

GOAL: Learn the procedure to enter a program, compile and build it, and get it to work. Most of this will be needed ALL semester for almost every assignment.

One-Time Actions:

Install VPN software named GlobalProtect.

You will need to connect to GlobalProtect before accessing CSUS servers if you are connecting from a **non-campus computer**. Here is the link for the instructions to connect to GlobalProtect:

<https://www.csus.edu/college/engineering-computer-science/computing-services/internal/documents/globalprotect-vpn.pdf>.

(The directions are also to be found on Canvas dashboard for this class. There is a published course named “ECS Resource Center – Students”. Scroll down to the second module “GlobalProtect”. Make the appropriate choice for the machine you will use.)

Some of you will need to install PuTTY (an SSH client) to do a remote login using SSH

- Most of us use PuTTY software to accomplish this.
- The ECS computers all have PuTTY
- To get PuTTY at home, the free download: <https://www.putty.org/>
- Mac machines can also use “ssh”.

You may find a use for File Transfer software.

- For Windows, I use WinSCP. <http://winscp.net/>
- For Mac or Windows, you can use FileZilla. <https://filezilla-project.org/>
- You may also use your campus OneDrive.

Step 1: GETTING STARTED

Make sure your VPN software, GlobalProtect is connected if you are connecting from a non-campus computer. Log in using your Sac State credentials with a Terminal or an SSH client such as PuTTY.

Step 2. LOGGING ON TO our Linux computer:

STEP 2a: Logging in from home or lab on a Windows machine.

Open **PuTTY**.

In the box labeled Host Name, type: **ecs-coding1.csus.edu** (May use 1 or 2 or 3)

Set the port number: **22**

Make the Connection Type is: **SSH**

Just below “Saved Connections”, enter a name. **csc60** might be appropriate.

Click on **Save**, and then on **Open** (lower right of the window).

You will get a window to this Linux machine with a prompt to “Log in as”.

Enter your *User-Name* for your SacLink account.

Enter your *Password*. (Nothing will show on the screen as you type it.)

You will now have a prompt similar to the one I got: **[bielr@ecs-pa-coding1 ~]\$**

The next time you log on, you will just need to:

- double click on the name (ex: csc60) and log in.

- OR click on *Load* and then on *Open*

STEP 2b: Logging in from home on a Mac machine.

Open up a terminal/console window and type the following:

`ssh yourSacLinkName@ecs-coding1.csus.edu`

Example: `ssh bielr@ecs-coding1.csus.edu`

Press: Enter

When prompted, type “yes” to accept the server’s key.

Then enter your password. (Nothing will show on the screen as you type it.)

STEP 2c: Using the C compiler on your Mac

I personally have no Mac experience. The ECS IT department found the following links that ought to help you:

<https://www.cs.auckland.ac.nz/~paul/C/Mac/>

<https://mkyong.com/mac/how-to-install-gcc-compiler-on-mac-os-x/>

STEP 2d: Using the C compiler on your Linux computer

This is an acceptable alternative.

STEP 3: GETTING SET UP TO START

You should now be logged into a Linux computer. Type the following instructions:

mkdir csc60 Create a directory (folder) for this class

cd csc60 Move to the new directory

mkdir lab1 Create a directory for this assignment

cd lab1 Move to the new directory

STEP 4: START ENTERING YOUR PROGRAM.

At the prompt “>”, type: **vim lab1.c**

Go into insert mode by typing: **i**

Start typing in your program in this window. (Remember, no mouse)

For this Lab1, enter in the program that appears below *inside the box* below.

(PS: You **don’t** have to create the box.)

Type your own full name (both first and last) in all the places needed.

Start typing at the left edge of the screen.

Use the indentation style as shown.

Attribution for the quote is required. You may print the quote & attribution in either one or two *printfs*.

Pay attention to your punctuation and spelling. Presentation is important and your instructor is picky about it.

```

/*-----*/
/* Your Name Here */
/* Lab 1          */

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

int main (void)
{
    printf("\nLab 1. \n\n");
    printf("Hello World.\n");
    printf("Hi, Your Name. \n\n");
    printf("Quote. \n\n");

    return EXIT_SUCCESS;
}
/*-----*/

```

Teacher Comments:

Don't count the dashes. Approximate.
 Put Your-Name here, both first & last.
 "/* */" = comment symbol.

{Preprocessing directives for
 {the compiler.

Line required in each program.

Be sure to indent for clarity
 Put your First & Last name here!
Put your quote here instead of the word "Quote"
 Attribution for the quote is **required**.
 Capitalize EXIT_SUCCESS

5: SAVE YOUR WORK, COMPILE IT, AND SEE THE RESULTS.

Get out of insert mode by typing: **Esc** (the escape key)

To save your work and quit, type: **:wq**

The shell prompt returns.

Type: **gcc lab1.c**

(This compiles the program and sends the executable output to a file called **a.out**)

If you have compile errors, they will appear, and they will need to be fixed.

The prompt returns.

If you have no errors, type **a.out** and the output of your program will display.

If typing **a.out** does NOT work, try: **./a.out**

The results of my program appear on next page.

```
[bielr@ecs-pa-coding1 lab1]$ ./a.out
```

```
Lab 1.
```

```
Hello World.
```

```
Hi, Ruthann Biel.
```

```
Be yourself; everyone else is already taken.
```

```
- Oscar Wilde
```

```
[bielr@ecs-pa-coding1 lab1]$
```

NOTICE: the attribution (WHO created the quote) is required.

Comments:

- Your instructor is picky about presentation.
- There should be an empty line between *a.out* and *Lab 1*, and again at the end before the prompt returns.
- I expect your output to have empty lines where they show above.
- Use proper English and proper punctuation in your quote.
- Save your creativity for the quote.

To show your line numbers in VIM:

1. Press the **Esc** key if you are currently in insert or append mode.
2. Type the colon (:). The cursor should reappear at the lower left corner of the screen next to the colon (:) that you just typed.
3. After the colon, enter the following command: **set number** followed by the Enter Key.
4. A column of sequential line numbers will then appear at the left side of the screen.

Standardize your indentation:

If you are not sure about your indentation, get out of Insert Mode by typing: **Esc**

type: :1 which takes you to line 1

type: =G which will standardize your indentation

If you have Errors:

If you have errors, it is OK, a normal course of events. Examine the Error Message list. Sometimes the second or third message makes more sense than the first error message. One code error can cause SEVERAL error messages.

Fix your errors and save your changes. Go back to the top of STEP 5.

Repeat until you have NO ERRORS.

MAJOR REMINDER.

Every time you change the code, you must **redo** the COMPILE (which is the **gcc** line) before you run the program, or you will NOT see any changes when you run the program (a.out). !!!

STEP 6. PREPARE YOUR FILE FOR GRADING.

When all is well and correct, and you are still on our Linux machine...

- type: **script StudentName_lab1.txt** Script will keep a log of your session.
Please use Your name instead of "StudentName"
Use both your first and last name.
- At the prompt, type: **gcc lab1.c** To compile the program.
- At the prompt, type: **a.out** or **./a.out** as needed to run the program
- After the program run is complete,
type: **exit** To leave the script session.

NOTE: If you forget to type **exit** to leave *script*, your script file will be empty!!!

STEP 7: Move your files to be accessible to your browser.

Go to Power Point File, *1 Linux Start*, slides #6-7 for solutions to this situation.

You need to move the two files listed below in Step 8.

STEP 8: Turn in your work. 18 points

Go to Canvas and turn in two files:

1. **lab1.c** ...the code file
2. **StudentName_lab1.txt** ...the script file

STEP 9: LOG OFF EVERYTHING.

Type "**exit**" when you are ready to leave the Linux computer.

Close as much software and hardware as necessary for safety, depending on your location.