

CISC 1600/1610 Computer Science I

Writing and compiling programs with Linux

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JMH 328A

Linux/UNIX programming environment

- Text commands
- Directory structure

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Command-line interface

Goals are achieved through text commands, rather than through mouse clicks

The “terminal” runs a command-line interpreter

1. Interpreter waits for a command
2. User enters text command
3. Interpreter determines activity to perform based on command
4. Output of activity displayed in terminal
5. Go back to waiting (step 1)

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Our first program: “Hello world!”

```
// include library of standard input and output commands
#include <iostream>
using namespace std;

int main()
{ // Begin main function
  cout << "Hello world!\n"; // output "Hello world!"

  return 0; // indicate successful program completion */
} // End main function
```

Interaction with terminal

```
> ./myProgram
Hello world!
>
```

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Command-line: typical format

```
> command_name [additional_inputs]
```

command_name is an executable file
additional_inputs can be included

- to specify special behaviors of the command
- to tell the command to act on certain files

Example: making a copy of your C++ file:

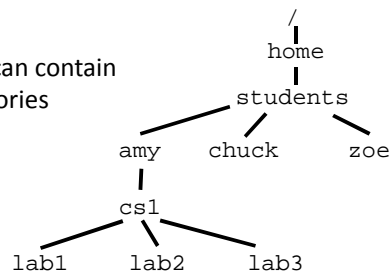
```
> cp myProgram.cpp myProgram_COPIED.cpp
```

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Directory structure

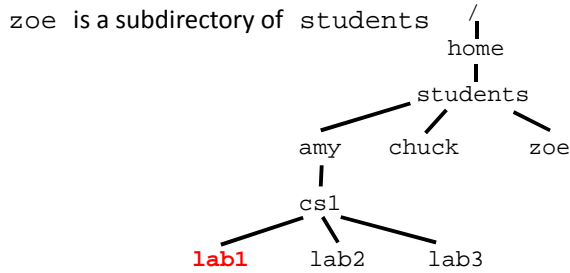
Files are stored in directories in your computer. We will store our C++ code and executable files on the computer storm.cis.fordham.edu

Directories can contain other directories within them



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Directory structure



The "full path" of **lab1** is:
/home/students/amy/cs1/lab1

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Key commands

Logging into storm
ssh username@storm.cis.fordham.edu

Show name of current directory ("print working directory")
pwd

List contents of current directory
ls

Make new directory
mkdir newDirectory

Change directory
cd newDirectory

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Key commands

Logging into storm
ssh username@storm.cis.fordham.edu

Opening a new file to write
vi myProgram.cpp

Compiling a program
g++ myProgram.cpp -o myProgram.out

Running a program
./myProgram.out

There are many other Linux commands. I highly recommend you use my list of commands online⁹

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Editing in vi

vi is a very simple text editor that runs in two modes

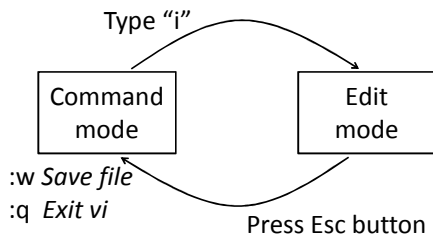
- Command Mode
- Edit Mode

In edit mode: type in all the text you want in your file

In command mode: save your file and exit

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Editing in vi

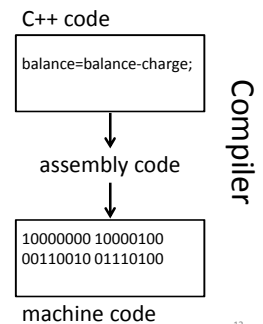


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From letters to binary

- High-level language
 - Uses words to describe instructions
 - More intuitive to people
 - Computer-independent
- Machine-language
 - Uses binary to describe instructions
 - Less intuitive to people
 - Computer-dependent



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