CPSC 254
Fall 2015
Project #2: Shell Scripting

Introduction

The goal of this project is to write a shell script of moderate complexity. Your script will mimic the functionality of the tree command line program.

Requirements

You will need your own Ubuntu installation with network access, which you should have already set up.

You will also need to install the `tree` program, which is available in an Ubuntu packaged called, appropriately, ”tree”. There are two straightforward ways of installing the ”tree” package: with the `apt-get` command line program, or the Synaptic graphical program under System > Administration > Synaptic Package Manager.

The `tree` program descends into a directory on disk, and prints out a tree-like diagram showing the contents of that directory, and the contents of any of those subdirectories, and the contents of any of those subdirectories, and so on.

For example, the command

```
$ tree/etc/gdm
```

produces the following output:

```
/etc/gdm
|--Init
|`--Default
|--PostLogin
|`--Default.sample
|--PostSession
|`--Default
|--PreSession
|`--Default
|--Xsession
|--failsafeBlacklist
|--failsafeDexconf
```

```
|--failsafeXServer

|--failsafeXinit

`--gdm.schemas

4directories,10files
```

You must write a script called `mytree` that takes a start directory as a parameter. Your mytree script **should not invoke the tree program at any point**. The purpose of installing and running the tree script is to simply compare your script to see if the output matches. Your script should

1. Output the start directory

2. For each file or directory,

- Output out a pipe character (|, then two dashes (--), then the
- In the case of a directory, recurse into the directory and print its name of the file/directory contents

3. Output the total number of directories and files that were listed

In order to look right, subdirectories should be indented according to how ”deep” they are below the start directory.

In addition to these requirements, your script must accept two optional parameters:

• --help: print out usage information, then immediately quit

• -d: list directories only; in other words, ignore files

When you have your version of tree working, print out the following:

1. Your script’s source code

2. The output of tree /etc/gdm

3. The output of mytree /etc/gdm

4. The output of mytree --help

5. The output of mytree -d /etc/X11

6. The output of mytree -d /var/lib

Deliverables

In addition to your source code, you should print out each of the 5 commands and their output.
The first page of your submission should include your name(s) and a title.

Hints

Your script will probably need to use the ls command, as well as if statements, loops, functions, variables, and arithmetic.

In order to implement recursive directory printing, you will probably need to write a recursive shell function to handle printing out a directory. That function will probably need to take an argument for the depth of recursion (or, alternatively, the number of spaces of indenting to use).

You may want to refer to the scripting tutorial at

http://linuxcommand.org

or the GNU Bash manual at

http://www.gnu.org/software/bash/manual/html node/index.htmlIntroduction

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Acknowledgements

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