CSC112　　　　　　　Fall 2010
Fundamentals of Computer Science
Lab 1

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

0. Install "virtual box" software on your computer. Details will be presented during the lab session.

1. Install Ubuntu. A CD-ROM disk will be provided during the lab session.

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 form is:

```
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. Install it on your computer using the command

```
apt-get install gcc
```

We will be installing additional software as the semester progresses.

Once everything is set up, do the following exercises.

0. Write a shell script to create the following directory structure.
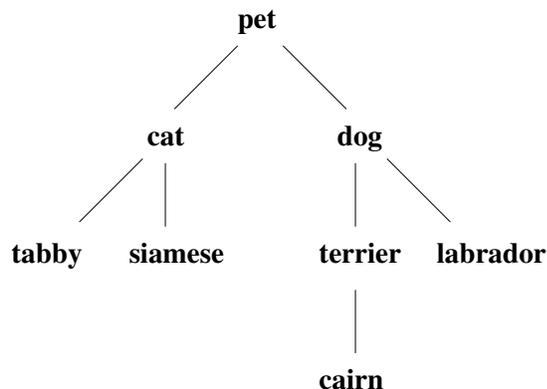
The internal nodes of the tree are directories and the leaf nodes are files. For this exercise, these can be empty files. You can create these with the `touch` command.

1. Use the `tar` command to create an archive of this directory. Change to the directory containing "pet" and use:

```
tar cf pet.tar pet
```

2. Upload your tar archive file "pet.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.

3. Using the "vi" editor, create a file called "hello.c" containing the following C program.

```
#include <stdio.h>

int main()
{
    printf("Hello world.\n") ;
}
```

4. Compile your program using the command:

```
gcc -o hello hello.c
```

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

5. Run your program by typing its name.

6. Using the "vi" editor, create a another file called "hello.cc" containing the following C++ program.

```
#include <iostream.h>

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

7. Compile your program using the command:

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

and run it as before.

8. Enter, compile, and run the following C++ program. This one demonstrates input as well as output.

```
#include <iostream.h>

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 ;
}
```

9. Create a tar archive (named "work.tar") containing the programs above (including the compiled executables) and upload them to your home directory on **telesto**.