**Programming Assignment 0** *Computer Organization CSI404 Spring 2015*

**This is just a mechanical, no-problem solving assignment. DO IT RIGHT AWAY–the penalty-free deadline is Tuesday, January 27, 11:59PM**

But you CAN'T begin Prog. Assignment 1 until 24 hours after you do this!

If you have ANY TROUBLE WITH IT AT ALL, you're expected to get the trouble resolved by visiting a course staff member WELL BEFORE THE ABOVE DEADLINE.

You are to merely type two commands after logging in to itsunix.albany.edu

1. Connect and log in, using your NetID and password, to `itsunix.albany.edu` as you did for our CSI333 course. (See the FAQ at the end for more info.) DO NOT change the directory you're in! (Simply don't give any commands besides the two we give you.) Our instructions depend on being in your home directory which is where you are when you log in.

2. First command: `ssh-keygen -t rsa`
   JUST PRESS ENTER when it prompts for which file to save the key. Again JUST PRESS ENTER when it prompts for a "passphrase".
   It will prompt for a passphrase a second time. JUST PRESS ENTER again. Here's what you should see: (What varies is replaced with .....'s and "`or something`" and "`YourNetID`".)

   ```
   unix1% ssh-keygen -t rsa
   Generating public/private rsa key pair.
   Enter file in which to save the key (/home...../.ssh/id_rsa):
   Created directory '/home...../.ssh'.
   Enter passphrase (empty for no passphrase):
   Enter same passphrase again:
   Your identification has been saved in /home..../.ssh/id_rsa.
   Your public key has been saved in /home...../.ssh/id_rsa.pub.
   The key fingerprint is:
   a2:a7:....or something.............  YourNetID@unix..its.albany.edu
   ```

   If you see some error message instead of something like the above: STOP! It will be USELESS to go on! See the FAQ after these instructions.

3. Last command (read and type this exactly, very carefully):
   `mailx schaiken@albany.edu < .ssh/id_rsa.pub`
   If you see the `unix%` prompt right away, you are done, provided you typed Prof. Chaiken's email address without any mistakes.

   The non-letter symbols in this command are (1) the AT-SIGN and some periods, (2) a SPACE, (3) the LESS-THAN symbol "`<`", (4) another SPACE, (5) A DOT or period in `.ssh`, (6) a forward slash "`/`", (7) underscore "`_`" (a key near the left end of the upper-most row depressed with SHIFT held down), and finally a DOT in `.pub`

   Make sure to type `id_rsa.pub` (You will also have a `id_rsa` file without the `.pub`—DO NOT SPECIFY THAT ONE!!)

4. If you see any error message, you likely either didn't get the `~/.ssh/id_rad.pub` file created by `ssh-keygen` or you mistyped `mailx schaiken@albany.edu < ~/.ssh/id_rsa.pub`

## Frequently Asked Questions

1. Accessing itsunix? (Help for transfer students.)

   (a) You need a valid UA NetID and password, so you must be in UAlbany. Consult the ITS helpdesk in the LC for problems with your NetID and password.

   (b) You might use your own Internet connected computer but if that doesn't work you MUST use the UA Info. Commons Windows PCs in the libraries to get your assignments done IN TIME. Personal computer or network problems are NOT acceptable excuses for lateness.
   On a UA PC:

      i. Log in with your NetID and password.
      ii. From the Start menu, select Unix Connectivity.
      iii. Among the Unix Connectivity options, select putty to itsunix.
      iv. At the username prompt type your NetId in lower case and press ENTER.
      v. At the password prompt type your password (respecting upper and lower case) and press ENTER. You will not see the password characters or anything else like dots as you type it in.
      vi. After seeing the greeting message, go back and follow course instructions. Try the NetID and password again if it fails, and then consult the helpdesk.

   (c) On your own desk or laptop computer (iPads/tablets are NOT RECOMMENDED):
   On a MAC or Linux system, open a command shell window and command:
   `ssh -X` *YourNetID*`@itsunix.albany.edu`
   Answer yes to questions about accepting the host key and then type your UA password at the prompt. (Your typing will not be echoed.)
   On Windows: You need to download and install **ssh client software** like Putty (`http://www.chiark.greenend.org.uk/~sgtatham/putty/`). In that software's GUI for connecting, specify
   `itsunix.albany.edu` for host name
   Make sure `ssh` or port 22 is specified for protocol or port number.
   You UA password for password authentication.

2. ssh-keygen fails.

   - If you see a message that some file "`already exists`" and "`Overwrite (yes/no)?`", then you must choose what to do since you had already made and might be using SSH key pairs. If you know nothing about that, just type `yes` and go on.
     If you REALLY know what you are doing, you could use the same RSA public key for our course as you use for other things. Email your public key to Prof. Chaiken in a PLAIN ASCII TEXT MESSAGE that also contains your UA NetID. OTHEWISE, follow the instructions!
   - Any error message is likely due to you mistyping the `ssh-keygen -t rsa` command. Just try again, more carefully.

3. Why must I do this key thing, what is the role of GIT and what am I expected to do with it in 404?

Unlike previous 404 students, you will use GIT to BOTH manage how your programming work is stored AND to upload it for grading. You will be doing C and MIPS assembly language programming homeworks much like those in CSI333, except that you will use GIT to turn in your work INSTEAD OF `turnin` or Blackboard. Specific instructions and explanations will be given as you need them.

Access to the GIT servers used by professionals is usually controlled by ssh (secure shell) cryptographic keys, prevent unauthorized uploads, or downloads of secure information. So, you MUST follow the instructions to generate and send us your key BEFORE you can download the C program file to start Assignment 1.

You (like many professionals in major projects today) will use private/public key pairs to authenticate your access to a GIT server.

4. How can we find out more about GIT?
   GIT is a key software development technology today, it is easy to use for simple things when you follow instructions, but it is conceptually subtle and has an enormous number of capabilities, commands and options. Prof. Zheleva will explain it a little at a time throughout the course, and please do ask her your questions.
   Harvard's GIT notes from its Systems Programming and Systems Programming course at `http://cs61.seas.harvard.edu/wiki/2014/Git` are a great introduction to how we will be using GIT.
   My favorite site of GIT tutorials leading to concepts and implementation is `http://www.gitguys.com/`
   And `http://git-scm.com/documentation` provides Scott Chacon's comprehensive book and the reference manual free.