

Using SSH to Connect to deepthought

ECE6110, Spring 2016

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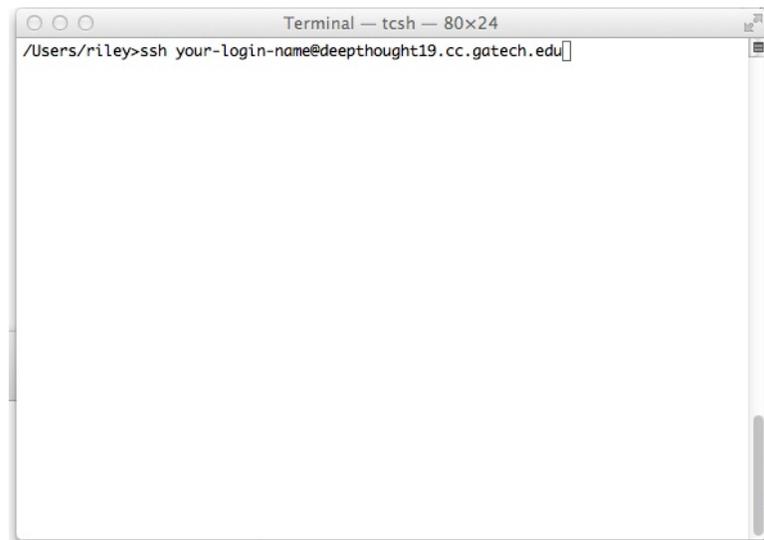
1. If you use Windows and have not yet installed *XWin32* you should go to <http://software.oit.gatech.edu>, select your affiliation as student and the software type is Microsoft Windows Desktop. Then select and download X-Win32 2014 (with SSH).
2. Bring up a terminal window on your laptop. If you have a Mac or Linux it is simply the Terminal application. For windows use the XWin32 downloaded above. Below is a screen shot of the terminal window on Mac.



Notice the prompt showing the current working directory (`/Users/riley` in my case. Yours will of course be different.

3. Use the `ssh` command to “connect” to a different computer, `deepthought19.cc.gatech.edu` in this case.

Below are screen shots before and after entering the final “return” key and after entering your log in password.



```
gr48@deepthought19:~ — ssh — 80x24
/Users/riley>ssh gr48@deepthought19.cc.gatech.edu
gr48@deepthought19.cc.gatech.edu's password:
Last login: Tue Jan 12 11:05:10 2016 from gfr-mac-desktop.ece.gatech.edu
[gr48@deepthought19 ~]$
```

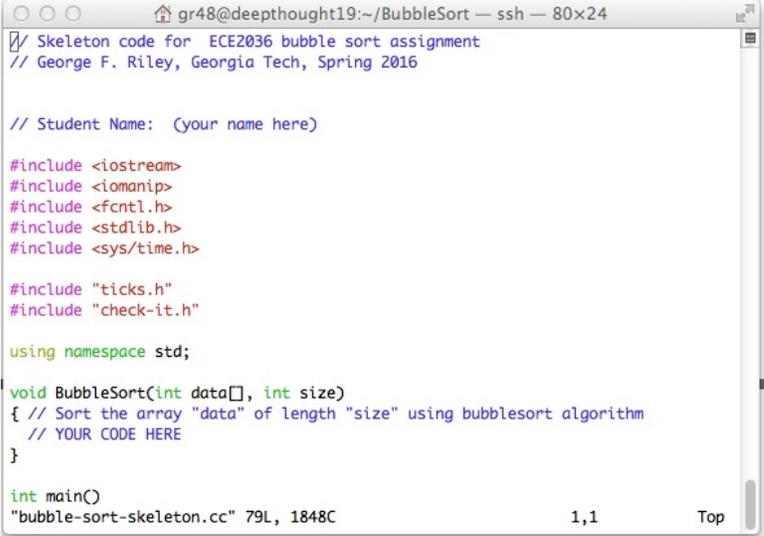
Note that the “Prompt” is slightly different on deepthought in that it prints the login name followed by the local machine name (deepthought19 in this case).

4. Finally is an example of the output after changing your working directory using `cd` and then a `ls` (list files) command.

```
gr48@deepthought19:~/BubbleSort — ssh — 80x24
[gr48@deepthought19 ~]$ rsync -avu /nethome/ECE2036/BubbleSort .
sending incremental file list
BubbleSort/
BubbleSort/BubbleSort.aux
BubbleSort/BubbleSort.log
BubbleSort/BubbleSort.pdf
BubbleSort/BubbleSort.tex
BubbleSort/Makefile
BubbleSort/bubble-sort-skeleton.cc
BubbleSort/check-it.cc
BubbleSort/check-it.h
BubbleSort/ticks.cc
BubbleSort/ticks.h

sent 90926 bytes  received 206 bytes  182264.00 bytes/sec
total size is 90197  speedup is 0.99
[gr48@deepthought19 ~]$ cd BubbleSort
[gr48@deepthought19 BubbleSort]$ ls
BubbleSort.aux  BubbleSort.pdf  BubbleSort.tex  check-it.h  ticks.cc
BubbleSort.log  bubble-sort-skeleton.cc  check-it.cc  Makefile  ticks.h
[gr48@deepthought19 BubbleSort]$
```

5. Next is a screen shot of using the `vi` text editor. In this case we have specified to run the `vi` program on the `bubble-sort.cc` file. There are many good on-line resources about how to use `vi`.



```
gr48@deepthought19:~/BubbleSort — ssh — 80x24
~/ Skeleton code for ECE2036 bubble sort assignment
// George F. Riley, Georgia Tech, Spring 2016

// Student Name: (your name here)

#include <iostream>
#include <iomanip>
#include <fcntl.h>
#include <stdlib.h>
#include <sys/time.h>

#include "ticks.h"
#include "check-it.h"

using namespace std;

void BubbleSort(int data[], int size)
{ // Sort the array "data" of length "size" using bubblesort algorithm
  // YOUR CODE HERE
}

int main()
"bubble-sort-skeleton.cc" 79L, 1848C 1,1 Top
```

6. Finally a screenshot of using `emacs` to edit your `bubble-sort.cc` file. Notice that `emacs` opens a second and larger window with the text of the program. This will only happen if you have `X11` installed on your laptop. For linux systems it is included with the distribution, but with Mac OSX there is a separate install process for `X11` called `XQuartz`. For windows platforms the `XWin32` discussed above should be sufficient.

The screenshot shows the Emacs editor window with the following content:

```

emacs@deepthought19.cc.gatech.edu
File Edit Options Buffers Tools C++ Help

// Skeleton code for ECE2036 bubble sort assignment
// George F. Riley, Georgia Tech, Spring 2016

// Student Name: (your name here)

#include <iostream>
#include <iomanip>
#include <fcntl.h>
#include <stdlib.h>
#include <sys/time.h>

#include "ticks.h"
#include "check-it.h"

using namespace std;

--- bubble-sort-skeleton.cc Top (1,0) (C++/1a Abbrev) ---2:17PM---
Welcome to GNU Emacs, one component of the GNU/Linux operating system.

Emacs Tutorial          Learn basic keystroke commands
Emacs Guided Tour       Overview of Emacs features at gnu.org
View Emacs Manual       View the Emacs manual using Info
Absence of Warranty     GNU Emacs comes with ABSOLUTELY NO WARRANTY
Copying Conditions      Conditions for redistributing and changing Emacs
Ordering Manuals        Purchasing printed copies of manuals
To quit a partially entered command, type Control-g.

This is GNU Emacs 23.1.1 (x86_64-redhat-linux-gnu, GTK+ Version 2.24.23)
of 2014-11-27 on x86-010.build.bos.redhat.com
Copyright (C) 2009 Free Software Foundation, Inc.

If an Emacs session crashed recently, type Meta-x recover-session RET
to recover the files you were editing.
Dismiss this startup screen  Never show it again.

-U:%%- *GNU Emacs* All (3,0) (Fundamental) ---2:17PM---
For information about GNU Emacs and the GNU system, type C-x h C-a.

```

7. There are a few linux commands that are needed to successfully complete the assignments. There are dozens of on-line resources for learning linux shell commands. A few of the useful commands are given below.
- ls - List all files in the current directory excepting *hidden* files.
 - ls -la - List in long format all files in the current directory including *hidden* files.
 - cd SomeDirectoryName - Change your working directory to some other directory. If the SomeDirectoryName starts with a forward slash, the directory is relative to the system *root* directory. You would rarely do this.
 - cd - Change your working directory to your *home* directory.
 - cd .. - Change your working directory to the *parent* of the current directory.
 - make program-name - Run the compiler and linker to create an executable binary program-name using the source code program-name.cc
 - g++ -o program-name -g -Wall program-name.cc Run the C++ compiler, compiling program program-name.cc and writing the executable binaries on file program -name