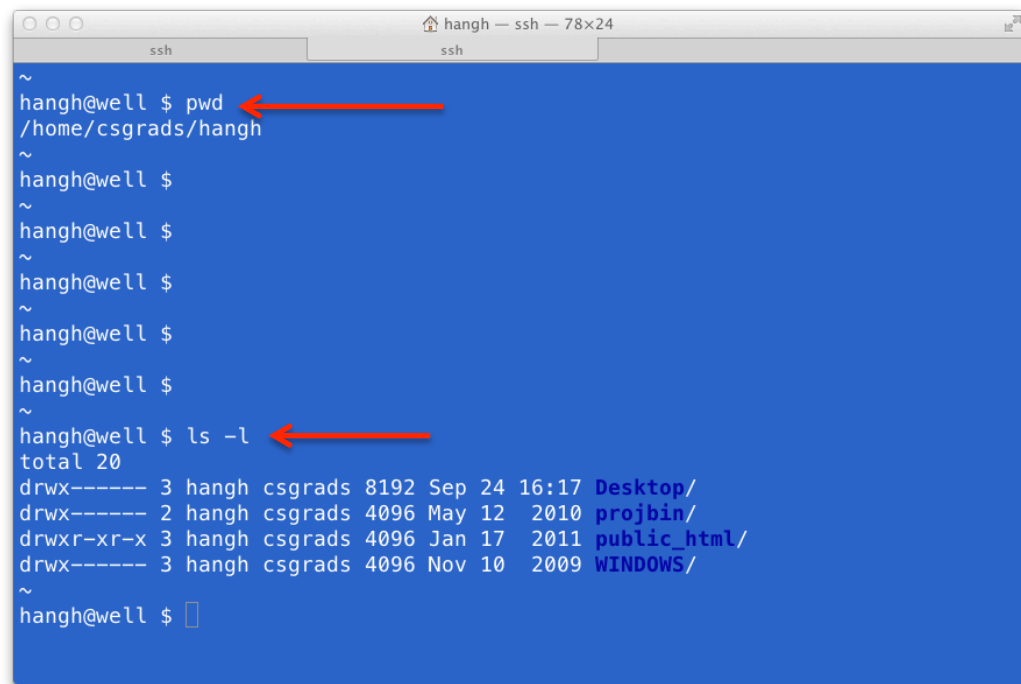## How to Write C++ programs in Linux/Geany environment

1) If it is the first time that you have logged in to your CS account, you can add a button to your task bar (bar on the bottom of the desktop) that will open up a new terminal when you left click it. To do this, right click on the task bar and select "Add to Panel->Launcher from menu->Accessories->Terminal".

OR, you can always open a terminal by right-clicking anywhere on the screen and selecting "**Open Terminal**" to start the terminal (as shown in the picture below)
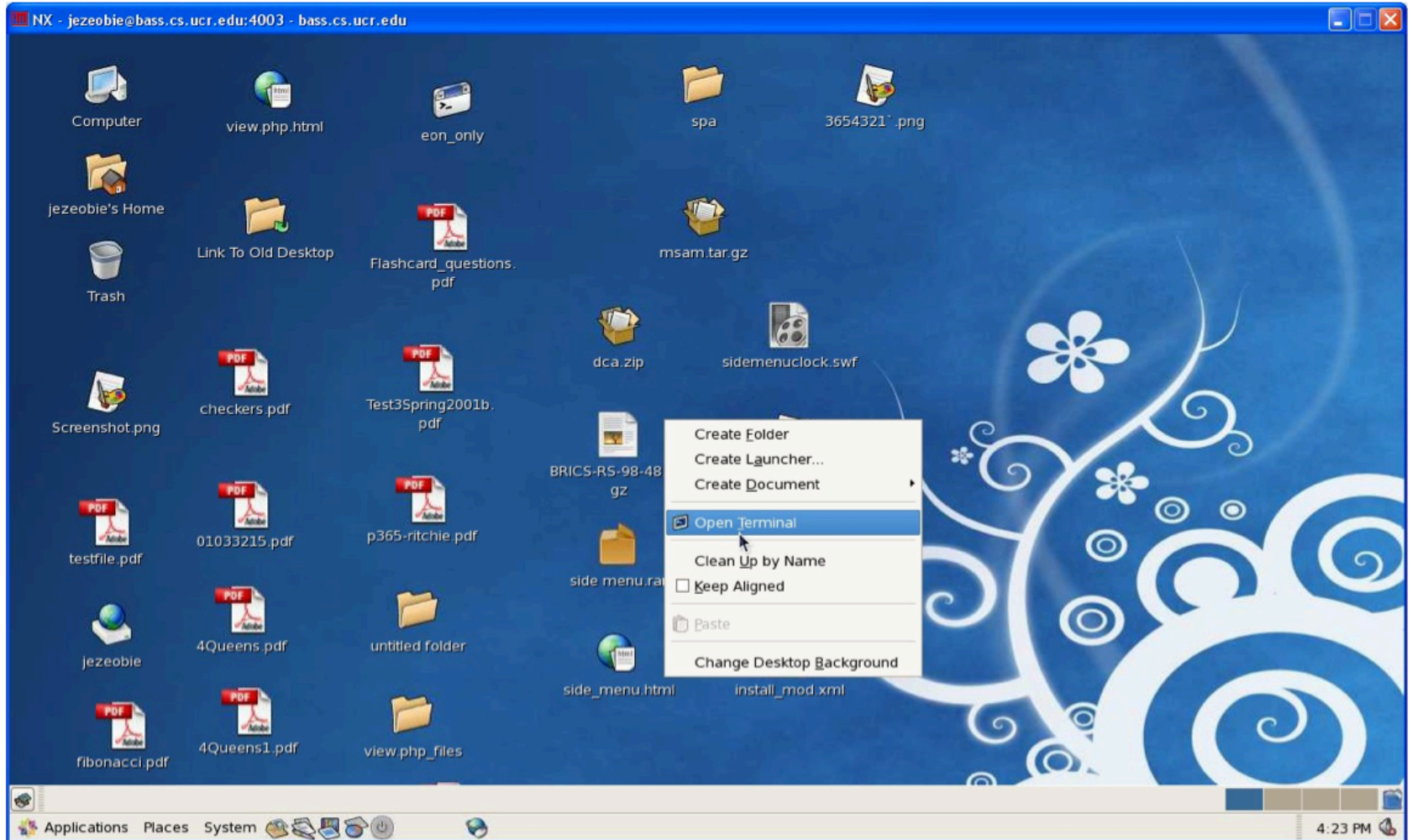
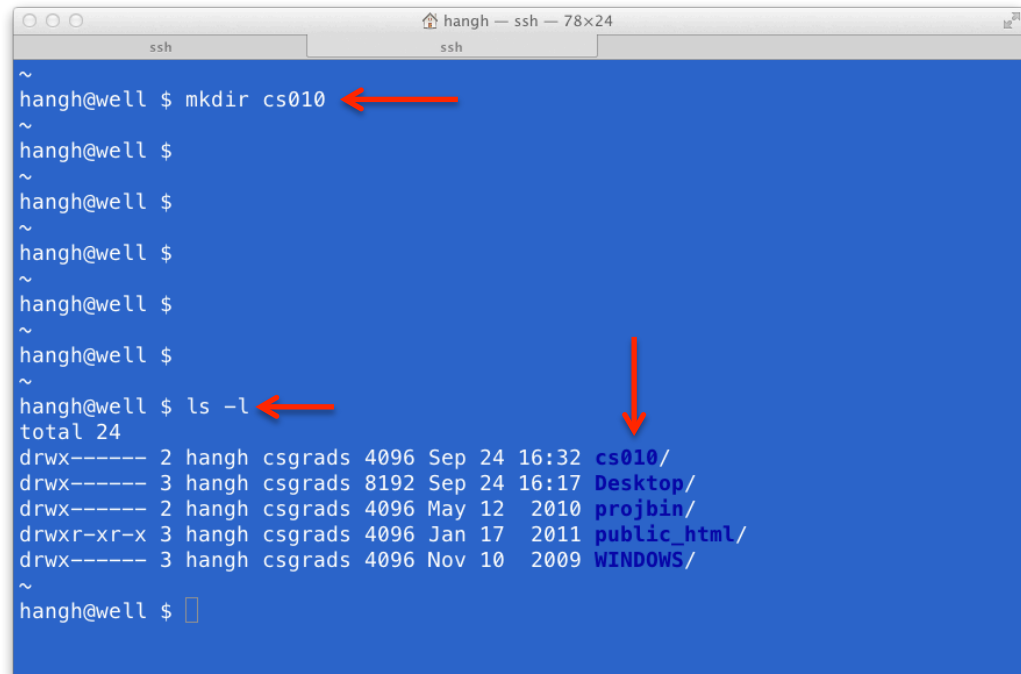When you start a Terminal, you will end up at your Home folder. To see where this is, type **pwd** and press enter.

```
~
hangh@well $ pwd    ⟵
/home/csgrads/hangh
~
hangh@well $
~
hangh@well $
~
hangh@well $
~
hangh@well $
~
hangh@well $
~
hangh@well $ ls -l    ⟵
total 20
drwx------ 3 hangh csgrads 8192 Sep 24 16:17 Desktop/
drwx------ 2 hangh csgrads 4096 May 12  2010 projbin/
drwxr-xr-x 3 hangh csgrads 4096 Jan 17  2011 public_html/
drwx------ 3 hangh csgrads 4096 Nov 10  2009 WINDOWS/
~
hangh@well $
```

To see the content of the current directory, type **ls -l** and press enter.

You should create a directory to store the code you will be writing for this class.

To create a directory, you type: **mkdir dirname**. For instance, to make a directory called **cs010**, you will type **mkdir cs010**

To verify, we do another **ls -l** and…

```
~
hangh@well $ mkdir cs010    ⟵
~
hangh@well $
~
hangh@well $
~
hangh@well $
~
hangh@well $
~
hangh@well $
~
hangh@well $ ls -l    ⟵
total 24
drwx------ 2 hangh csgrads 4096 Sep 24 16:32 cs010/
drwx------ 3 hangh csgrads 8192 Sep 24 16:17 Desktop/
drwx------ 2 hangh csgrads 4096 May 12  2010 projbin/
drwxr-xr-x 3 hangh csgrads 4096 Jan 17  2011 public_html/
drwx------ 3 hangh csgrads 4096 Nov 10  2009 WINDOWS/
~
hangh@well $
```

To go inside a directory, you need the command **cd**. To go into **cs010**, we type: **cd cs010**

A **pwd** will confirm that you are in fact in the directory you just created

```
~
hangh@well $ cd cs010   ←
~/cs010
hangh@well $
~/cs010
hangh@well $
~/cs010
hangh@well $
~/cs010
hangh@well $
~/cs010
hangh@well $ pwd
/home/csgrads/hangh/cs010   ←
~/cs010
hangh@well $ █
```

If you need to go to the parent directory (the one containing your **cs010** directory), you type **cd ..** (no space between the 2 dots)

Another **ls -l** shows that you have gone up one level

```
~/cs010
hangh@well $ cd ..   ←
~
hangh@well $
~
hangh@well $
~
hangh@well $
~
hangh@well $
~
hangh@well $
~
hangh@well $
~
hangh@well $ ls -l
total 24
drwx------ 2 hangh csgrads 4096 Sep 24 16:32 cs010/
drwx------ 3 hangh csgrads 8192 Sep 24 16:17 Desktop/
drwx------ 2 hangh csgrads 4096 May 12  2010 projbin/
drwxr-xr-x 3 hangh csgrads 4096 Jan 17  2011 public_html/
drwx------ 3 hangh csgrads 4096 Nov 10  2009 WINDOWS/
~
hangh@well $ █
```

You should create a separate directory for each of the labs you will do this quarter. Now go ahead and go inside the **cs010** folder and create a directory called **lab0**.

In this tutorial, we will show you how to use the IDE (Integrated Development Environment) Geany to do your programming assignments

To fire up Geany, simply type **geany** at the prompt and press enter.

In the next slide, we'll show you what Geany looks like.

```
~/cs010
hangh@well $ mkdir lab0  ←——————————
~/cs010
hangh@well $ cd lab0
~/cs010/lab0
hangh@well $
~/cs010/lab0
hangh@well $
~/cs010/lab0
hangh@well $
~/cs010/lab0
hangh@well $
~/cs010/lab0
hangh@well $
~/cs010/lab0
hangh@well $ geany█  ←——————————
```

Geany is essentially a text editor.

To begin writing your program, you will need to create a new, blank file. On the top left corner, there is a button that says **New**. Click on it.

A new file called **untitled** will appear.

You may start writing. As soon as you do, the option to save the file will be available. If the name of your file is in red, it means that it hasn't been saved since the last change that is made

Click on the button called **Save** next to the **New** button.
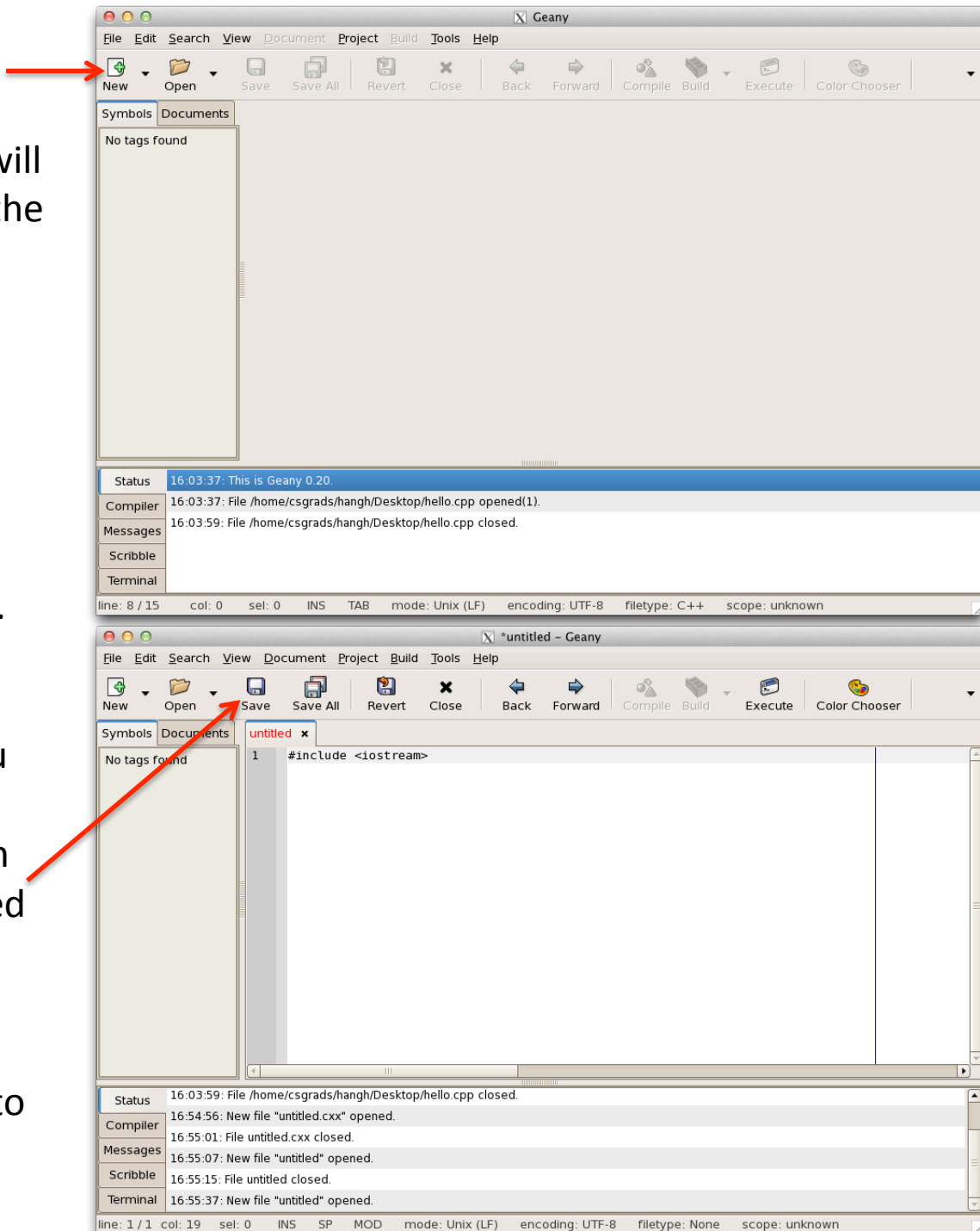
Let's save the file in the **lab0** directory you created and name it **main.cpp**

All of the files you will write and submit to iLearn will be named specifically **main.cpp**.

Once the **.cpp** has been specified, Geany will turn on its color coding feature for the C++ template.

In the next slide, we will write a simple program that will print something to the screen
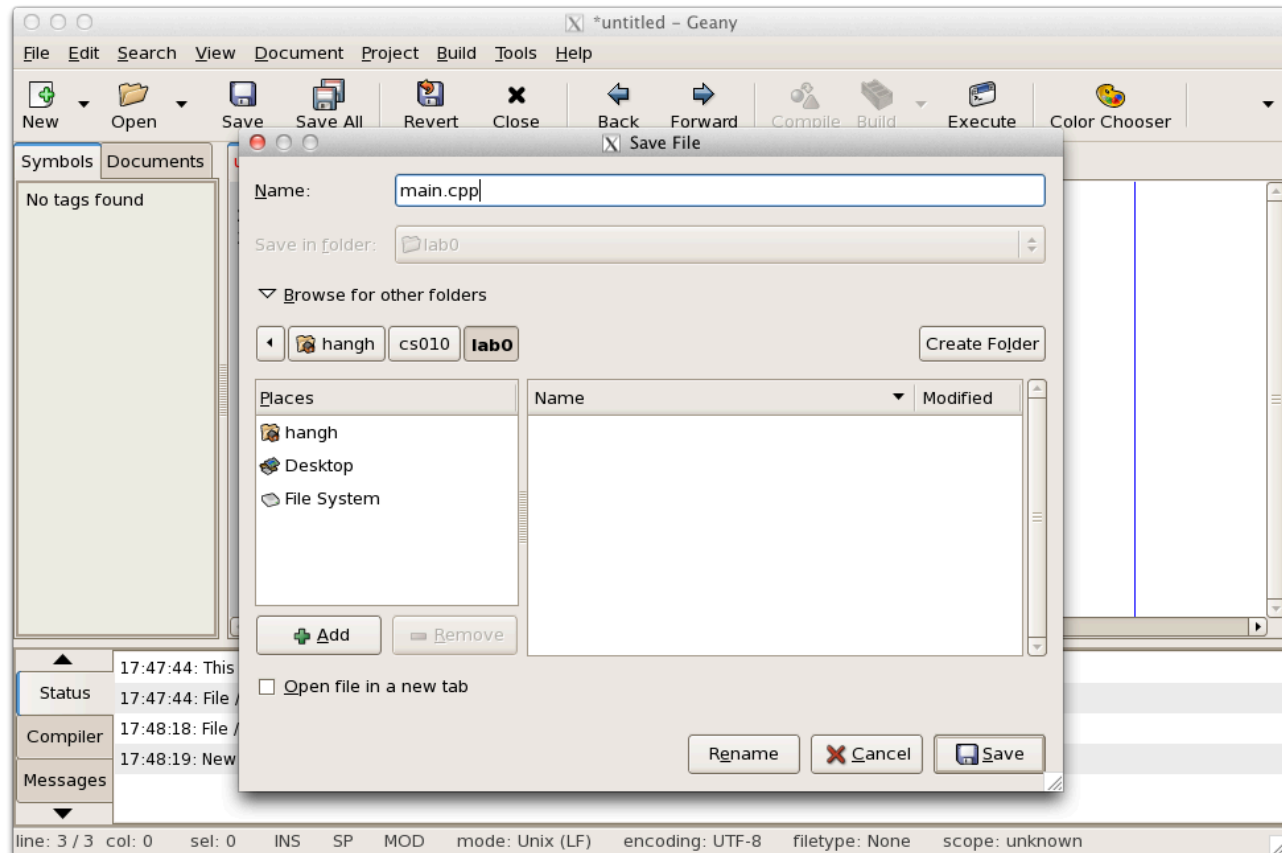
Feel free to supply your own name in this small program

Before we do anything with it, we will need to configure some options to make your life easier in this class

The vertical line to the right marks the boundary of your code. You will need to respect this limit in that any line of code you write **must not** cross this line and therefore be **properly**, **manually** broken down to the **next** line.

The TAs will be printing out your code to grade, and if your code crosses the line, it will cause line-wrapping and we will be compelled to deduct some points
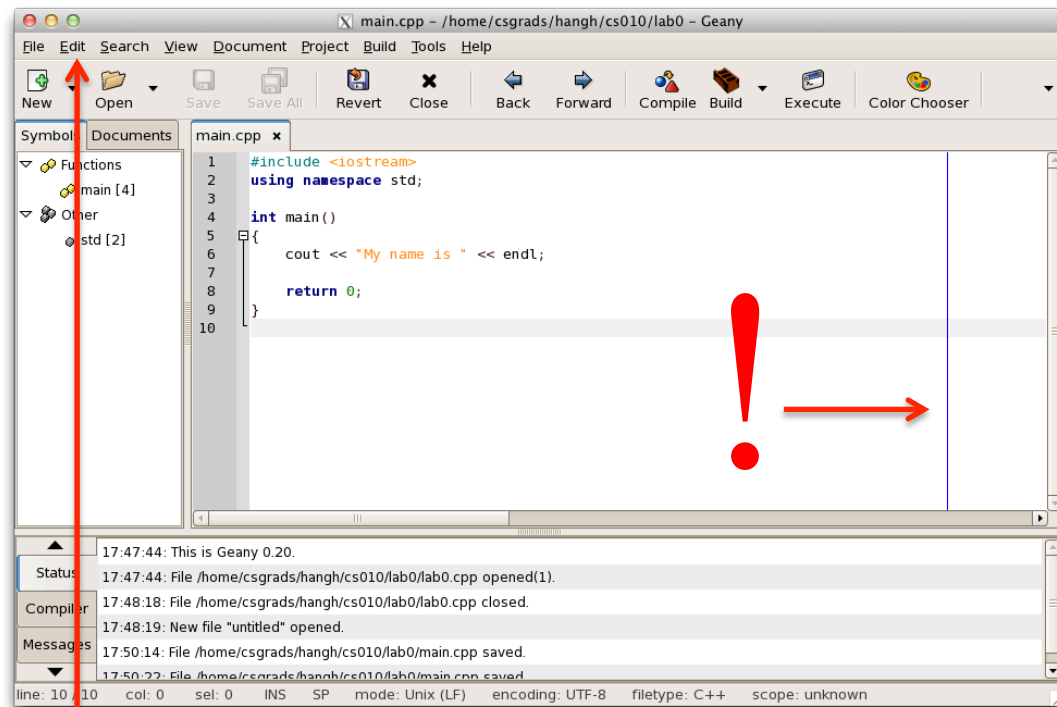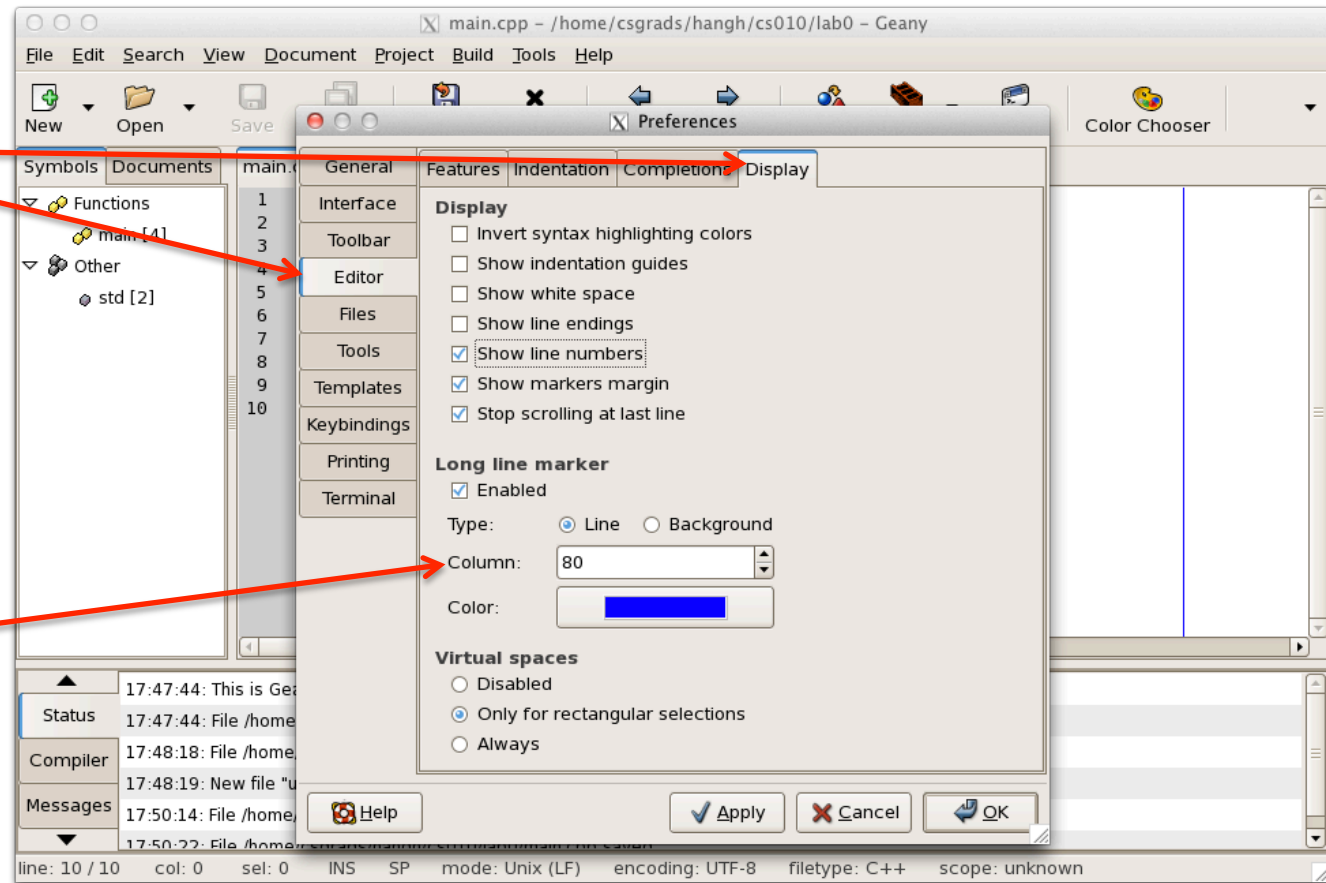
The line is not where it should be, however, and we will now correct it

Click on the **Edit** menu, then select the **Preferences** option.

You would want to go to the **Editor** tab, then select the **Display** tab

You may choose any color for your marker line, but you must make sure that the value in the **Column** box is **80**

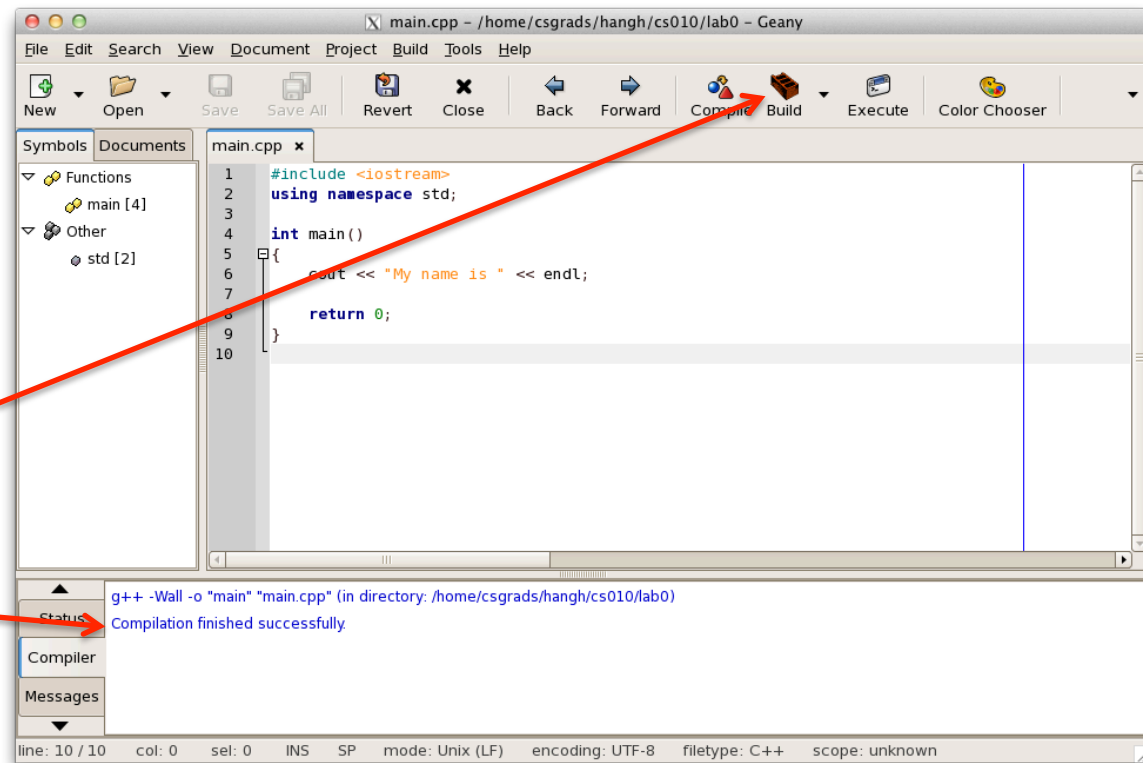When you're done, press **Apply**, then **OK**.

Next slide, we'll show you how to run your program

To run your program, first you must compile and then create an executable output file
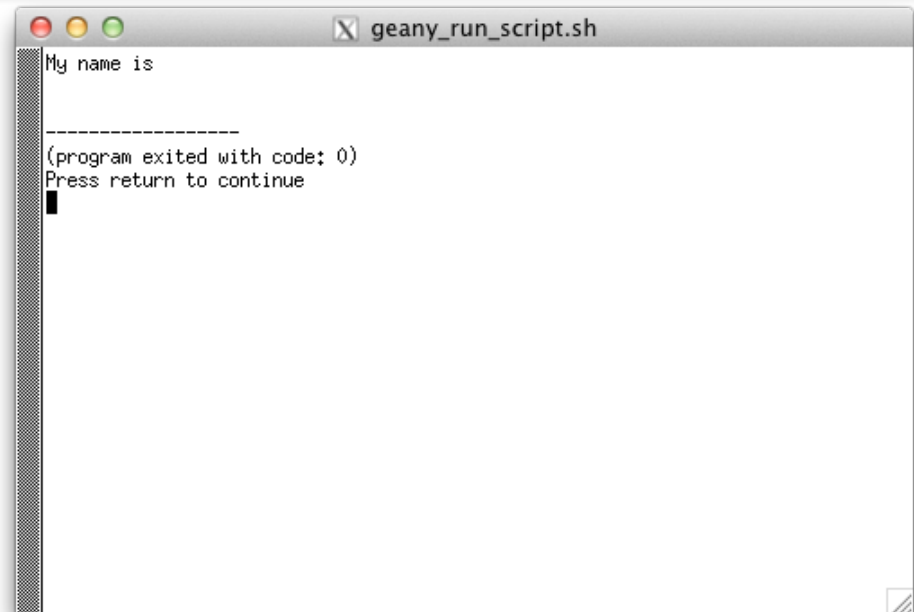
Do **not** click on the Compile button, but click in the **Build** button instead

You should see this message

And if you click on the **Execute** button next to the **Build** button, you will see the console to the right

Remember to save as often as you can


```
X main.cpp – /home/csgrads/hangh/cs010/lab0 - Geany

File  Edit  Search  View  Document  Project  Build  Tools  Help

New    Open    Save  Save All  Revert  Close    Back  Forward  Compile  Build  Execute  Color Chooser

Symbols  Documents    main.cpp  x

▽ ∞ Functions          1    #include <iostream>
    ∞ main [4]          2    using namespace std;
▽ ∞ Other              3
    ∞ std [2]           4    int main()
                        5    {
                        6        cout << "My name is " << endl;
                        7
                        8        return 0;
                        9    }
                        10

Status      g++ -Wall -o "main" "main.cpp" (in directory: /home/csgrads/hangh/cs010/lab0)
Compiler    Compilation finished successfully.
Messages

line: 10 / 10    col: 0    sel: 0    INS    SP    mode: Unix (LF)    encoding: UTF-8    filetype: C++    scope: unknown
```

```
X geany_run_script.sh

My name is


------------------
(program exited with code: 0)
Press return to continue
```
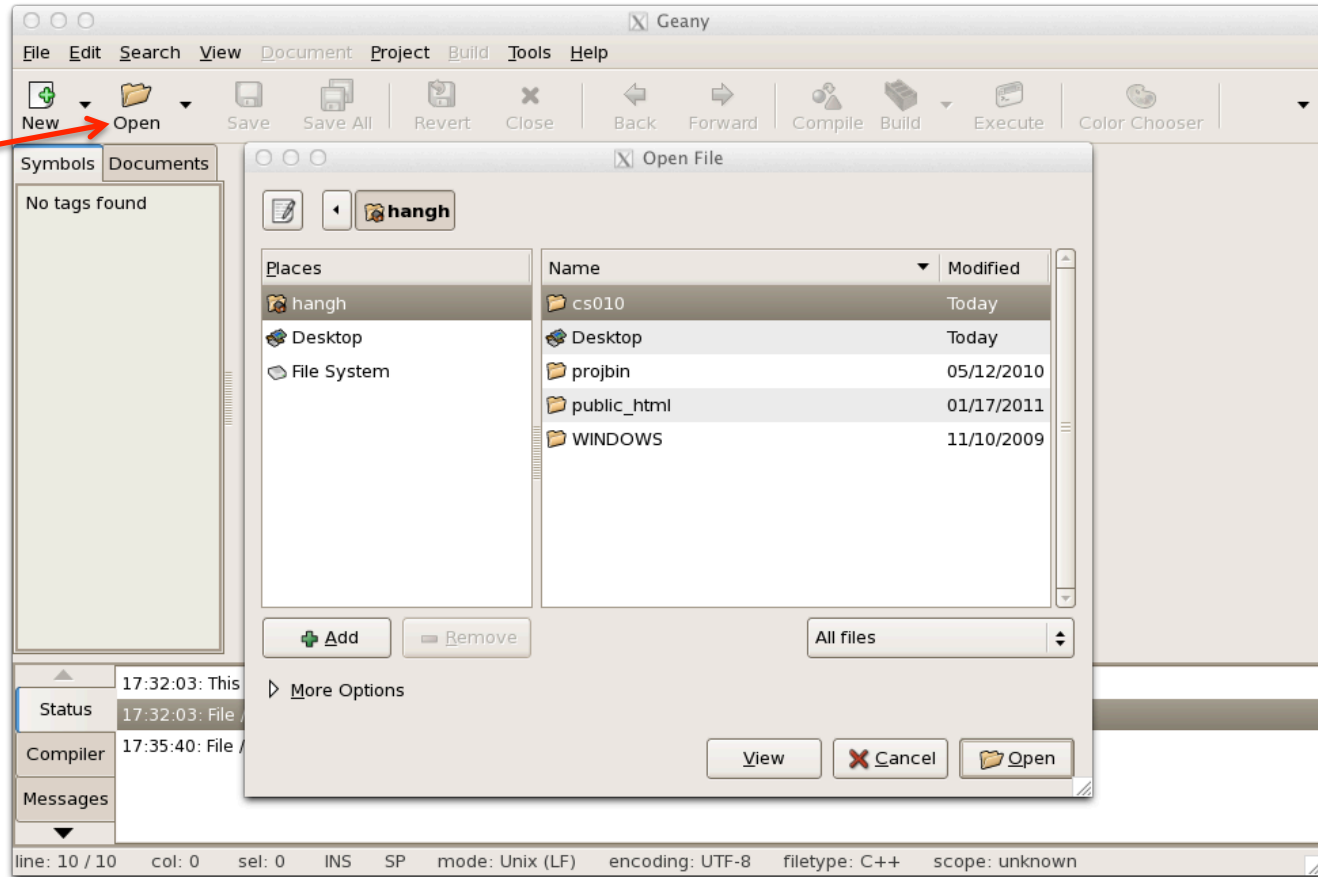
To open an existing file, click on the **Open** button right next to **New**

You will see an Open File dialog box.

Simply choose any cpp file from any folder

This is the same step you will take when you want to download the file you submit to iLearn and verify that it works

You must remember that any file you submit to iLearn must be named **main.cpp**. If you turn in anything else, it will not be graded and you will be given a 0