

CSC112 **Spring 2011**
Fundamentals of Computer Science
Lab 1

Our first task is to get everyone set-up with a working Linux environment. For this:

1. Install “virtual box” software on your computer. Details will be presented during the lab session.
2. Install Ubuntu. A CD-ROM disk will be provided during the lab session.
3. Install “virtual box extensions” software on your computer. This software will enable full-screen mode while working with Ubuntu.

Warning While Virtual Box is fully functional, it is not “100 % soldier proof”. Always remember to shut down your Ubuntu virtual machine before turning off your computer. Shut down your virtual machine using the menus that are provided by the Virtual Box software. **Do not** shut down your Virtual Box/Ubuntu session using the Windows task manager.

The initial install media for Ubuntu consists of only one CD. Many useful software packages could not be included because of space limitations. Fortunately, Ubuntu makes it very easy for you to install additional software. Open a terminal session, and use the `apt-get` command. The `apt-get` command requires administrative privilege to install software. There are several ways to obtain administrative privilege, but one of the most common ways is via the `sudo` command. Thus, a recommended form for installing software is:

```
sudo apt-get install package_name
```

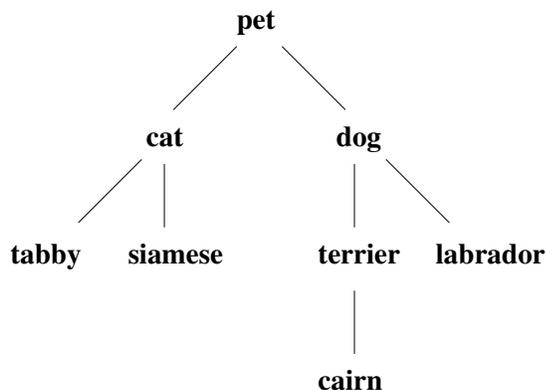
where “*package_name*” is the name of the desired package. One of the software packages we will be making use of is the C/C++ compiler suite. The C components should be already installed, but in Ubuntu 10.04, C++ was not installed by default. To install C++ on your computer, use the command

```
sudo apt-get install g++
```

We will be installing additional software as the semester progresses.

Once everything is set up, do the following exercises.

0. Create a directory named `Lab1` and change your current directory (using the `cd` command) to `Lab1`. Keep all work for this lab in the directory named `Lab1`.
1. Write a shell script (and run it) to create the following directory structure.



The internal nodes of the tree are directories and the leaf nodes are files. For this exercise, these can be empty files. You can create these with the `touch` command.

- Using the “vi” editor, create a file called “hello.cc” containing the following C++ program.

```
#include <iostream>
using namespace std ;

int main()
{
    cout << "Hello world C++" << endl ;
}
```

- Compile your program using the command:

```
g++ -o hello hello.cc
```

The “-o” option causes the output of the compiler (executable code) to be put into a file named “hello”.

- Run your program by typing its name.
- Enter, compile, and run the following C++ program. This one demonstrates input as well as output.

```
#include <iostream>
using namespace std ;

int main()
{
    int a, b ;

    cout << "Enter an integer 'a'   : " << endl ;
    cin >> a ;
    cout << "Enter an integer 'b'   : " << endl ;
    cin >> b ;
    cout << endl << a << " + " << b << " = " << a + b << endl ;
}
```

- Use the `tar` command to create an archive of your work for this lab. Change to your home directory (containing directory “Lab1”) and use:

```
tar cf lab1.tar Lab1
```

- Backup your work (the tar file) onto the memory stick (provided at Lab 1).
- Upload your tar archive file “lab1.tar” to your account on **telesto.cs.wfu.edu**. Use the **sftp** command to copy the file to the remote host. An account on telesto and your password will be provided.