Linux Overview

- Local facilities
- Linux commands
- The vim (gvim) editor
- The programming process
Using the workstations in the lab

- The computer labs are ENGR 213 and ENGR 214.
- You need to have a proximity ID card to get into the lab. I will let you know if you need to do anything to get one.
Logging in

- Choose a workstation and make sure everything is turned on. Move the mouse if necessary so that you can see the login screen.
- Enter your user name and password in the appropriate text boxes.
- Now you should see the KDE desktop which provides you with a graphical interface (GUI) to the operating system.
The KDE Desktop

- The KDE desktop looks similar to the Windows desktop.
- Icons on the desktop can be double clicked to open/start them.
- The taskbar at the bottom of the screen (usually) has a number of useful things. A single click will start these applications.
  - The Fedora icon is a menu that lets you start programs and logout.
  - The world icon is a web browser.
- Use the Leave/Logout option in the Fedora menu to log out of your session.
command line interface

- Using the console can be faster than navigating graphical windows and menus.
- When you access the server via the Internet, the console mode is much faster to use than the graphical mode.
- If you are logging in remotely then the console mode is all you have. So it makes sense to learn your way around the console mode.
- You can start up a console window by clicking on the icon for the Terminal program (the monitor icon) on the panel.
- Once you have opened a console, use it to learn a few basic commands.
  - navigating directories (also known as folders)
  - creating directories
  - moving across directories
  - copying files
  - deleting files
## Basic Linux commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Effect</th>
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<tbody>
<tr>
<td>cd</td>
<td>change to your home directory</td>
</tr>
<tr>
<td>cd dir1</td>
<td>change to directory dir1</td>
</tr>
<tr>
<td>cd ..</td>
<td>go up one level in the directory tree</td>
</tr>
<tr>
<td>ls</td>
<td>list all files in the current directory</td>
</tr>
<tr>
<td>ls -l</td>
<td>get detailed file list</td>
</tr>
<tr>
<td>mkdir skills</td>
<td>makes a new directory called skills</td>
</tr>
<tr>
<td>pwd</td>
<td>print the path of the current directory</td>
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<tr>
<td>cp file1 skills</td>
<td>copy file named file1 to the directory skills</td>
</tr>
<tr>
<td>mv file2 junk</td>
<td>rename file2 to junk</td>
</tr>
<tr>
<td>mv xyz skills</td>
<td>move file xyz to the directory skills</td>
</tr>
<tr>
<td>rm junk</td>
<td>remove file junk</td>
</tr>
</tbody>
</table>
Changing your password

You can use the `passwd` command to change your password to something that is easier to remember.

**But** don’t make it too easy or it will not be secure. You should use a mixture of letters and digits – up to 8 characters.

In order to change your password, you need to log into the main onyx server and run a particular version of the `passwd` command.

```
ssh onyx
passwd
```

When you type `passwd`, you will be asked to enter your current password. Then you will be asked to enter the new one twice. There will be a delay before your new password gets transmitted back to the workstations so don’t expect to be able to log in again immediately.
The vim/gvim editor

- vim is a text editor and gvim is a graphical version of that editor.
- The editor can either be in command mode or insert mode.
- In command mode, anything you type will be interpreted as a command.
  - Most commands are single letters, possibly preceded by a number
  - A forward slash (/) allows you to enter a search string
  - A colon (:) allows you to type more complicated commands into a buffer at the bottom of the screen.
  - ZZ saves your file and exits the editor.
- In insert mode, anything you type is considered to be part of the text you are editing.
- The editor starts in command mode. Commands that put the editor into insert mode are i, I, a, A, o, O
- To get from insert mode to command mode, hit the ESC key.
The Programming Process

- Create a class using vim (or whatever editor you are comfortable with)
  
vim MyClass.java
- Compile the file you created.
  
javac MyClass.java
- Run the program.
  
java MyClass
Simple Java Program

/** A simple console program written in Java. */

public class MyClass {

    public static void main(String[] args) {
        // replace the word name by your name
        System.out.println("Hello, I’m SOMETHING");
    }

}

Logging out

- Make sure you are completely logged out before you leave the lab.
- Click on the Fedora icon (f) at the left end of the control panel. Select Leave and then Logout.
- Be sure the login screen is visible before you leave the lab.
- There are gremlins in the lab who have been known to play tricks on people who forget to log out before leaving the lab.
- Typing exit will close into a terminal window only closes the window; it does not log you out.
Email

You have several choices of email clients on onyx.

When you are in the lab, you have a graphical program called evolution available to use. Once it has been set up, it should be reasonably self-explanatory. See the skills assignment for details.

If you are logging in remotely, there is a text-based email program called mutt. It uses the vi editor for editing messages.
If you don’t want to deal with mail on onyx, you can forward everything to another account.

- Go to your home directory (Type `cd`)
- Create a text file named `.forward` which should contain the email address you want to forward to and nothing else. You can use
  
  ```
  vim .forward
  i
  user@isp.net
  ESC
  ZZ
  ```

- If you want to keep a copy of your mail on onyx, you can replace the 3rd line with
  
  ```
  \onyxuser, user@isp.net
  ```

Grades for homework and programming assignments are sent to your onyx account. If you want to know what your grades are, you need to either learn to use one of the mail programs or forward your email.
Remote Sessions via ssh

- Download a free Secure Shell Client for your home computer.
  - Windows: Go to
    http://www.jfitz.com/tips/ssh_for_windows.html#sshServer
    for information about programs for Windows.
    1. PuTTY is a program that lets you log into onyx remotely
    2. WinSCP lets you copy files between onyx and your computer.
    4. Cygwin is a program that gives you a Linux-like desktop on your own computer.
  - Mac: Use the Terminal program in OS X. It has a ssh command for logging in and an scp command for copying files.

- The ssh programs are secure since they encrypt your password and data before sending over the Internet.
There are a number of links to handouts about Linux and vim at

http://cs.boisestate.edu/~tcole/cs125/spr11/useful.html

- Local Linux Guide
- basic Unix commands
- getting started with vim
Redirection

We will be writing programs that read from the keyboard and write to the console. You will probably find yourself typing in the same sequence of text over and over as you debug your programs.

You can save yourself some typing by using input redirection. Basically, this allows you to replace the keyboard with a text file for a single run of the program. Put the text that you would have typed into the program in a file (datafile below) and then type

```
java MyProg < datafile
```

Similarly, you can redirect the console output to a file by typing

```
java MyProg > outfile
```

You can do both at once as well

```
java MyProg < datafile > outfile
```