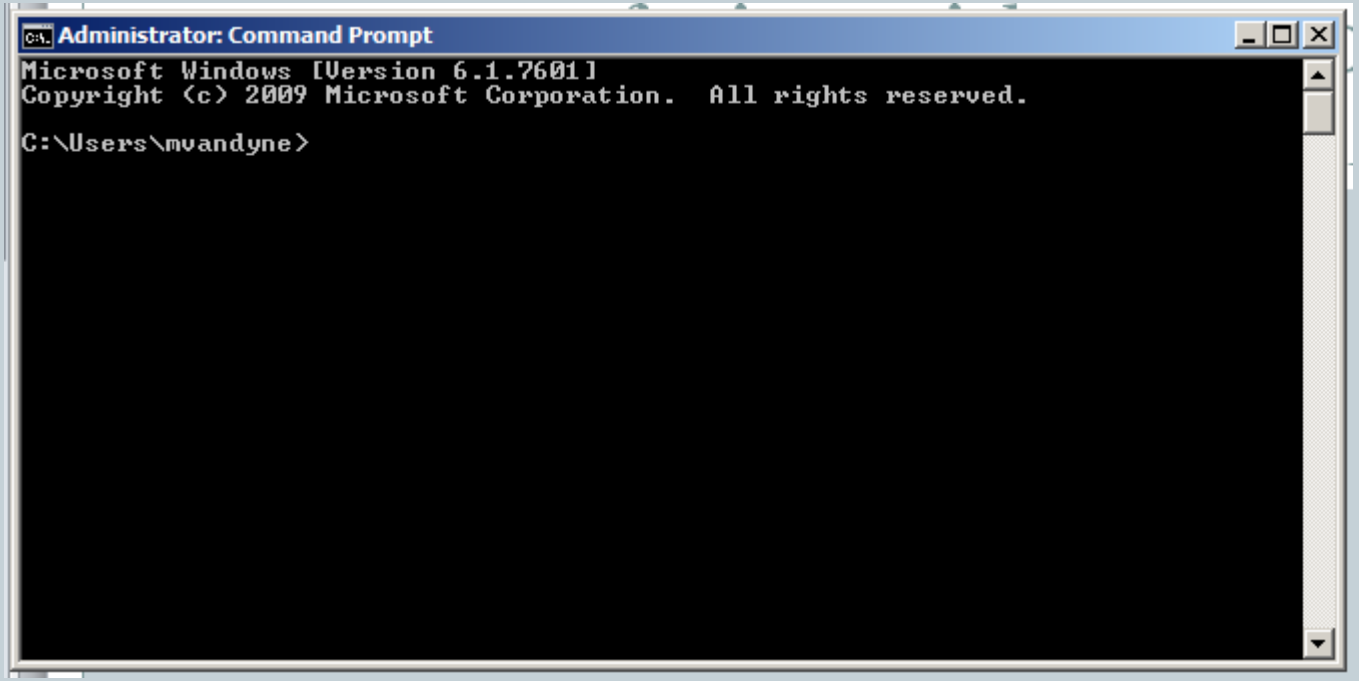
The Command Shell



Outline

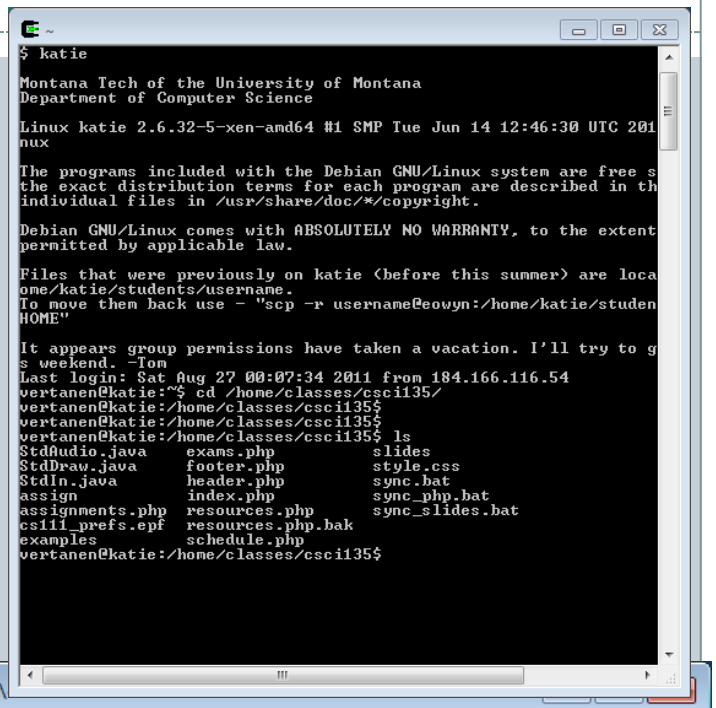
- Starting the Command Shell
  - Locally
  - Remote Host
- Directory Structure
  - Moving around the directories
- Displaying File Contents
- Compiling and Running a Java Program
- Editing a Text File
- Copying Files between Computers
- File Redirection and Piping
- Command Summary

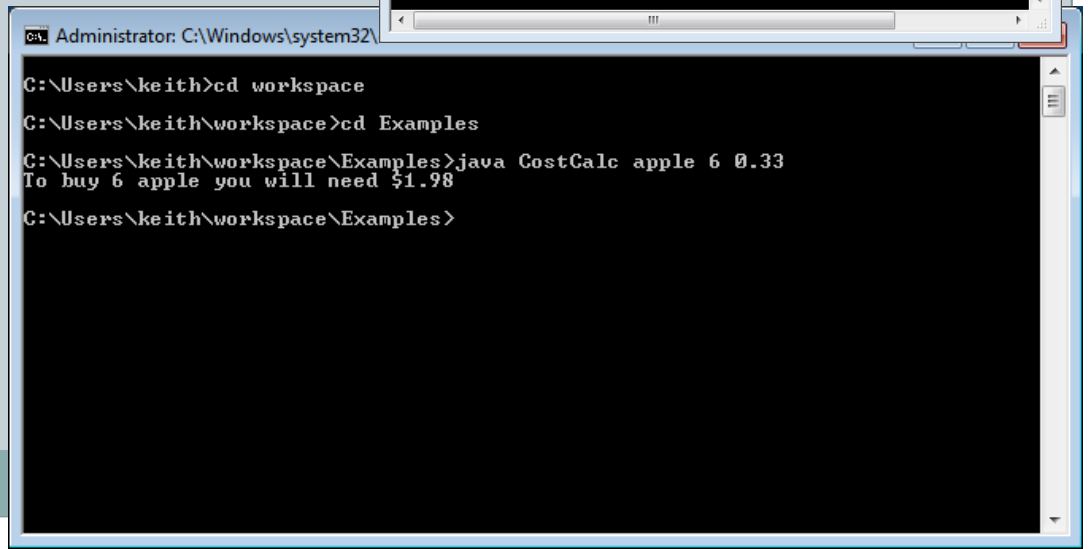
Interfacing with your Computer

- GUI (Graphical User Interfaces)
  - Today: predominant interaction method
  - Windows, buttons, mouse
  - Advantages
    - Easier for novices
    - No commands to remember
    - Rich input and output capabilities

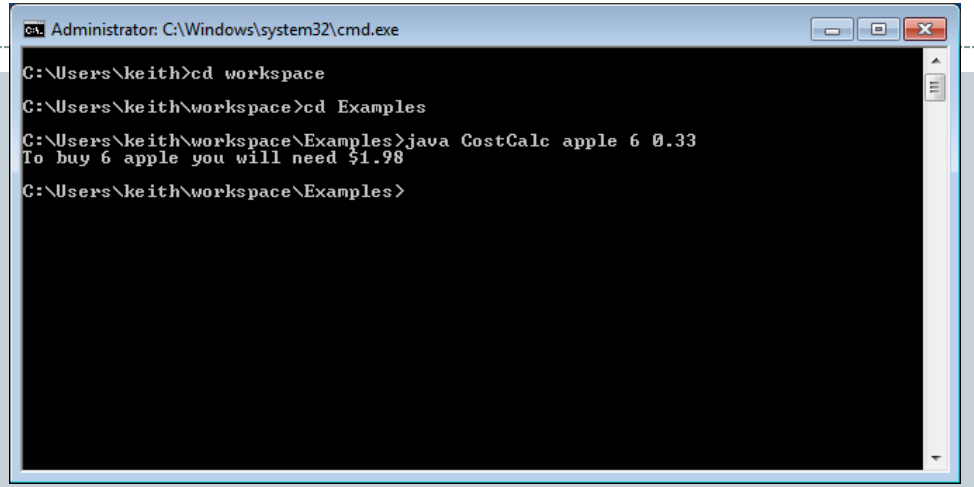
Interfacing with your Computer

- Command Line Interface (CLI)
  - Originally the only option
  - Input by typing commands
  - Advantages:
    - Can be faster for experts than a GUI
    - Easier to automate tasks
    - Easier to hook programs together





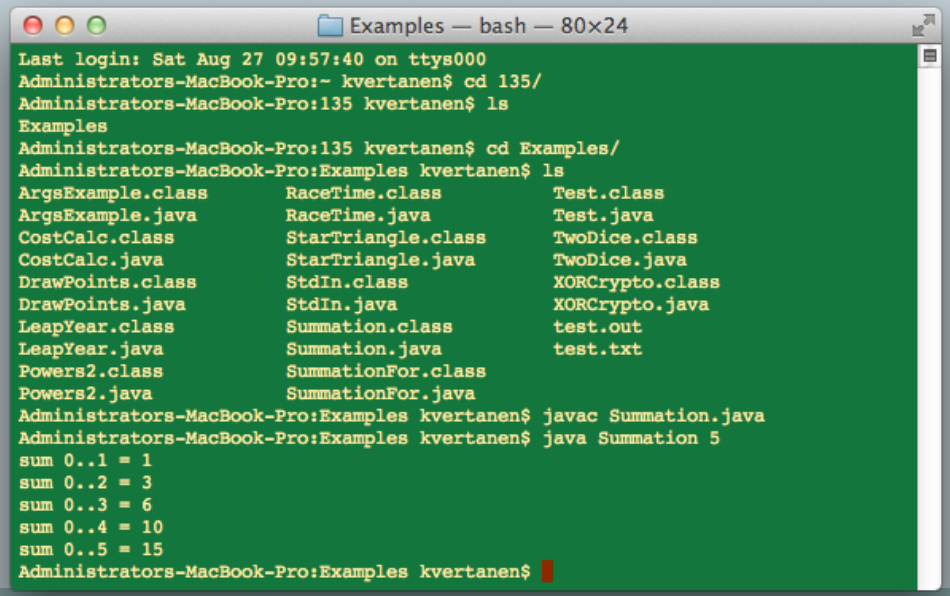
Starting a Command Shell



Windows 7

Start → type "cmd"

All Programs → Accessories → Command Prompt



Mac

Spotlight → type "terminal"

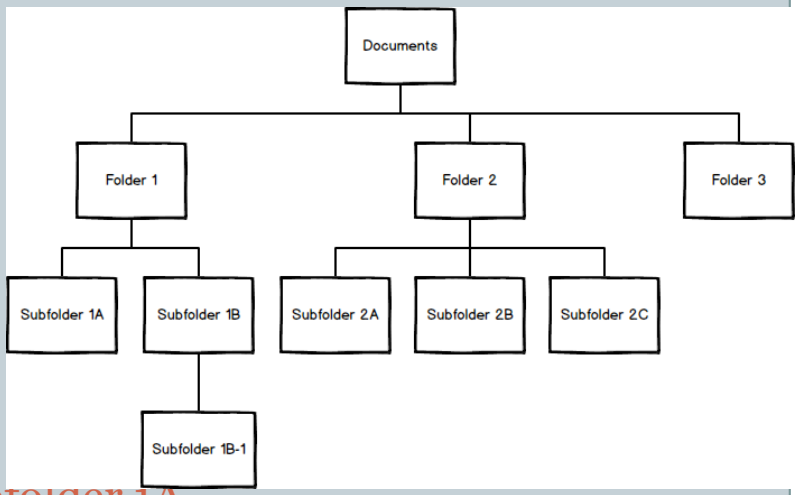
Go → Applications → Utilities → Terminal

Starting a Command Window in Linux: putty

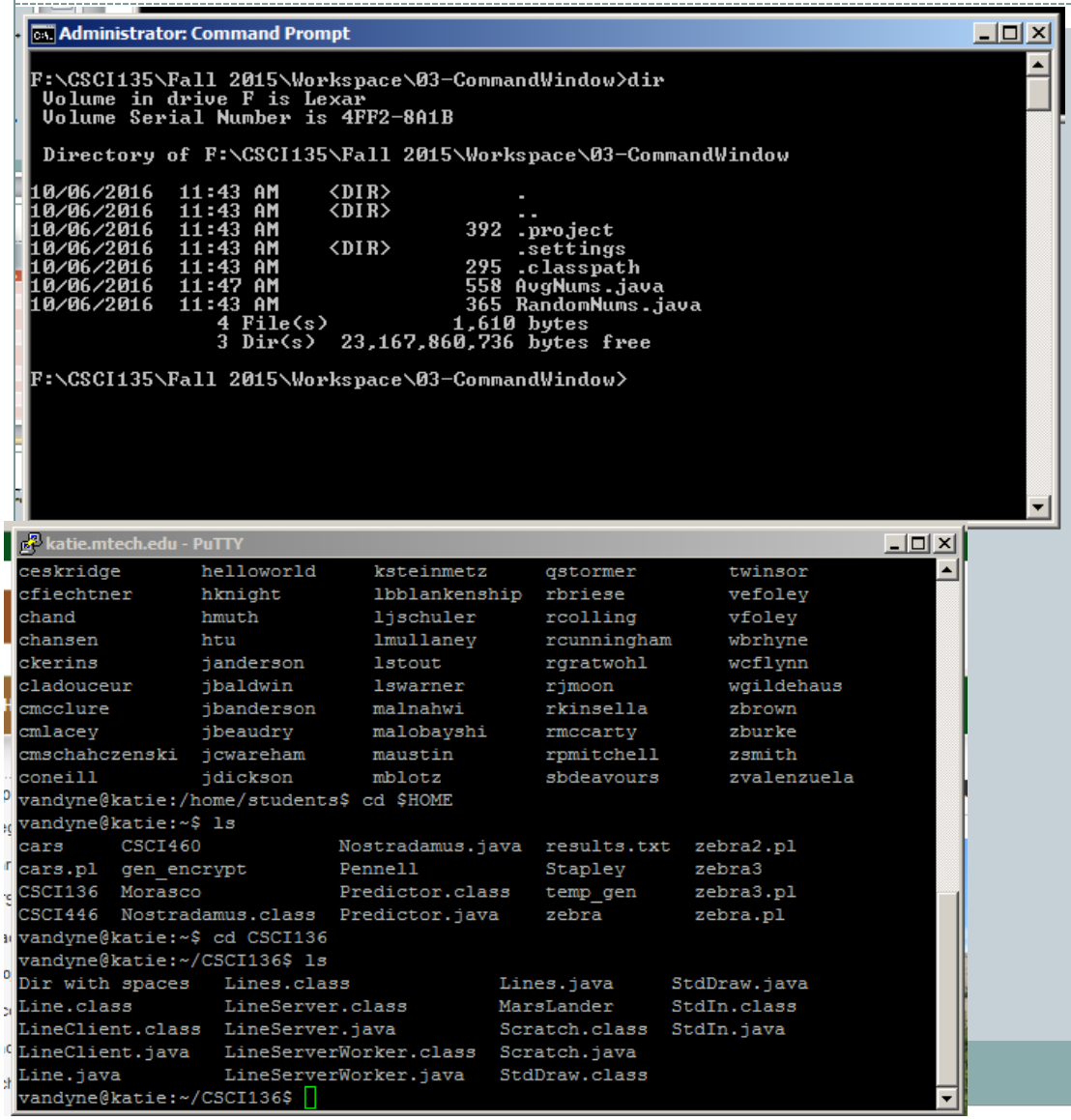
- Use putty.exe
  - cs.mtech.edu then go to the Students tab, select Software
  - Download both putty and winscp
  - Double click on putty
    - Enter katie.mtech.edu for the Host Name (or you can use an IP)
    - Click Open button
    - Enter login name (first initial last name, all lowercase)
    - Enter password:
    - You will need to change this immediately – remember what you changed it to.

Directory Structure

- "Folders"/Directories organized in a tree structure
  - Root is at the top, branches below
  - Files are stored in folders/directories
  - On Windows, different devices have different letters
    - Primary hard drive is C:
    - Flash drives are usually E: onward
- Navigating the tree
  - To change to a directory:
    - Windows: cd C:\Documents\Folder 1\Subfolder 1A
    - Linux: cd "root/Documents/Folder 1/Subfolder 1B"
    - Up one directory level: cd ..
    - The current directory: .
    - Where am I?
      - Linux: pwd
      - Windows: usually shown in the "prompt"



Getting Around in the Command Shell



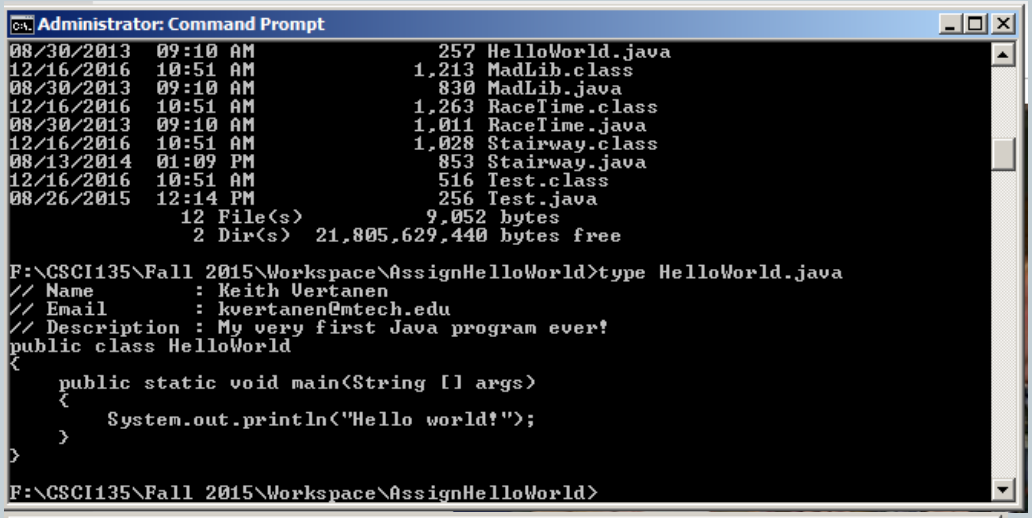
Looking at the contents of a folder

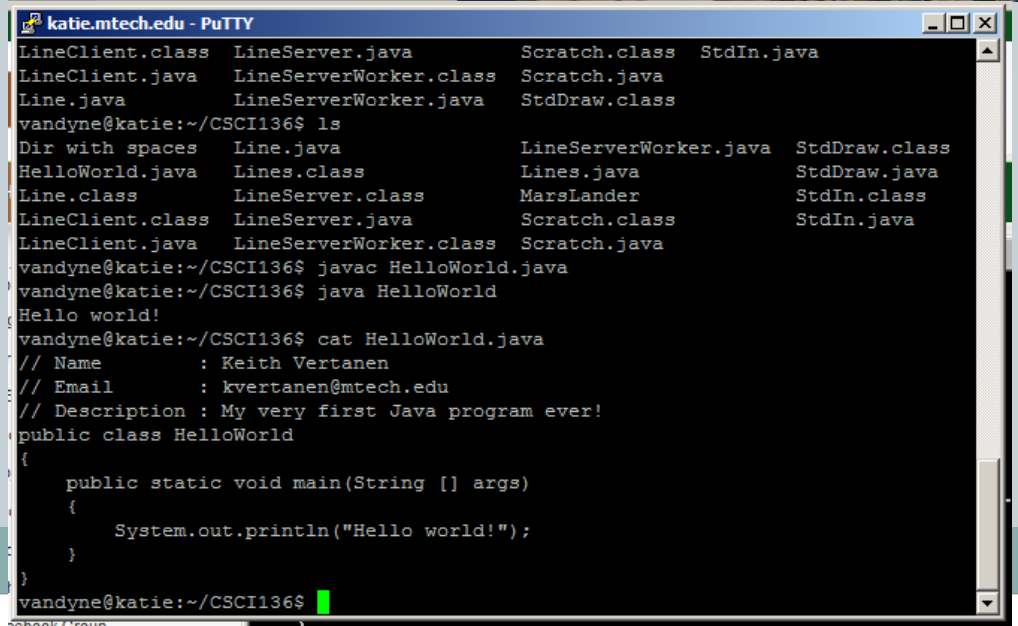
Windows: dir

Linux: ls

Displaying the Contents of Text File

- Windows:
  - type HelloWorld.java
- Linux:
  - cat HelloWorld.java





Compiling a Java Program

- Windows or Linux:
  - javac HelloWorld.java
- If it all compiles correctly, you'll get back a prompt
  - The file HelloWorld.class is generated
- If things go wrong, you will get a list of compiler errors and associated line numbers
  - Not always where the error is, but will give you some clues – just like in Eclipse
- What if you want to compile multiple files?
  - javac *.java

Running a Java Program

- Windows or Linux:
  - java HelloWorld
    - Note: you don't need to type the .class extension
- If it all runs correctly, you'll get the program results and a prompt
- If things go wrong, you will get a runtime error and the name of the exception that was thrown
  - Again, will give you some clues – just like in Eclipse
- You should run the file that contains the main method that you want – the JVM will find the rest of the files it needs

Editing a Java Program

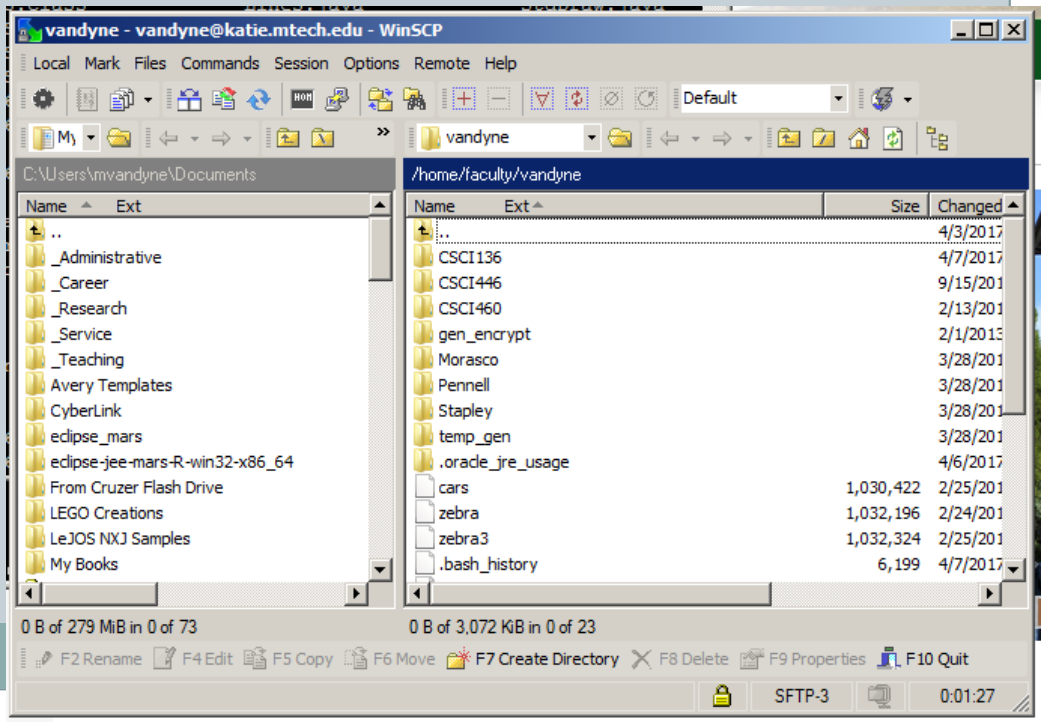
- Use any text editor
  - In Linux, vim
    - vim HelloWorld.java
    - Opens up an editor so you can change the code (or create a file)
    - Reference for vim commands:
      - http://www.cmrr.umn.edu/~strupp/vim-3.0.refcard.html
  - In Windows, any text editor
    - Notepad, Wordpad, Eclipse, etc.
      - Just be careful – some editors try to help you by giving the file a .txt extension when you save it – you need a .java extension in order to compile it

Copying a File to Another Computer: winscp

- Double click on winscp (you should have already downloaded it from the cs.mtech.edu website)
- Click the Run button
- Enter katie.mtech.edu for the host name
- Enter your user name in the User name box
- Enter your password in the Password box
- Hit Enter or click the Login button

Copying a File to Another Computer: winscp (continued)

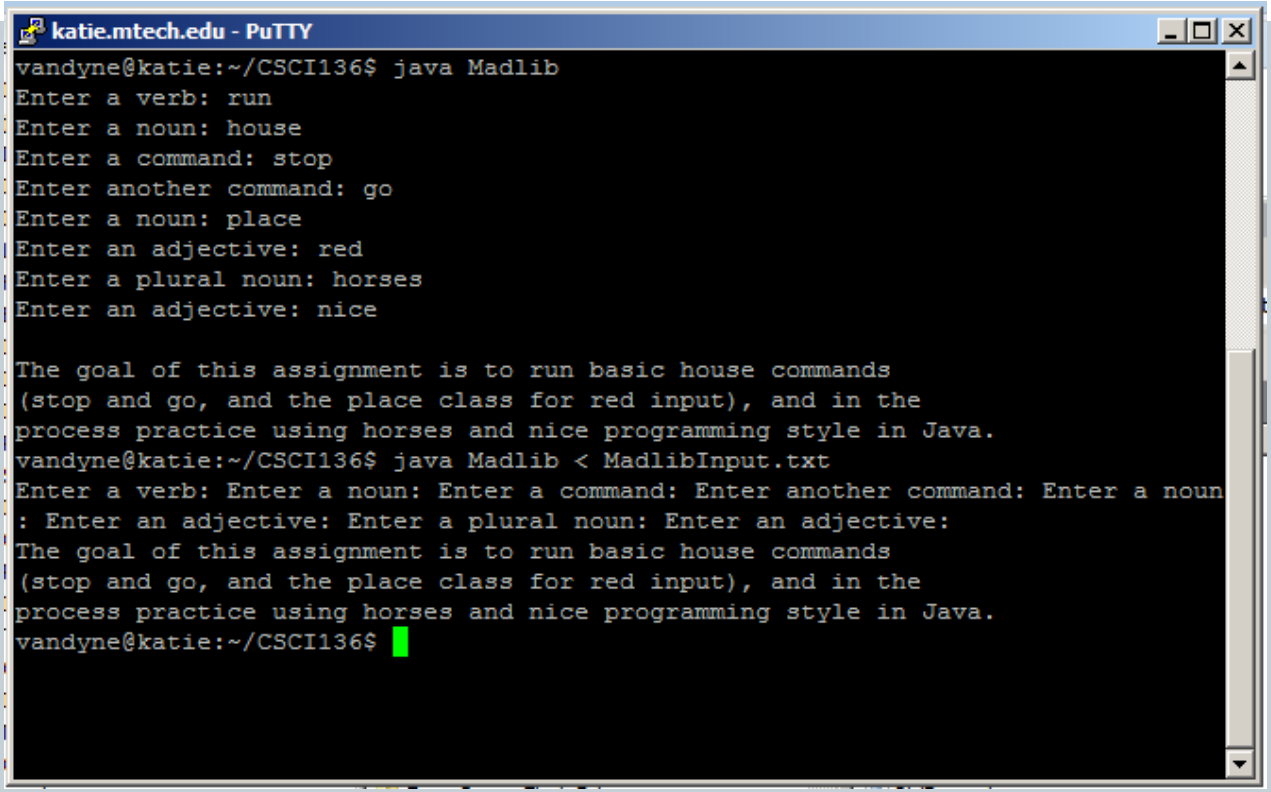
- You will see two panes in a window
  - The left side is your local computer
  - The right side is the computer you just logged in to
  - Can drag and drop files between the two sides
  - Or you can drag files from and to File Manager on your local computer



Redirection

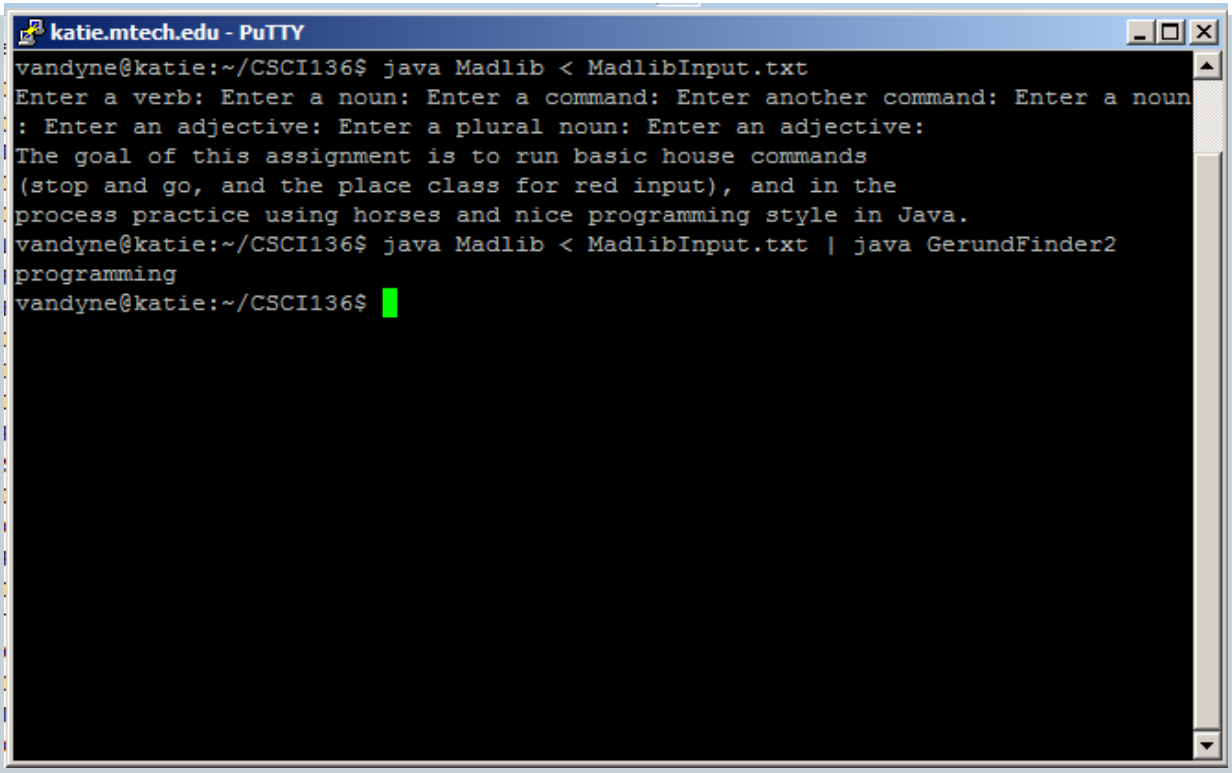
Redirecting program **output to a file** using **>** followed by the output filename.

Redirection



Reading input from file using **<** followed by the filename.

Piping



Using the output of one program as the input to another

Use the | operator

Summary of Helpful Commands

Action	Windows	Mac OS / Unix
Move into a folder	`cd myfolder`	`cd myfolder`
Move into parent folder	`cd ..`	`cd ..`
Move into a folder, absolute folder	`cd \Users\keith`	`cd /Users/keith`
List files in current folder	`dir`	`ls`
Compile program in current folder	`javac Prog.java`	`javac Prog.java`
Run a compiled program	`java Prog`	`java Prog`
See what is in a text file	`type Prog.java`	`more Prog.java`
Auto-complete filenames	`<tab key>`	`<tab key>`
Previous command	`<up arrow>`	`<up arrow>`

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