**Lab 3 – Introduction to Python, Simple Shell in Python**

**Objectives**

Learn how to use Python as a scripting language by completing various system administration tasks in Python. Write a simple shell in Python.

**Background**

**Python** is a general-purpose high-level programming language whose design philosophy emphasizes code readability. Python aims to combine "remarkable power with very clear syntax", and its standard library is large and comprehensive. Its use of indentation for block delimiters is unusual among popular programming languages.

Python supports multiple programming paradigms, primarily but not limited to object oriented, imperative and, to a lesser extent, functional programming styles. It features a fully dynamic type system and automatic memory management, similar to that of Scheme, Ruby, Perl, and Tcl. Like other dynamic languages, Python is often used as a scripting language, but is also used in a wide range of non-scripting contexts.

(Python (programming language), Wikipedia, [http://en.wikipedia.org/wiki/Python\_(programming\_language)](http://en.wikipedia.org/wiki/Python_%28programming_language%29), retrieved 8/24/2010)

**Procedures**

**Part I – Setup Python in Windows and Linux**

1.     Setup Python Development Environment in Windows

a.     Download Python 2.7 for Windows from <http://python.org/download/> (Be sure to get 2.7 NOT 3.1.2)

b.     Download and setup Eclipse Classic 3.6.0

c.     Download Pydev for Eclipse (I suggest getting the zip file, unzipping, and copying the folders to the eclipse/dropins folder)

2.     Setup Python Development Environment in Linux (use a VM with Ubuntu)

a.     Ubuntu 10.04 should have Python 2.6.5 already installed. Type python –V in the terminal to verify that python is installed. If it is not installed, you will need to download and install python from python.org

b.     Download and setup Eclipse. This can be done through the Synaptic Package Manager.

c.     Download and install Pydev for Eclipse.  (see <http://linuxforhumanbeings.blogspot.com/2009/10/how-to-integrate-pydev-in-eclipse-for.html>)

**Part II – System Administration Tasks**

Be sure to perform these tasks in both Windows and Linux.

1.     List a directory using python. (Hint: take a screenshot)

2.     Kill or suspend a process.  Note that this is done differently in Windows and Linux(Hint: take a screenshot)

3.     Start a process. (Hint: take a screenshot)

4.     Search for a file on your hard drive. (Hint: take a screenshot)

5.     Search for a string in a text file. (Hint: take a screenshot)

**Part III – Simple Shell in Python for Linux**

1.     Build a simple shell in python for Linux. Use the skeleton code [shell.py](http://it344.groups.et.byu.net/labs/shell.py) to get started. Use the following libraries to help you: sys, os, subprocess, shlex (for string tokenization)

2.     Be sure that your shell can run the following commands: date,pwd,ls,ps,cd, and exit (Hint: take a screenshot)

**Pass-off**

Show your working Python shell from part 3

**Write-up instructions**

1.     Document your install (Part I) such that your results could be replicated by another IT student. Include screenshots as necessary.

2.     Include your scripts (make sure to add comments so that anyone who reviews the scripts will know what is going on) and screenshots from Part II.

3.  Include your code from Part III and a screenshot of the shell running the following commands: : date,pwd,ls,ps,and exit

4.     Include links to any websites that you used as references.

**Resources**

·       [Python.org](http://www.python.org)

o   [Python Beginners guide for Programmers](http://wiki.python.org/moin/BeginnersGuide/Programmers)

o   Documentation for the [sys module](http://docs.python.org/library/sys.html)

o   Documentation for the [os module](http://docs.python.org/library/os.html)

o   Documentation for the [subprocess module](http://docs.python.org/library/subprocess.html)

o   Documentation for the [shlex module](http://docs.python.org/library/shlex.html)