# 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

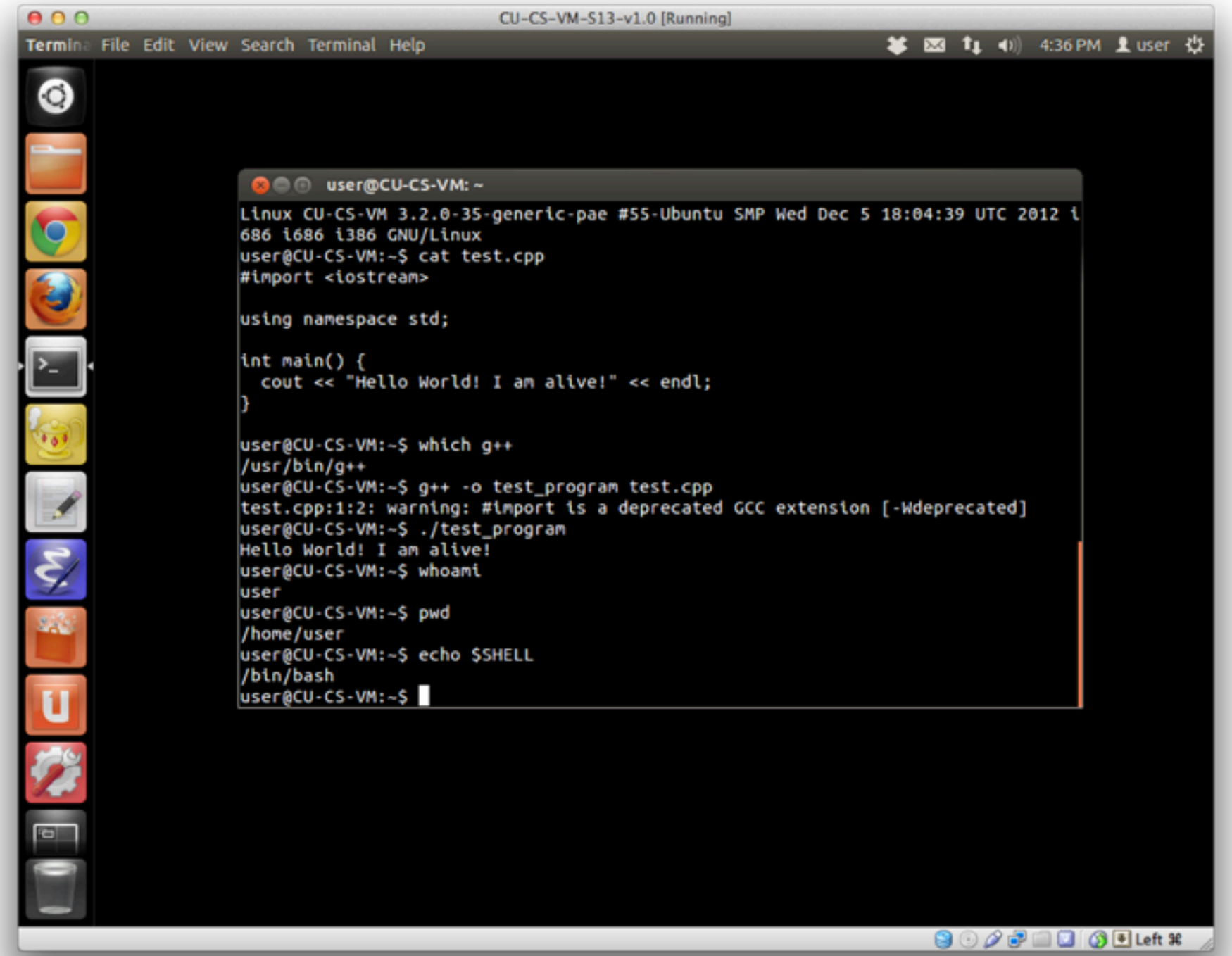
Need help installing? Go to an installation help session in the CSEL Wireless Cafe (ECCS 128).

Scheduled Sessions are 1 hour each:

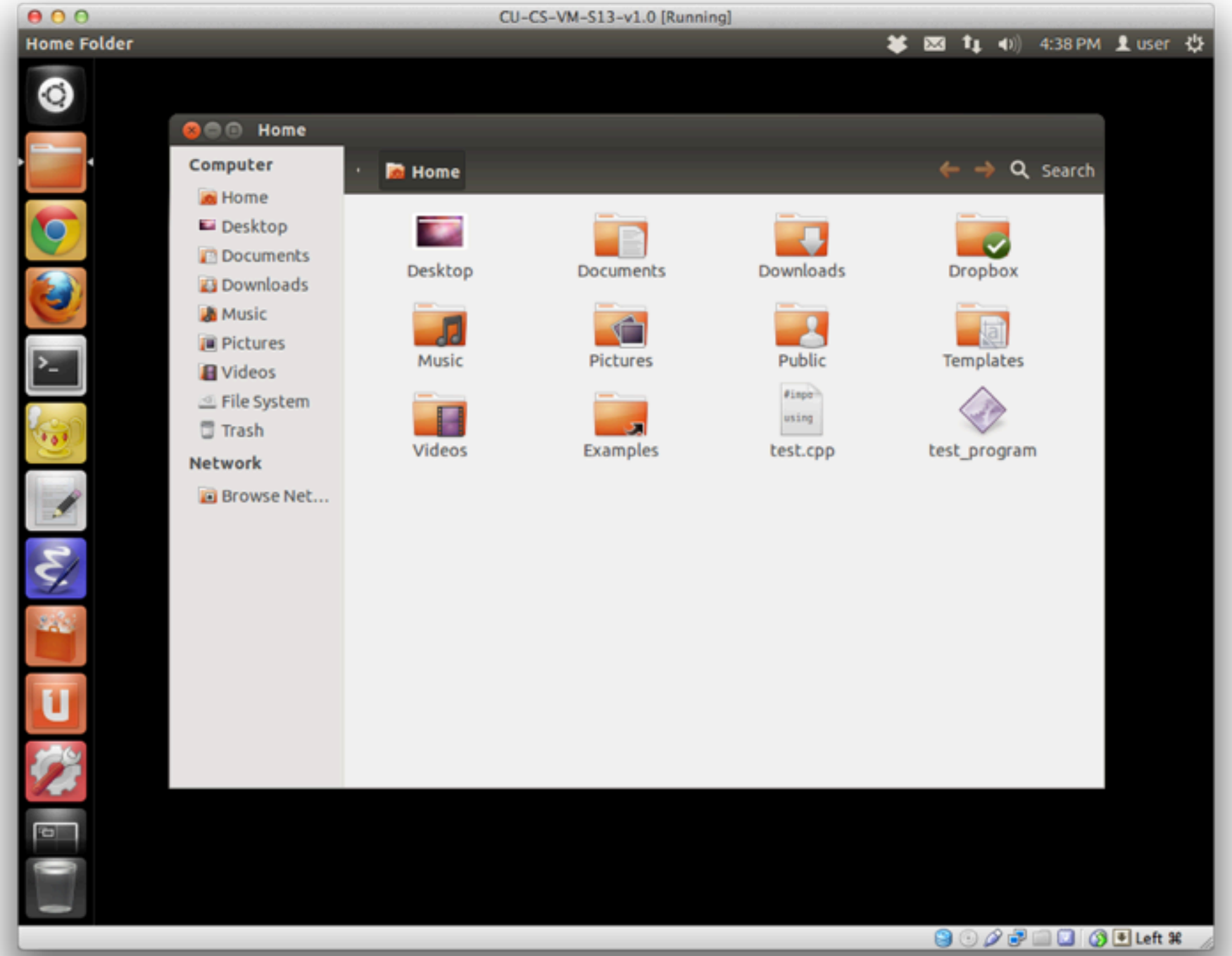
**Wed Jan 16 2pm**
**Fri Jan 18 4pm**
**Wed Jan 23 12pm**
**Wed Jan 23 2pm**

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

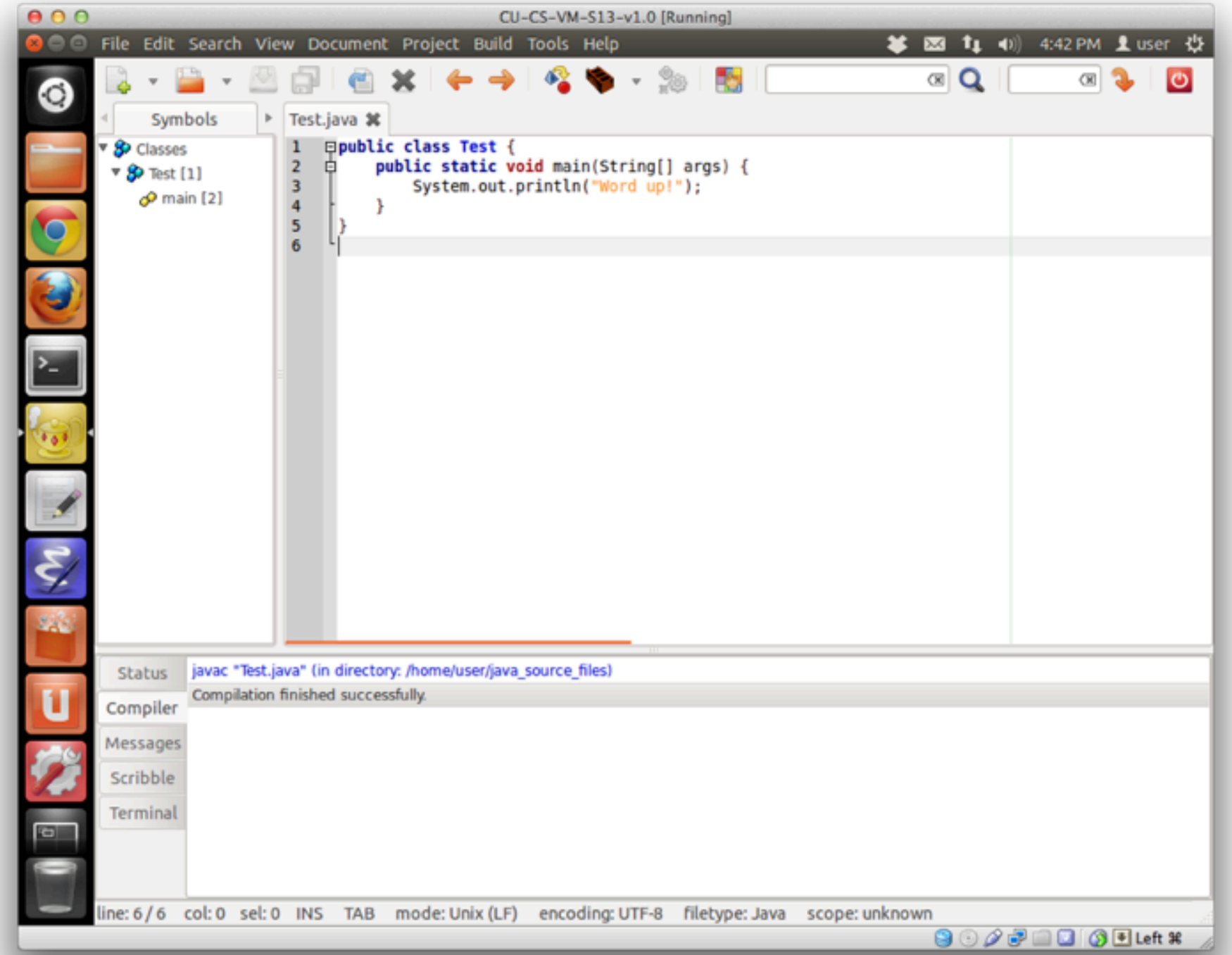
# Shell Interaction



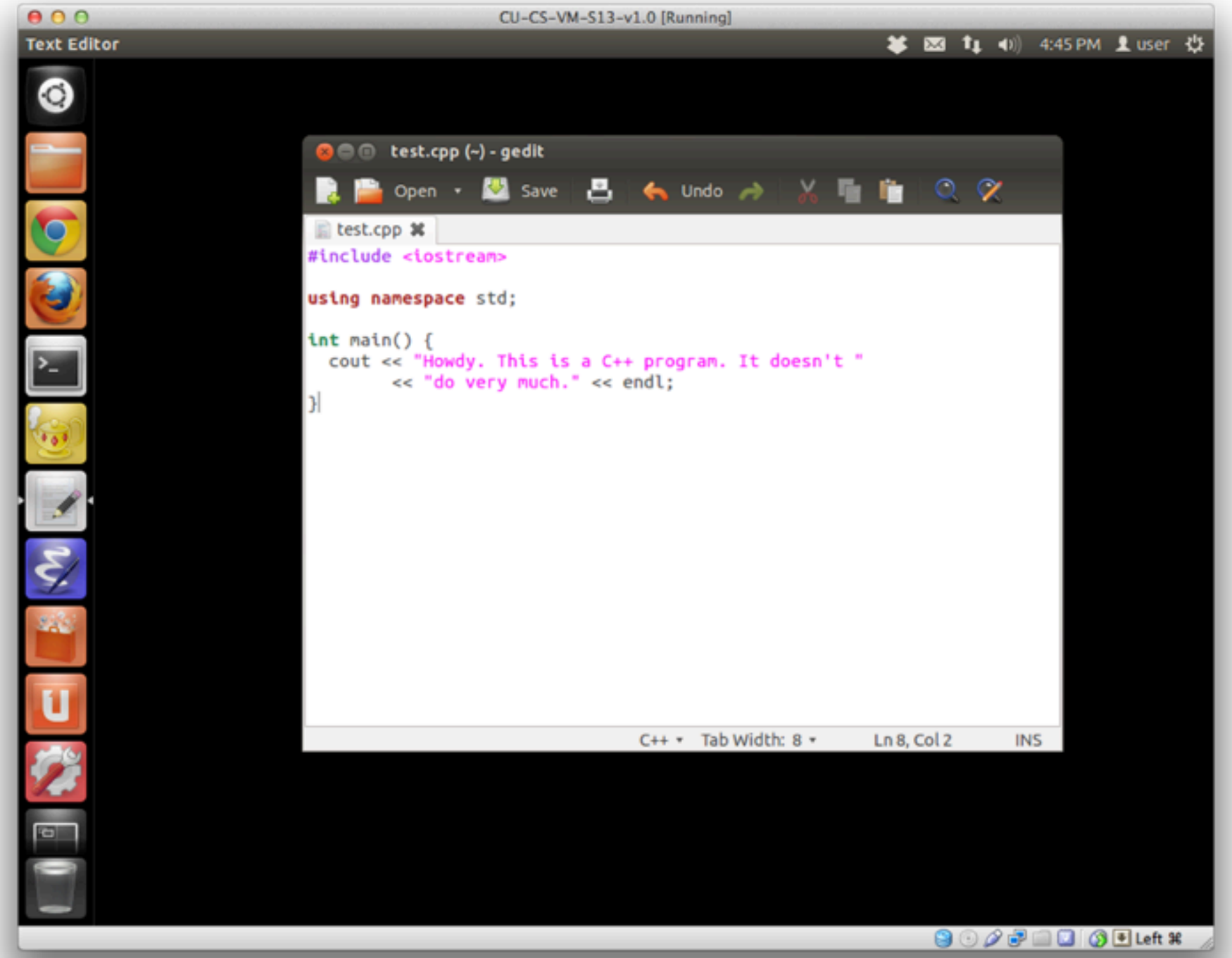
# File Browser (familiar?)



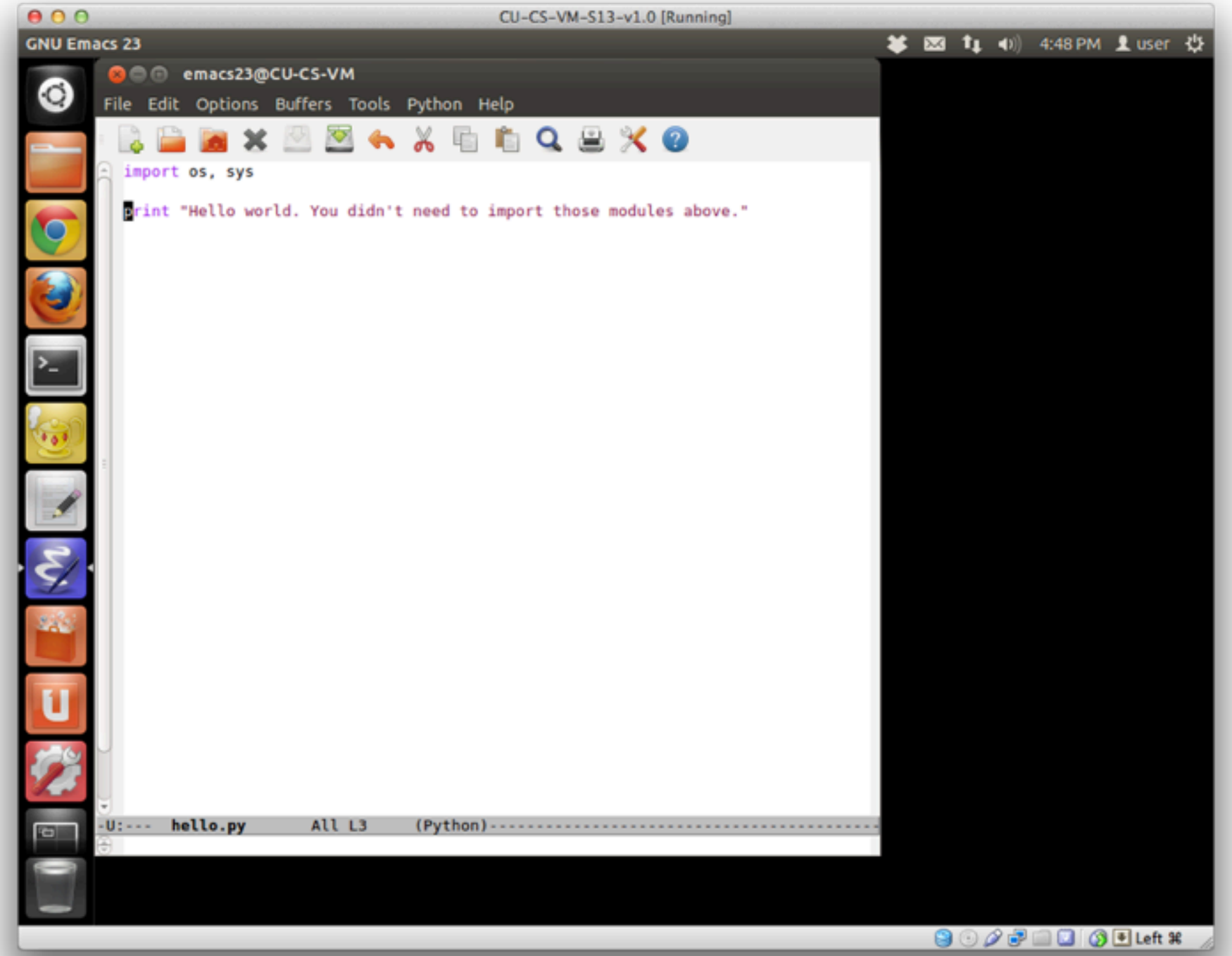
# Text and Code Editors: Geany



# 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.

# Linked List Game (DS)

A second bunch of cards will be distributed. Each has a *memory address*, a *data structure component 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.

We'll start coding next time.