Instructions for setting up Java on your own machine

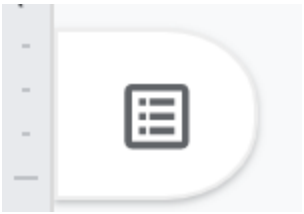
Intro

In this class, you will be writing in Java. This page contains information on how to use it on your machine, split up by instructions for Mac and instructions for Windows.

If you have any questions or issues, feel free to reach out to anyone on the staff.

Outline

Additionally, you can click the Outline button to the left of this document to get a more detailed outline.



Mac Instructions

To run most things on Mac, you will use an application called `Terminal`, which should already be downloaded onto your computer. Here is a quick tutorial on how to use the `Terminal`, however you will be going over the basics in lecture / lab, so this is just if you want to explore beyond what's in class.

NOTE: One thing to note throughout these instructions is that whenever a `Terminal` command is offered, don't include the "$" in the command - that is there to signal to you that it is a terminal command.

Java

You will be editing your code and running it in 2 separate locations.

Getting Java on Your Machine

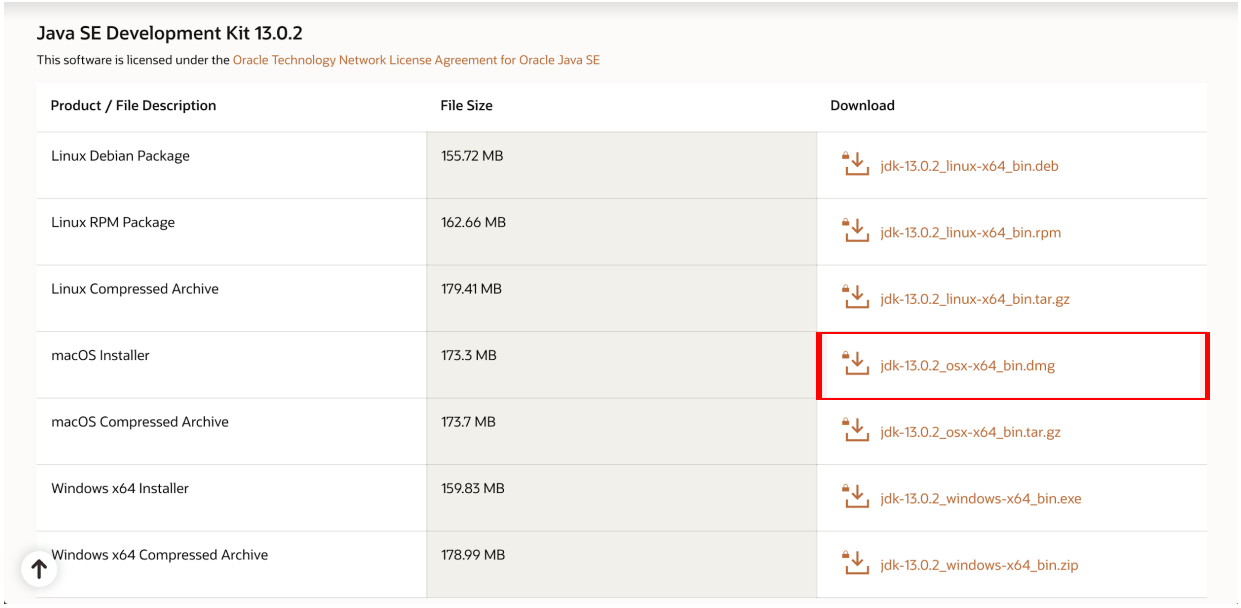
To check if you have Java, type the following command in your `Terminal`:

```
$ java --version
```

It should give you a version number that is 11 or higher.

If it doesn't list a number 11 or above, or if an error gets produced saying there is "No Java runtime present", then you need to get the updated version.

To do that, go to this link. Scroll down to the download links (should look like the screenshot below). Click the button that says "jdk-13.0.2_osx-x64_bin.dmg". Accept the license agreement

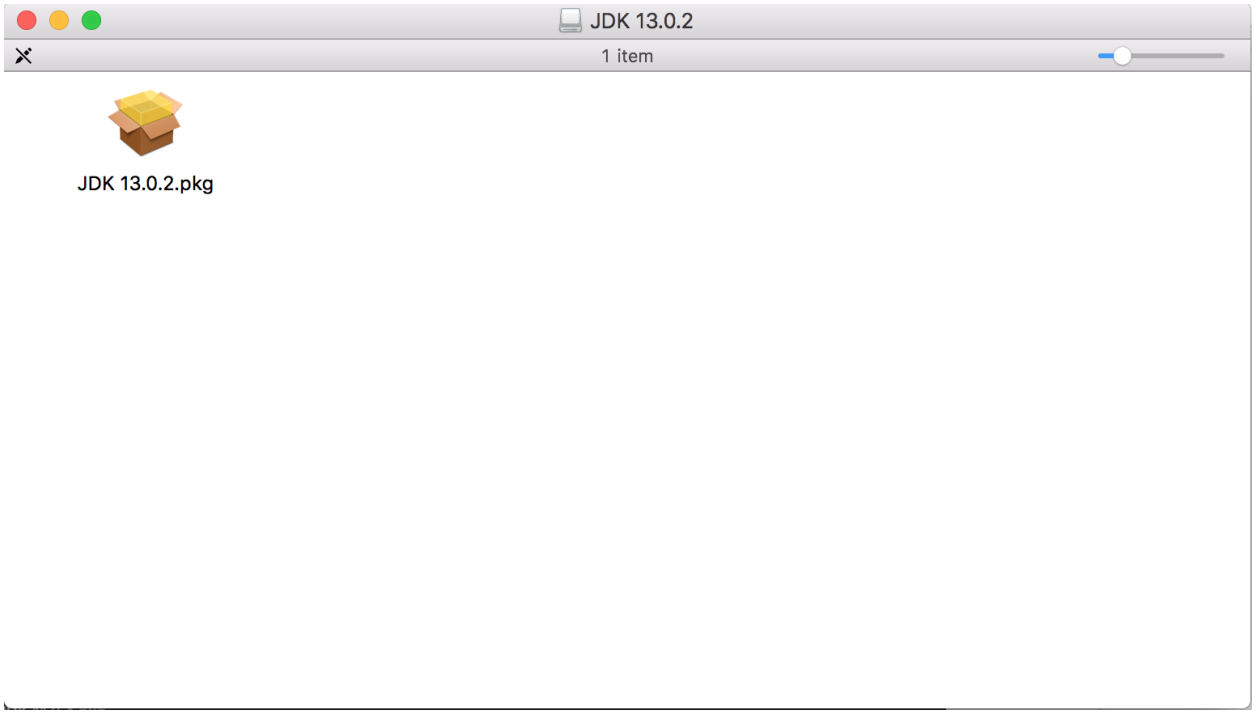


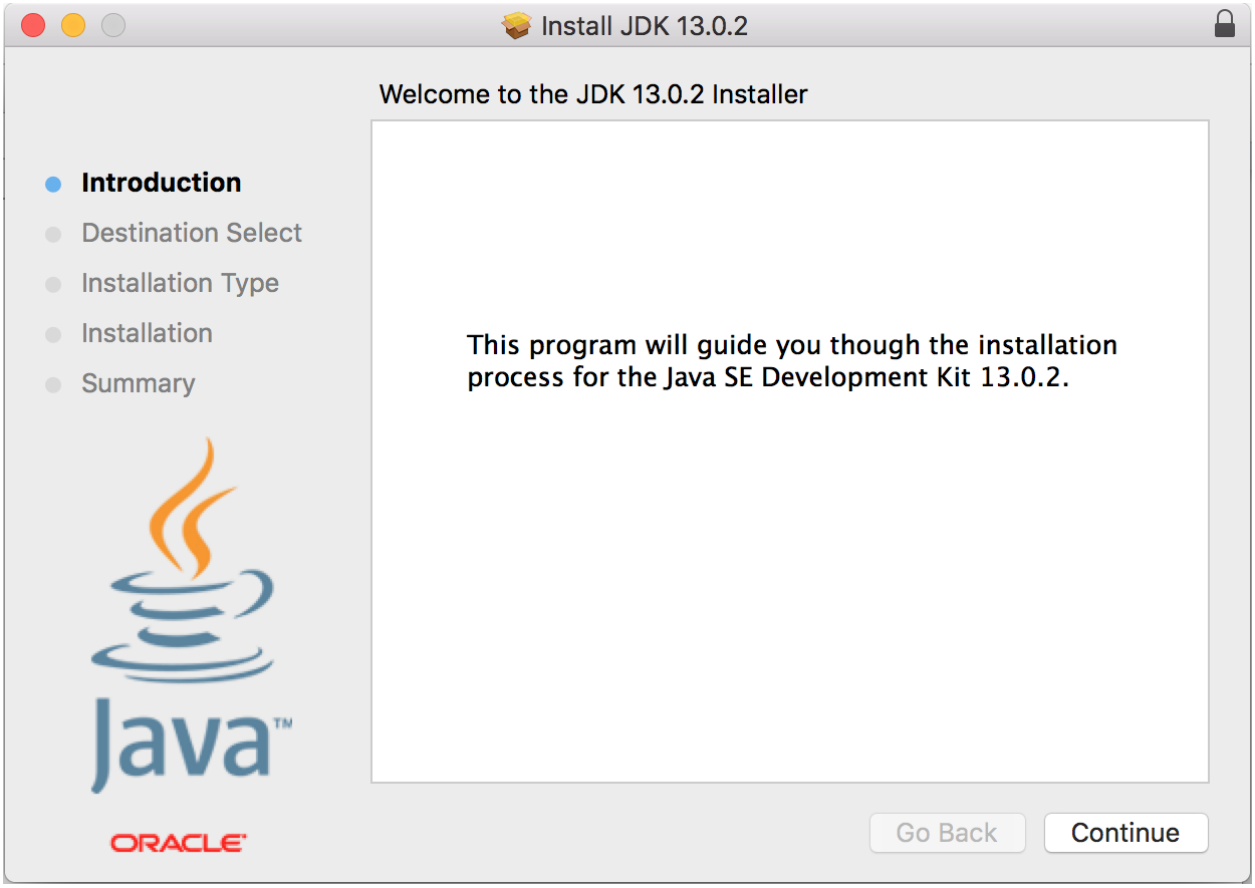
Java SE Development Kit 13.0.2

This software is licensed under the Oracle Technology Network License Agreement for Oracle Java SE

Product / File Description	File Size	Download
Linux Debian Package	155.72 MB	jdk-13.0.2_linux-x64_bin.deb
Linux RPM Package	162.66 MB	jdk-13.0.2_linux-x64_bin.rpm
Linux Compressed Archive	179.41 MB	jdk-13.0.2_linux-x64_bin.tar.gz
macOS Installer	173.3 MB	jdk-13.0.2_osx-x64_bin.dmg
macOS Compressed Archive	173.7 MB	jdk-13.0.2_osx-x64_bin.tar.gz
Windows x64 Installer	159.83 MB	jdk-13.0.2_windows-x64_bin.exe
Windows x64 Compressed Archive	178.99 MB	jdk-13.0.2_windows-x64_bin.zip

When you've finished the download, click it and follow the installer. You might also have to double click the box (shown in the first photo below) to start the installer. You can move the installer to the trash when it's done.





Re-run the following java version command to make sure you have the correct version:

```
$ java --version
```

After running this command you should see:

```
java 13.0.2 2020-01-14
Java(TM) SE Runtime Environment (build 13.0.2+8)
Java HotSpot(TM) 64-Bit Server VM (build 13.0.2+8, mixed mode, sharing)
```

If you see this then you have correctly installed Java!

Editing Java Code

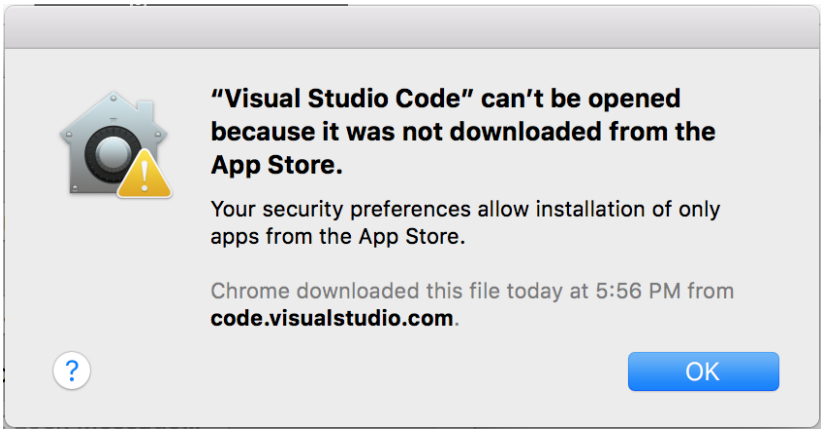
To edit your Java code, we recommend the following 2 text editors.

Visual Studio Code

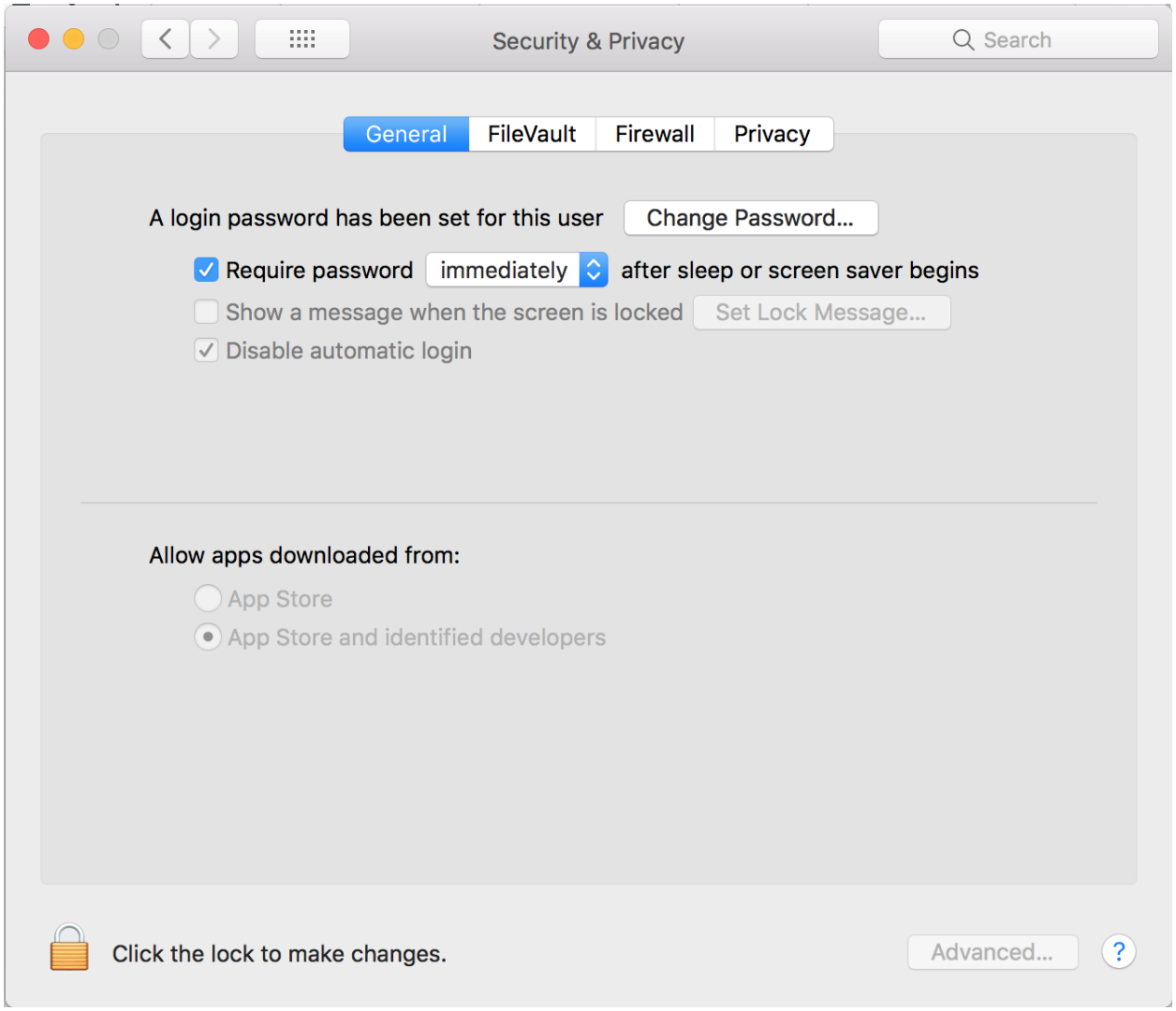
Follow this link, and click the Mac Download button:

Open the downloaded file once it's done, and follow the instructions there on how to finish the download.

A possible error that may occur when trying to open VS Code is the following:



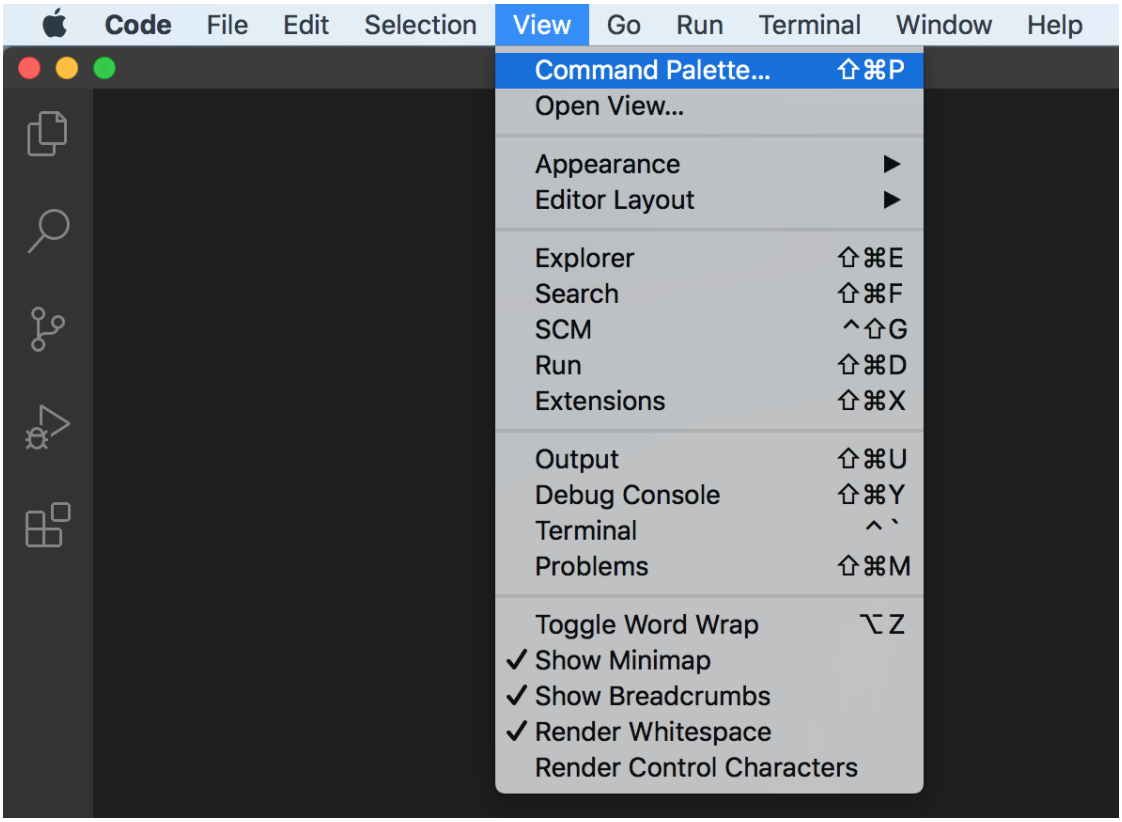
To fix this, do the following:
Open System Preferences through Spotlight Search
Click on Security and Privacy
Click on the lock symbol in the bottom left followed by entering your password
Then change the setting under "Allow apps downloaded from:" from App store to App Store and identified developers. Below is a screenshot of the correct setting
Finally, click the lock on the bottom left to lock the settings
You should now be able to run the VS Code application



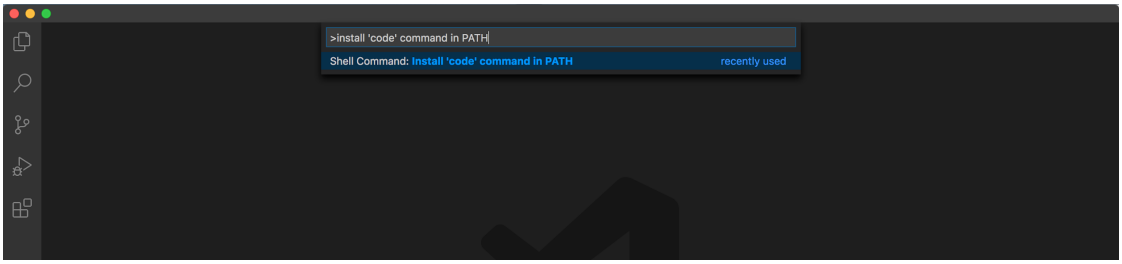
To open files in VS Code, there are two ways to do this.

- One way is to open VS Code itself first. From there, go to `File > Open`, and choose the file you wish to edit.
- To run it from `Terminal`, it is slightly more complicated (you need to do one step first to make it always work. Note that this step only needs to be performed the first time you open VS Code).

- First, open up the command palette within VS Code (type ⇧⌘P) or click view on the top bar followed by the command palette option. Below is a screenshot of this



- Next type “Install 'code' command in PATH” into the command palette and hit enter. Below is a screenshot of this



- Now you can run the `Terminal` command. Open `Terminal`, and navigate to the folder where your file is located and type `code` followed by your file’s name:

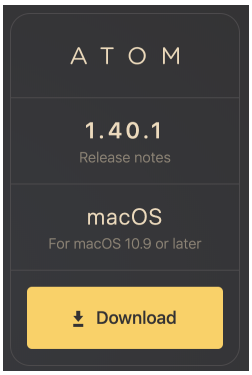
```
$ code fileName.java
```

For example, if I have a file called helloWorld.java, then I would type the following to open it in VS Code:

```
$ code helloWorld.java
```

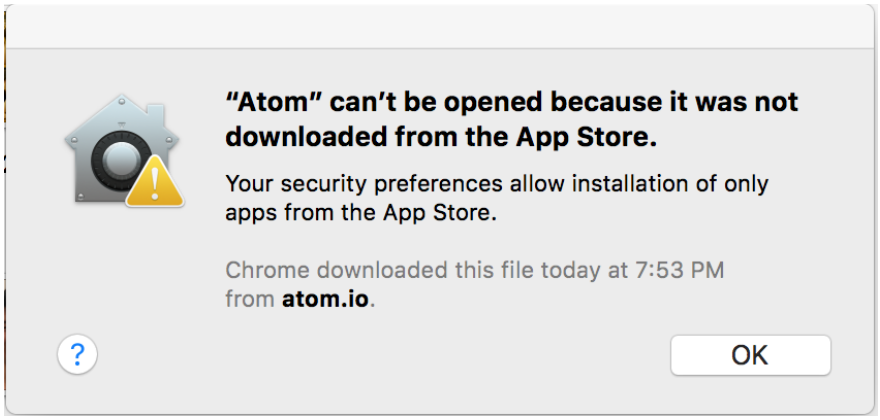
Atom

Follow this link, and click the Download button:

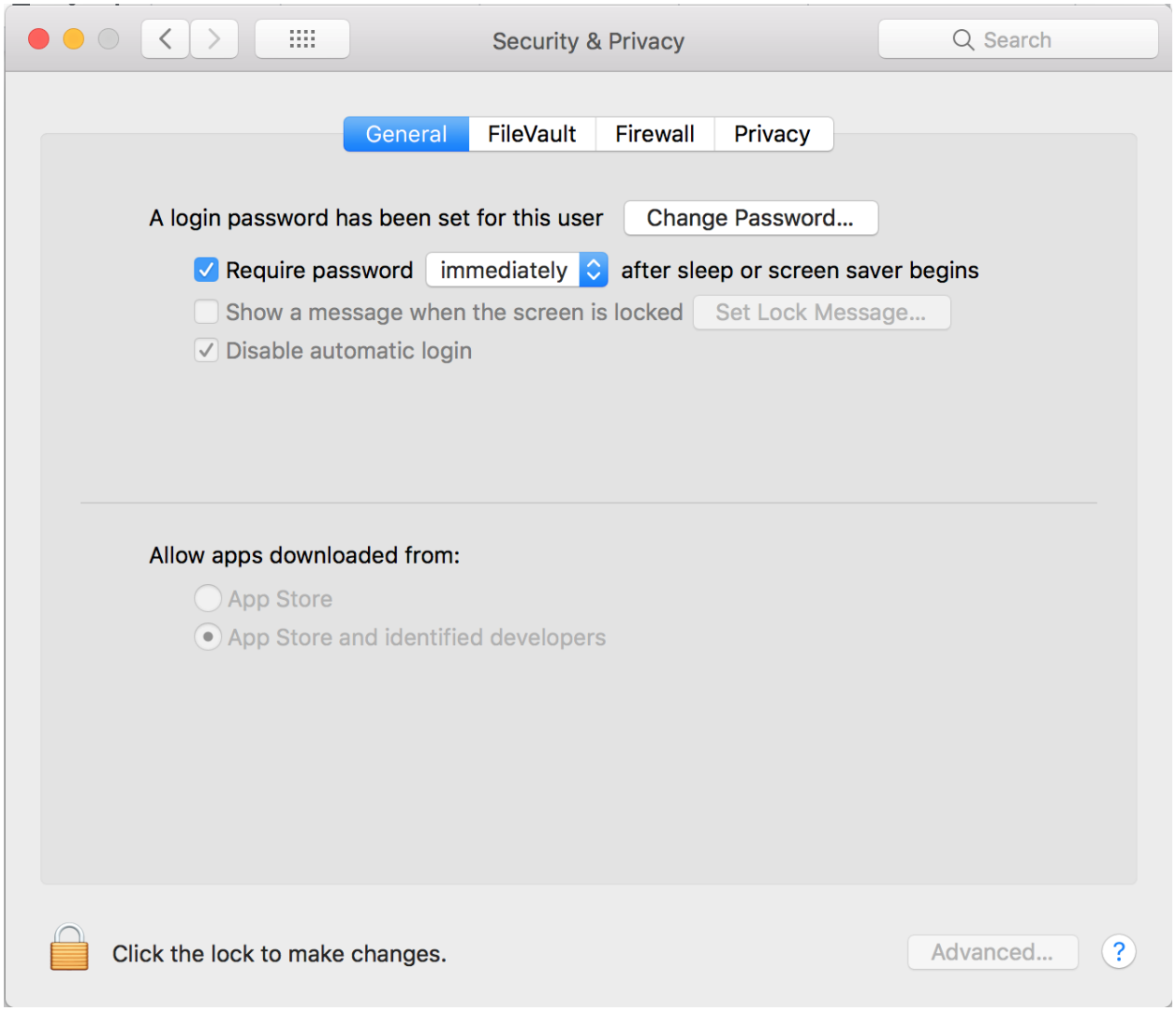


Open the downloaded file once it's done, and follow the instructions there on how to finish the download.

A possible error that may occur when trying to open Atom is the following:

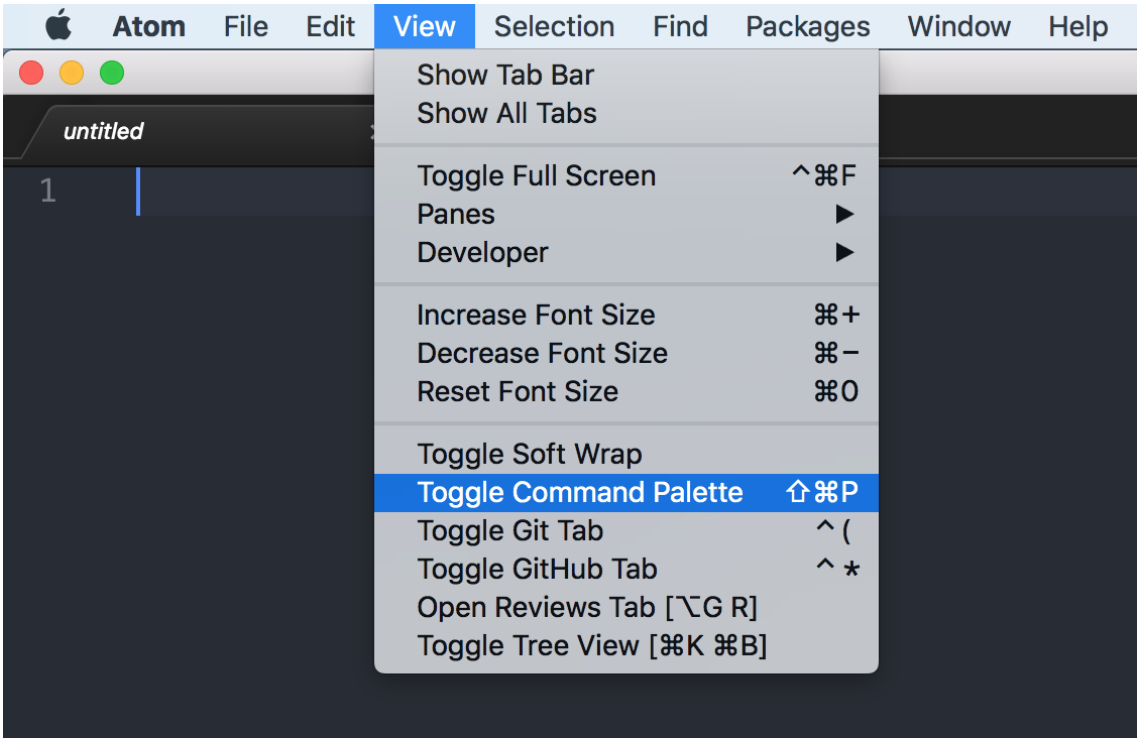


To fix this, do the following:
Open System Preferences through Spotlight Search
Click on Security and Privacy
Click on the lock symbol in the bottom left followed by entering your password
Then change the setting under "Allow apps downloaded from:" from App store to App Store and identified developers. Below is a screenshot of the correct setting
Finally, click the lock on the bottom left to lock the settings
You should now be able to run the Atom application

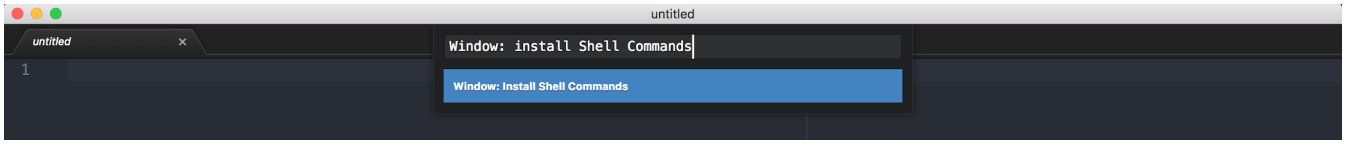


Opening files in Atom is very similar to opening files in VS Code.

- Open Atom first, then go to `File > Open`, and choose the file you wish to edit.
- To run it from `Terminal`, it is slightly more complicated (you need to do one step first to make it always work. Note that this step only needs to be performed the first time you open Atom).
    - First, open up the command palette within Atom (type ⇧⌘P) or click view on the top bar followed by the command palette option. Below is a screenshot of this



- and run the command called *Install Shell Commands* into the command palette and hit enter. Below is a screenshot of this process



- Now you can run the `Terminal` command. Open `Terminal`, and navigate to the folder where your file is located and type `atom` followed by your file's name:

```
$ atom fileName.java
```

For example, if I have a file called helloWorld.java, then I would type the following to open it in Atom:

```
$ atom helloWorld.java
```

Running Java Code

The last step to getting Java to work is making sure you know how to run Java files. This will be covered in class, but will be here as a reminder.

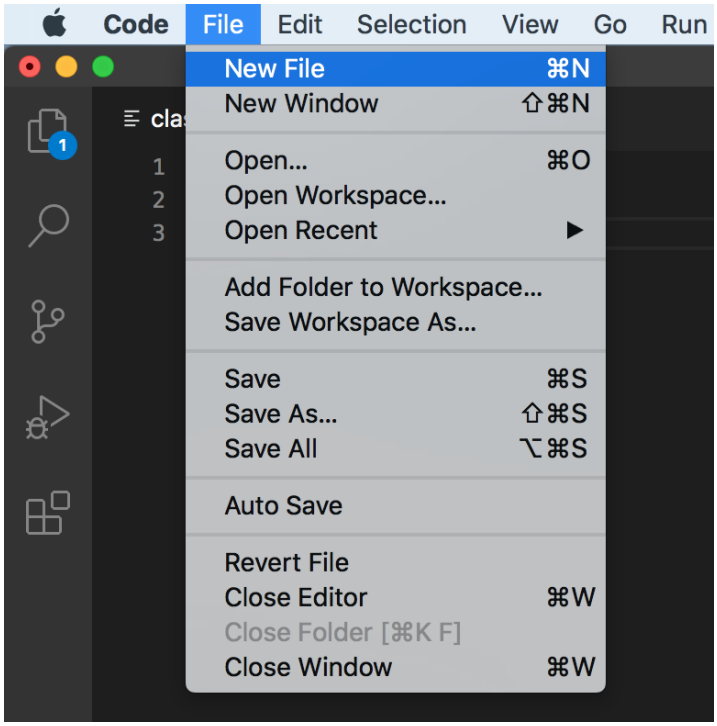
First open your preferred text editor by clicking the application icon or typing the following in terminal to open either VS Code or Atom:

```
$ code
```

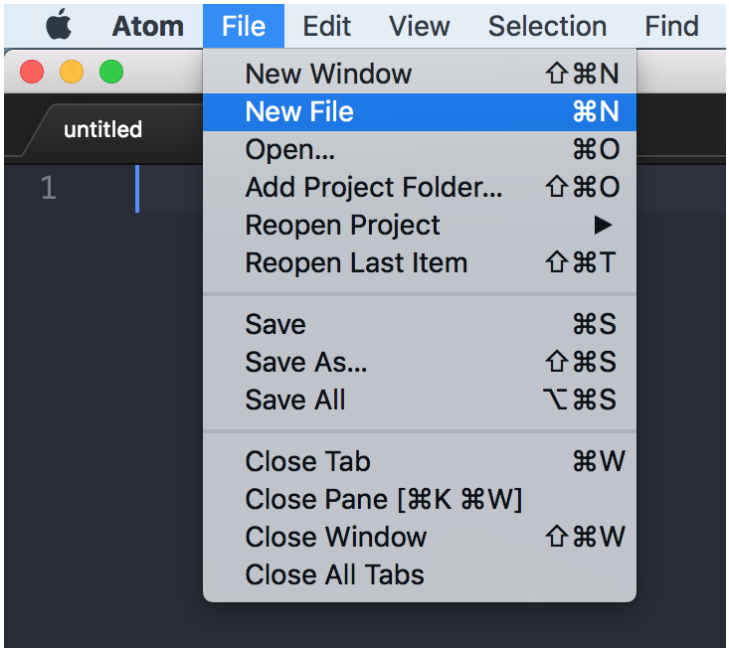
```
$ atom
```

Once the text editor is open, we will begin by making a java file. Below are screenshots of how to do this in either VS Code or Atom

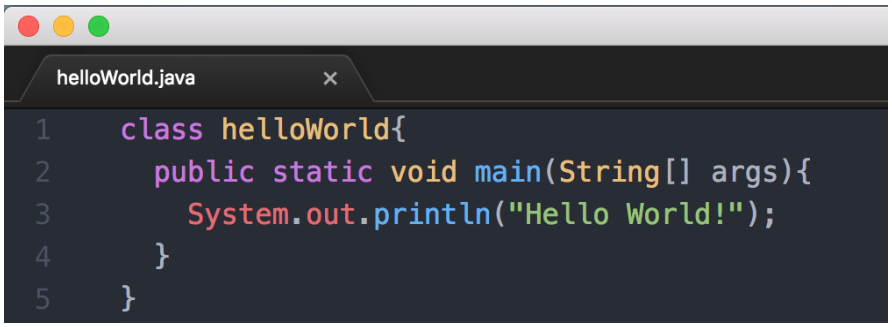
In VS Code click on File followed by New File:



In Atom click on File followed by New File:



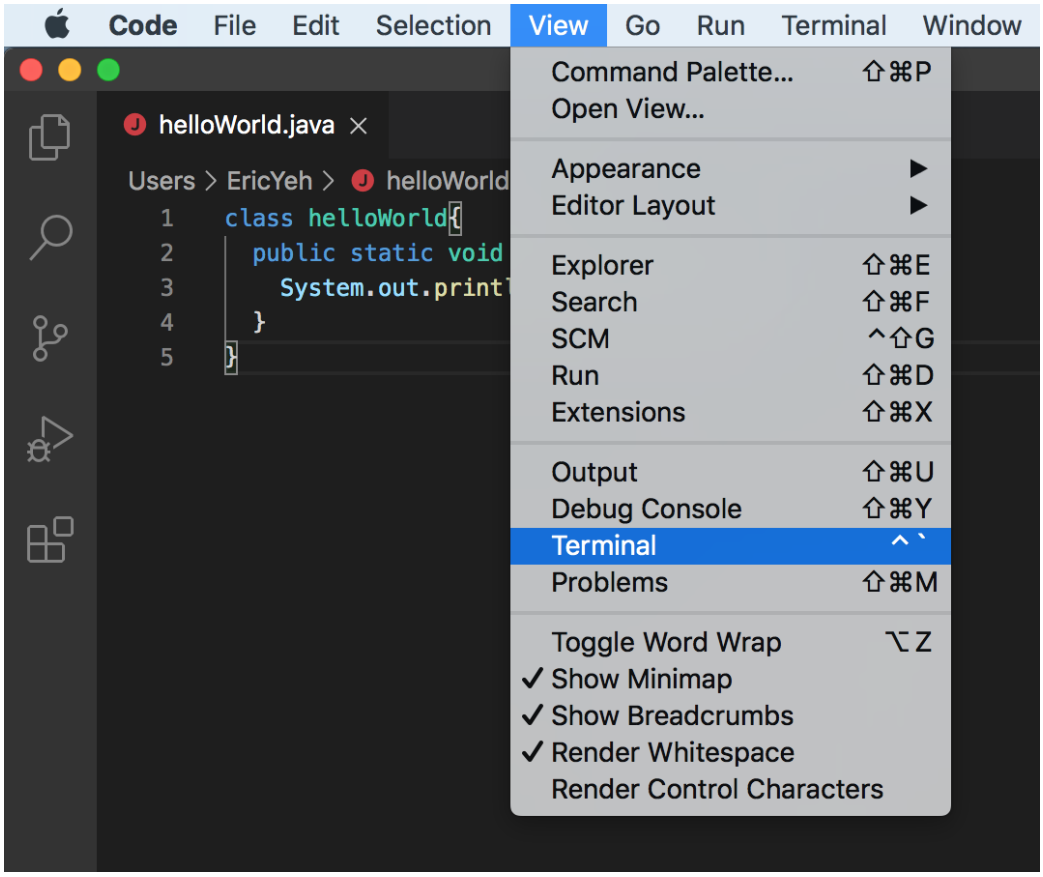
Once you have a new file open, type the following code into the file. Do note that it is case sensitive so make sure there are no typos before moving onto the next step:



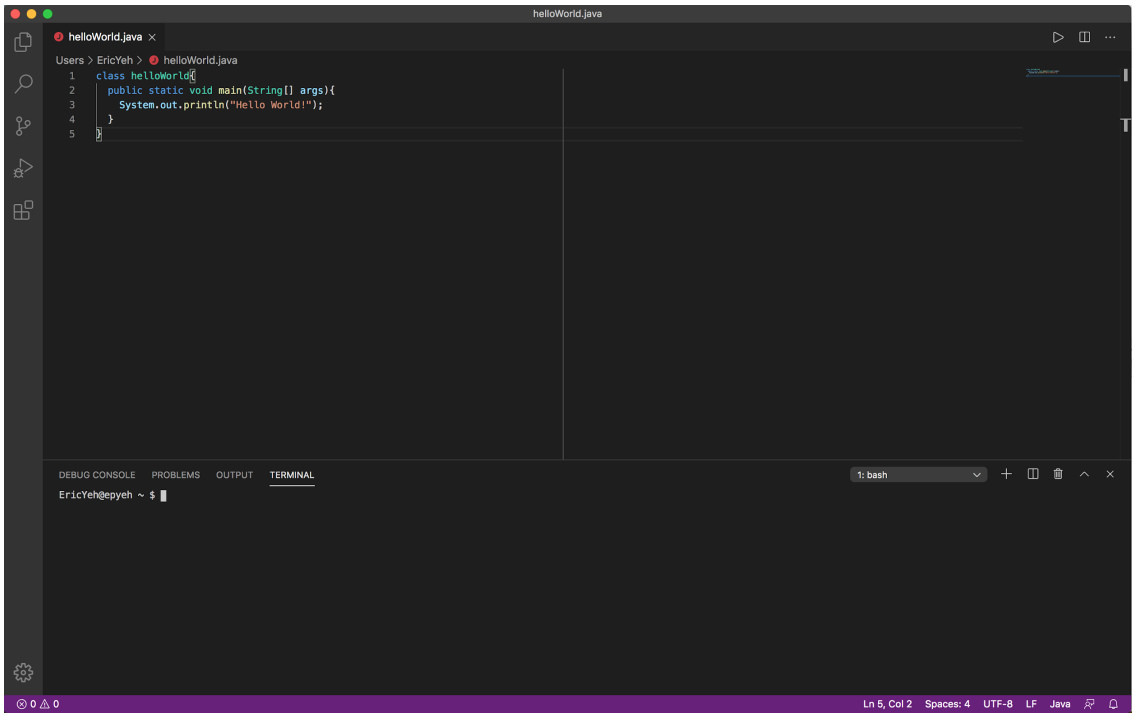
Make sure to save your file by clicking on File followed by save!

Next we will open the in-built terminal.

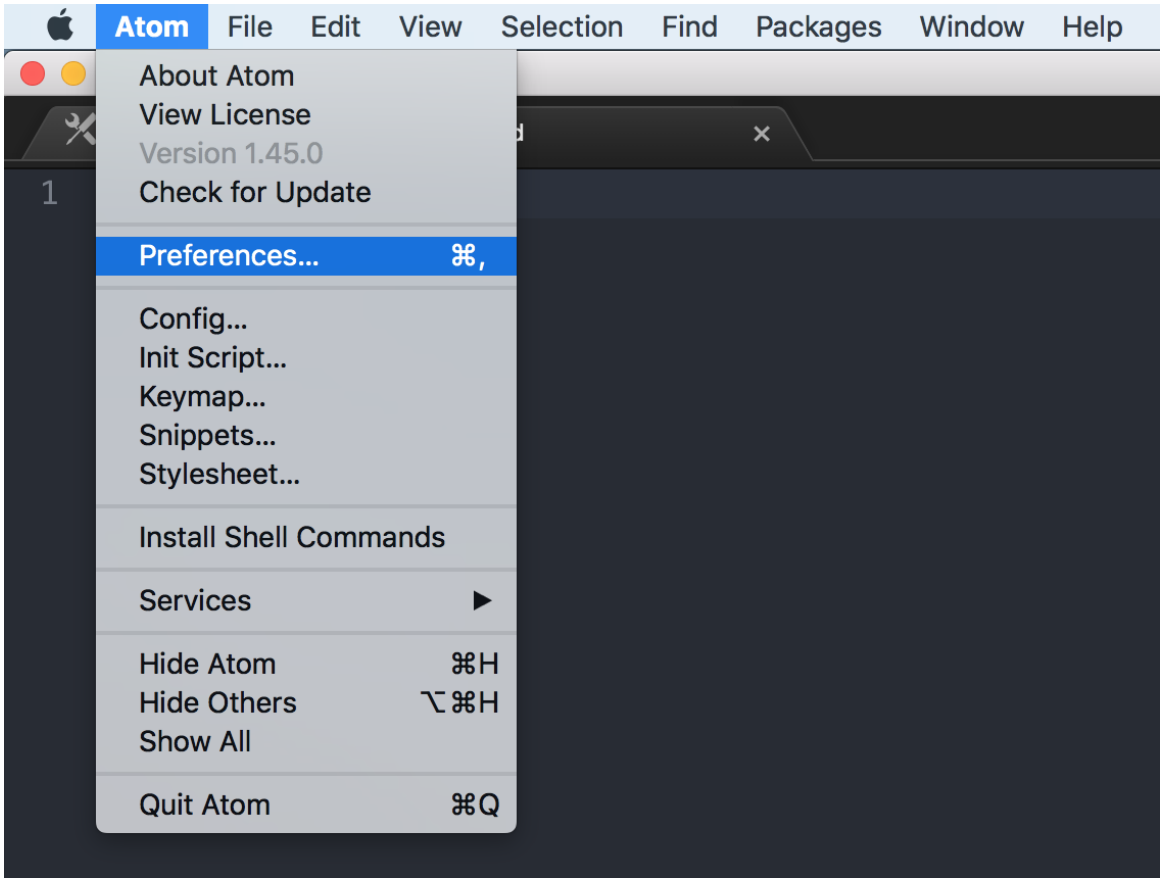
In VS Code it is opened by clicking View followed by Terminal. Below is a screenshot illustrating this.



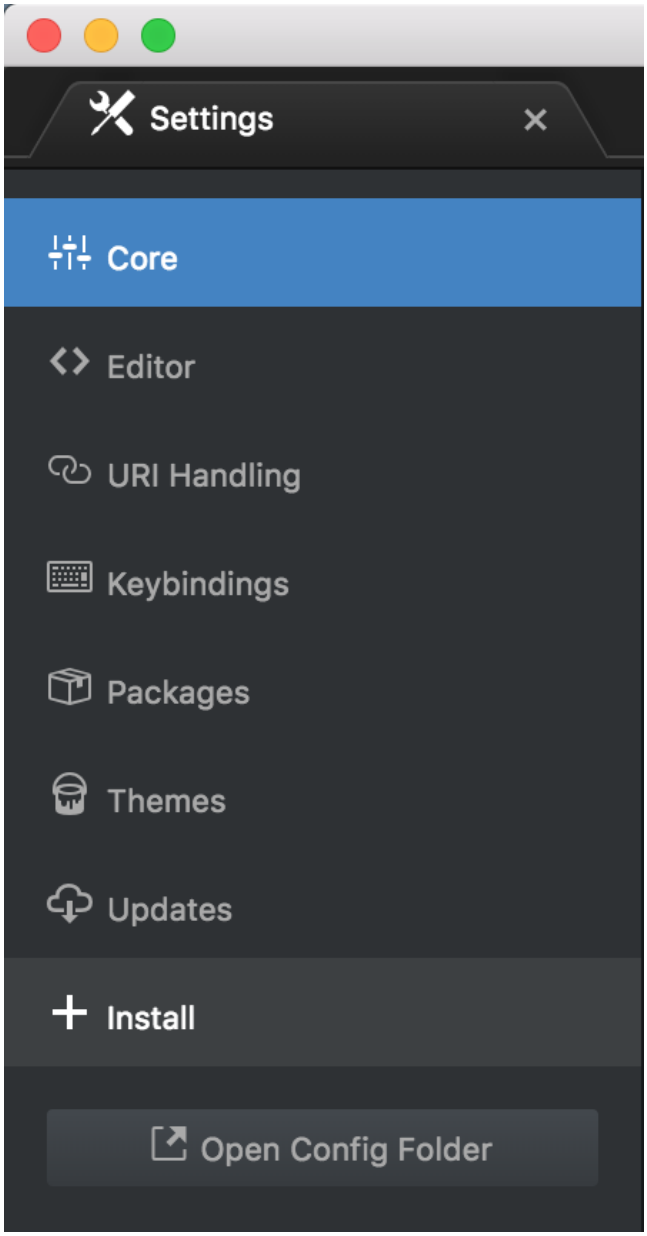
After clicking this your VS Code should now look like the following with a terminal tab:



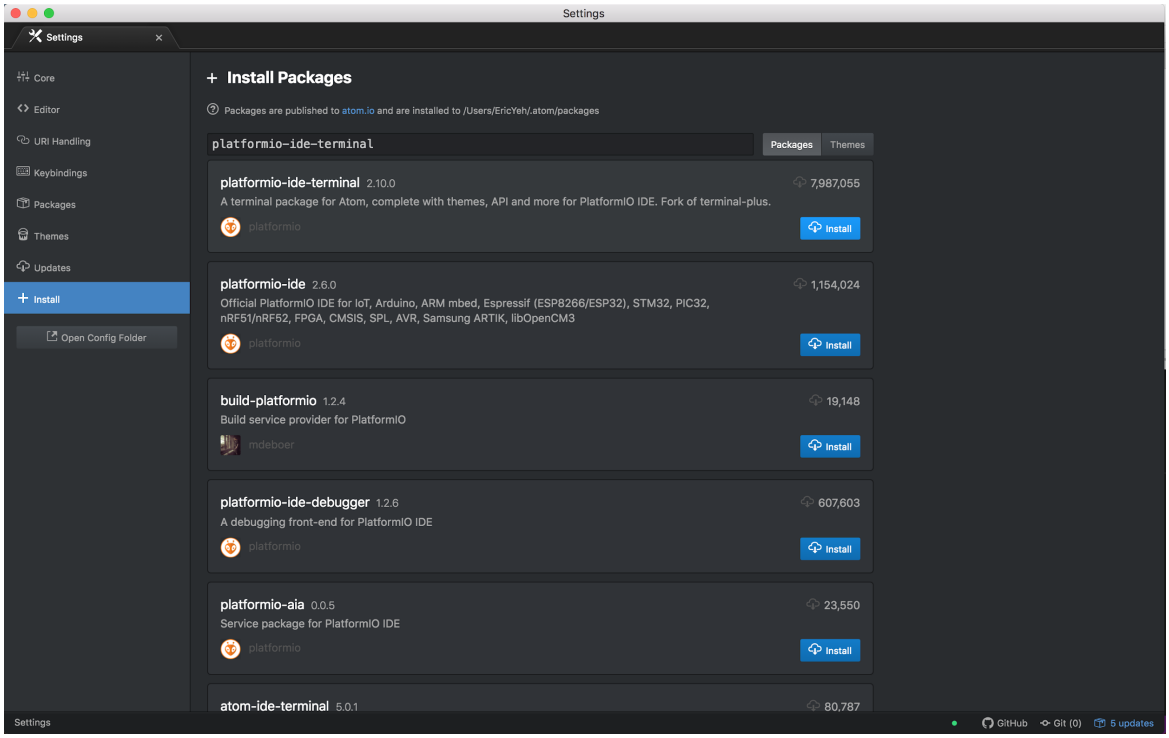
In Atom it is slightly more complicated as it requires installing additional packages. First click on Atom in the toolbar followed by clicking on preferences. Below is a screenshot for this process



Once the window pops up, click on the install tab. In the screenshot below it is lightly highlighted in grey (not the one in blue)

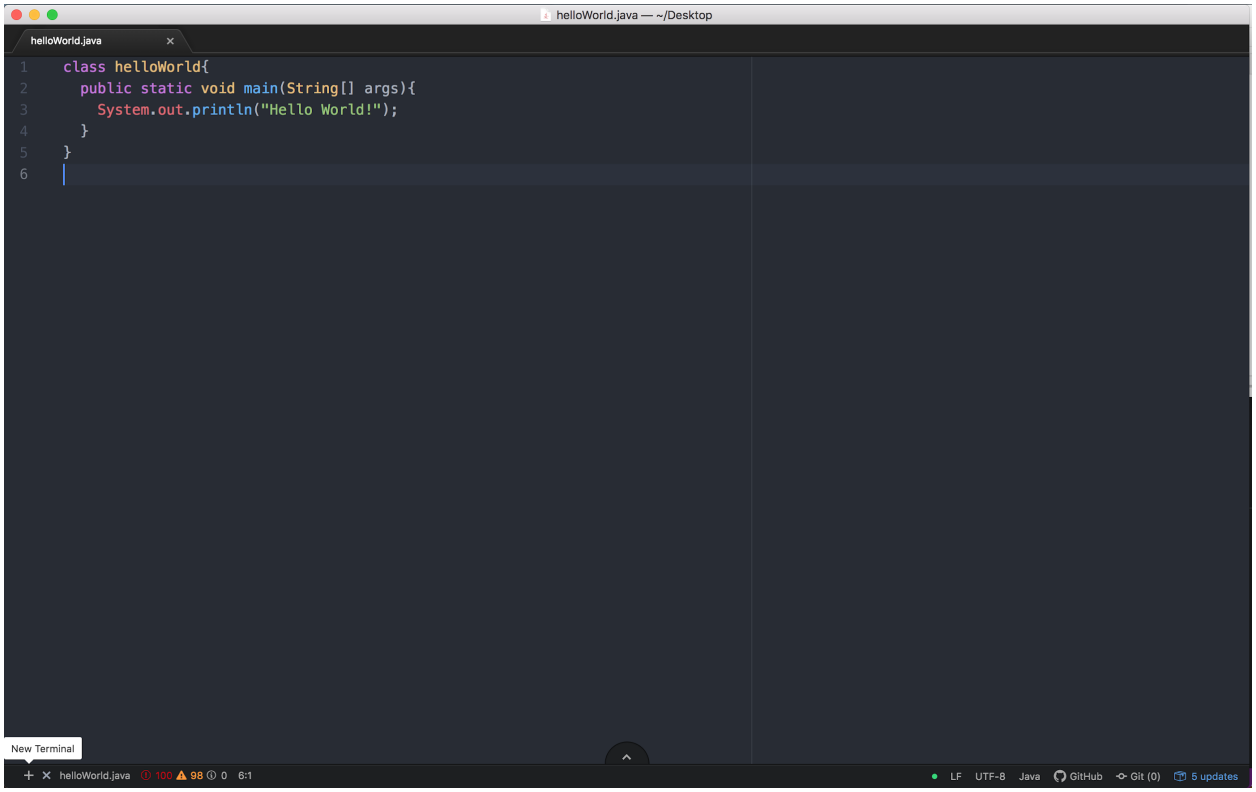


After clicking on install, type “platformio-ide-terminal” in the search bar. You should see the following pop up

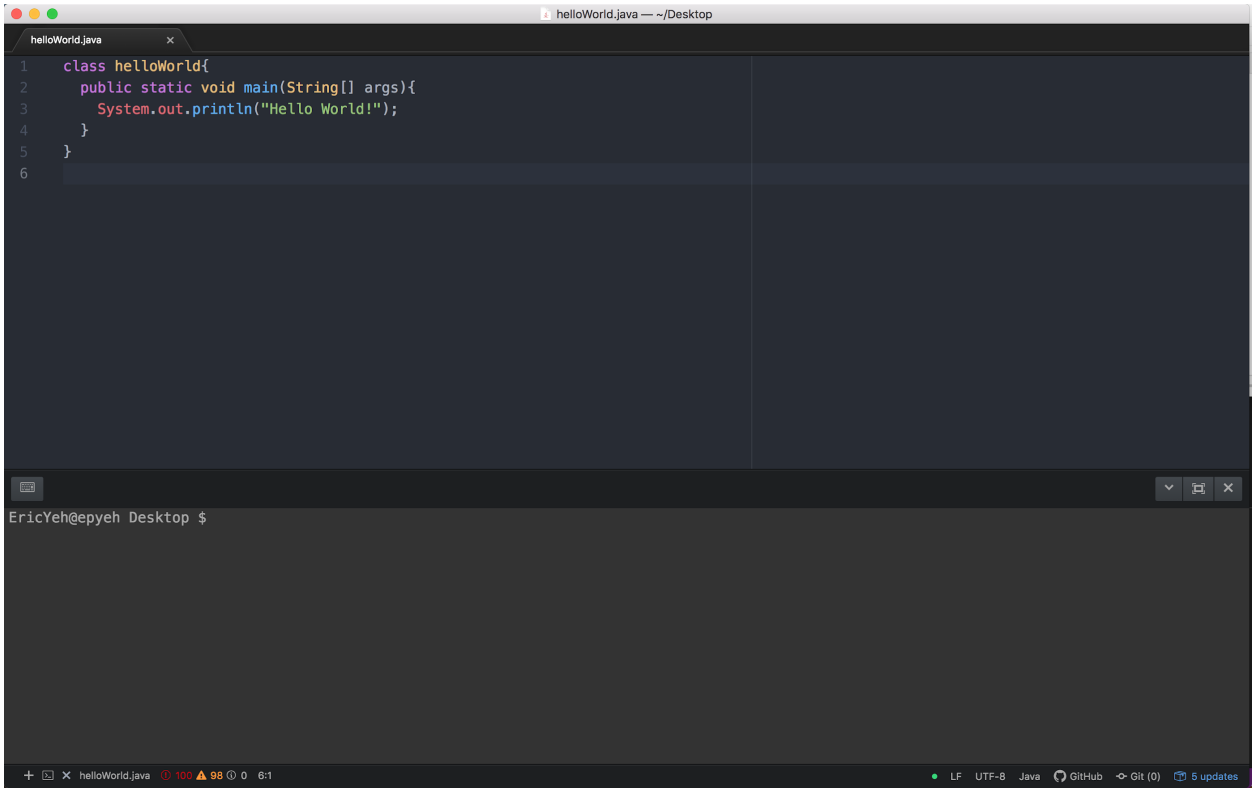


Click install on the first one

After successfully installing it, return back to the helloWorld file. Then click the new terminal button in the bottom left. Below is a screenshot illustrating this.



After clicking on the open terminal button atom should now look like:



After you have successfully opened the terminal in either VS Code or Atom, we will now *compile* our java code by typing the following into the in-built terminal

```
$ javac helloWorld.java
```

This will produce a file named `helloWorld.class`, which will store information about the file you just compiled.

Finally, to run the file, type the following (make sure you do *not* add the ".java" part at the end of the file name):

```
$ java helloWorld
```

If everything is working correctly, you should see Hello World be printed to the console!

And you're done! Congratulations on writing your first Hello World program in Java!

Windows Instructions

These instructions will have you run commands in the `Command Prompt`, which comes with Windows and can be found by searching for it in the Search Bar.

NOTE: One thing to note throughout these instructions is that whenever a `Command Prompt` command is offered, don't include the "$" in the command - that is there to signal to you that it is a command.

Java

You will be editing your code and running it in 2 separate applications.

Getting Java on Your Machine

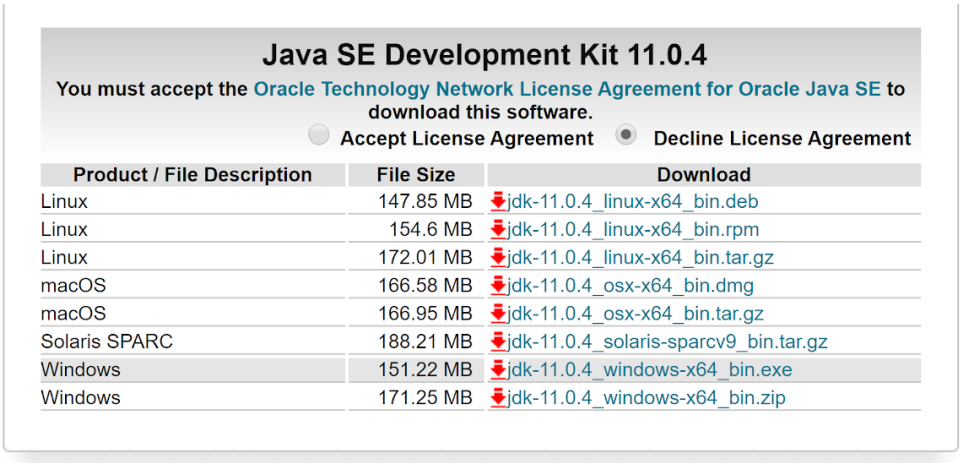
To check if you have Java, type the following command in your `Command Prompt`:

```
$ java --version
```

It should give you a version number that is 11 or higher.

If it doesn't list a number 11 or above, or if an error gets produced saying there is "No Java runtime present", then you need to get the updated version.

To do that, go to this link. Click the button that says "jdk-11.0.4_windows-x64_bin.exe" (accept the License Agreement first).



Java SE Development Kit 11.0.4

You must accept the Oracle Technology Network License Agreement for Oracle Java SE to download this software.

○ Accept License Agreement ● Decline License Agreement

Product / File Description	File Size	Download
Linux	147.85 MB	jdk-11.0.4_linux-x64_bin.deb
Linux	154.6 MB	jdk-11.0.4_linux-x64_bin.rpm
Linux	172.01 MB	jdk-11.0.4_linux-x64_bin.tar.gz
macOS	166.58 MB	jdk-11.0.4_osx-x64_bin.dmg
macOS	166.95 MB	jdk-11.0.4_osx-x64_bin.tar.gz
Solaris SPARC	188.21 MB	jdk-11.0.4_solaris-sparcv9_bin.tar.gz
Windows	151.22 MB	jdk-11.0.4_windows-x64_bin.exe
Windows	171.25 MB	jdk-11.0.4_windows-x64_bin.zip

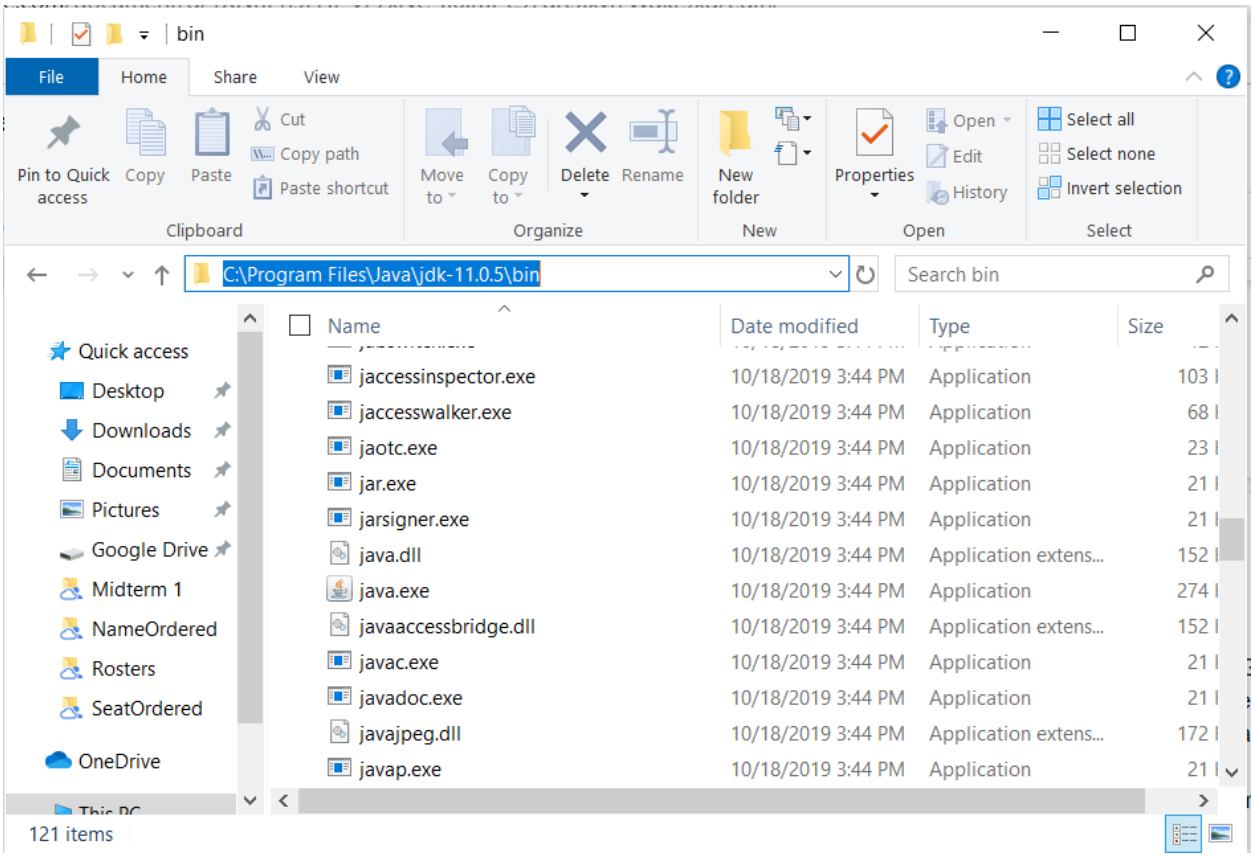
It will ask you to Login to Oracle, or create an account. Login, or create an account if you don't have one. Re-login if you created an account, and the download should start.

When you've finished the download, click it and follow the installer.

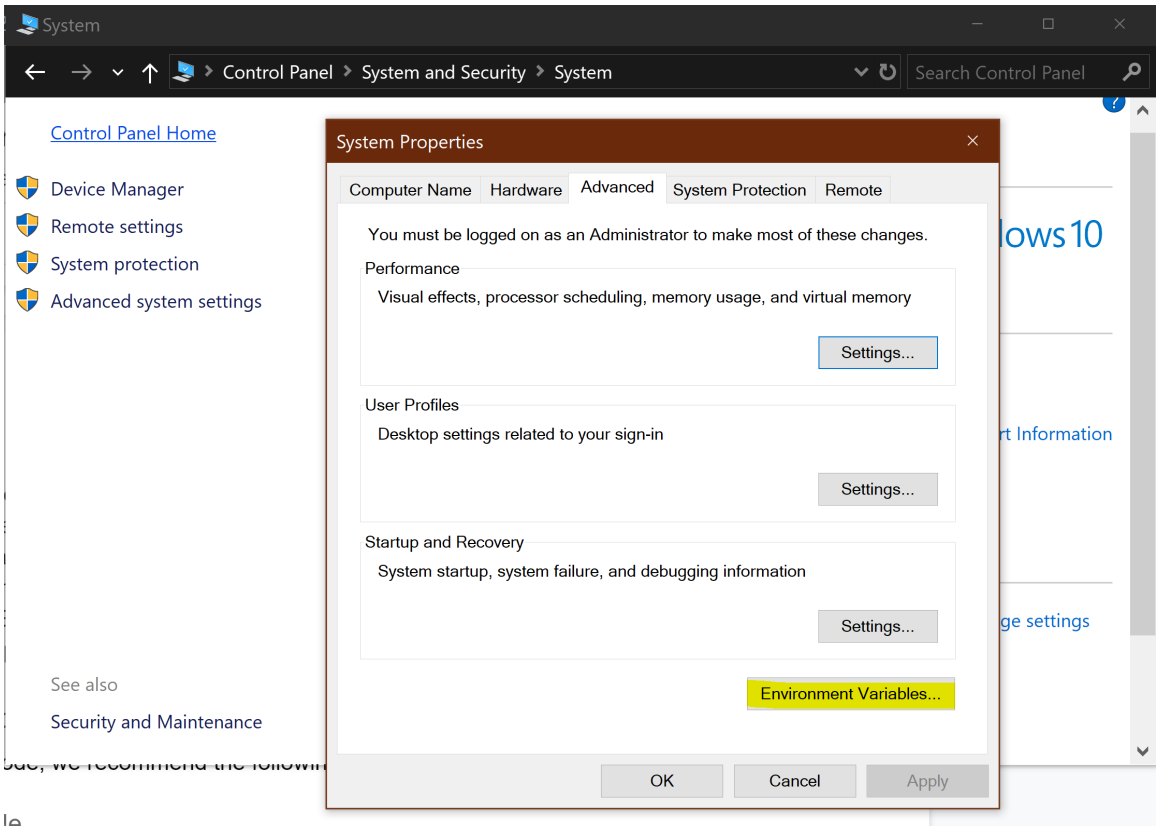
Re-run the "java" command from above to make sure you have the correct version.

Type `javac` in the command prompt and see the output, if you get javac is not recognized as an internal or external command, this means the JDK Path is not set. To do this do the following:

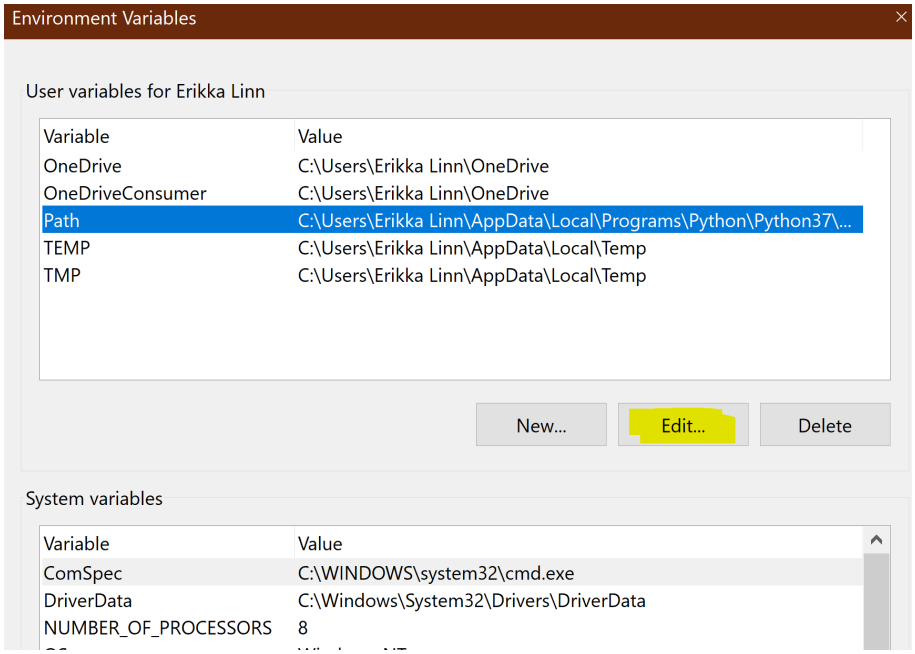
1. Find the location of your Java folder. Go into the folder of the java version you just installed, and then go into the bin folder, which is inside that folder. In the bin folder you should see the files javac.exe and java.exe. Highlight the path and copy it



2. Open Control Panel and Select System and Security
3. Select System
4. Select Advanced System Settings
5. Select Environment Variables



6. Select and Edit Path Environment variable



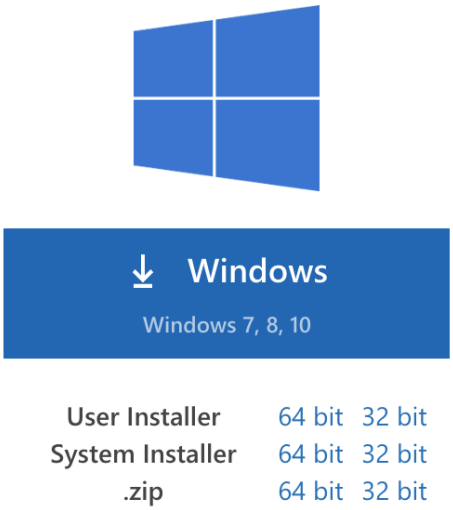
7. Click new and paste the path to your Java folder. Click ok.
8. Finally, open a *new* command prompt window again type `javac`

Editing Java Code

To edit your Java code, we recommend the following 2 text editors.

Visual Studio Code

Follow this link, and click the Windows Download button:



Open the downloaded file once it's done, and follow the instructions there on how to finish the download.

To open files in VS Code, there are two ways to do this.

- One way is to open VS Code itself first. From there, go to `File > Open`, and choose the file you wish to edit.
- The other way is to open your `Command Prompt`, and navigate to the folder where your file is located. Then type `code` followed by your file's name:

```
$ code fileName.java
```

Atom

Follow this link, and click the Download button:

Opening files in Atom is very similar to opening files in VS Code. Open Atom first, then go to `File > Open`, and choose the file you wish to edit.

Running Java Code

The last step to getting Java to work is making sure you know how to run Java files. This will be covered in class, but will be here as a reminder.

Firstly, navigate to your file in the `Command Prompt`. Then, type the following to *compile* your code:

```
$ javac fileName.java
```

This will produce a file named `fileName.class`, which will store information about the file you just compiled.

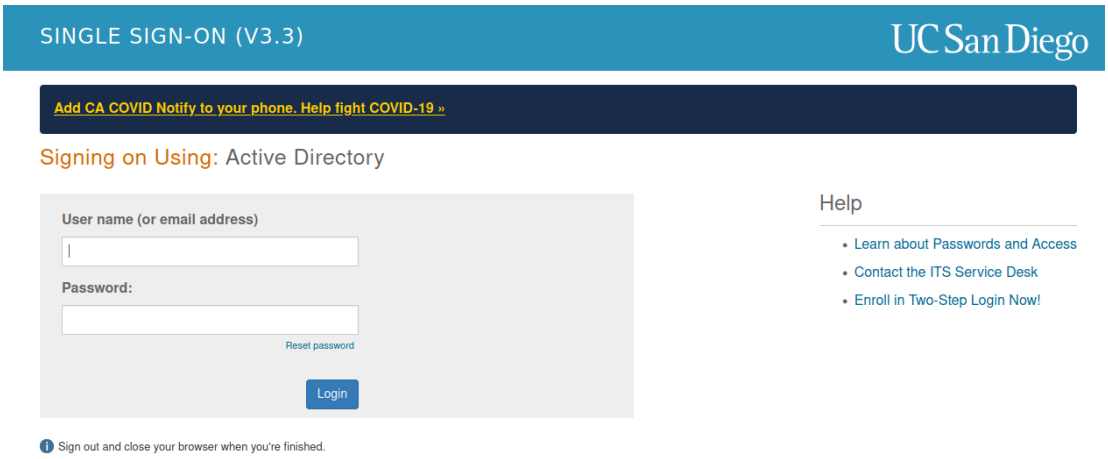
Finally, to run the file, type the following (make sure you do *not* add the ".java" part at the end of the file name):

```
$ java fileName
```

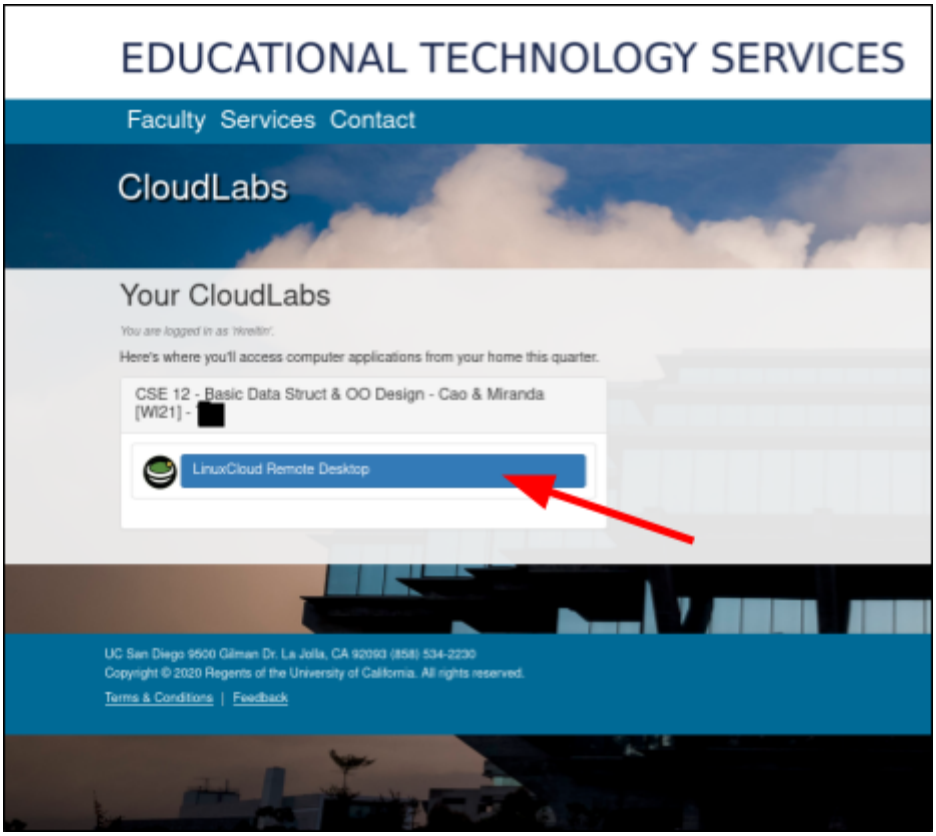
CloudLabs Instructions

Click on the link to head to UCSD CloudLabs: https://cloudlabs.ucsd.edu/

Sign into the Active Directory:

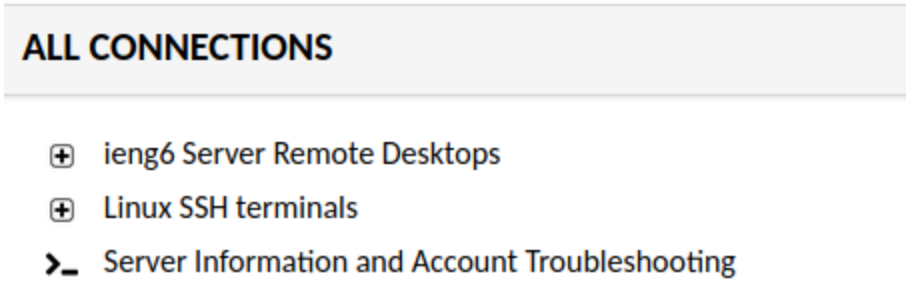


You will then be directed to “Your CloudLabs” where you should see “CSE 12 - Basic Data Struct & OO Design”. Click on “LinuxCloud Remote Desktop”:



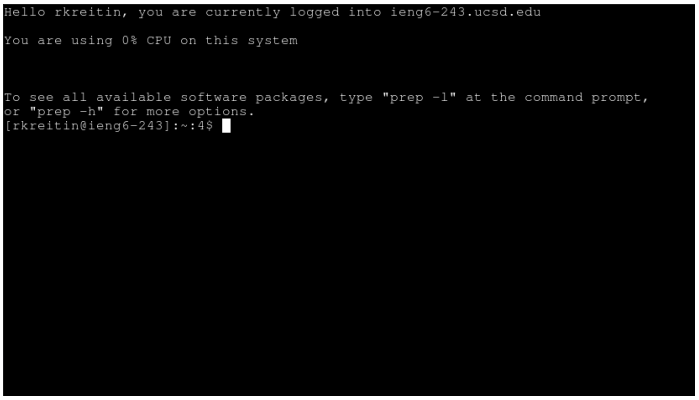
You will then be redirected to another sign-in page. Use your USCD sign-in (this is the same as the one you used before) and complete the Duo Two Factor authentication:

Once you finish signing in, you will be directed to a page that says “Recent Connections” and “All Connections”. Under “All Connections” you have the following options:



ieng6 Server Remote Desktops:
Allows you to run a simulated desktop version of the Linux server through your browser. You can think of this as running one of the lab computers in the CSE basement through your own computer. This is more user friendly as it includes a graphical user interface.

Linux SSH terminals:
Allows you to run only the Linux server terminal through your browser. There is no interface so everything must be done with command lines. If you want extra practice with navigating and coding with the terminal this is a great way to challenge yourself! Note, we will not be covering command lines for the



terminal aside from compiling and running java files. However, CSE 15L should cover some basics.

When you expand the list (click on the + sign), you will see different machines you can connect to. You may click on any of the options and it will launch either the remote desktop or the terminal (depending on what you chose to use above). Note, try to choose a machine that is not as busy.

All of your work will be saved to your account so you may use any of the machines and still have access to your work. For example, if you save a file to the “Documents” folder in ieng6-240.ucsd.edu, you can access it from ieng6-241.ucsd.edu, ieng6-242.ucsd.edu, and so on.