Written by Kyle Pulido & Rolans Apinis
Based off of original document by Ariel Sari & Evyatar Saias
Cytoscape 3.7.2 and the Eclipse IDE

CyFinder Developer Guide

This is a slightly modified version of the original Developer Guide by the previous group working on this project in Fall 2019. We elected to use it as a base because the installation and building processes have not changed, however there have been some text/organization changes and most of the images have been updated to cleaner/better quality versions.

How to install CyFinder:

The CyFinder plugin is made up of two different modules, the "CyFinder" module and the "Subgraph Finder" module. Both modules should be treated as two separate projects.

The CyFinder module is responsible for the GUI of the plugin on Cytoscape while the Subgraph Finder module is responsible for the logic of the plugin.

This plugin works by having the Subgraph Finder module as a jar file inside the CyFinder jar, which is generated from the CyFinder project using Maven. Basically, it is a jar inside a jar. This may be a bit confusing, but hopefully the following images and step by step explanation will help.
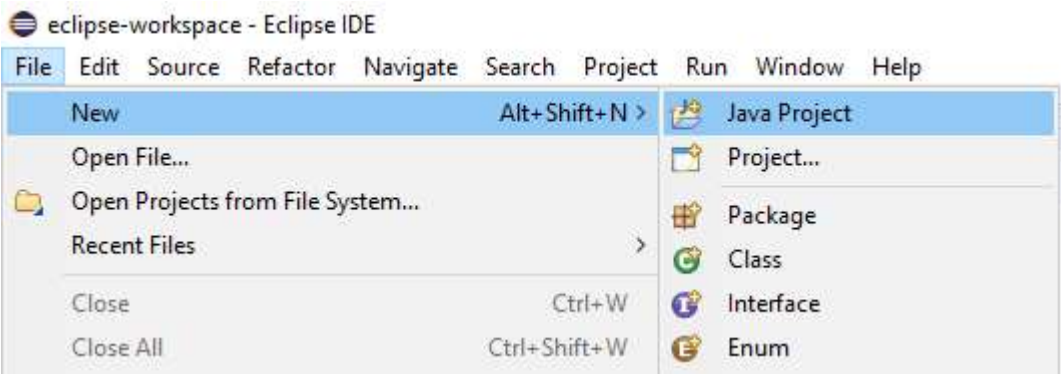
How to develop:

First download the CyFinder and Subgraph Finder projects from the Google Drive folder that should be shared with you by your product owner and import them as two individual projects into your favorite IDE. All the following steps shown in this tutorial will be done in the Eclipse IDE but it should work with any IDE.

Importing Subgraph Finder:
We will first import the "Subgraph Finder" project into Eclipse.

Step 1: Select file in the toolbar and choose the New -> Java Project option from the dropdown.

Step 2: Uncheck the box "Use default location" and click the "Browse…" button. Then choose the directory of the Subgraph Finder project after you download and extract it from the shared Google Drive folder and click Finish.
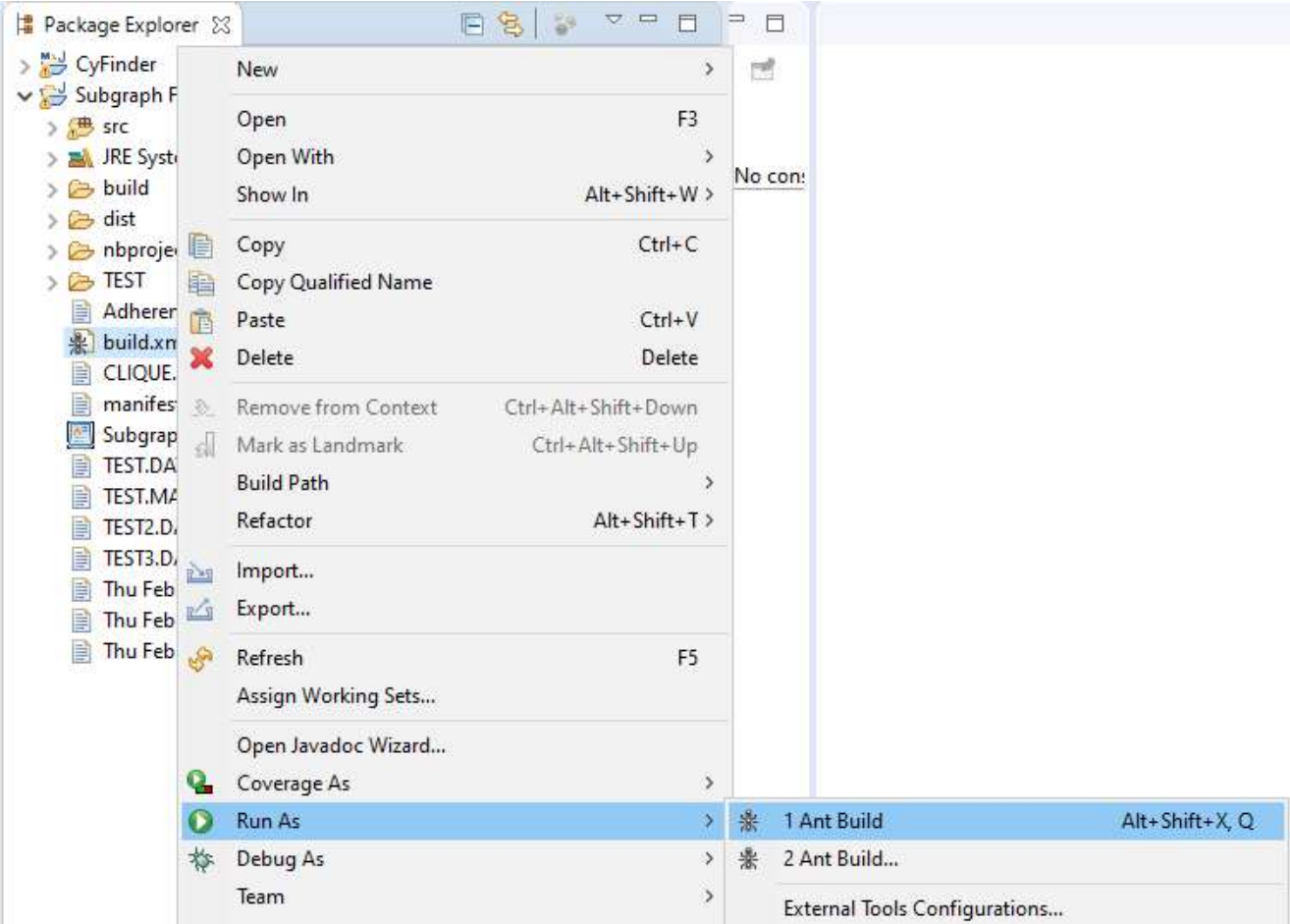

Building Subgraph Finder:
We will now build the Subgraph Finder jar so that CyFinder can use it later.

Step 3: Right click on the "build.xml" file in the Subgraph Finder project and choose Run As -> Ant Build
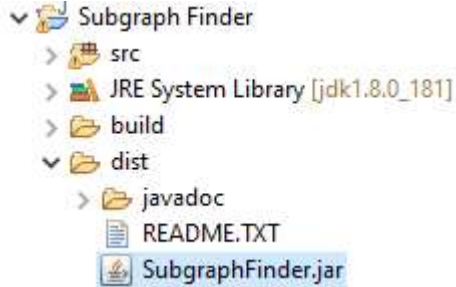
A successful Ant build will show "BUILD SUCCESSFUL" at the end.

```
-javadoc-browse:

javadoc:

default:
BUILD SUCCESSFUL
Total time: 10 seconds
```

Step 4: After a successful Ant Build, the jar file that was generated called "SubgraphFinder.jar" should be found in the "dist" folder in your "Subgraph Finder" project.
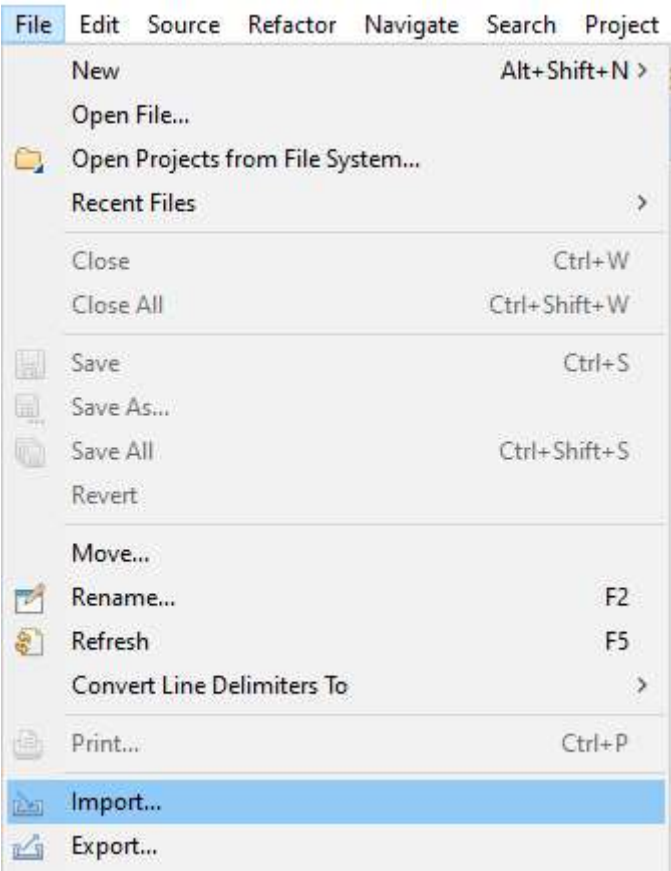

NOTE: Every time you make changes to anything in the "SubgraphFinder" project which will usually be logical changes you will have to generate a new jar file in this manner. This jar file is then used as a dependency for the CyFinder project.
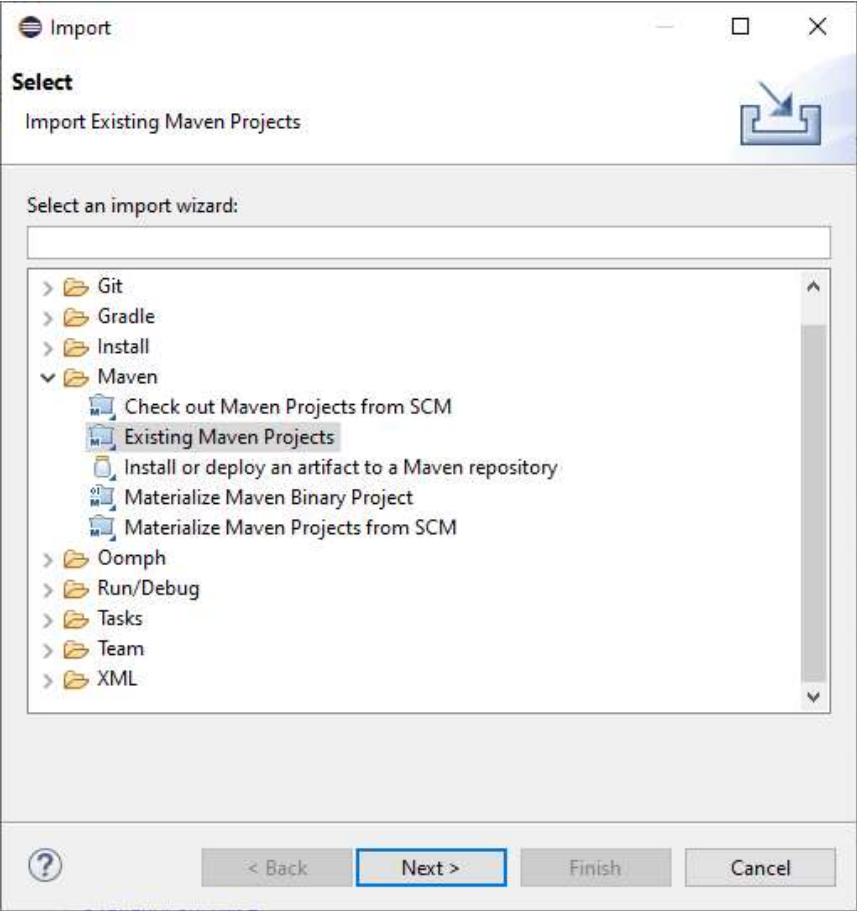
Importing and Building CyFinder:

We will now import the CyFinder project. This is a Maven project and should be imported as such with the following steps:

Note: If Maven is not already installed as part of your IDE package follow the link below for instructions on how to install and run Maven https://maven.apache.org/index.html
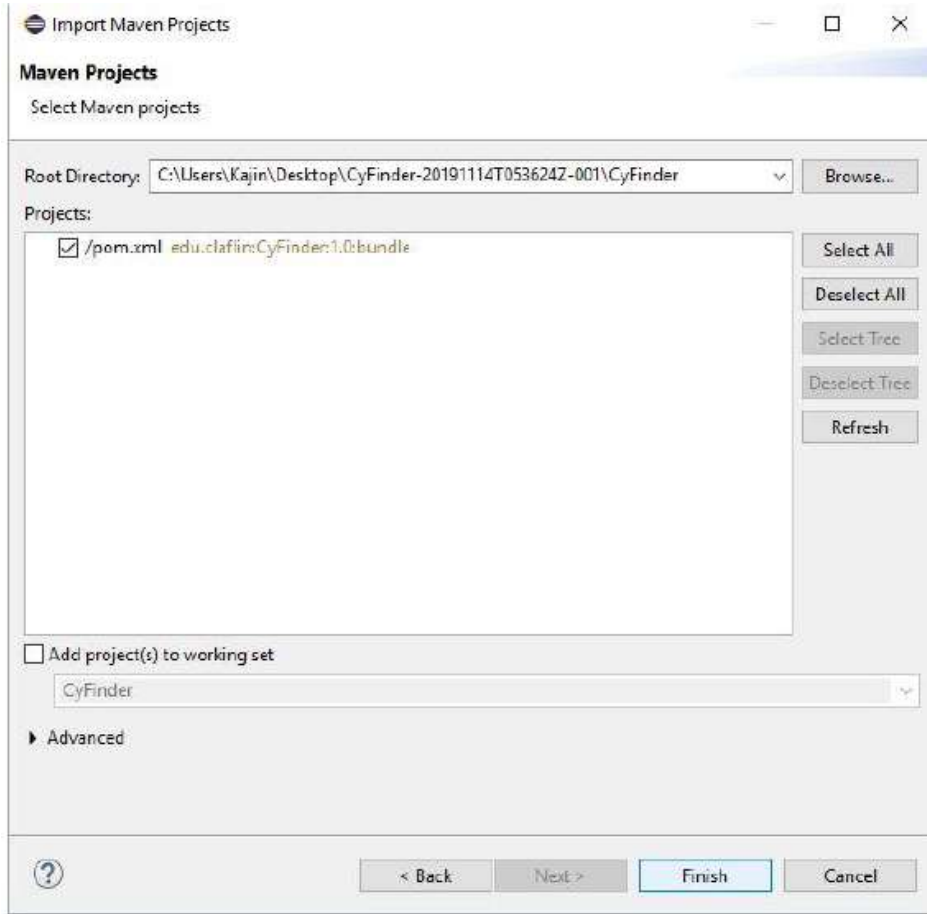
Step 5: Select file in the toolbar and choose the Import option from the dropdown.
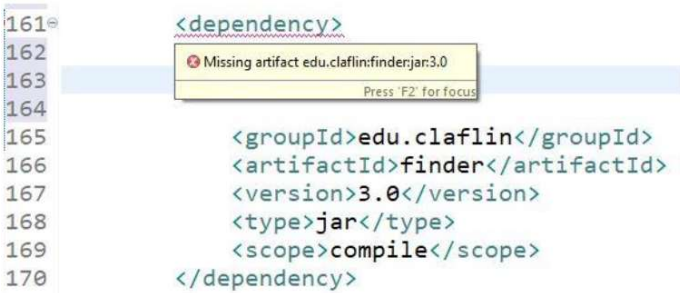

Step 6: Select Maven and then choose the option "Existing Maven Projects"

Step 7: Click the "Browse…" button and then choose the directory of the CyFinder project after you download and extract it from the Google Drive shared folder and click "Finish".

After importing the "CyFinder" project you will notice an error in the "pom.xml" file that has to do with the dependency "edu.claflin:finder:jar:3.0".

This error is basically stating that this particular dependency can't be found by Maven and should be installed manually for CyFinder to work. This dependency is actually the jar file called "SubgraphFinder.jar" that we created in the previous steps using the Subgraph Finder project. As mentioned earlier, this jar can be found in the "dist" folder in the Subgraph finder project if you followed the previous steps correctly.
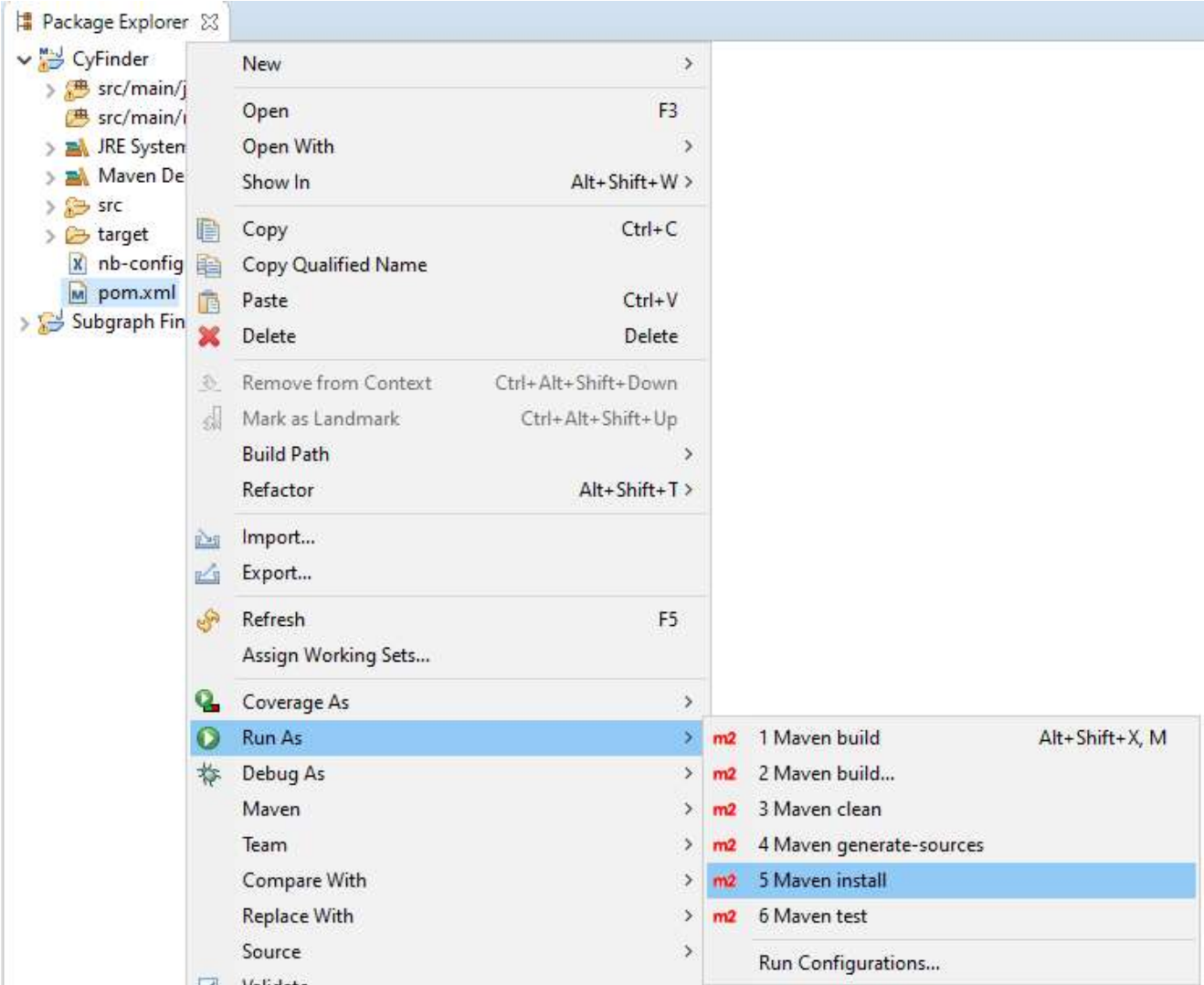
Step 8: In order to use this jar file as a Maven dependency for the CyFinder project you must first rename the jar from "SubgraphFinder.jar" to "finder-3.0" and then place the jar file into the following directory: C:\Users**<YourUserNameHere>**\.m2\repository\edu\claflin\finder\3.0

C:\Users\█████\.m2\repository\edu\claflin\finder\3.0

Name	Date modified	Type	Size
finder-3.0.jar	4/21/2020 1:26 PM	Executable Jar File	354 KB

Now you should notice that error regarding the dependency "edu.claflin:finder:jar:3.0" in the CyFinder project from before has been cleared and you should have no other errors.

Now to test that everything works we will generate a jar file from the CyFinder project using **Maven** that we will then import into Cytoscape.

Step 9: Right click the CyFinder project and choose the options Run As -> Maven install from the dropdown menu
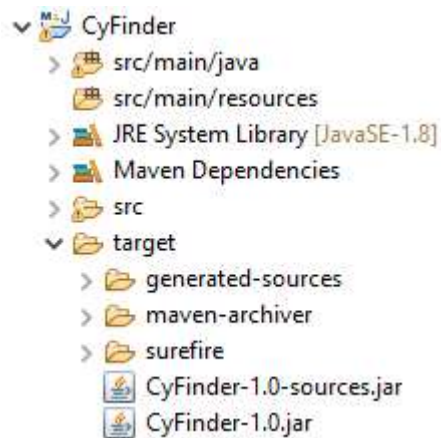

If done correctly the output below should be displayed in the console.

```
[INFO] <<< maven-bundle-plugin:2.5.4:install (default-install) < install @ CyFinder <<<
[INFO]
[INFO]
[INFO] --- maven-bundle-plugin:2.5.4:install (default-install) @ CyFinder ---
[INFO] Installing edu/claflin/CyFinder/1.0/CyFinder-1.0.jar
[INFO] Writing OBR metadata
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 17.895 s
[INFO] Finished at: 2020-04-26T19:31:33-04:00
[INFO] ------------------------------------------------------------------------
```

A succussful Maven install should generate a target folder in your project's directory. This folder will contain two jar files, the one that we will use for Cytoscape is the "CyFinder-1.0.jar" file.

Note: Everytime you do a Maven install the old target folder will be deleted and a new one will be generated.
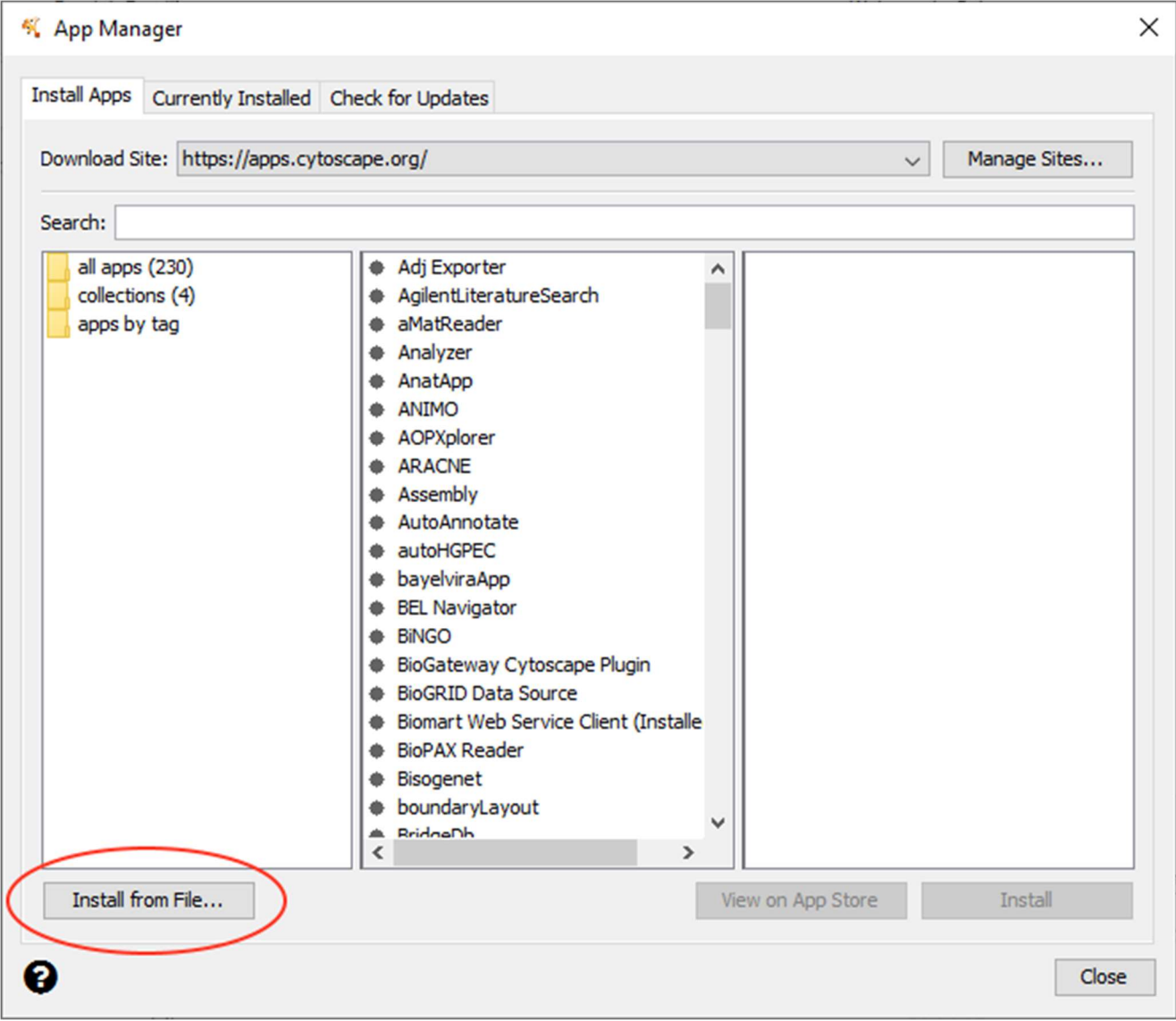
Loading CyFinder into Cytoscape:
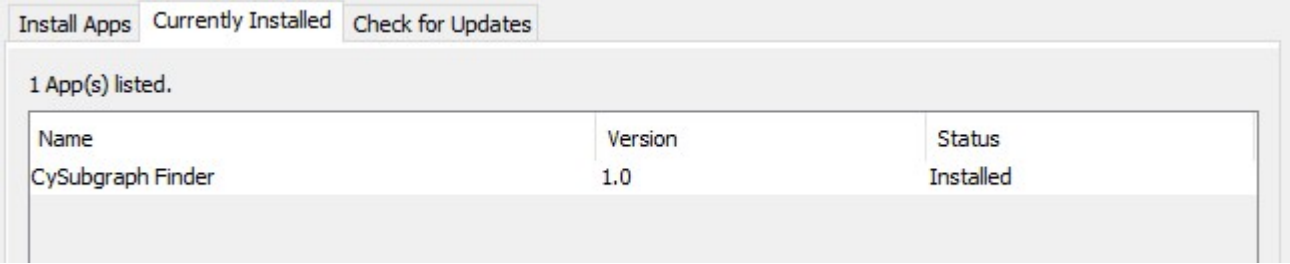We will now import the "CyFinder-1.0.jar" file that we generated into Cytoscape.
Step 10: Open Cytoscape and select Apps from the toolbar then click on "App Manager"

Step 11: Click on the "Install from File…" button on the bottom left of the window. Then navigate to the location of the "CyFinder-1.0.jar" which should still be inside your target folder.

Step 12: If no errors have occurred you should see the following window after selecting your jar file. The indication of success is if the word under Status says "Installed". You can now close this window.

Name	Version	Status
CySubgraph Finder	1.0	Installed

Step 13: Lastly, confirm that you now have access to CyFinder. You should be able to see the CyFinder option from the Apps toolbar dropdown menu.

IMPORTANT NOTES:

- For testing changes made to the CyFinder Project (GUI): You will have to only generate a new CyFinder jar using maven and then import it to Cytoscape.
- For testing changes made to the Subgraph Finder Project (Logic): you will have to go through all the steps of generating both jar files and then ensuring that you replace the old jar generated by Subgraph finder with the new, renaming it each time. Then importing the new CyFinder jar generated with Maven into Cytoscape to test your code.
- If any errors regarding the JavaDocs occur from either the CyFinder project or Subgraph Finder project, you can simply comment out any reference to the JavaDocs from the project giving you the errors.
- Developer information for Cytoscape available at this link https://cytoscape.org/documentation_developers.html and the Cytoscape API JavaDocs can be found here http://chianti.ucsd.edu/cytoscape-3.6.0/API/