CSCI 2270

Data Structures & Algorithms

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Lecture 2 Jan 16, 2013

Computing Environment and Intro to Data Structures & Algorithms

Lecture Goals

1. Virtual Box
2. Shell Interaction
3. Text/Code Editors
4. Sorting (card game)
5. Linked List (card game)

Upcoming Homework Assignment

HW #1 **Due: Friday, Jan 25**

Linked Lists (pointers)

Implement a Linked List Data Structure in C++ that has common manipulation functions, including (but not limited to):

* Create a new list
* Append/insert data to the list
* Remove an item from the list
* Determine if the list contains a value
* Create a sub-list
* Copy a list
* Determine if the list is empty

I will release the 'official' assignment on Friday.

Virtual Box

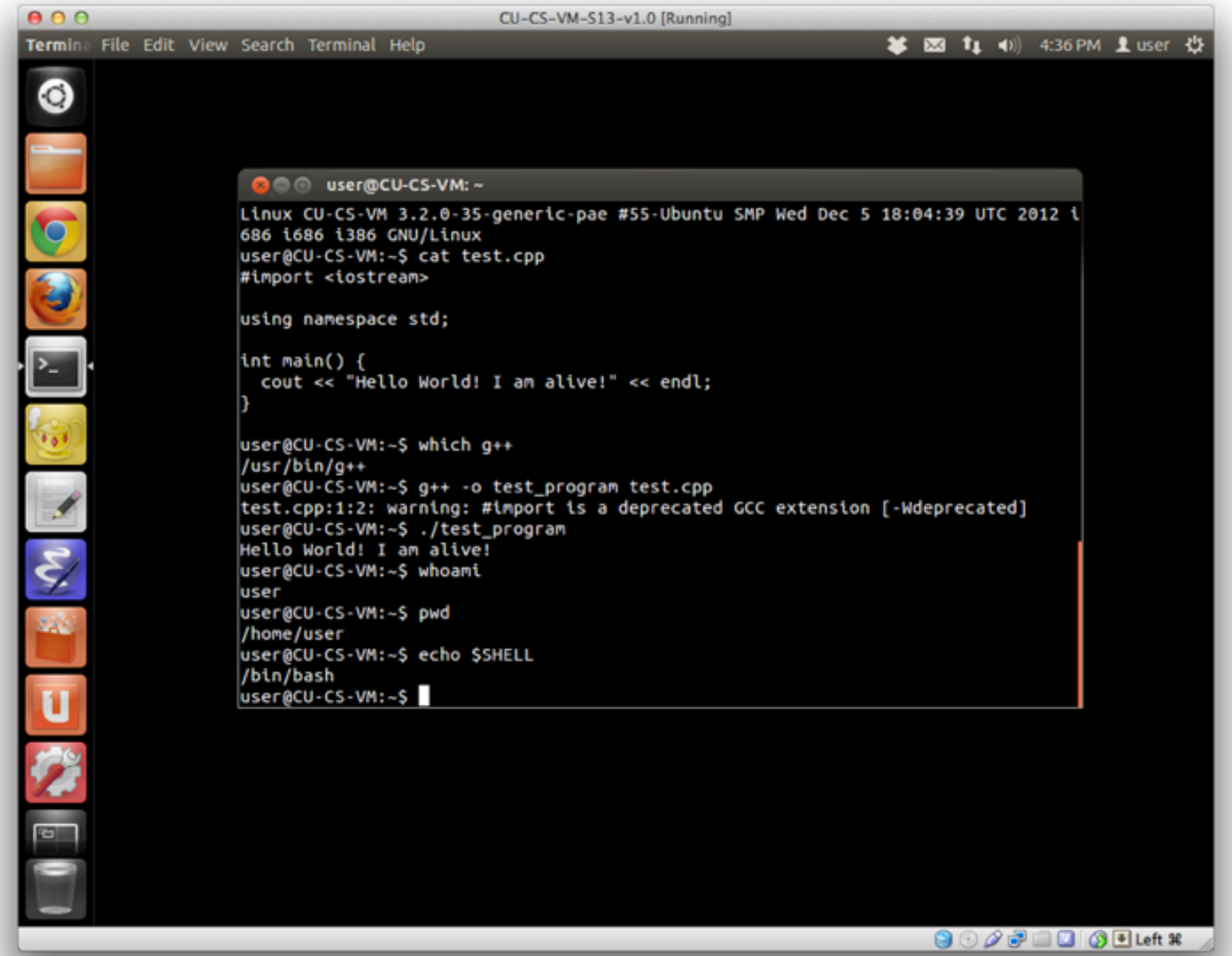
Need help installing? Go to an installation help session in the CSEL Wireless Cafe (ECCS 128).

Scheduled Sessions are 1 hour each:

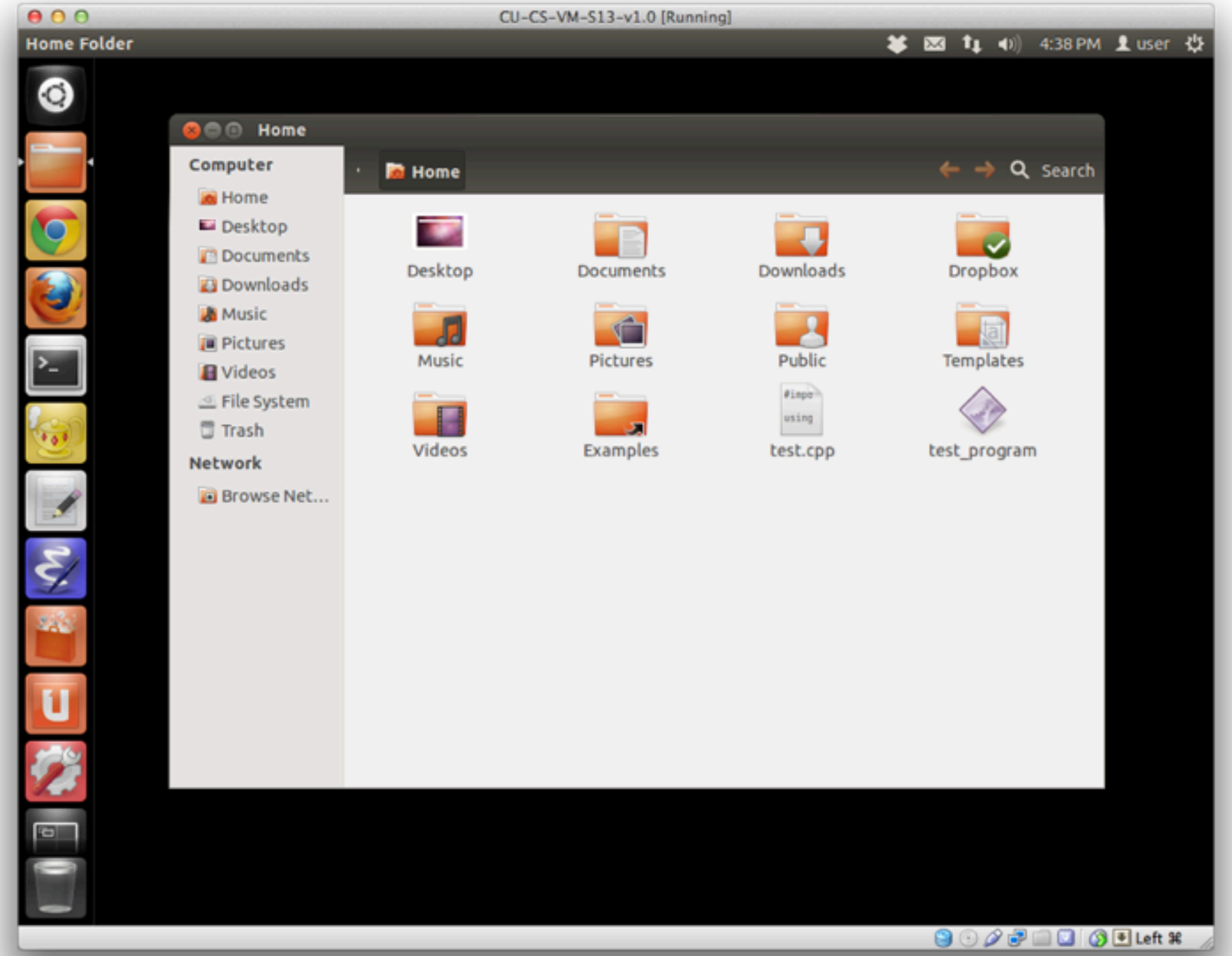
Wed Jan 16 2pm
Fri Jan 18 4pm
Wed Jan 23 12pm
Wed Jan 23 2pm

Additional sessions by may be scheduled by appointment. Contact andrew.sayler@colorado.edu for more information.

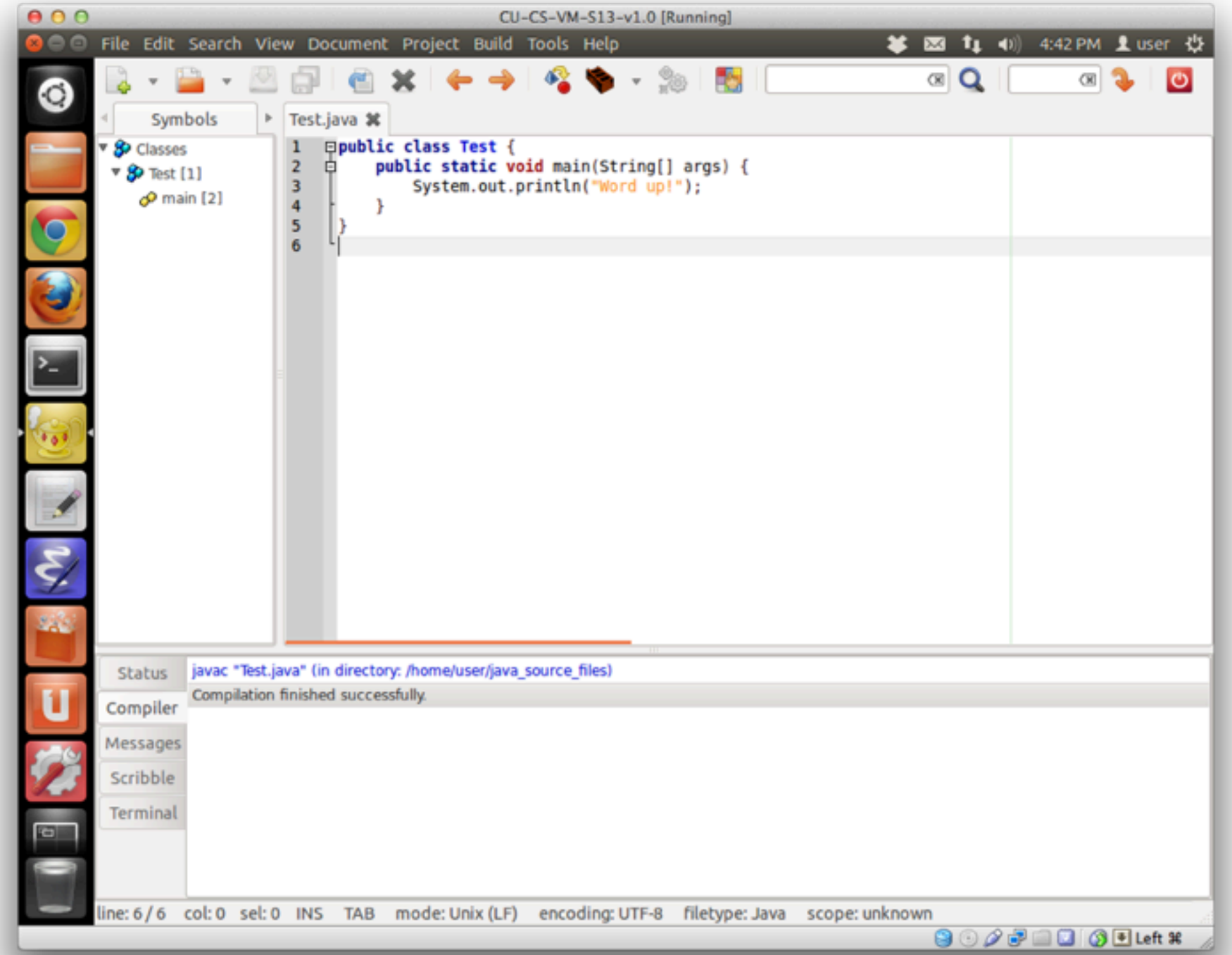
Shell Interaction



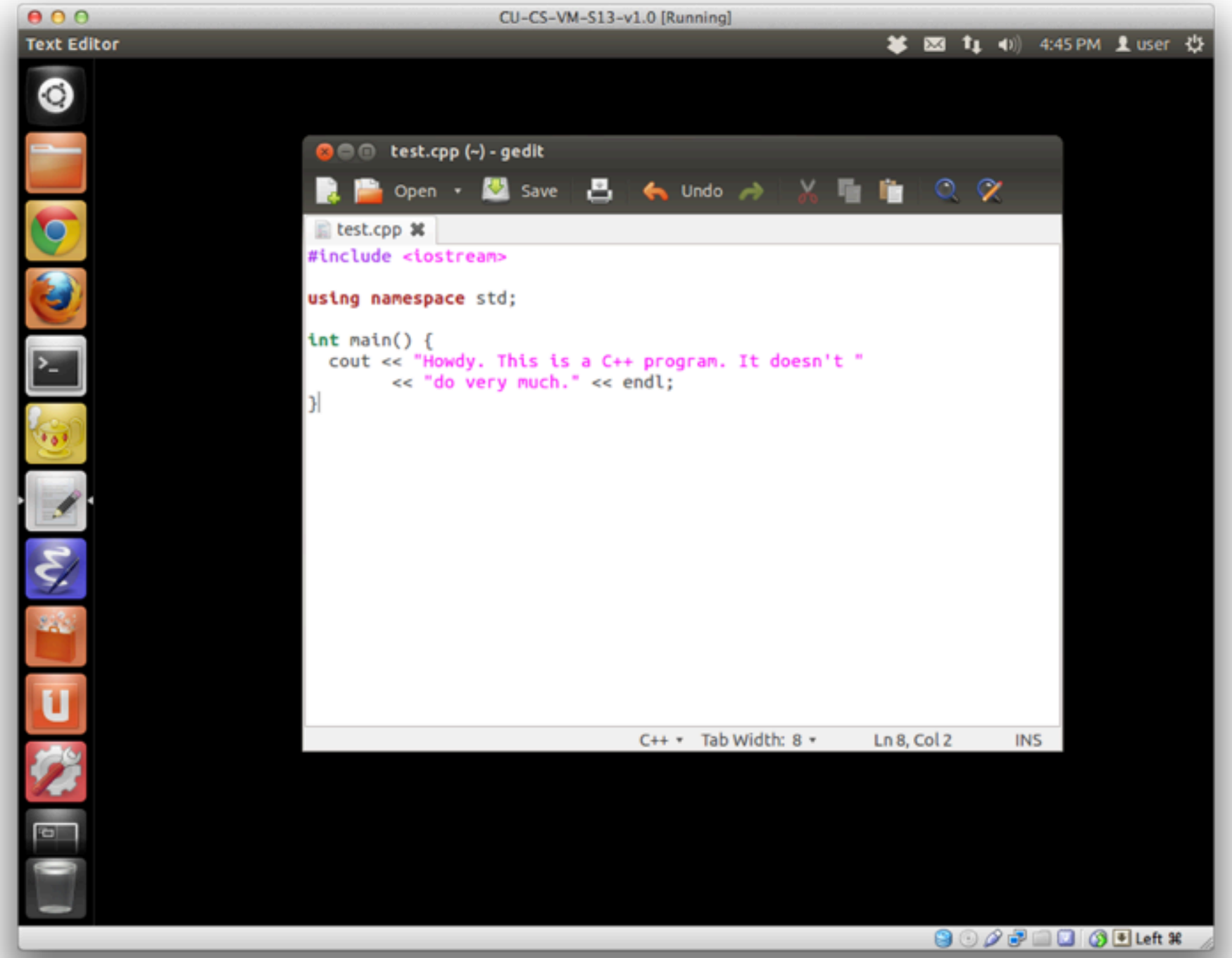
File Browser (familiar?)



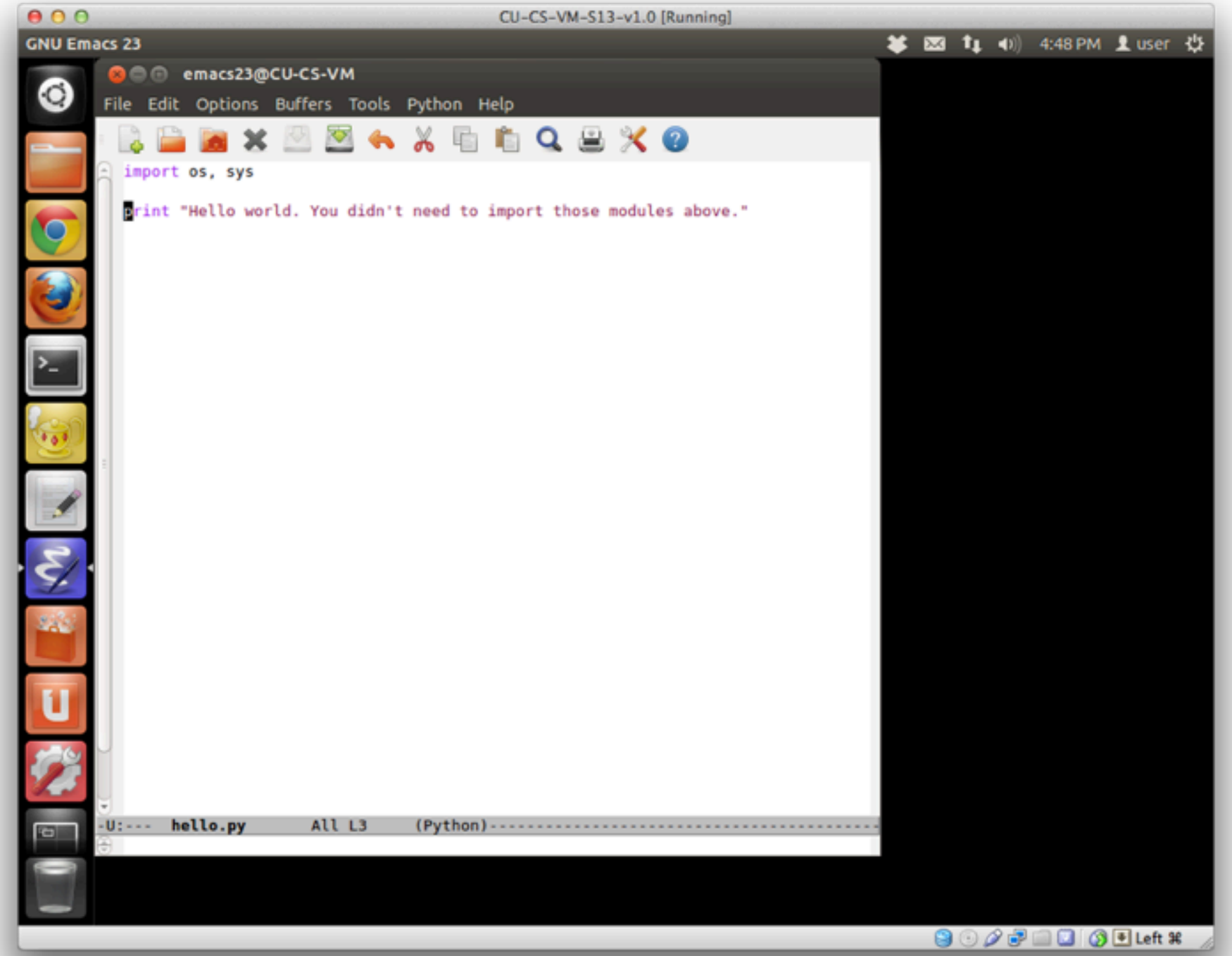
Text and Code Editors: Geany



Text and Code Editors: gedit



Text and Code Editors: emacs



Review of Linux+CLI?

If enough people would like a review of the Ubuntu environment I can do a little tour right now...

Otherwise, read as much of ***The Command Line Crash Course*** as you can stand.

(you should be able to do the entire thing in about 5 hours.)

Sorting Game (Algorithm)

I'll give out a bunch of cards with numbers on them. Each person represents a variable, and the number on their card represents that variable's value.

The idea is to come up with an efficient strategy for sorting people so the numbers increase monotonically.

Sorting Game (Algorithm)

A second exercise (once the numbers are sorted) is to create a sequence of steps to locate particular numbers in the list, or to determine if the number is not in the list.

Pointers

Linked List Game (DS)

A second bunch of cards! Each has a *memory address*, a *data structure member name*, and a *value.*

We will be able to follow the data structure to determine what exciting phrase the linked list contains.

It will also serve as a starting point for thinking about the kinds of operations we might do on such lists. Or, for that matter, any kind of collection data structure.

For Next Time

Read sections 1, 1.1, and 1.2 in the Shaffer text.

Read section on pointers in *C++ Language Tutorial* at http://www.cplusplus.com/doc/tutorial/pointers/

We'll start coding next time. If you are awesome you might get some coding in beforehand.