

Editing, Compiling And Executing Code

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Editing a C++ program in Linux

- ▶ To edit a file we need to use a text editor.
(Notepad is an example of a text editor on Windows.)
- ▶ We will use the vi editor on our Linux machine.
(You can also use emacs or pico but the first or second quiz will have questions about basic vi commands and I expect you to know them.)
- ▶ To launch the vi to edit a file, type the following:
 - ▶ `vi <file_name>`
 - ▶ Example: `vi helloworld.cpp`
- ▶ The vi editor creates a file if it doesn't exist.
- ▶ It opens the file if the file already exists.

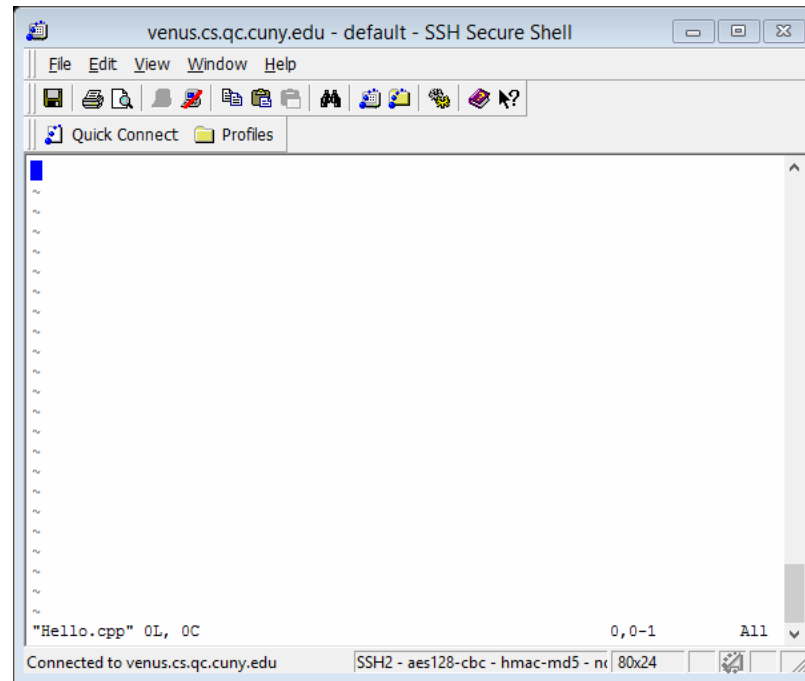
vi

- ▶ vi editor has two modes of operation:
 - ▶ Command mode (start out by default)
 - ▶ Insert mode
- ▶ If currently in Command mode, type **i** to go to Insert mode
- ▶ If currently in Insert mode, hit **ESC** key to go to Command mode
- ▶ In Command mode:
 - :wq --- save (**w**rite) the file and **q**uit vi
 - :q --- quit vi when the file has not been modified
 - :q! --- disregard any modification and quit vi

Example of HelloWorld.cpp

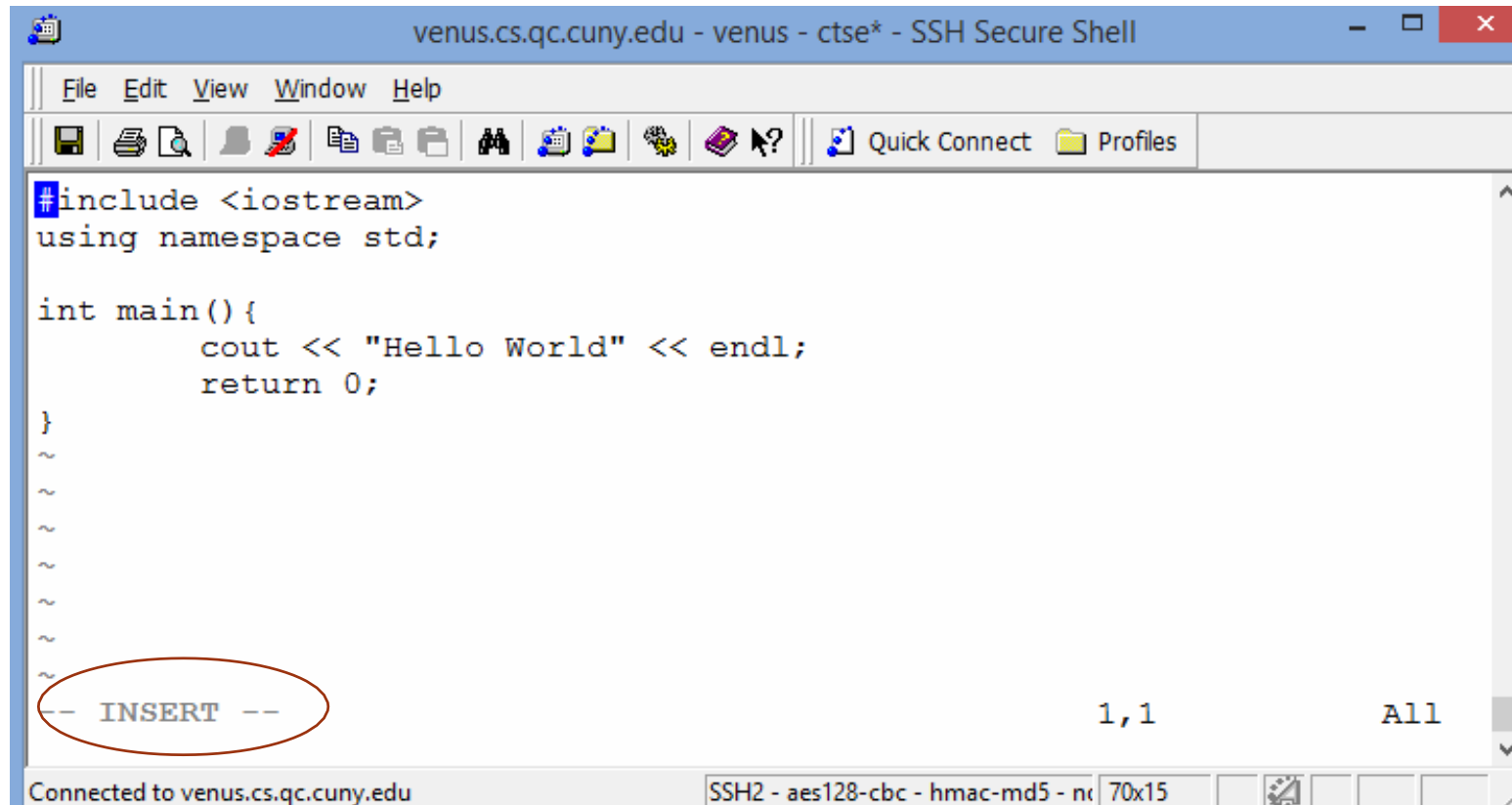
- ▶ vi HelloWorld.cpp
- ▶ Command Mode

```
[ctse@venus practice]$ vi HelloWorld.cpp
```



- ▶ To switch from Command Mode to Insert Mode, press **i**

Write the program **in Insert Mode**



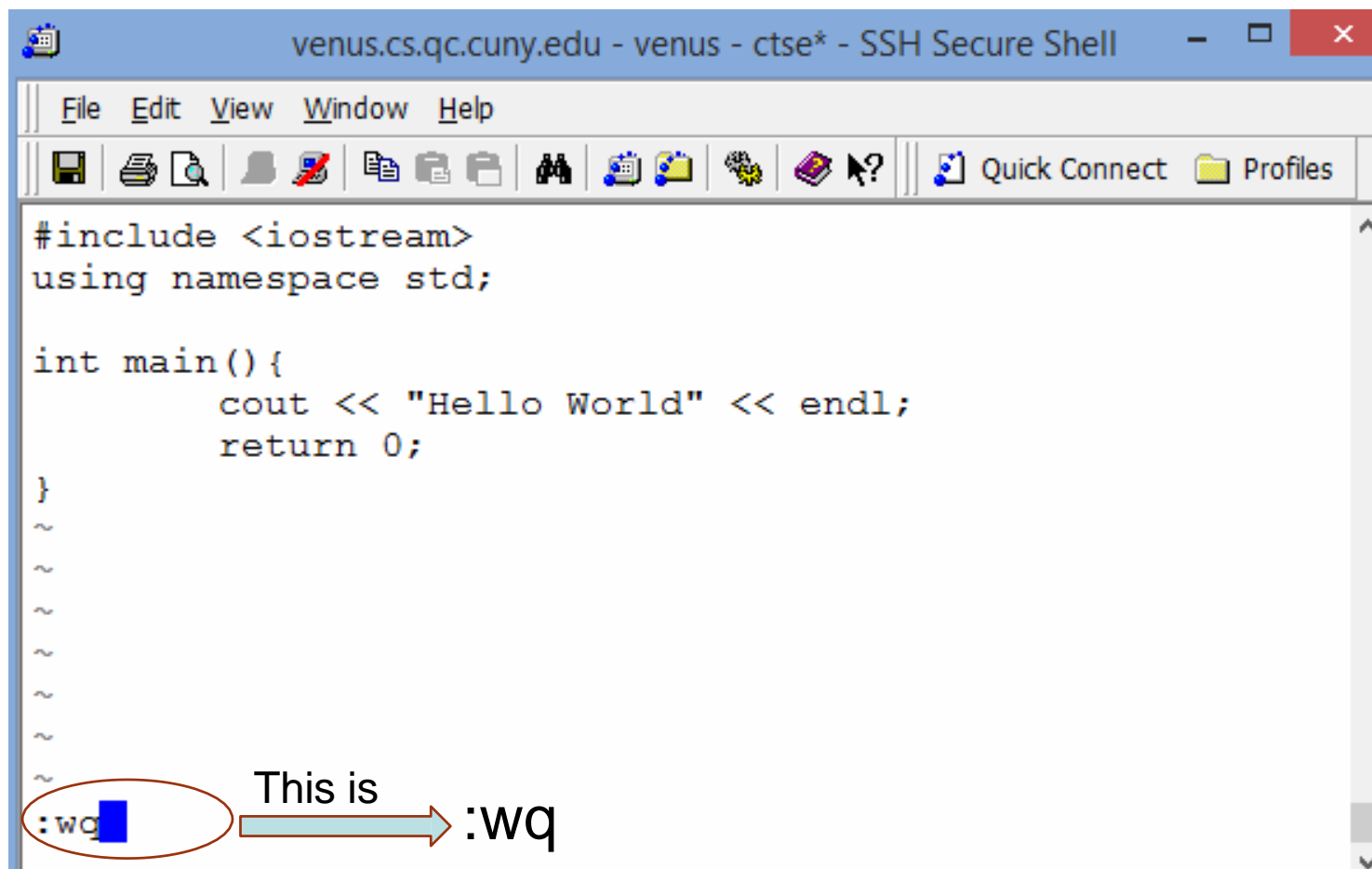
The image shows a terminal window titled "venus.cs.qc.cuny.edu - venus - ctse* - SSH Secure Shell". The window contains a C++ program for printing "Hello World". The program code is as follows:

```
#include <iostream>
using namespace std;

int main() {
    cout << "Hello World" << endl;
    return 0;
}
~
~
~
~
~
~
~
~
-- INSERT --
```

The text "-- INSERT --" is circled in red. The status bar at the bottom of the terminal shows "Connected to venus.cs.qc.cuny.edu", "SSH2 - aes128-cbc - hmac-md5 - nt", and "70x15".

Go back to **Command Mode** by hitting [Esc] key, then save the program using “:wq”



The image shows a terminal window titled "venus.cs.qc.cuny.edu - venus - ctse* - SSH Secure Shell". The window contains a C++ program with the following code:

```
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using namespace std;

int main(){
    cout << "Hello World" << endl;
    return 0;
}
~
~
~
~
~
~
~
~
~
```

At the bottom of the terminal, the command `:wq` is being entered. A red oval highlights the `:wq` text, and a blue cursor is positioned at the end of it. A light blue arrow points from the text "This is" to the `:wq` command.

Compile a program using a compiler

- `g++ HelloWorld.cpp` (compile HelloWorld.cpp)

```
[ctse@venus lab02]$ ls
HelloWorld.cpp
[ctse@venus lab02]$ g++ HelloWorld.cpp
[ctse@venus lab02]$ ls
a.out HelloWorld.cpp
[ctse@venus lab02]$
```

You should see this

- If the program compiles, there would be no output from the `g++` program.
- If you see any output, you have errors in the code.
- Fix these errors (debug) and recompile.

Run Program

- Run Command is “./a.out”

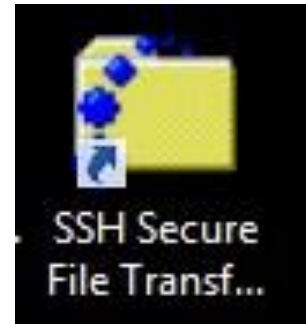
```
[ctse@venus lab02]$ ls
a.out  HelloWorld.cpp
[ctse@venus lab02]$ ./a.out
Hello World!
[ctse@venus lab02]$
```


Run Program (cont.)

- ▶ a.out is default executable file of the HelloWorld.cpp
- ▶ Since we didn't specify the name of the output file at the time of compiling, the system created this default file.
- ▶ If we want to include the name of the executable file, use the `-o` option.
- ▶ Example: `g++ HelloWorld.cpp -o HelloWorld`
- ▶ Now if you type `ls`, you will see the file HelloWorld in the list.
- ▶ You can run the file by typing `./HelloWorld`

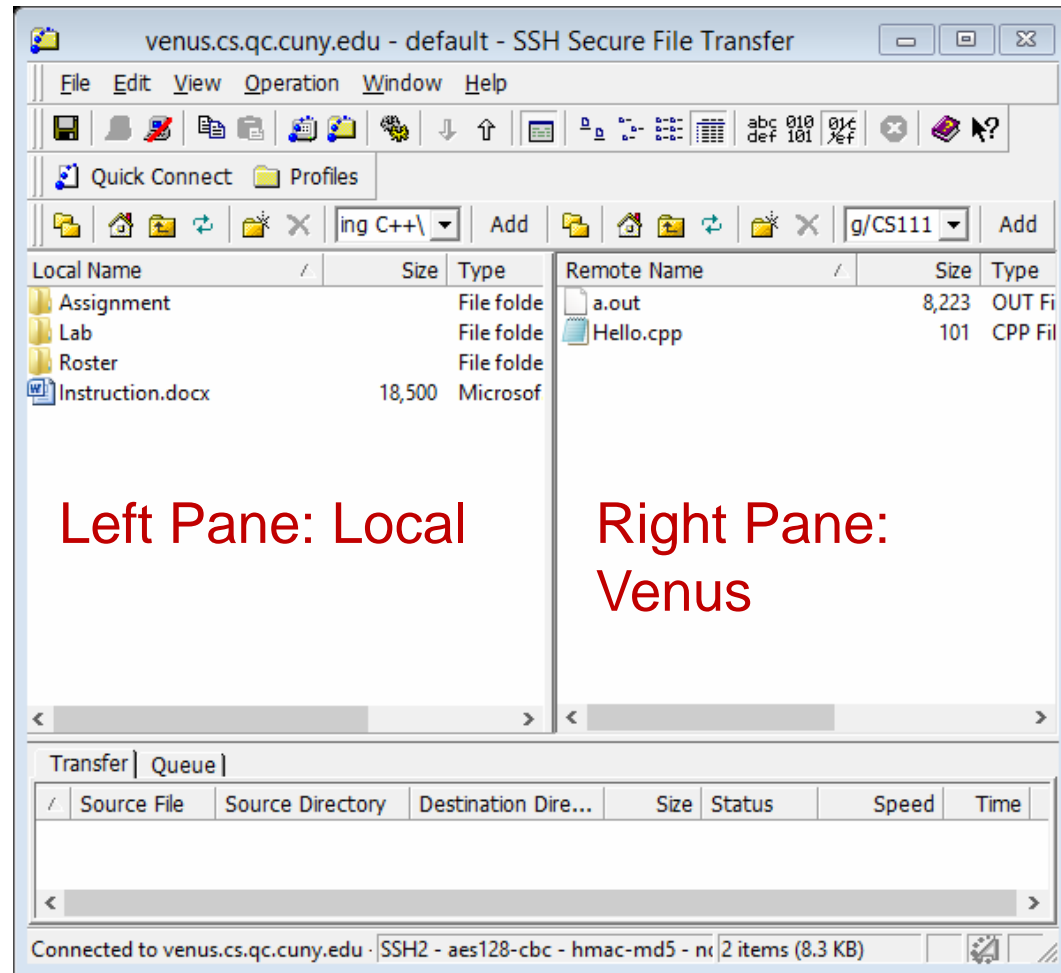
SSH Secure File Transfer Client

- Upload files to Venus
- Download files from Venus
- Icon on lab desktop



- For Mac users, use scp to download from venus.
For example:
`scp smjo5678@venus.cs.qc.cuny.edu:HelloWorld.cpp ~/Desktop`

Log in to venus.cs.qc.cuny.edu



Left Pane: Local

Right Pane:
Venus

Lab exercise using cout

- ▶ Write a complete C++ program that prints the following triangle of stars. Name the program `triangle.cpp`

```
*****
```

```
*****
```

```
****
```

```
***
```

```
*
```

- ▶ Compile the program and name the executable file `triangle1`
- ▶ Try this: `make triangle; ls`
- ▶ What do you notice?
- ▶ Execute the program