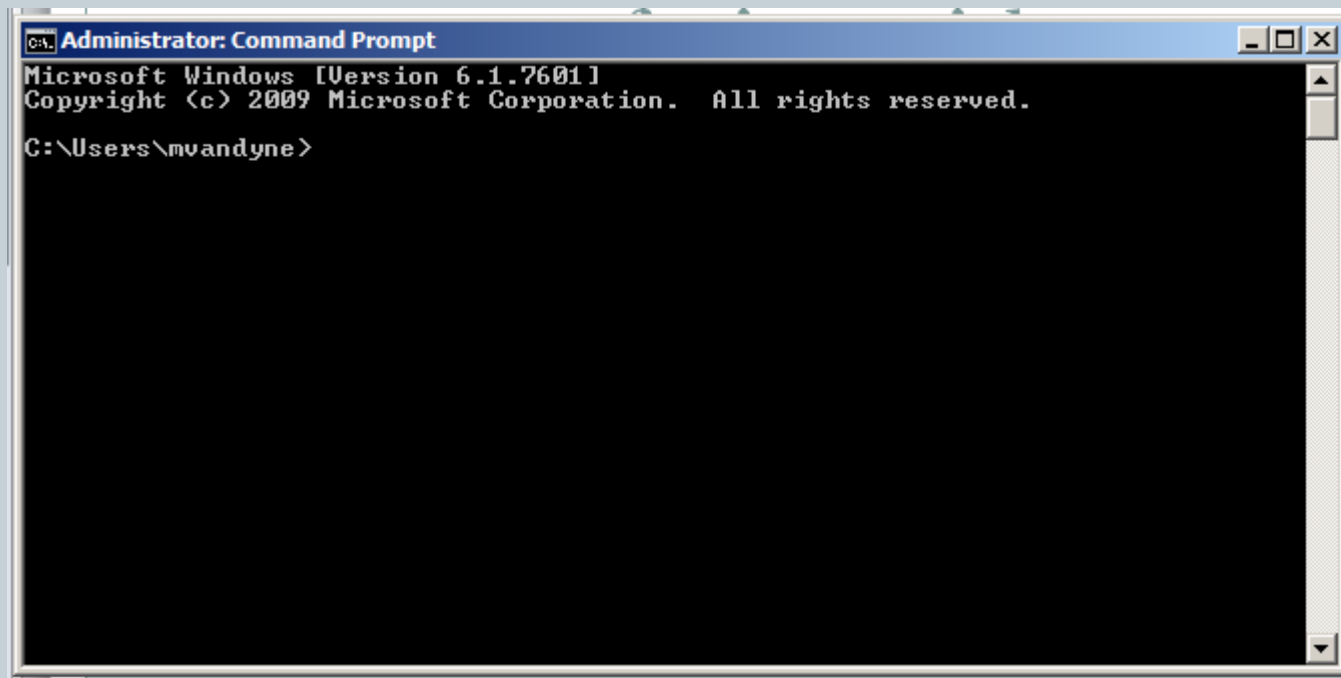


# The Command Shell



# Outline

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- Graphical User Interface
- Command Shell
  - Starting the Command Shell
  - Commands
  - Compiling and Running a Java Program
  - File Redirection and Piping

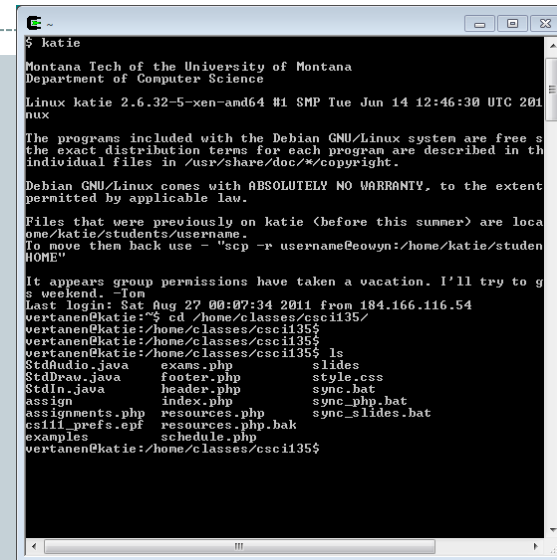
# Interfacing with your Computer

- **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



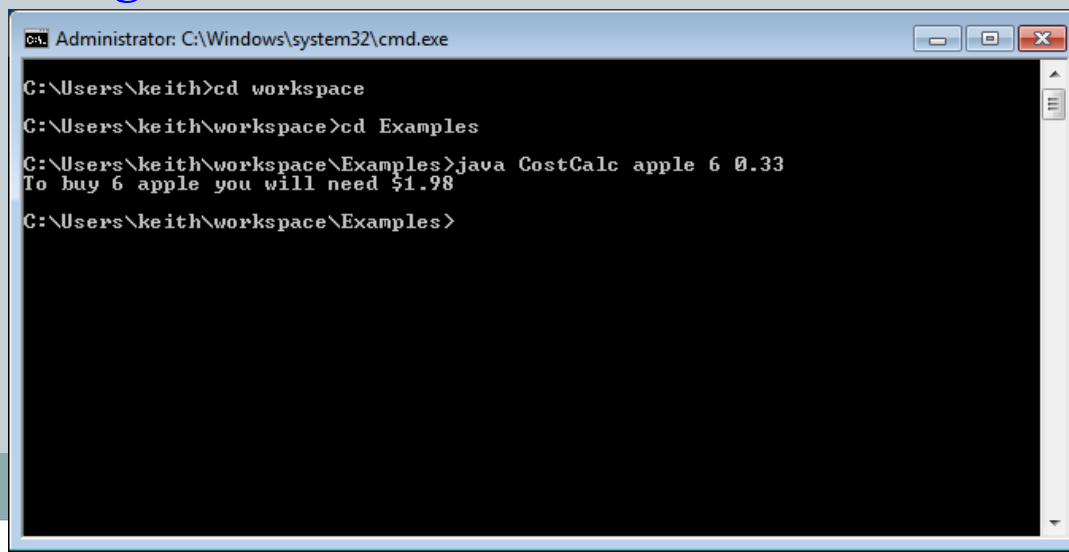
```
$ katie
Montana Tech of the University of Montana
Department of Computer Science
Linux katie 2.6.32-5-xen-amd64 #1 SMP Tue Jun 14 12:46:30 UTC 2011
nux

The programs included with the Debian GNU/Linux system are free s
the exact distribution terms for each program are described in th
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.

Files that were previously on katie (before this summer) are loca
one/katie/students/username.
To move them back use - "scp -r username@eovyn:/home/katie/studen
NONE"

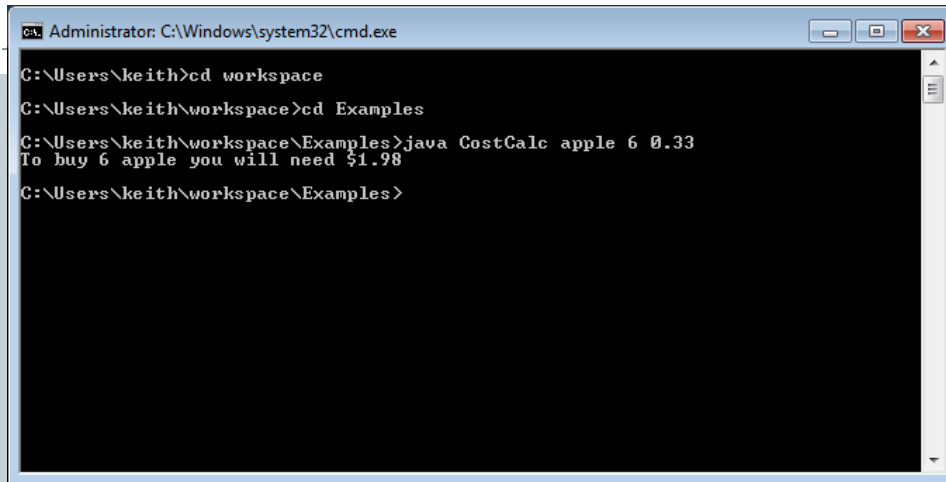
It appears group permissions have taken a vacation. I'll try to g
s weekend. -lon
Last login: Sat Aug 27 00:07:34 2011 from 184.166.116.54
vertanen@katie:~$ cd /home/classes/cscli35/
vertanen@katie:/home/classes/cscli35$
vertanen@katie:/home/classes/cscli35$ ls
StdAudio.java      exams.php           slides
StdDraw.java       footer.php          style.css
StdIn.java          header.php          sync.bat
assign             index.php           sync_php.bat
assignments.php     resources.php       sync_slides.bat
cscli_prefs.epf    resources.php.bak
examples            schedule.php
vertanen@katie:/home/classes/cscli35$
```



```
Administrator: C:\Windows\system32\cmd.exe

C:\Users\keith>cd workspace
C:\Users\keith\workspace>cd Examples
C:\Users\keith\workspace\Examples>java CostCalc apple 6 0.33
To buy 6 apple you will need $1.98
C:\Users\keith\workspace\Examples>
```

## Starting a Command Shell

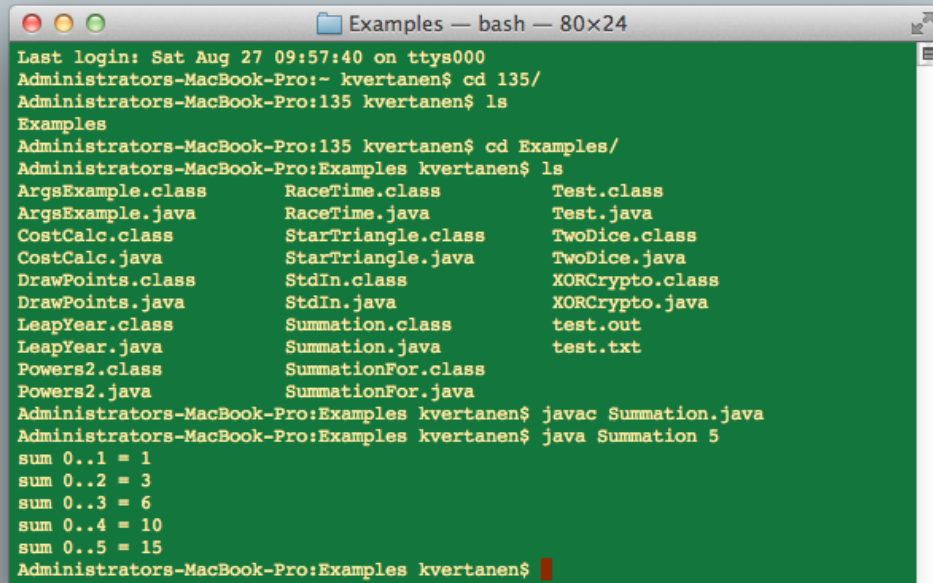
A screenshot of a Windows 7 Command Prompt window. The title bar reads "Administrator: C:\Windows\system32\cmd.exe". The command history shows: "C:\Users\keith>cd workspace", "C:\Users\keith\workspace>cd Examples", "C:\Users\keith\workspace\Examples>java CostCalc apple 6 0.33", and "C:\Users\keith\workspace\Examples>". The output of the last command is "To buy 6 apple you will need \$1.98".

```
Administrator: C:\Windows\system32\cmd.exe
C:\Users\keith>cd workspace
C:\Users\keith\workspace>cd Examples
C:\Users\keith\workspace\Examples>java CostCalc apple 6 0.33
To buy 6 apple you will need $1.98
C:\Users\keith\workspace\Examples>
```

### Windows 7

*Start → type "cmd"*

*All Programs → Accessories → Command Prompt*

A screenshot of a Mac Terminal window titled "Examples — bash — 80x24". The window shows the following commands and output: "Last login: Sat Aug 27 09:57:40 on ttys000", "Administrators-MacBook-Pro:~ kvertanen\$ cd 135/", "Administrators-MacBook-Pro:135 kvertanen\$ ls", "Examples", "Administrators-MacBook-Pro:135 kvertanen\$ cd Examples/", "Administrators-MacBook-Pro:Examples kvertanen\$ ls", a list of files including ArgsExample.class, RaceTime.class, Test.class, etc., "Administrators-MacBook-Pro:Examples kvertanen\$ javac Summation.java", "Administrators-MacBook-Pro:Examples kvertanen\$ java Summation 5", and a series of sum calculations: "sum 0..1 = 1", "sum 0..2 = 3", "sum 0..3 = 6", "sum 0..4 = 10", "sum 0..5 = 15".

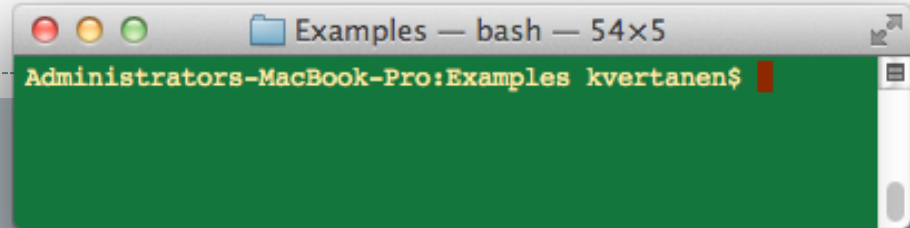
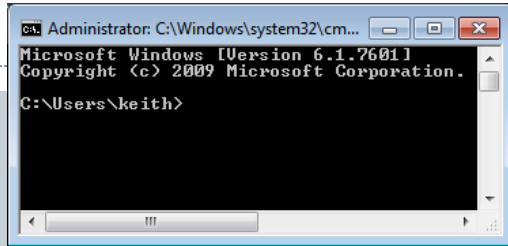
```
Examples — bash — 80x24
Last login: Sat Aug 27 09:57:40 on ttys000
Administrators-MacBook-Pro:~ kvertanen$ cd 135/
Administrators-MacBook-Pro:135 kvertanen$ ls
Examples
Administrators-MacBook-Pro:135 kvertanen$ cd Examples/
Administrators-MacBook-Pro:Examples kvertanen$ ls
ArgsExample.class      RaceTime.class        Test.class
ArgsExample.java       RaceTime.java         Test.java
CostCalc.class         StarTriangle.class    TwoDice.class
CostCalc.java          StarTriangle.java     XORCrypto.class
DrawPoints.class       StdIn.class           XORCrypto.java
DrawPoints.java        StdIn.java            test.out
LeapYear.class         Summation.class       test.txt
LeapYear.java          Summation.java
Powers2.class          SummationFor.class
Powers2.java           SummationFor.java
Administrators-MacBook-Pro:Examples kvertanen$ javac Summation.java
Administrators-MacBook-Pro:Examples kvertanen$ java Summation 5
sum 0..1 = 1
sum 0..2 = 3
sum 0..3 = 6
sum 0..4 = 10
sum 0..5 = 15
Administrators-MacBook-Pro:Examples kvertanen$
```

### Mac

*Spotlight → type "terminal"*

*Go → Applications → Utilities → Terminal*

## Getting around the Command Line



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>

## Getting Around in the Command Shell

```
Administrator: Command Prompt
C:\Users\mvandyne>F:
F:\>cd CSCI135
F:\CSCI135>cd Fall 2015
F:\CSCI135\Fall 2015>cd Workspace
F:\CSCI135\Fall 2015\Workspace>cd 03-CommandWindow
F:\CSCI135\Fall 2015\Workspace\03-CommandWindow>
```

Changing to a different drive and to different folders

```
Administrator: Command Prompt
F:\CSCI135\Fall 2015\Workspace\03-CommandWindow>dir
Volume in drive F is Lexar
Volume Serial Number is 4FF2-8A1B

Directory of F:\CSCI135\Fall 2015\Workspace\03-CommandWindow

10/06/2016  11:43 AM    <DIR>          .
10/06/2016  11:43 AM    <DIR>          ..
10/06/2016  11:43 AM             392  .project
10/06/2016  11:43 AM    <DIR>          .settings
10/06/2016  11:43 AM             295  .classpath
10/06/2016  11:47 AM             558  AvgNums.java
10/06/2016  11:43 AM             365  RandomNums.java
               4 File(s)          1,610 bytes
               3 Dir(s)  23,167,860,736 bytes free

F:\CSCI135\Fall 2015\Workspace\03-CommandWindow>
```

Looking at the contents of a folder

# File Redirection and Piping

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

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

Directly **piping output from one program to another** using pipe **|**



# Summary

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- Graphical User Interface
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