Getting Started

For fall 2019, most of your work in 6.004 will happen on the Athena machines. However, there are a few steps that you will need to do to setup your account: adding the 6.004 toolchain, and setting up an SSH key for MIT GitHub.

Login to Athena

- **From a workstation:** At any unoccupied workstation that displays the words "Welcome to Athena", enter your username (kerberos) and password.
- **Web browser:** Visit `https://athena.dialup.mit.edu`, where you can use a web-based SSH client to access the dialup servers. While this method requires no configuration, the web-based SSH client may not have some advanced terminal features.
- **Linux or Mac OS:** At the terminal prompt, type: `ssh {kerberos}@athena.dialup.mit.edu` and replace `{kerberos}` with your Athena username.
- **Windows:** Visit `https://ist.mit.edu/securecrt-fx` to download the SecureCRT ssh client. It comes pre-configured with a profile called "Athena". Simply double-click on it and enter your password when prompted. If you're using a different SSH client, you can configure it to connect to `athena.dialup.mit.edu`.

Setting up the 6.004 Toolchain

6.004 has an AFS locker containing binaries that it needs for you to test and compile your labs, however you need to add this manually.

1. **Access your Athena account.**
2. **Setup your `bashrc`.** Once you have logged in, you should add the line "`source /mit/6.004/setup.sh`" (without the quotes) to your `.bashrc`. You can do this through any editor (`emacs`, `nano`, `vim`, ...), or by running the following command:

   ```
   echo "source /mit/6.004/setup.sh" >> /mit/{kerberos}/.bashrc
   ```

   If you prefer to not modify your `.bashrc`, you can also run "`source /mit/6.004/setup.sh`" whenever you login.

Generating an SSH Key

To submit your code for grading, you will be pushing it to MIT's GitHub. However, to access GitHub, you will need to create an SSH key and add it to your account. (An SSH key is a piece of data that can be used to authenticate to many services on the command line; we will use it in 6.004 to authenticate to MIT GitHub so you can pull and submit code.)

On your Athena account (and locally, if you want to push to GitHub), you would run the command `ssh-keygen`. It will ask you where to store the file, and a password. For a good default, paste the following, replacing `{kerberos}` with your Athena username.

```
ssh-keygen -t rsa -b 4096 -C "{kerberos}@mit.edu"
```

- When you're prompted to "Enter a file in which to save the key," press Enter. This accepts the default file location (`.ssh/id_rsa`). Athena automatically loads this key name to the ssh-agent.
- When you're prompted to "Enter passphrase," you can create a passphrase to secure your SSH key. You will be prompted to type it a second time as a double-check, and will need to enter it again every time in the future you want to use this SSH key. Note that nothing will appear on the screen as you enter your passphrase; this is normal and is how many command-line applications accept passphrases. Also note that entering a passphrase is optional.

NOTE: If you plan to do local development, refer to the section **Adding your SSH key to the ssh-agent**. Also, If you have other ssh keys on your local machine, you should specify a different file location. For example, you might use `.ssh/mit-github`.

Link your MIT GitHub account

Once you have created your SSH key, you will need to link it with GitHub.

1. Output the content of the public key on your terminal using

   ```
   cat ~/.ssh/id_rsa.pub
   ```

   Then copy the output to your clipboard (manually).

2. Login to `https://github.mit.edu` with your mit Kerberos and Password.

3. Go to **Settings** (click on your icon in the top right) → **SSH and GPG keys**.

4. Click **New SSH key**.

5. Paste the content on the Key field.

6. Click **Add SSH Key**.

Adding your SSH key to the ssh-agent (for local development only)

If you want to pull or push your code to GitHub from local your computer, you will have to repeat the steps above to link your computer to Github just like you did for Athena. Then proceed with the following steps (this section supposes that you are able to run bash on your computer).

1. Start the ssh agent in the background with the following command:

   ```
   eval "$(ssh-agent -s)"
   ```

2. Add your SSH private key to the ssh-agent. If you created your key with a different name, or if you are adding an existing key that has a different name, replace id_rsa in the command with the name of your private key file.

   ```
   ssh-add ~/.ssh/id_rsa
   ```

NOTE: You will need to run these commands whenever you login to your computer. If you want it to be automatic, you should add these lines to your `.bashrc`.

Setting up graphical tools for Windows or Mac

If you encounter an error when trying to run the graphical tools then, you may need to install additional software on your computer. If you are a MacBook user, install XQuartz. See `https://www.xquartz.org` for instructions.

Else if you are Windows user. First you need to enable display forwarding on CRT. Follow these steps.

1. Open SecureCRT.

2. On your Athena session, under session manager tab, right click on your Athena session and select options.

3. Select Remote/X11 under the Port Forwarding category.

4. Make sure that the box "Forward X11 packets" is checked.

Next let's install X-Win32. This software handles the display forwarding and is provided by IST on `https://ist.mit.edu/xwin32`. Follow the installation guide to setup the activation key. After installation, open X-Win32 and click on Launch button.

You should now be able to run the graphical tools for the class.