0.cpp* on the screen.	**cat lab0.cpp**
11. Compile the *lab0* program:	**g++ lab0.cpp**
12. List the files in your directory again: You should see the executable file *a.out* listed now. It is created when the program compiles cleanly.	**ls –l**
13. Run the *lab0* program and view the output.	**./a.out**
14. End the photo session:	**[Ctrl]–d**
15. View the contents of your photo file a page at a time, pressing the *Space* bar to go to the next page:	**more sample.log**

Part D. Edit, debug and compile a C++ program.

1. Open the *lab0.cpp* file in the *pico* editor by typing the command: **pico lab0.cpp**
2. Use the arrow keys to move down to the first **cout** statement and change **cout** to **out**. This should force a syntax error on the next compile of the program. Exit pico and save your file using these steps:

Press **[Ctrl]-x** (press the **[Ctrl]** and the **x** key at the same time)
Type "**y**" in response to the question "Save modified buffer …?"
Press the **[Enter]** key in response to "File Name to write: …" You should see the $ prompt again.

3. Compile the program by typing the command: **g++ lab0.cpp**. You should get an error message that looks like this (or something similar):

```
lab0.cpp: In function 'int main()':
lab0.cpp:53:5 error: 'out' was not declared in this scope
                    out << endl << "Please enter a 3-digit account number: ";
```

4. Fix this syntax error by opening the file in *pico* again. To go directly to line 53 follow the steps below:

Press **[Ctrl]-w** (press the **Ctrl** and the **w** key at the same time)
Press **[Ctrl]-t** (press the **Ctrl** and the **t** key at the same time)
Type in 46 and press [Enter] (pico searches for line 46 and moves the cursor to that line)
Correct the spelling of **cout.**

5. Use the arrow keys or **[Ctrl]-y** to move back to the top of the file. In the header comments, replace "Author" with your first and last name. Exit pico, saving the program.

6. Recompile and run the program and make sure it works correctly.

What to turn in?

Once your program displays the output correctly, create a new photo log file called *lab0.log* by typing in these commands at the $ prompt:

$ photo lab0.log	Starts the photo utility and captures all screen output in the file *lab0.log*
$ ls -l	Use a lower-case L, not the number one to see a list of the files in your account in the "long" format (showing size, date modified, etc.)
$ cat lab0.cpp	Displays your program on the screen
$ g++ lab0.cpp	Compiles your program
$ ./a.out	You should see a display of accounts
$ [Ctrl]-d	Press the **Ctrl** and **d** keys at the same time to end the photo session