**Developers Guide**

Genomic Information System for Integrated Science 2 (Genisis2) Technical Services

Release 3



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**Department of Veterans Affairs**

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# Introduction

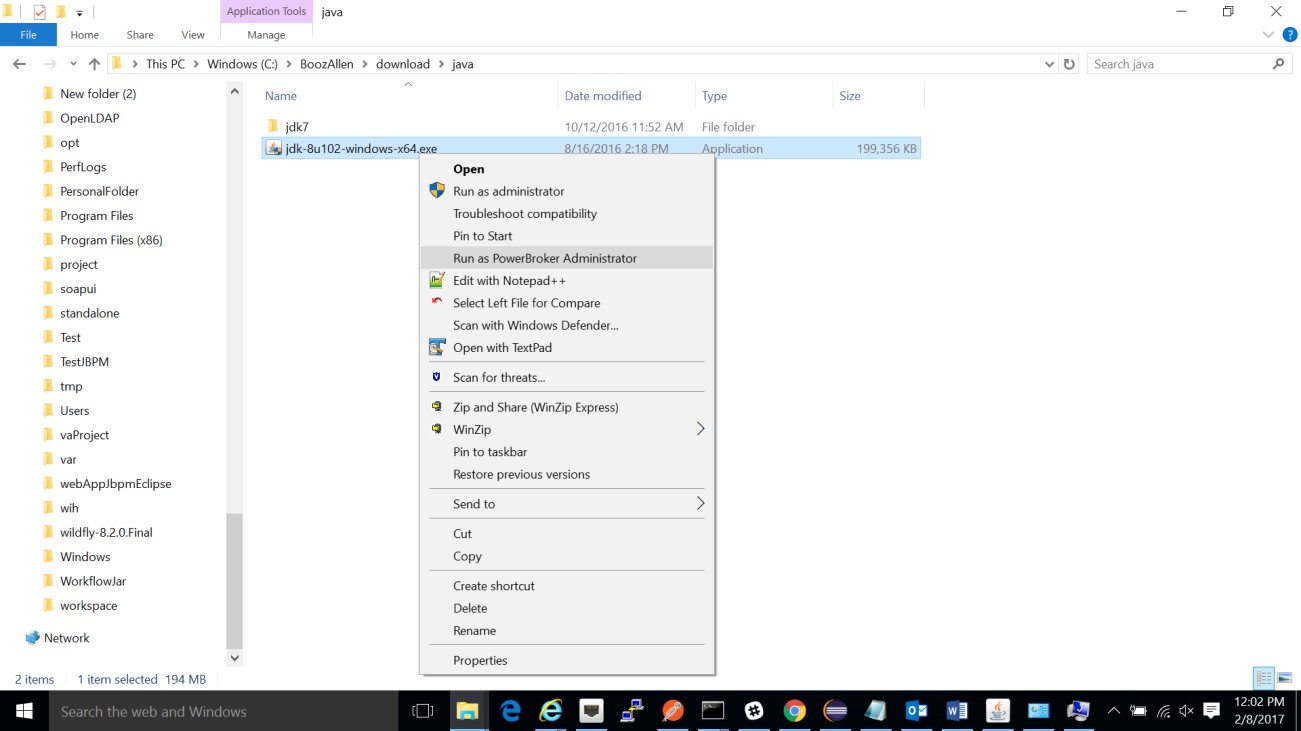
The Genomic Information System for Integrated Science 2 (Genisis2) Developers Guide describes how to set up the development environment, add new code to the environment, or maintain the application components. The intended audience for this document are the Information Technology (IT) teams responsible for developing new code or maintaining the existing code base between releases or in application sustainment.

# Set Up Local Java Development Environment

## Install Java1.8

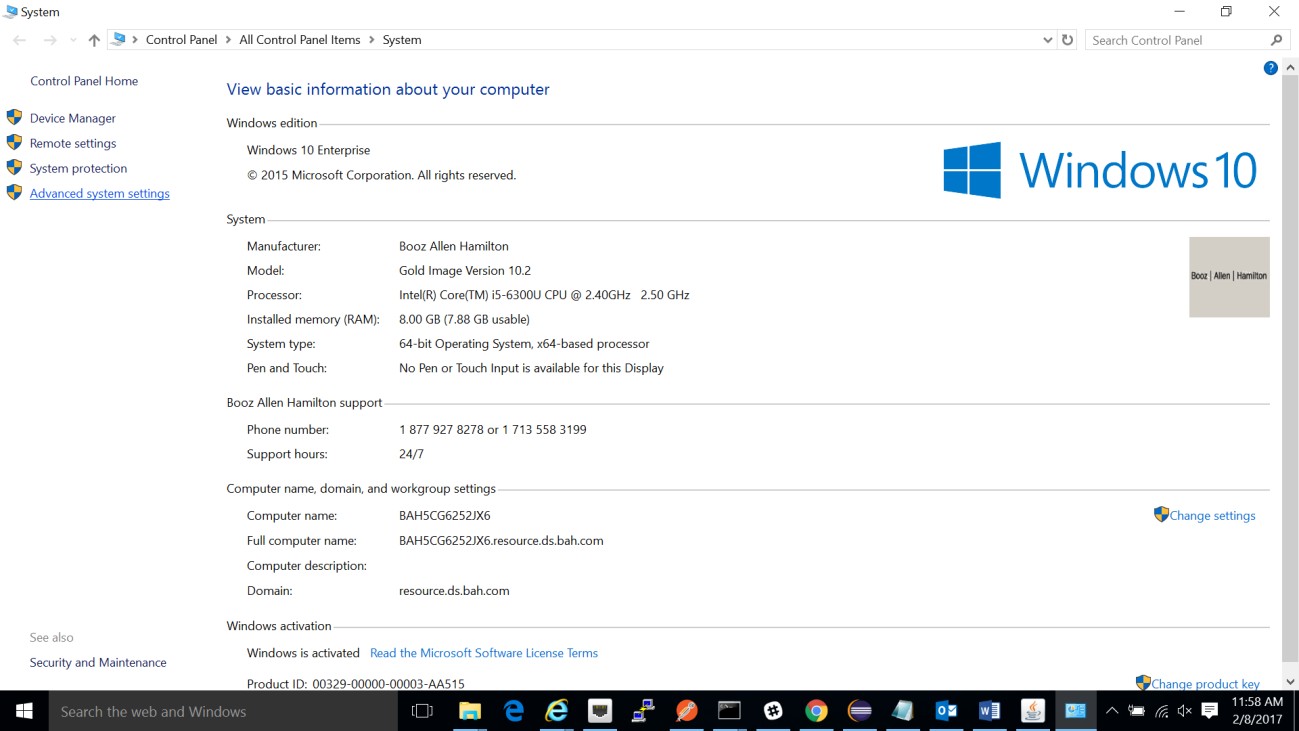
Access the Oracle website, [http://www.oracle.com/technetwork/java/javase/downloads/index-](http://www.oracle.com/technetwork/java/javase/downloads/index-jsp-138363.html)  [jsp-138363.html](http://www.oracle.com/technetwork/java/javase/downloads/index-jsp-138363.html), and download the jdk version jdk-8u92 or higher. For the purposes of this document, the jdk-8u102 version has been downloaded and installed.

As a Powerbroker Administrator, install Java as shown in Figure 1.

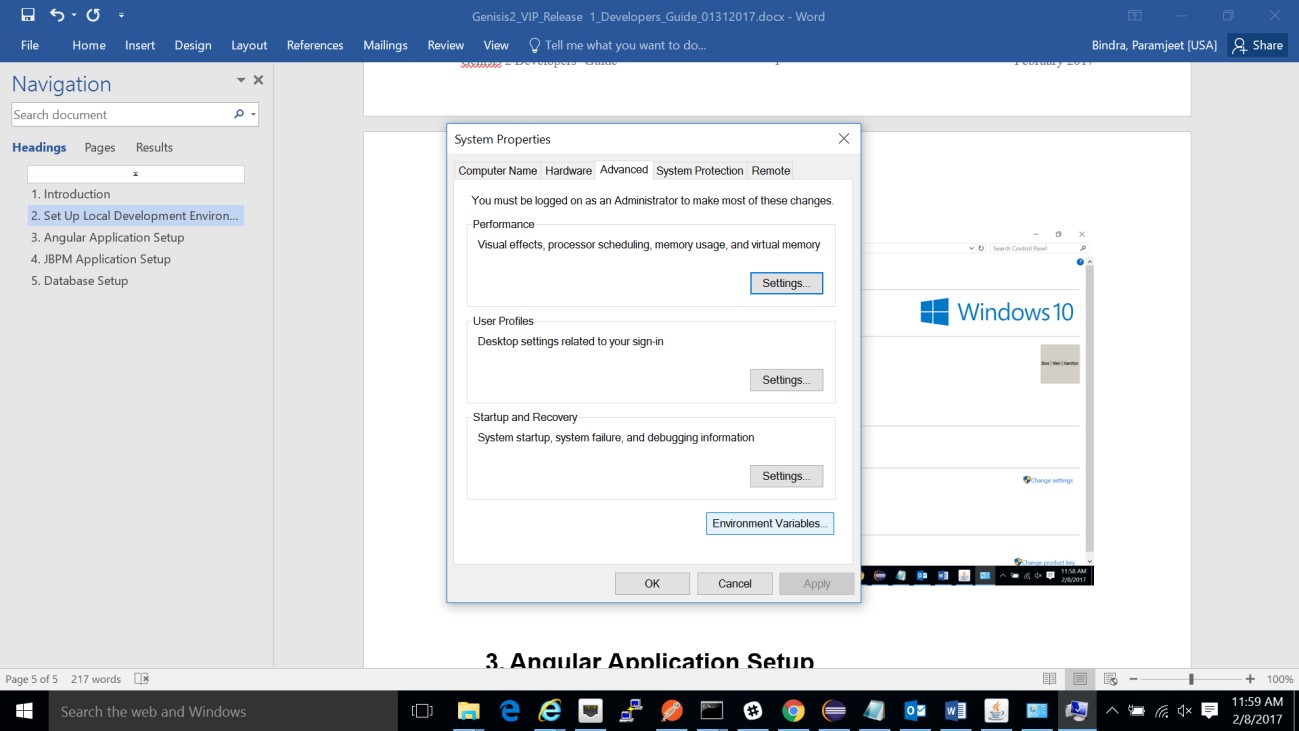


**Figure 1: Java Installation**

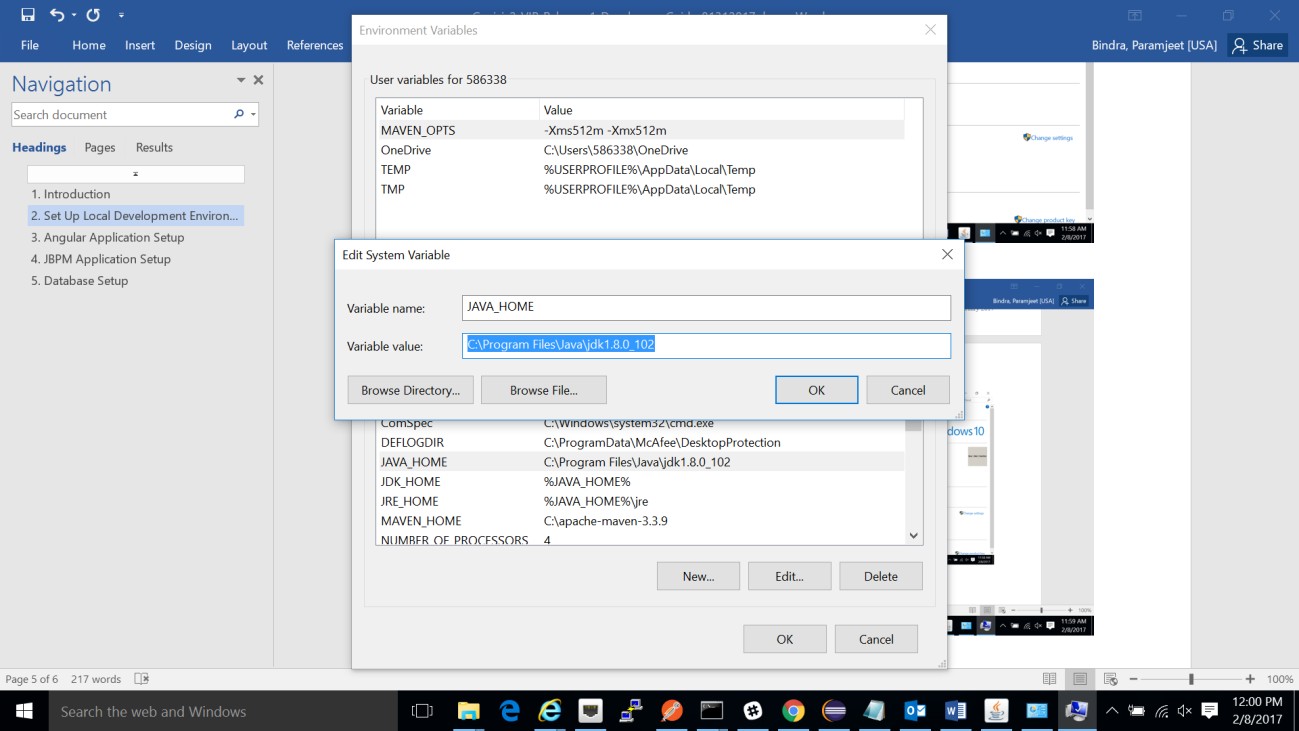
Set the environment variables as shown in Figures 2 - 4.



**Figure 2: Java Installation**



**Figure 3: Local Environment Set Up**



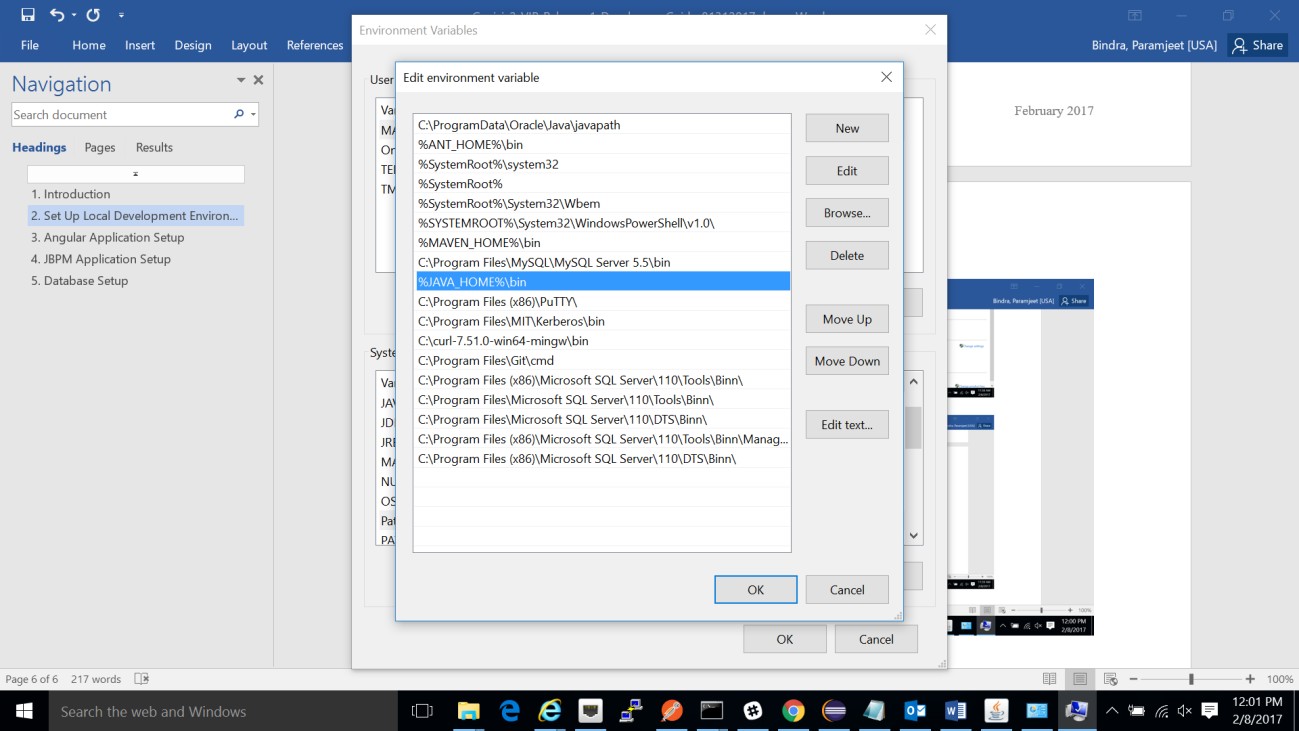
**Figure 4: System Variable Value**

Table 1 summarizes the JRE/Java variables.

**Table 1: JRE/Java Variables**

|  |  |
| --- | --- |
| **Java Variable** | **Variable Value** |
| JAVA\_HOME | C:\Program Files\Java\<Java home> example: C:\Program Files\Java\jdk1.8.0\_102 |
| JDK\_HOME | %JAVA\_HOME% |
| JRE\_HOME | %JAVA\_HOME%\jre |

Set the Path variable as shown in Figure 5.



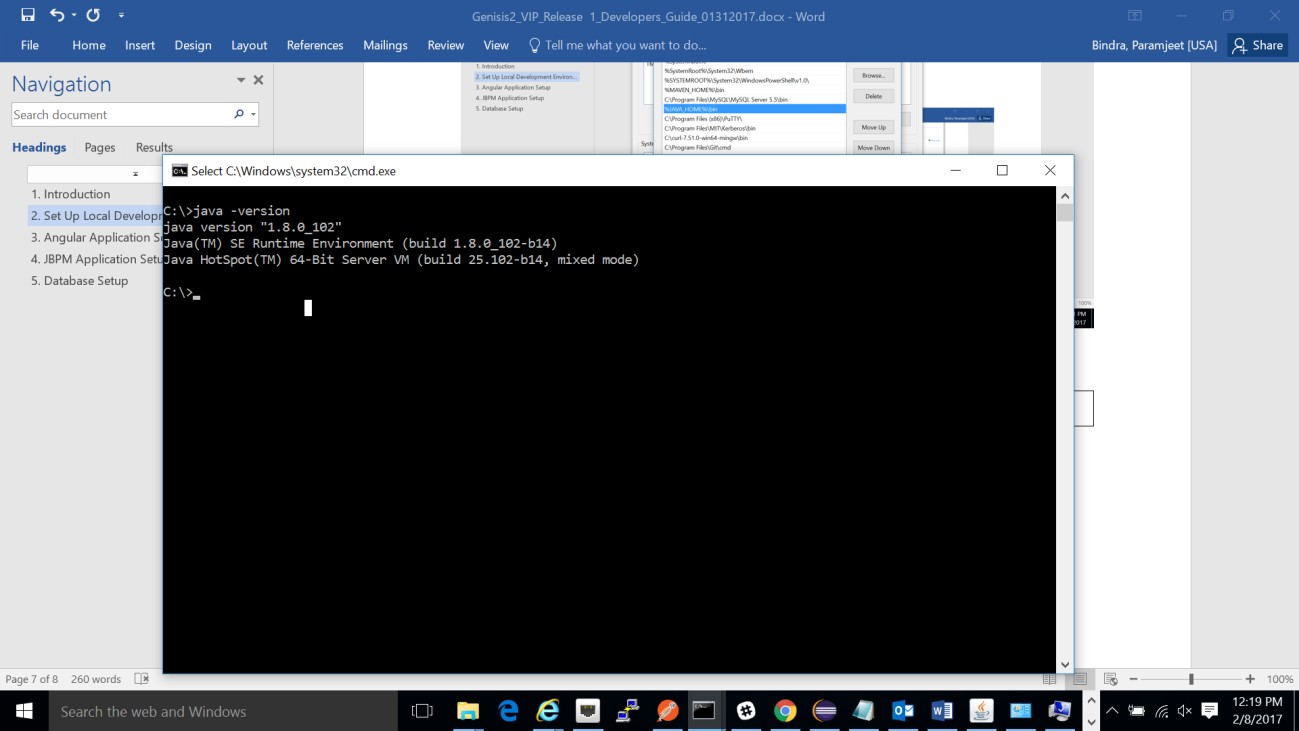
**Figure 5: Environment Variable Value**

The Path variable value is displayed in Table 2.

**Table 2: Path Variable**

|  |  |
| --- | --- |
| **Path Variable** | **Variable Value** |
| Path | %JAVA\_HOME%\bin; |

Validate the installation of Java and the environment setup as shown in Figure 6.



**Figure 6: Java and Environment Validation**

## Install Maven

Access <https://maven.apache.org/download.cgi>and download Apache Maven 3.3.9. Unzip the file and set environment variables as shown in Table 3.

**Table 3: Maven Environment Variables**

|  |  |
| --- | --- |
| **Environment Variable** | **Variable Value** |
| MAVEN\_HOME | C:\<Maven Home> Example: C:\apache-maven- 3.3.9 |
| MAVEN\_OPTS | -Xms512m -Xmx512m |
| Path | %MAVEN\_HOME%\bin; |

## Install Ant

Access <http://ant.apache.org/bindownload.cgi>and download Apache Ant 1.9.9 version. Unzip and set environment variables as shown in Table 4.

**Table 4: Ant Environment Variables**

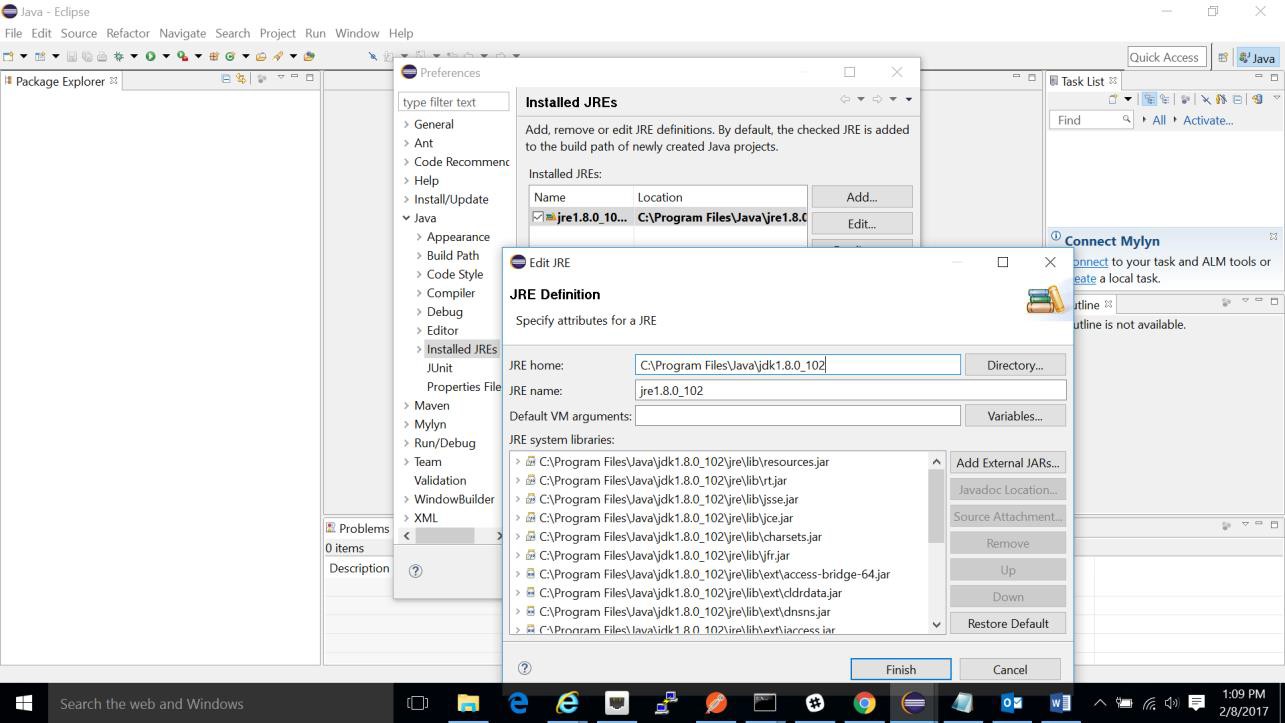
|  |  |
| --- | --- |
| **Environment Variable** | **Variable Value** |
| ANT\_HOME | C:\<Ant Home> Example: c:\apache-ant-1.9.7 |
| Path | %ANT\_HOME%\bin; |

## Install Eclipse

Access <http://www.eclipse.org/downloads/packages/eclipse-ide-java-developers>and download the Eclipse version of your choice; however, it is recommended that the version is Neon or above. These Eclipse packages have the following built-in tools:

* + - * Eclipse Git Team Provider
      * Eclipse Java Development Tools
      * Maven Integration for Eclipse
      * Mylyn Task List
      * Code Recommenders Tools for Java Developers
      * Eclipse XML Editors and Tools

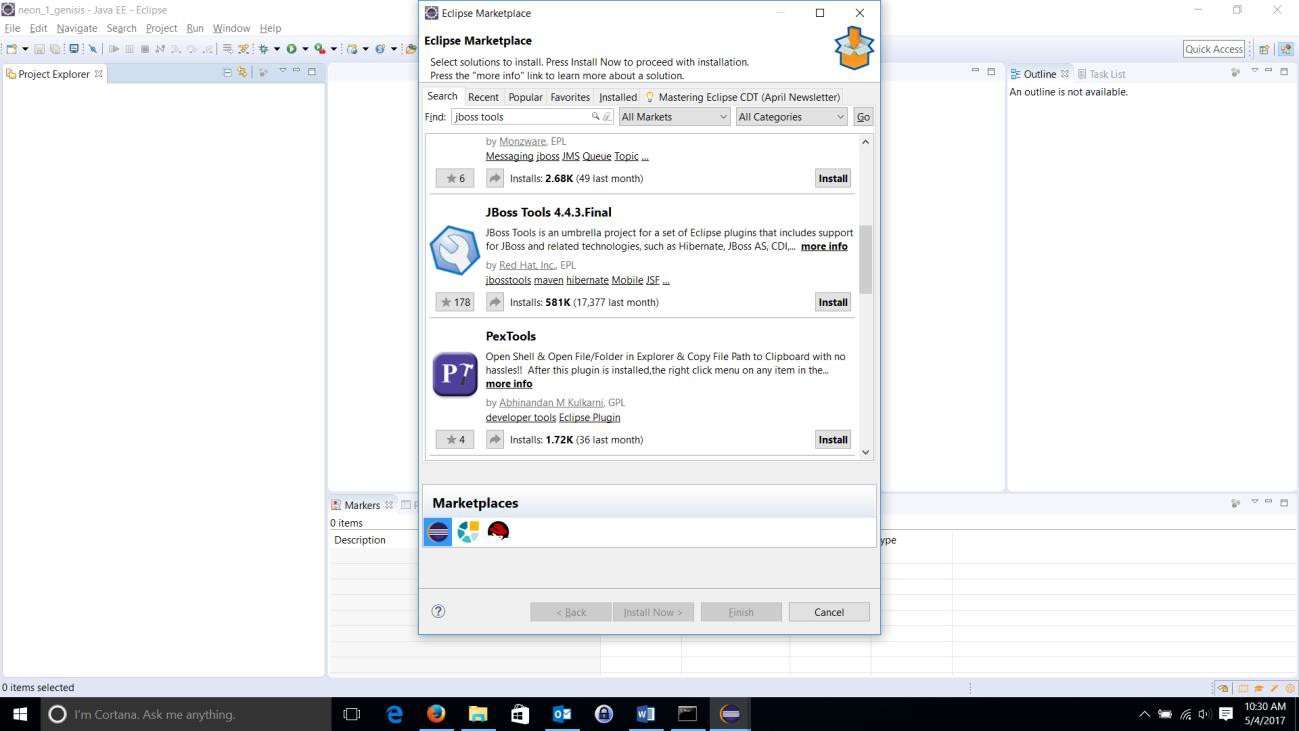
Unzip Eclipse and run eclipse.exe from Eclipse folder. Once Eclipse is up, the following settings are required as depicted in Figure 7. Configure JRE. Windows>Preferences.



**Figure 7: Eclipse Installation**

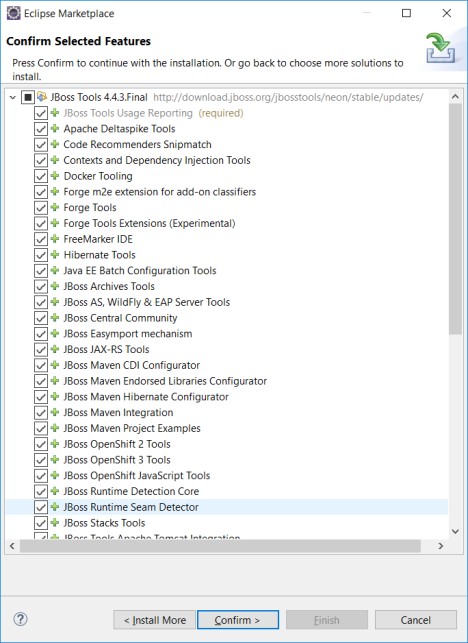
## Install JBoss Plug-in for Eclipse

To install the JBoss Plug-in for Eclipse, navigate to “**Help**” and then “**Eclipse Market Place**” as illustrated in Figure 8.



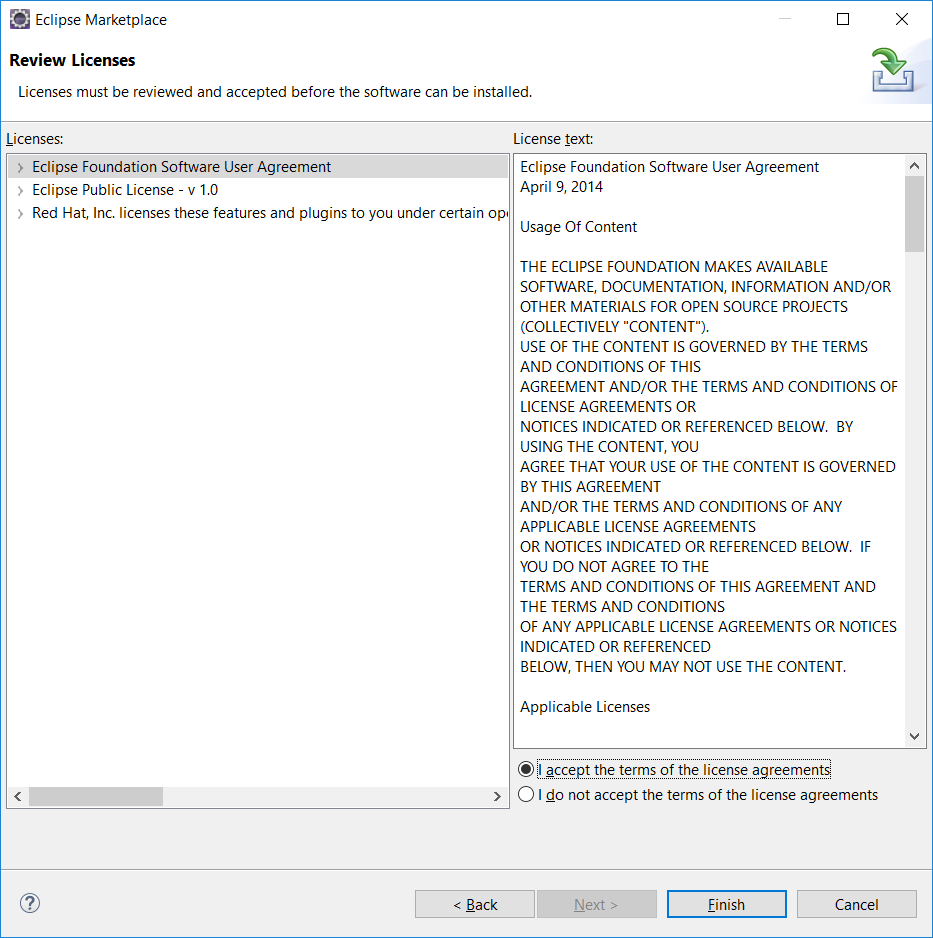
**Figure 8: Eclipse Installation**

Click on the “**Confirm**” button as shown in Figure 9.



**Figure 9: JBoss Installation Confirmation**

Select the “**I accept the terms of the license agreements**” radio button, and press the “**Finish**” button as shown in Figure 10.



**Figure 10: License Agreement Confirmation**

If you receive the Security Warning message shown in Figure 11 during the installation, click the “**OK**” button to continue.



**Figure 11: Security Warning Message**

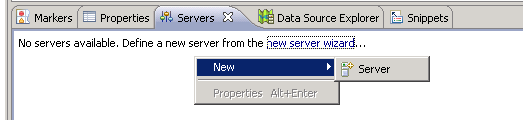
It will take a few minutes for the installation. Once complete, click the “**Restart Now**” button as shown in Figure 12 to restart Eclipse.



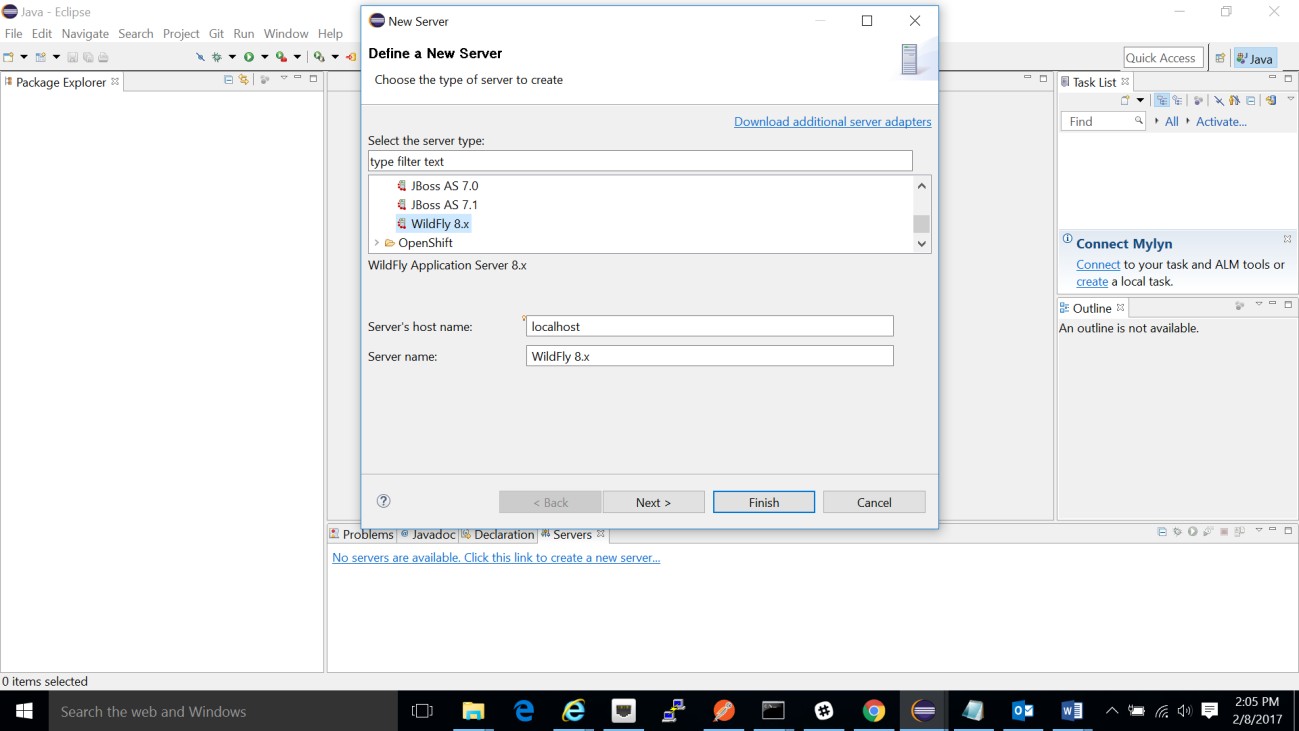
**Figure 12: Software Update Message to Restart Eclipse**

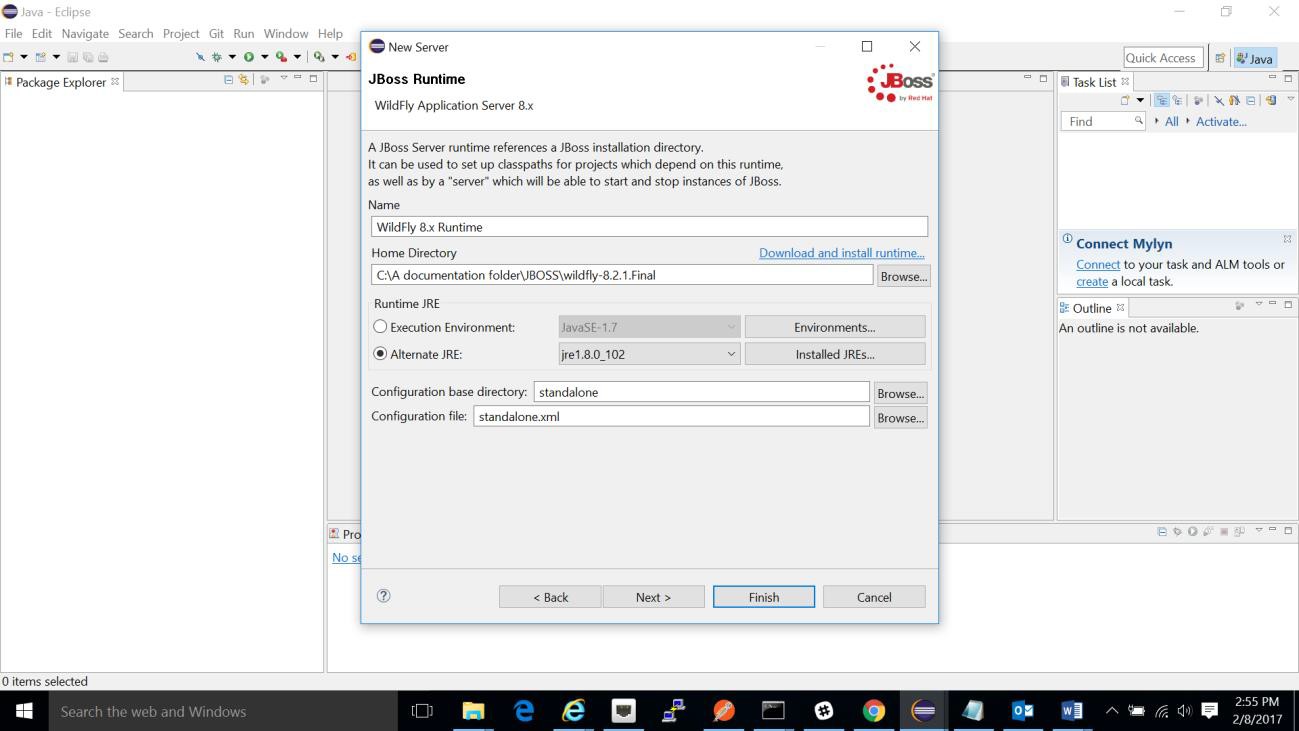
## Install WildFly Local Server

Activate the **"Servers"** view tab in the lower right-hand corner of the window. Right-click in the white space area and select **"New”** and then **“Server"** as shown in Figure 13.



**Figure 13: Installing New Server**



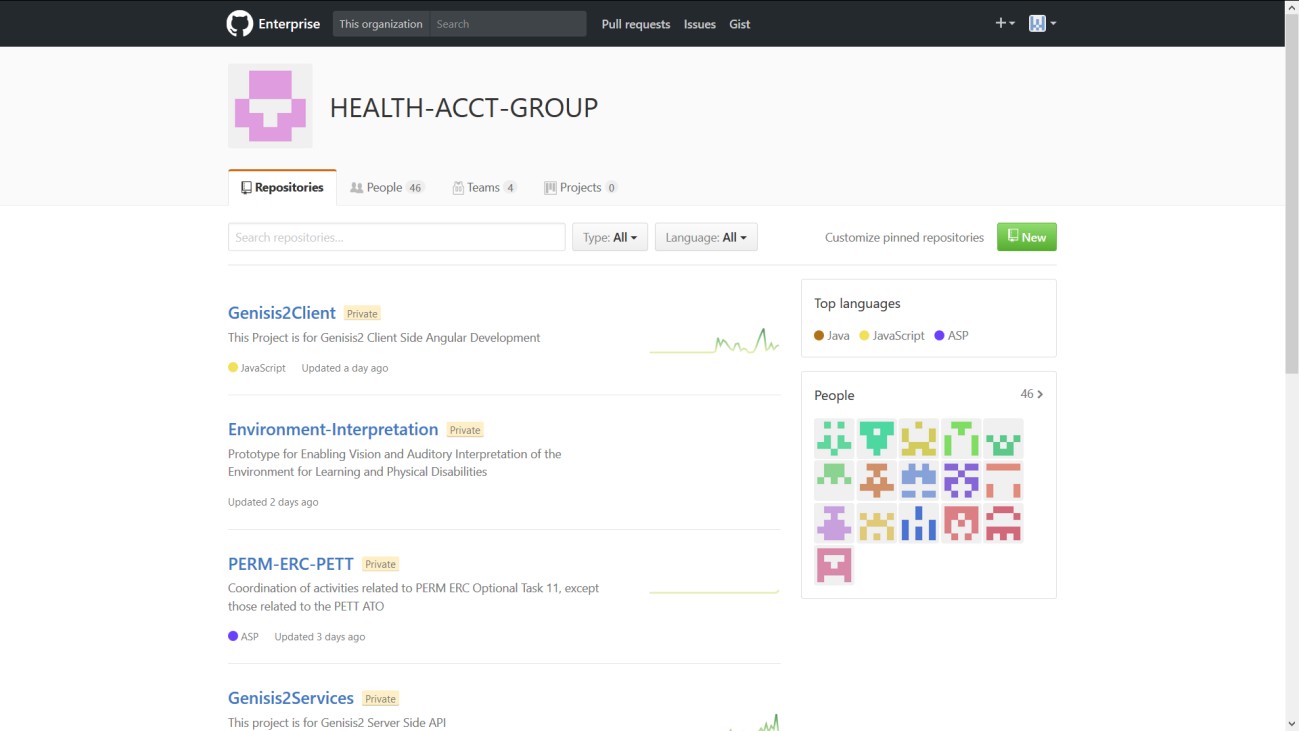


**Figure 14: Installing New Server**

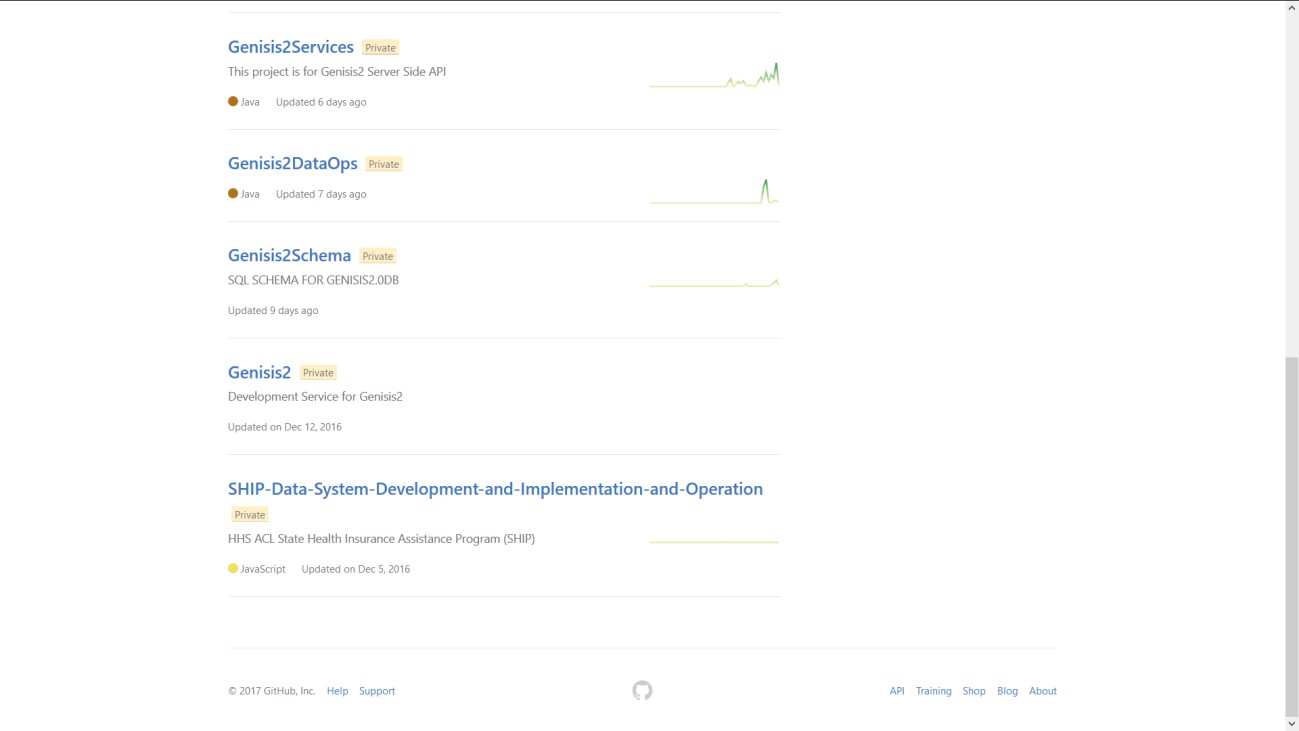
As illustrated in the screen shots as depicted by Figure 14, click “**Download and Install runtime**,” select “**Wildfly 8.2.1.Final**”, and then press the “**Next**” button. Select the “**I accept the terms of the license agreements**” radio button to accept the terms of the license agreements. Press the “**Next**” button, and browse to install folder. Press the “**Finish**” button. This will install Wildfly 8.2.1.Final on your local hard drive. Push “**Finish**” on new server Interface.

## Access to Genisis GIT

Booz Allen staff can access Genisis GIT at [https://github.boozallencsn.com/HEALTH-ACCT-](https://github.boozallencsn.com/HEALTH-ACCT-GROUP/)  [GROUP/](https://github.boozallencsn.com/HEALTH-ACCT-GROUP/). Genisis GIT is accessible only on via Booz Allen VPN. For access, contact Brittany Lovejoy at [PII](mailto:PII) Refer to Figures 15 and 16.

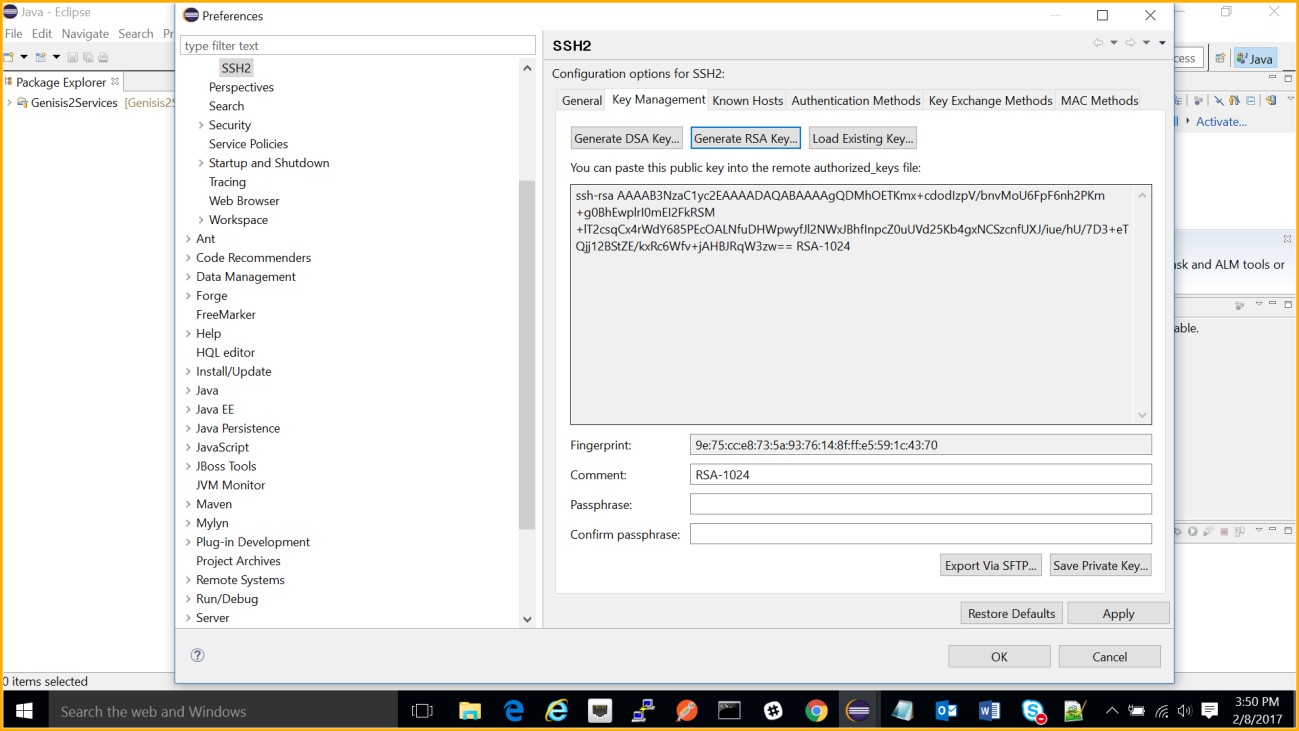


**Figure 15: Genisis GIT Access**



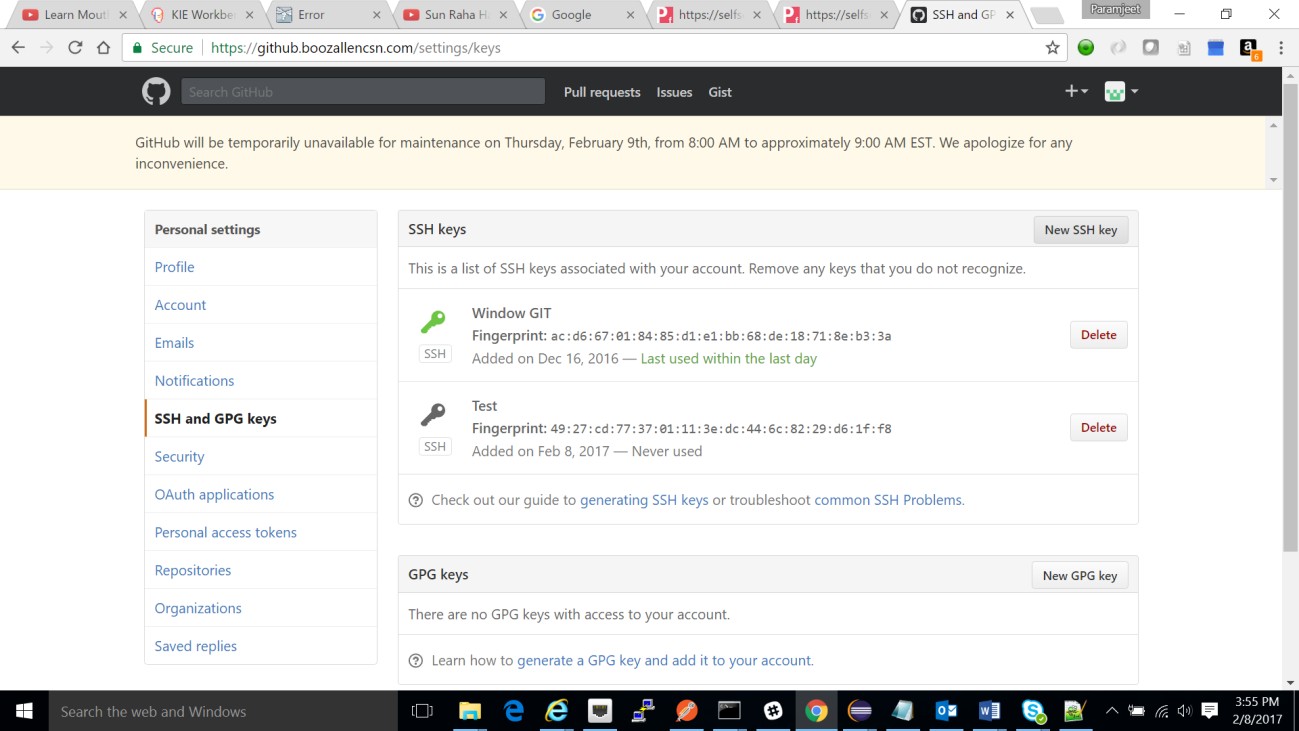
**Figure 16: Genisis GIT Repositories**

To create an SSH Key in Eclipse, select “**Windows,**” then “**Preferences**,” and then “**General**.” Select “**SSH2**” and click the “**Generate RSA Key….”** button as shown in Figure 17.



**Figure 17: SSH Key Creation**

Save the Private Key. Copy the Key and access [https://github.boozallencsn.com/HEALTH-](https://github.boozallencsn.com/HEALTH-ACCT-GROUP/)  [ACCT-GROUP/](https://github.boozallencsn.com/HEALTH-ACCT-GROUP/). On the right most section, click “**profile**”, select “**Settings**.”

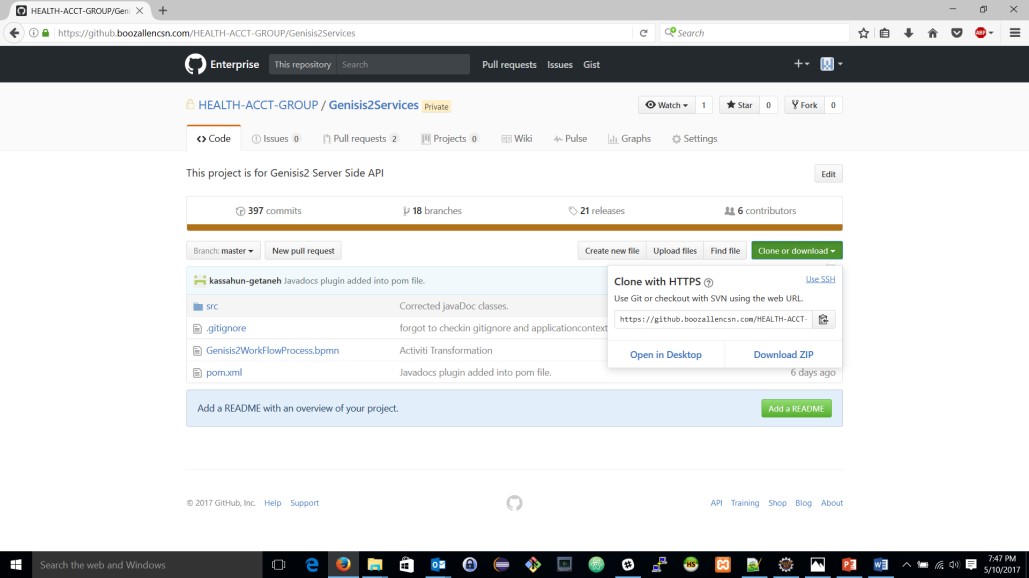


**Figure 18: New SSH Key**

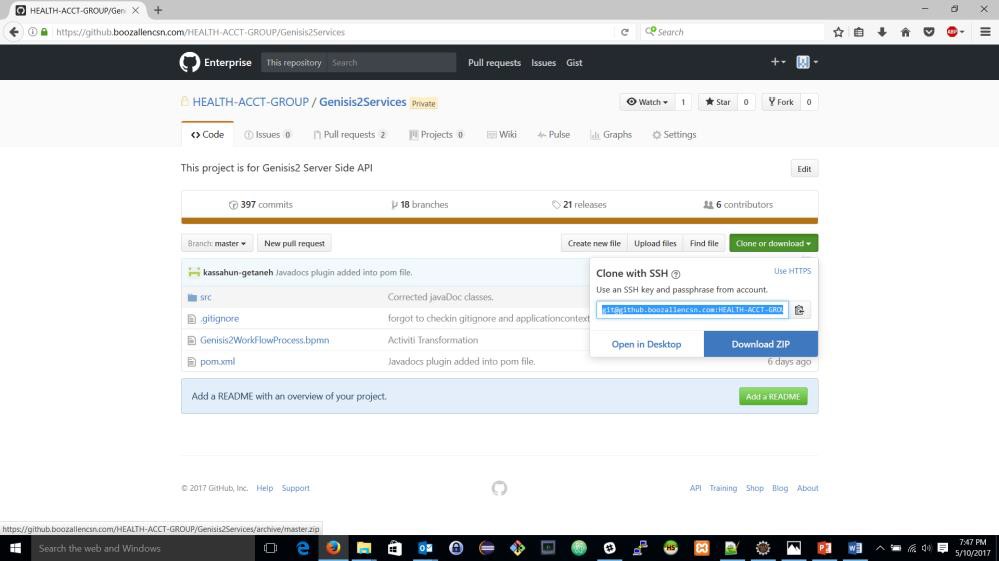
As shown in Figure 18, click “**New SSH key**”. Enter a Title and paste the copied key in the “**Key**” text box. NOTE: Ensure that there is no white space at the end of the pasted text.

## Setup Eclipse Workspace

Clone Genisis2Services, Genisis2DataOps, and Genisis2Client from Git into Eclipse. Go to Git Repo. Copy the “Clone with SSH” URL for Genisis2Services Git as shown in Figures 19 and 20.



**Figure 19: Genisis2Service Cloning**

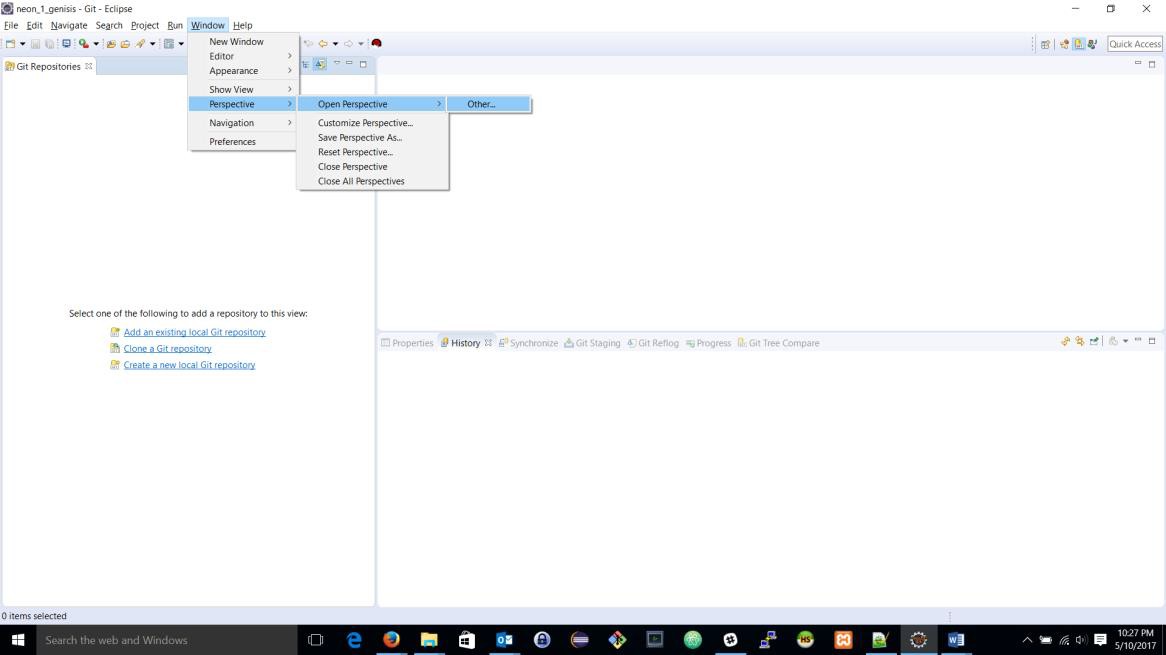


**Figure 20: Genisis2Service Cloning Download**

Follow the same directions to copy the “Clone with SSH” URL for Genisis2DataOps and Genisis2Client.

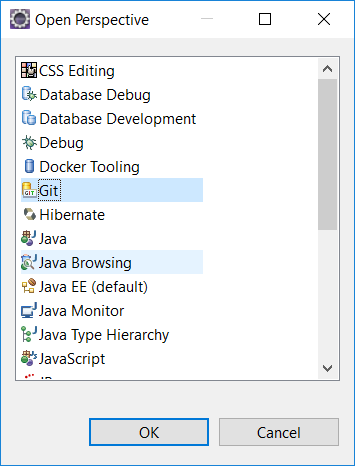
## Create Local GIT Repository for Genisis2Services

Change the Eclipse perspective to Git. Click “**Window**” and then “**Perspective**.” Click “**Open Perspective**” and then click “**Other**” as shown in Figure 21.



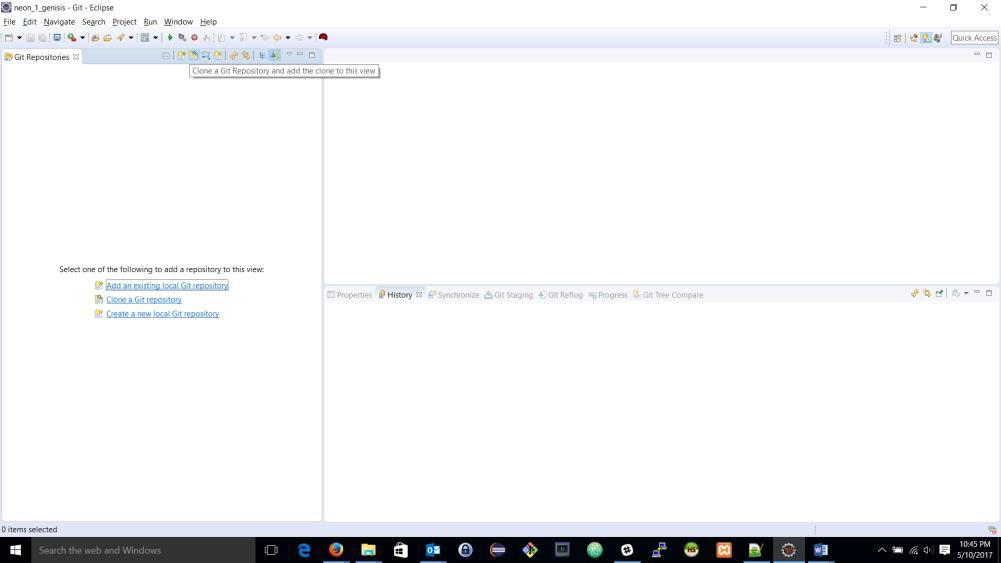
**Figure 21: Changing the Eclipse Perspective**

As shown in Figure 21, select “**Git**” then select “**OK**.”



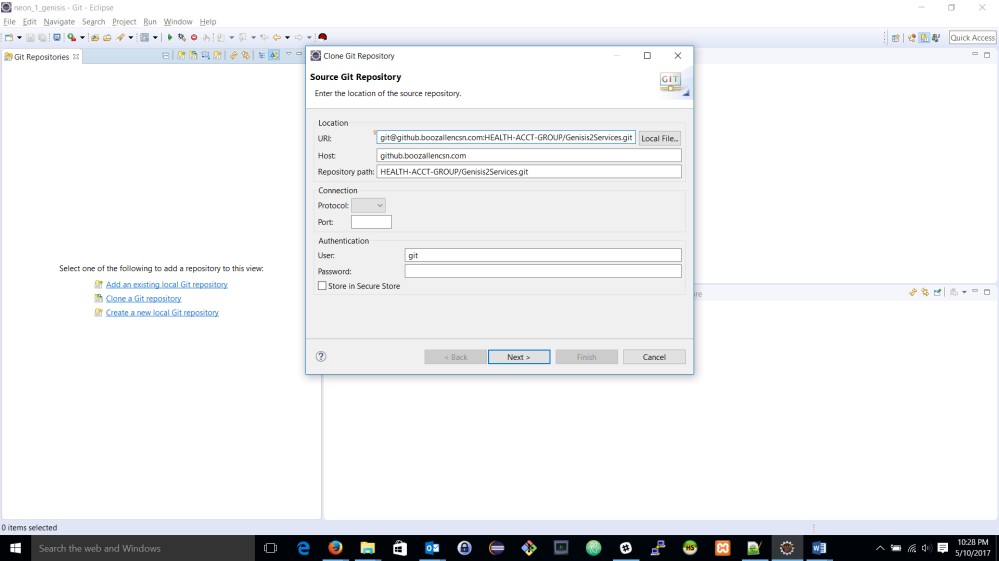
**Figure 22: Changing the Eclipse Perspective to Git**

Choose “Clone a Git Repository” as shown in Figure 23.



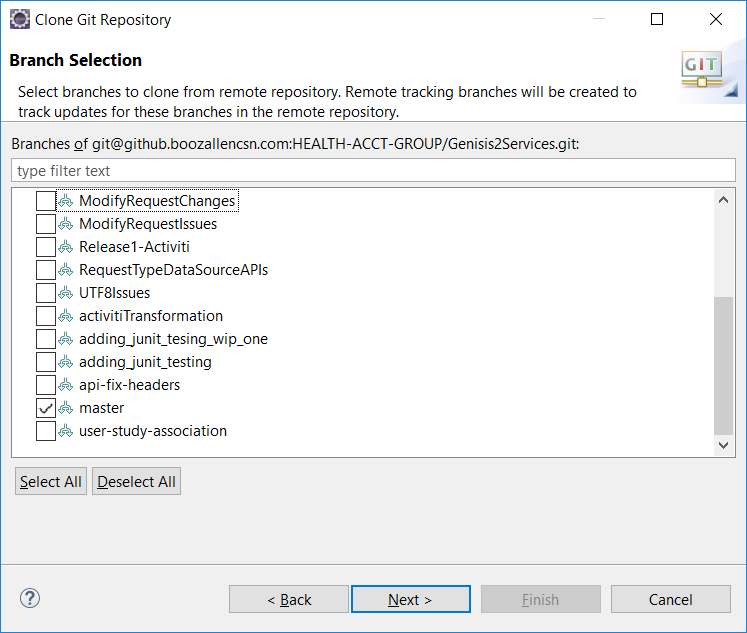
**Figure 23: Cloning a Git Repository - Genisis2Services**

Enter the “Clone with SSH” URL for the Genisis2Services Git as shown in Figure 24.



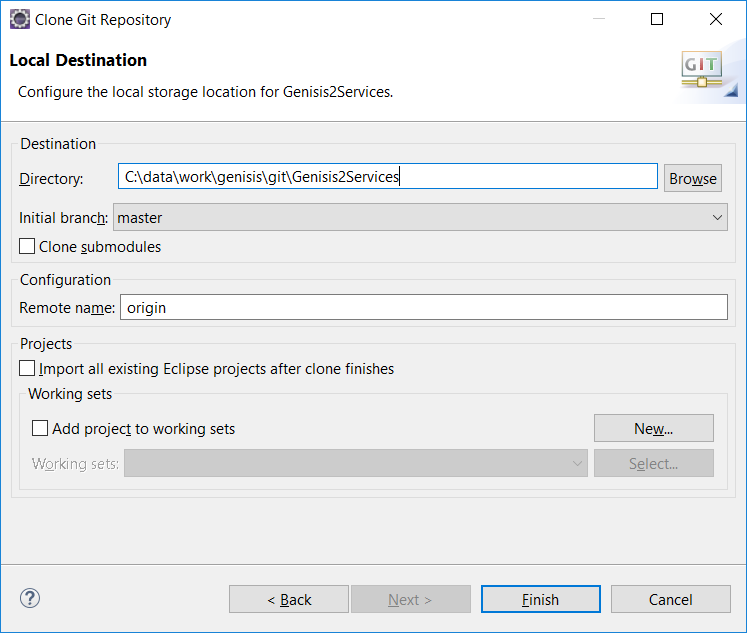
**Figure 24: Clone Genisis2 Git**

Choose the required stream (master). Refer to Figure 25.



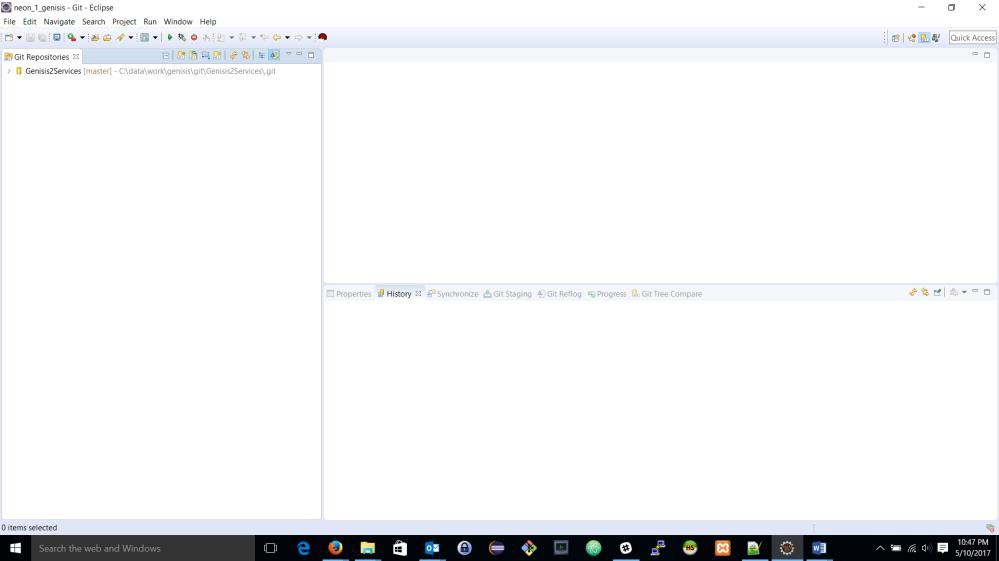
**Figure 25: Clone Git Repository - Branch Selection**

Enter the desired location for a local copy of the Git repository as shown in Figure 26.



**Figure 26: Clone Git Repository – Local Destination**

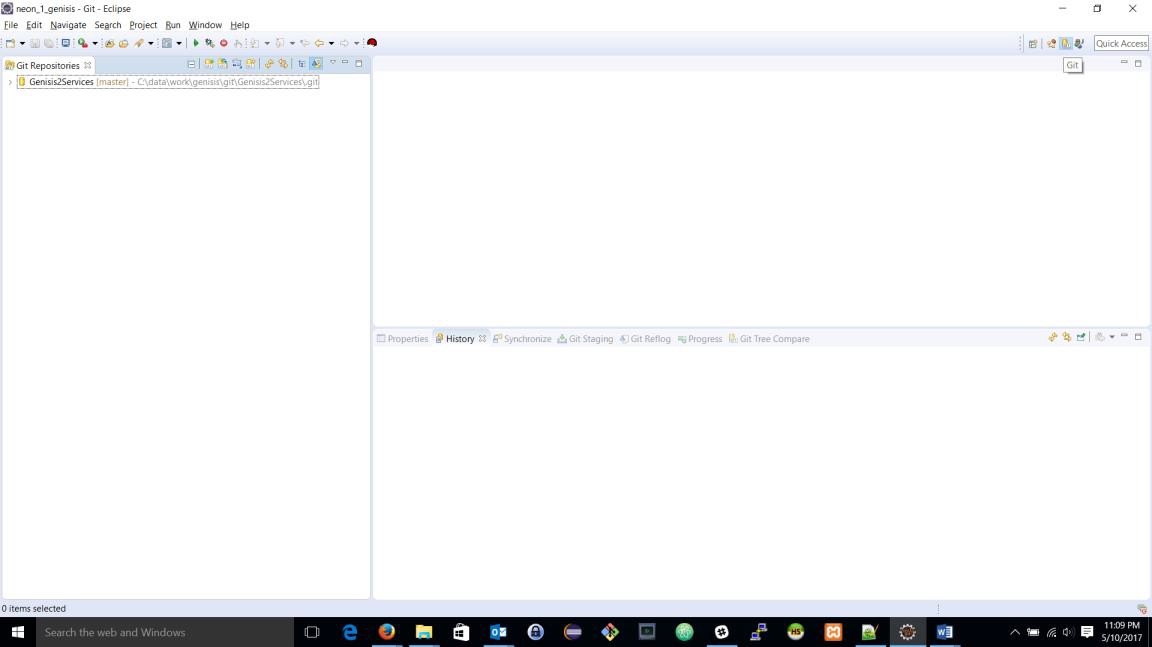
Figure 27 shows the local Git repository created for Genisis2Services.



**Figure 27: Clone Git Repository – Local Copy**

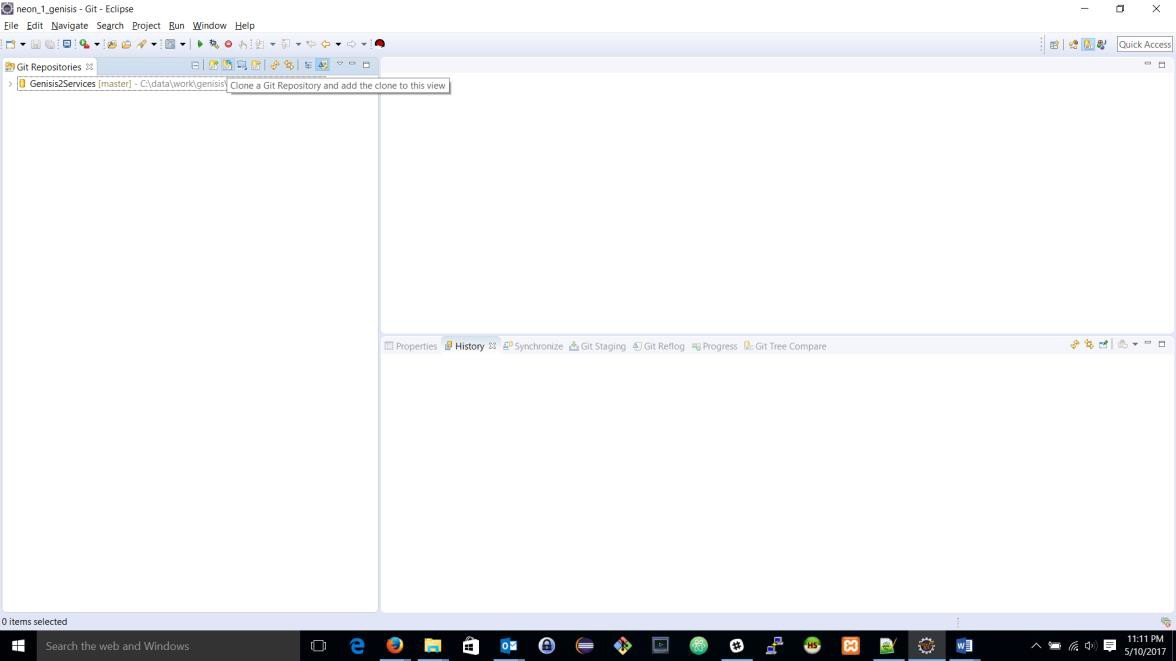
## Create Local GIT Repository for Genisis2DataOps

Change the Eclipse perspective to Git. Click “**Window**” shown in Figure 28 and then click “**Perspective**.” Click “**Open Perspective**” and then click “**Other.**”



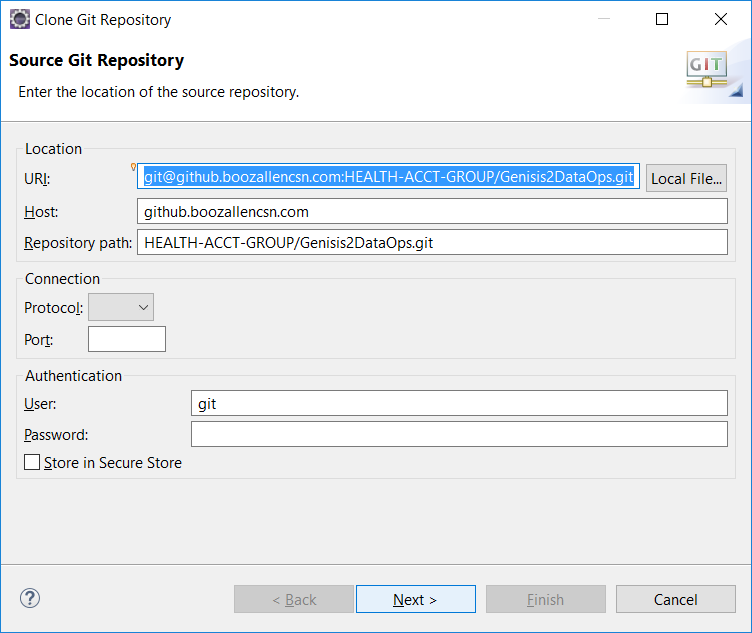
**Figure 28: Changing the Eclipse Perspective**

Choose “Clone a Git Repository” as shown in Figure 29.



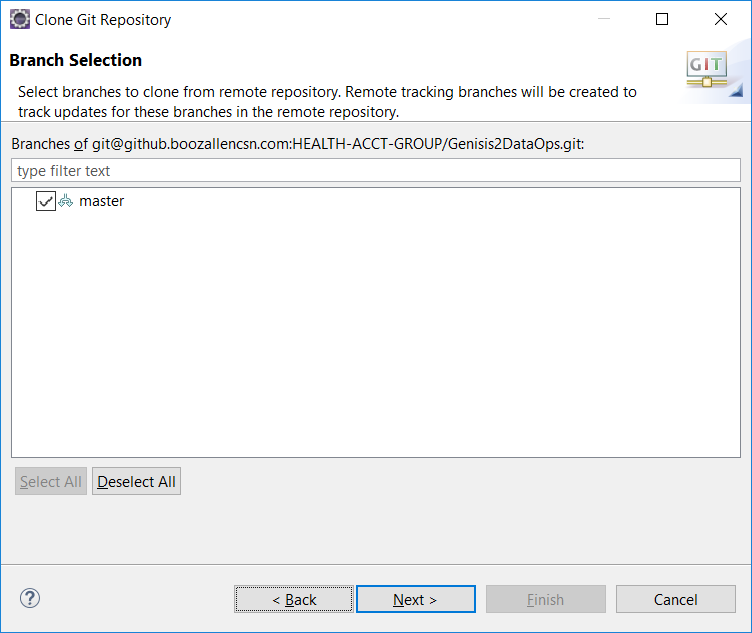
**Figure 29: Cloning a Git Repository - Genisis2DataOps**

Enter the “Clone with SSH” URL for the Genisis2DataOps Git as shown in Figure 30.



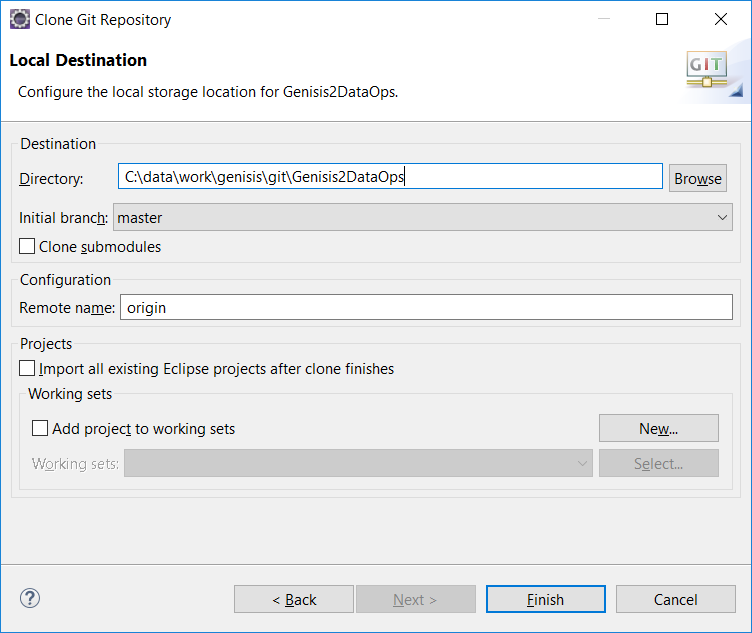
**Figure 30: Clone Genisis2 Git**

Choose required stream (master). Refer to Figure 31.



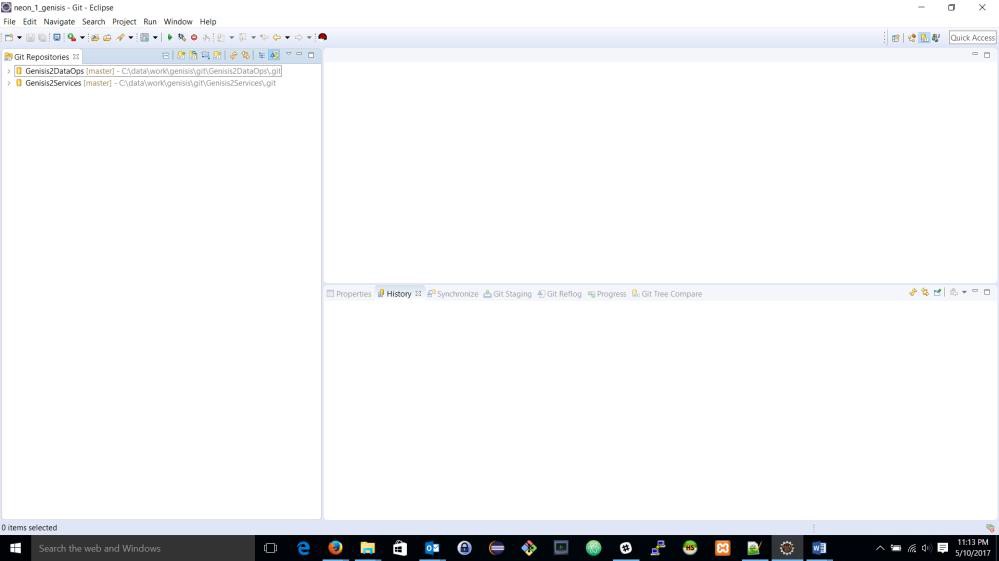
**Figure 31: Clone Git Repository - Branch Selection**

Enter the desired location for a local copy of the Git repository as shown in Figure 32.



**Figure 32: Clone Git Repository – Local Destination**

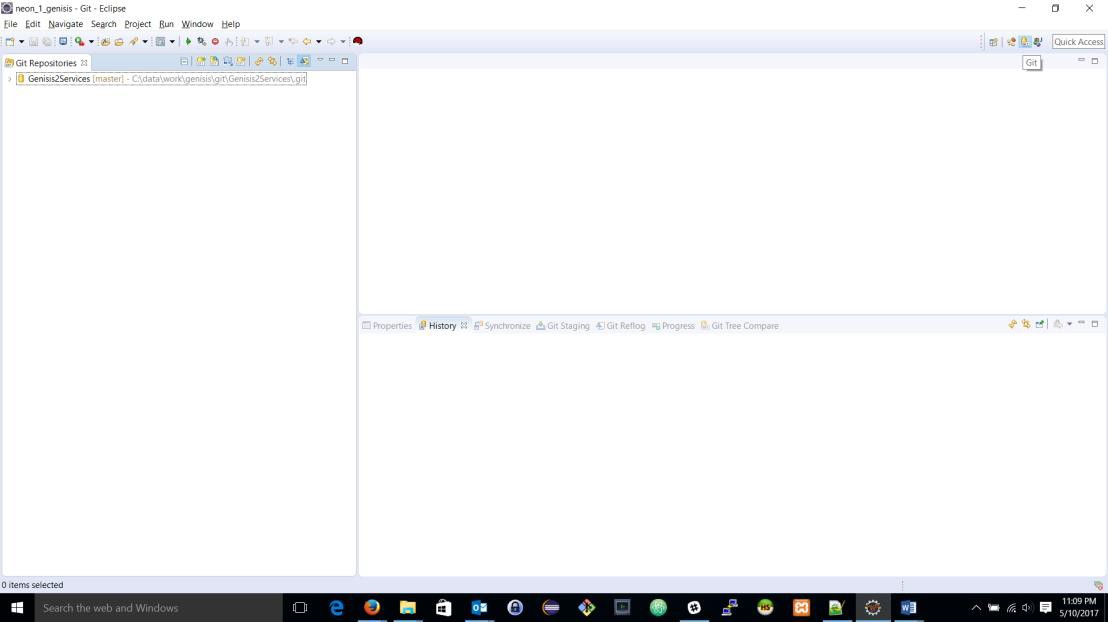
Figure 33 shows the local Git repository created for Genisis2DataOps.



**Figure 33: Clone Git Repository – Local Copy**

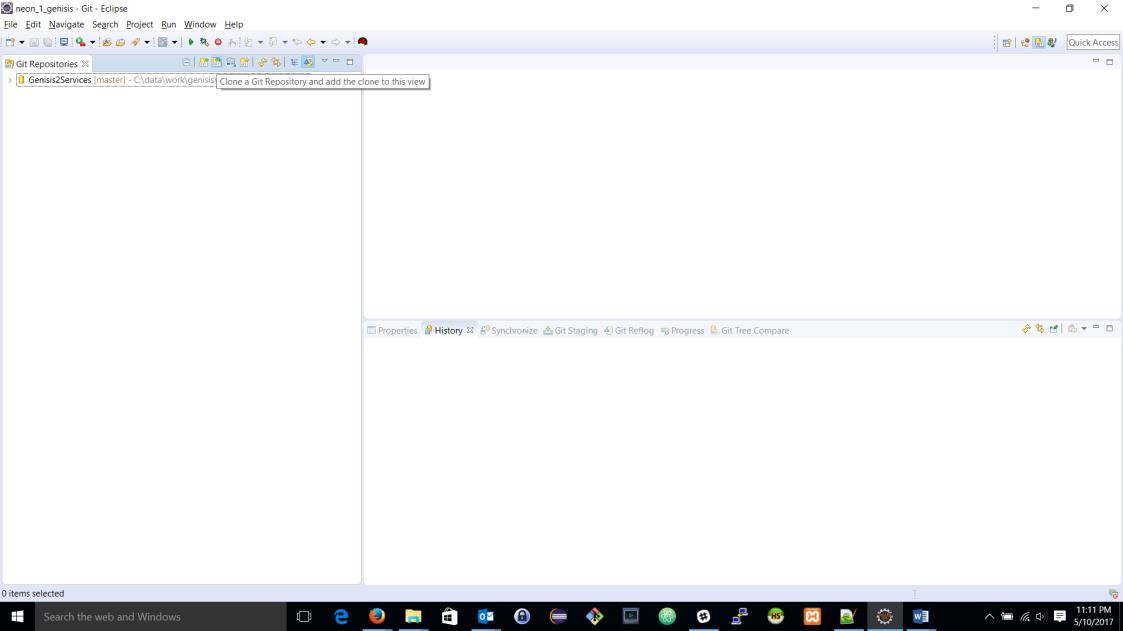
## Create Local GIT Repository for Genisis2Client

Change the Eclipse perspective to Git. Click “**Window**” shown in Figure 34 and then click “**Perspective**.” Click “**Open Perspective**” and then click “**Other.**”



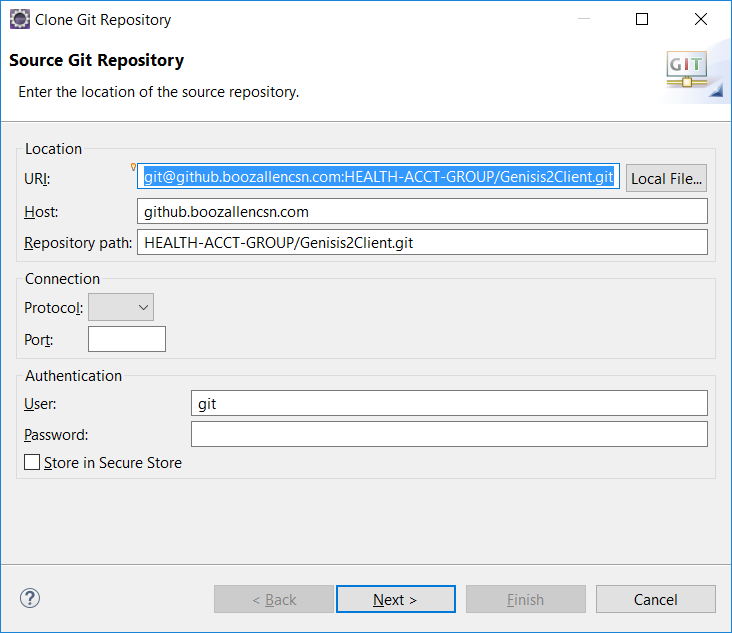
**Figure 34: Changing the Eclipse Perspective**

Choose Clone a Git Repository as shown in Figure 35.



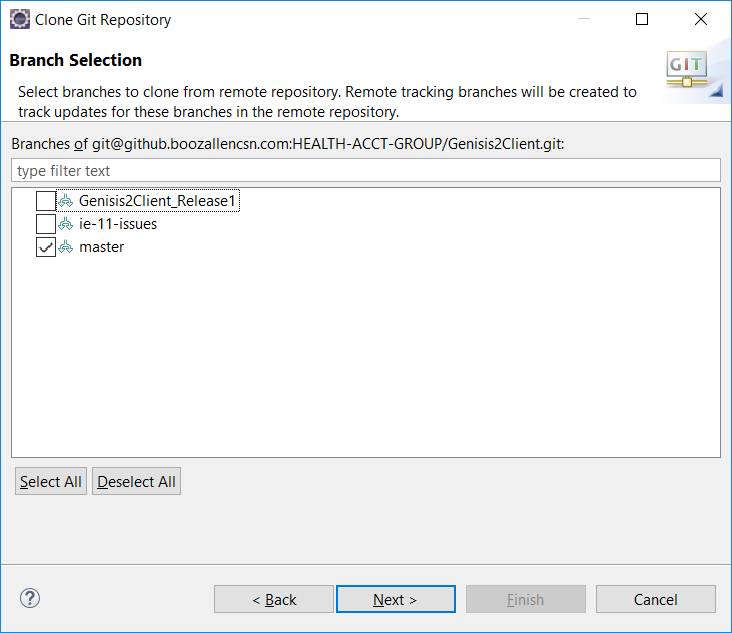
**Figure 35: Cloning a Git Repository - Genisis2Client**

Enter the “Clone with SSH” URL for the Genisis2Services Git as shown in Figure 36.



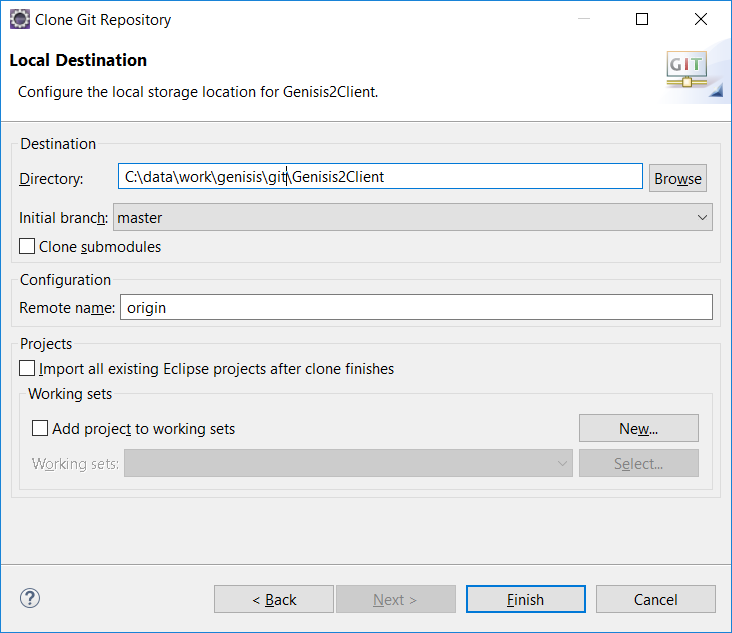
**Figure 36: Clone Genisis2 Git**

Choose required stream (master). Refer to Figure 31.



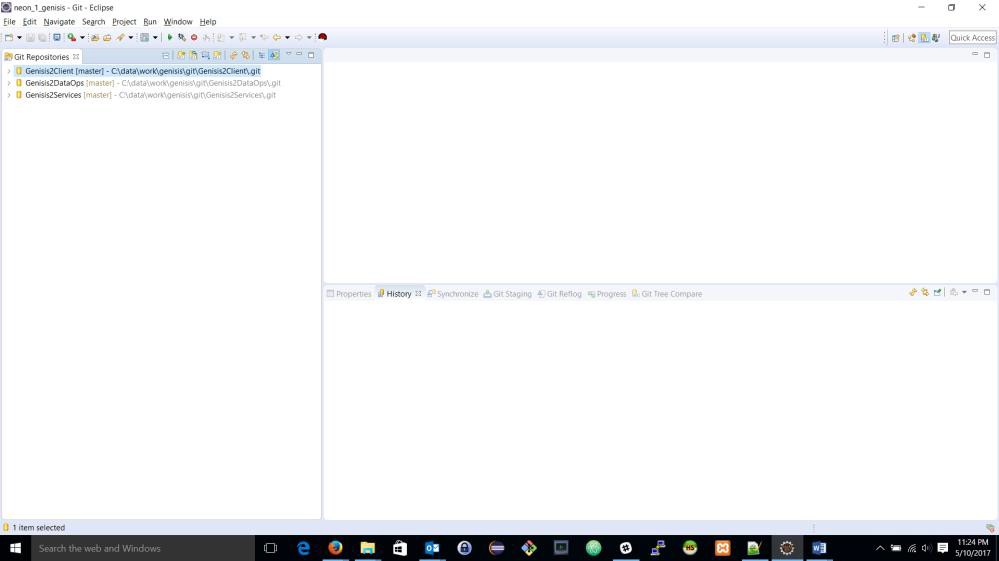
**Figure 37: Clone Git Repository - Branch Selection**

Enter the desired location for a local copy of the Git repository as shown in Figure 38.



**Figure 38: Clone Git Repository – Local Destination**

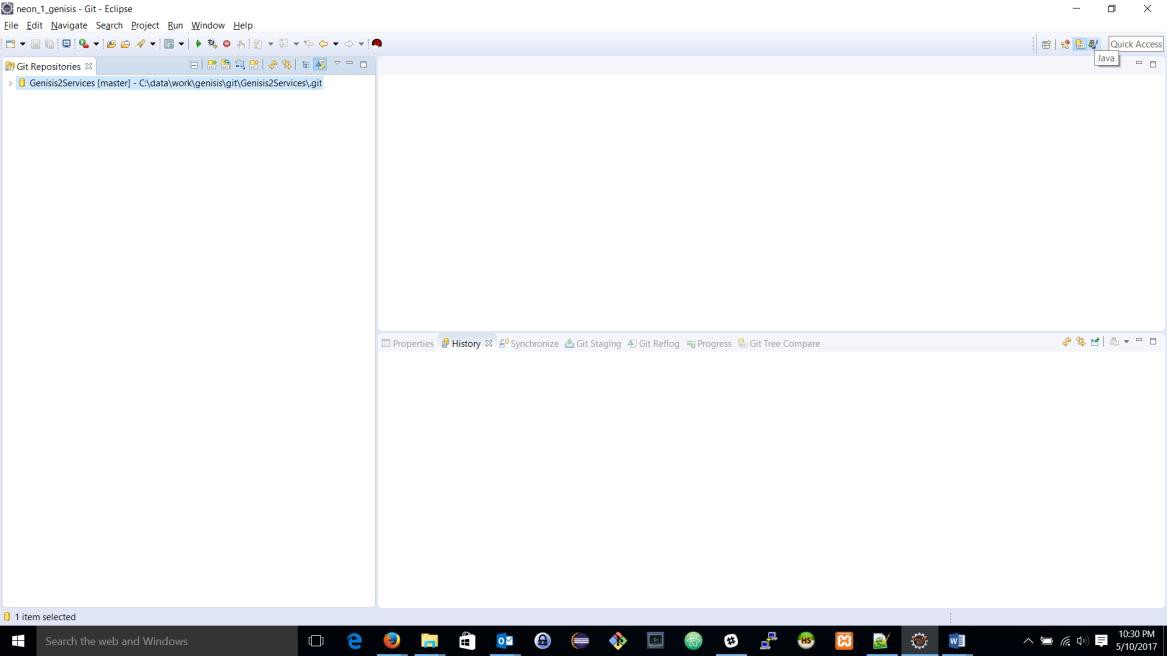
Figure 39 shows the local Git repository created for Genisis2Client.



**Figure 39: Clone Git Repository – Local Copy**

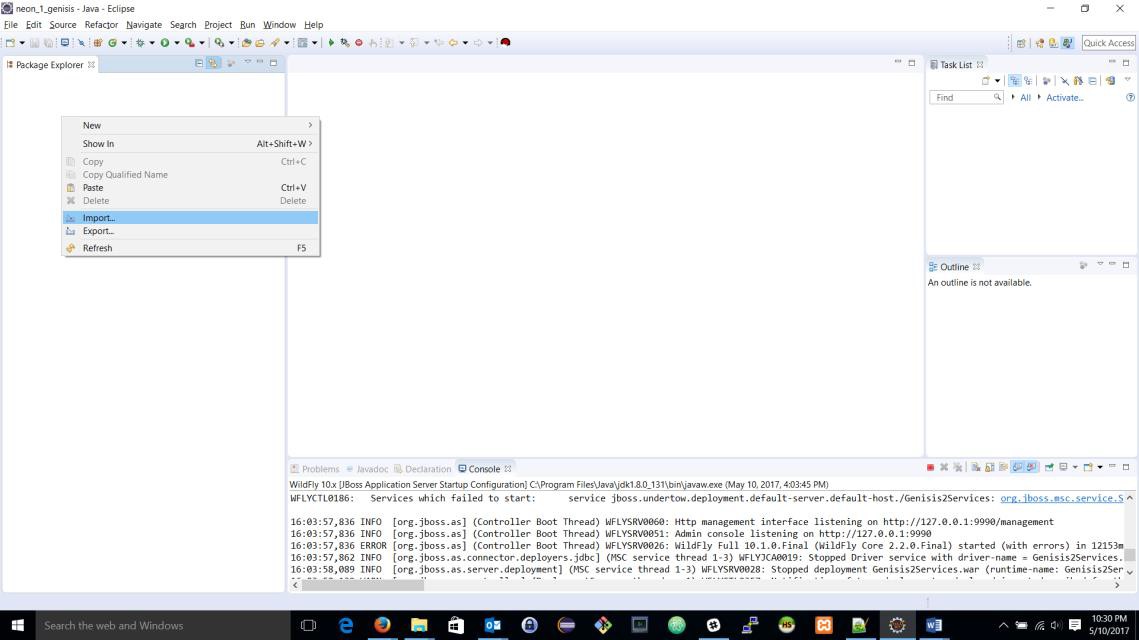
## Import Genisis2 Projects into Eclipse

Change Eclipse perspective to Java. Click “**Window**” shown in Figure 40 and then click “**Perspective**.” Click “**Open Perspective**” and then click “**Other.**”



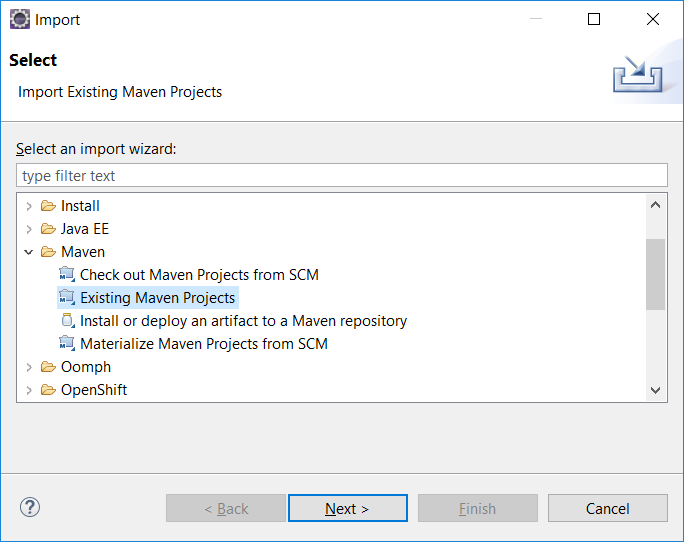
**Figure 40: Change Eclipse Perspective to Java**

Click “**File**” and then click “**Import**.” Refer to Figure 41.



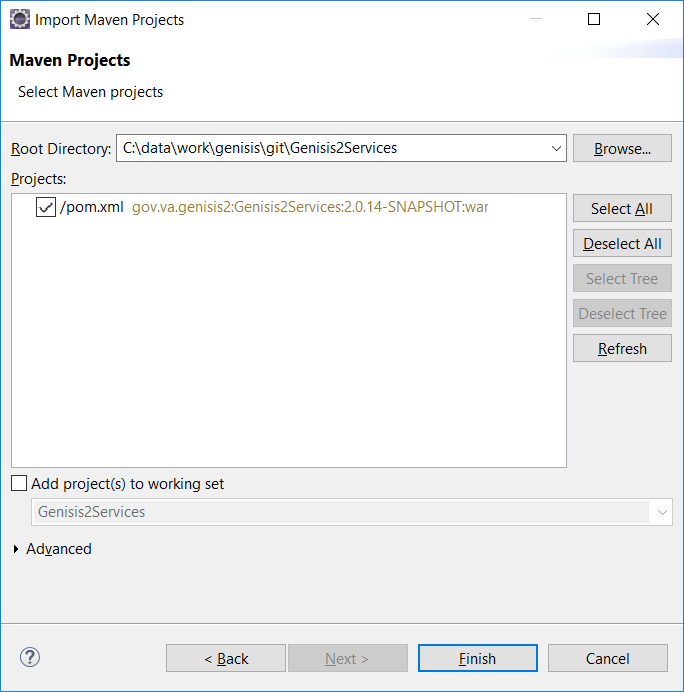
**Figure 41: Importing Projects into Eclipse**

Choose “Existing Maven Projects” as illustrated in Figure 42.

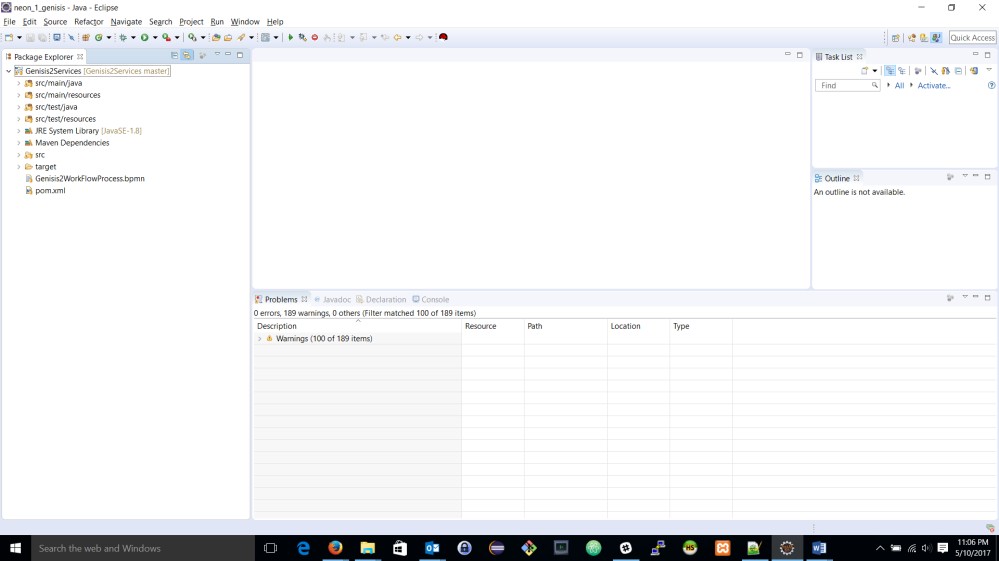


**Figure 42: Selecting Projects to Import**

Select the local Genisis2Services path by clicking “**Browse**” and then click “**Finish**.”



**Figure 43: Select Genisis2Services Local Copy**

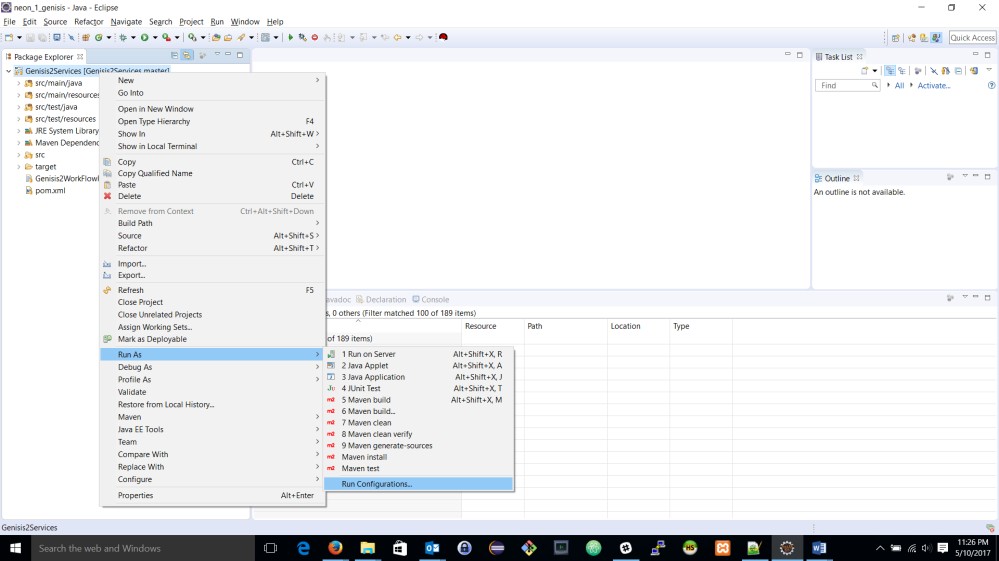


**Figure 44: Allow Public Access**

After generating the SSH key, you want to configure the account on your server repository to allow public access with your private key. If you have any questions regarding this step, please contact your Administrator.

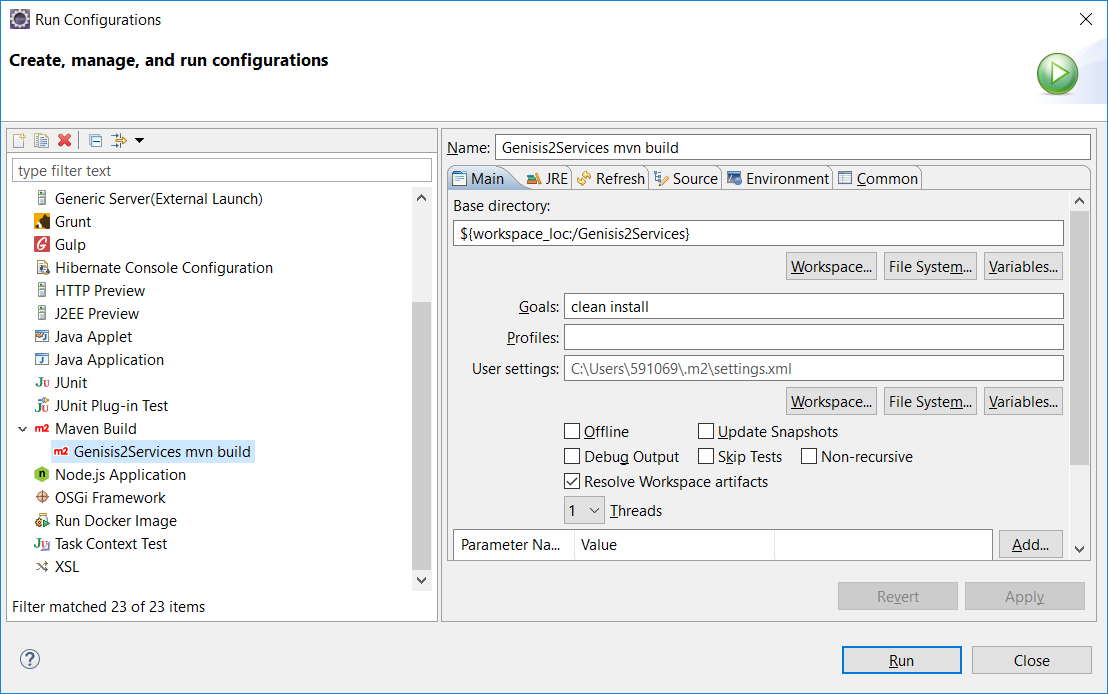
### Build Applications

To configure builds, right click on Genisis2Services, then click “**Runs As.**” Click “**Run Configurations**” and shown in Figure 45.



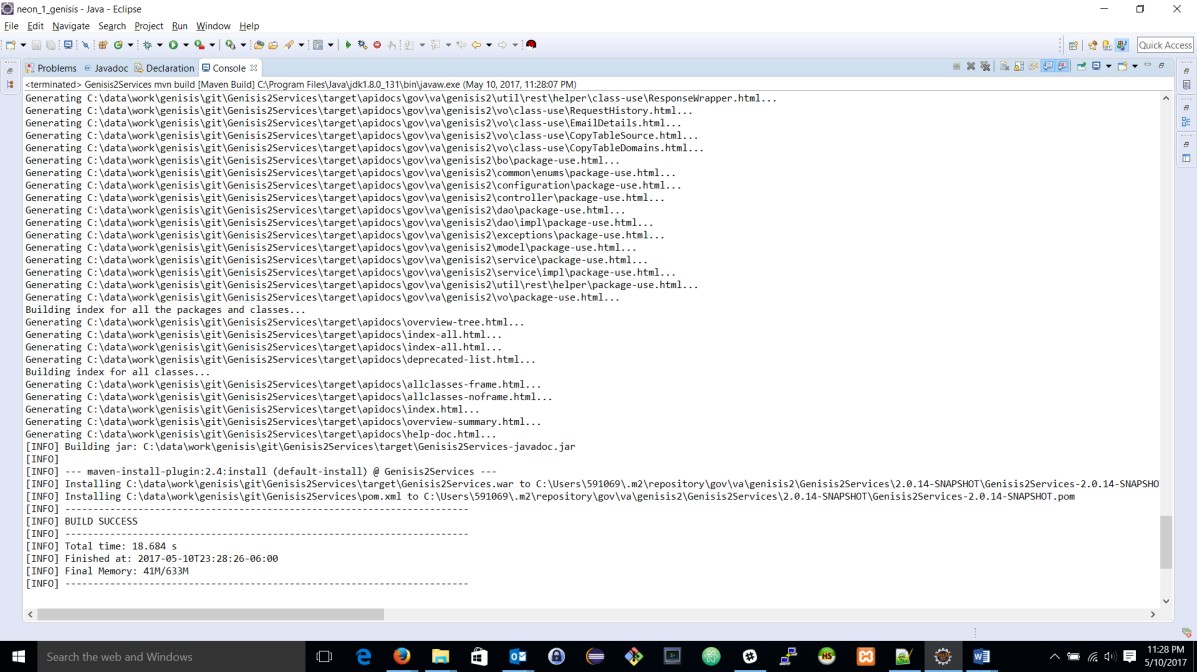
**Figure 45: Configuring Builds**

Click the “Run” button as shown in Figure 46.



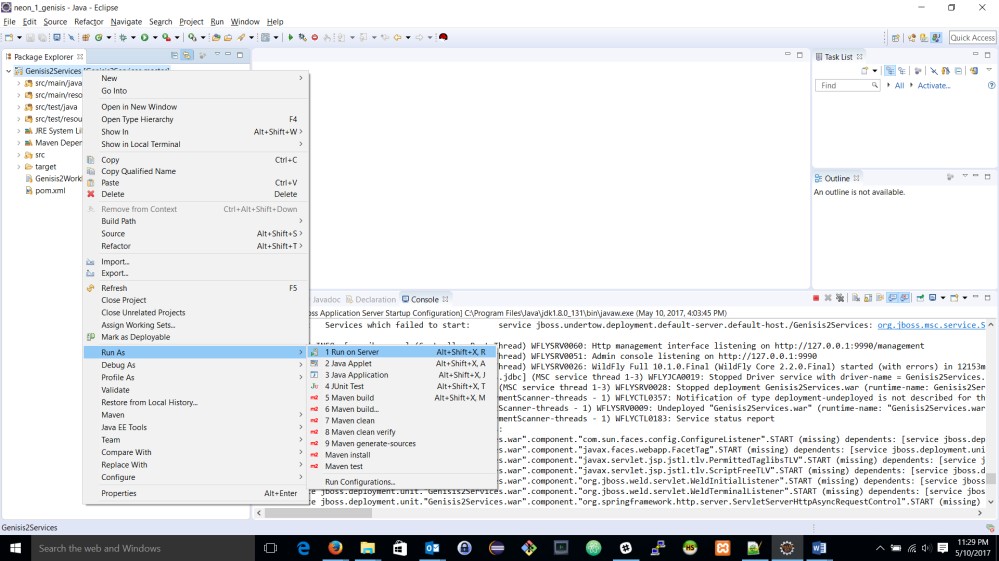
**Figure 46: Run Configurations**

The configurations are displayed as shown in Figure 47 and the build success message is provided.



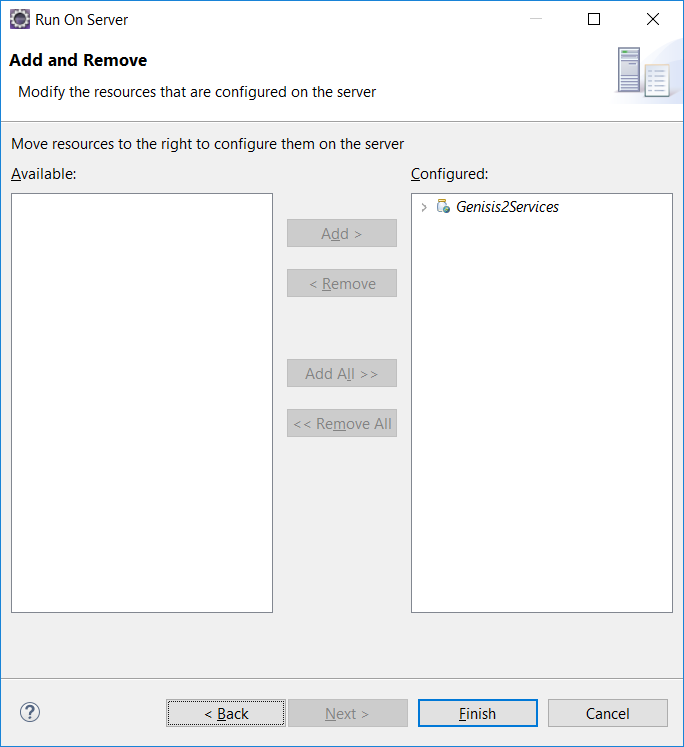
**Figure 47: Generated Configurations and Build Success**

Deploy the applications to the local server. Right click on “**Server**” and click “**Run As**.” Click “**Run on Server**” as shown in Figure 48.



**Figure 48: Deploy Applications**

To complete the process, click “Finish” as shown in Figure 49.



**Figure 49: Configured Genisis2Services**

Copy /Genisis2Services/src/main/resources/sample-genisis2.properties to <Wildfly Home>\standalone\configuration.

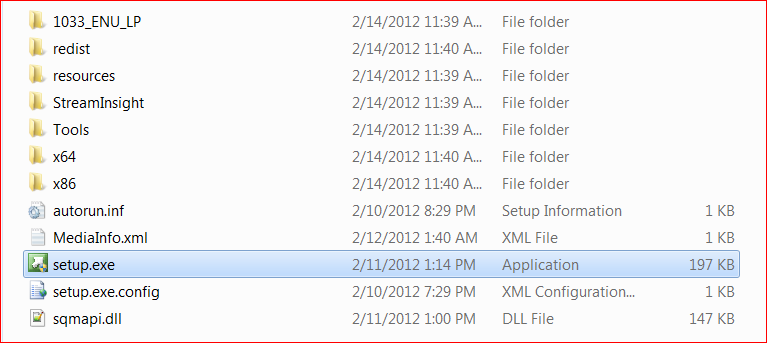
Rename sample-genisis2.properties to genisis2.properties.

# Database Setup

Install SQL server using URL [https://docs.microsoft.com/en-us/sql/database-engine/configure-](https://docs.microsoft.com/en-us/sql/database-engine/configure-windows/troubleshoot-connecting-to-the-sql-server-database-engine)  [windows/troubleshoot-connecting-to-the-sql-server-database-engine](https://docs.microsoft.com/en-us/sql/database-engine/configure-windows/troubleshoot-connecting-to-the-sql-server-database-engine).

Once installed, follow the steps as outlined below for the database setup.

Right click on the “**setup.exe**” file and then click “Run as **Powerbroker Administrator**.”



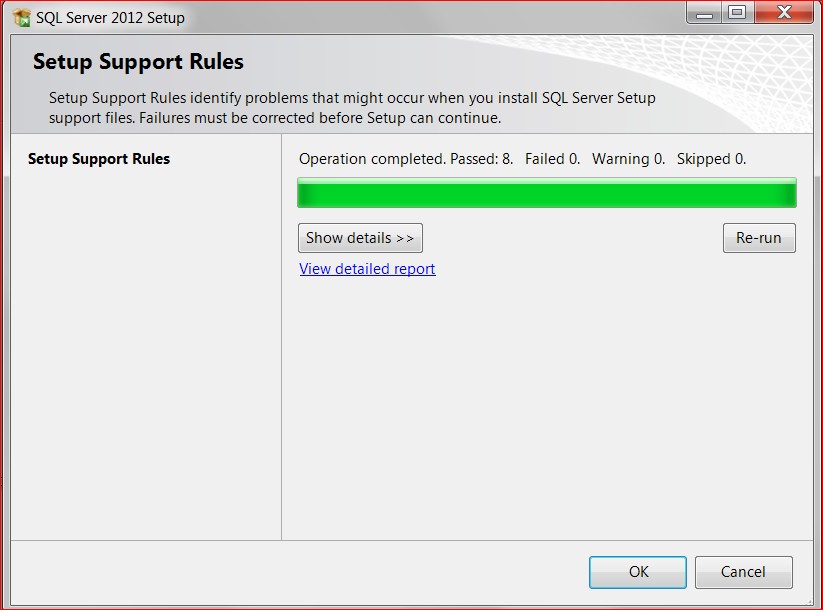
**Figure 50: Database Setup**

Click the “Installation” link and then click the “New SQL Server stand-alone installation or add features to an existing installation” link as shown in Figure 51.



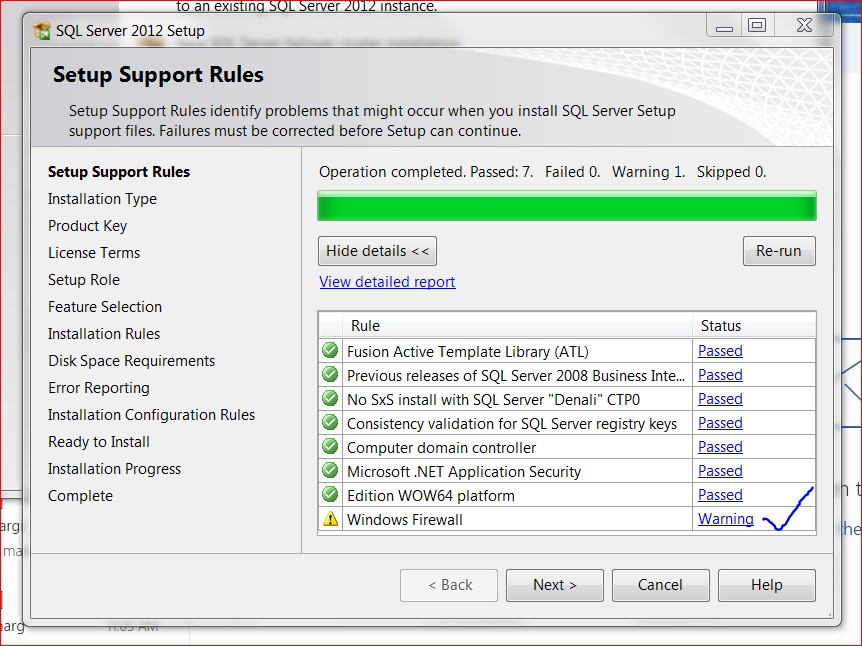
**Figure 51: SQL Server Installation**

Click “OK” as shown in Figure 52.



**Figure 52: Setup Support Rules**

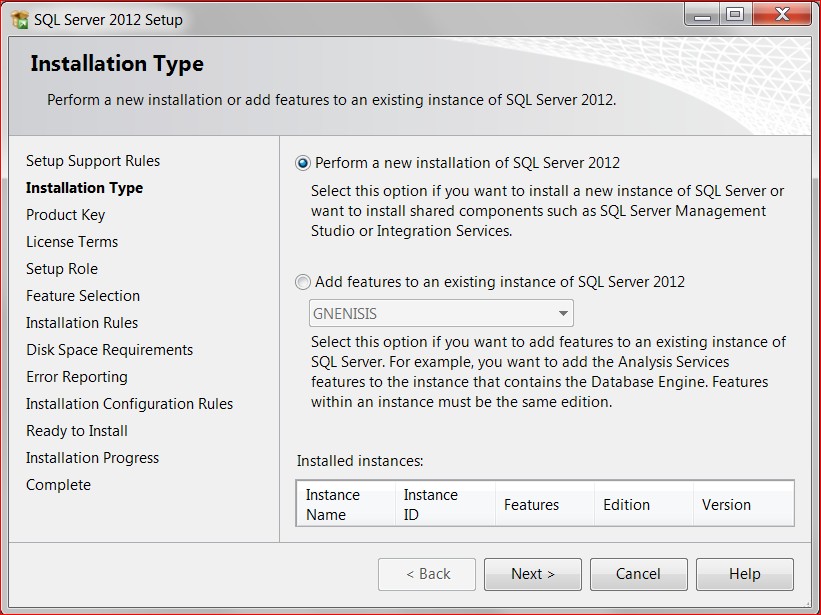
Before you click on the “**Next**” button, turn off your firewall from Control Panel\System and Security\Windows Firewall. Refer to Figure 53.



**Figure 53: Windows Firewall**

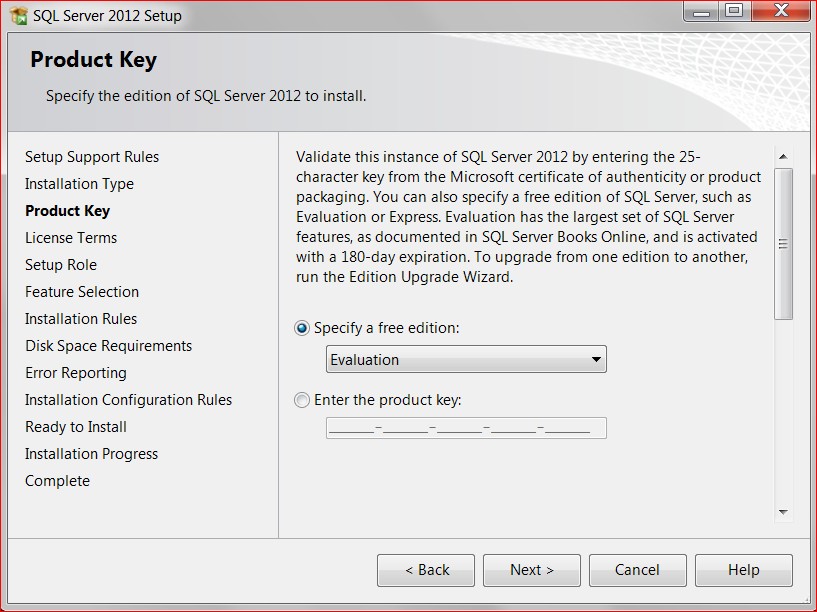
Push the “Next” button through the next three screens. Then click “Close.”

Go to the Start menu. Click “**All programs**”, click “**Microsoft SQL server 2012**,” and then click “**SQL Server Management Studio.**” Refer to Figure 54.



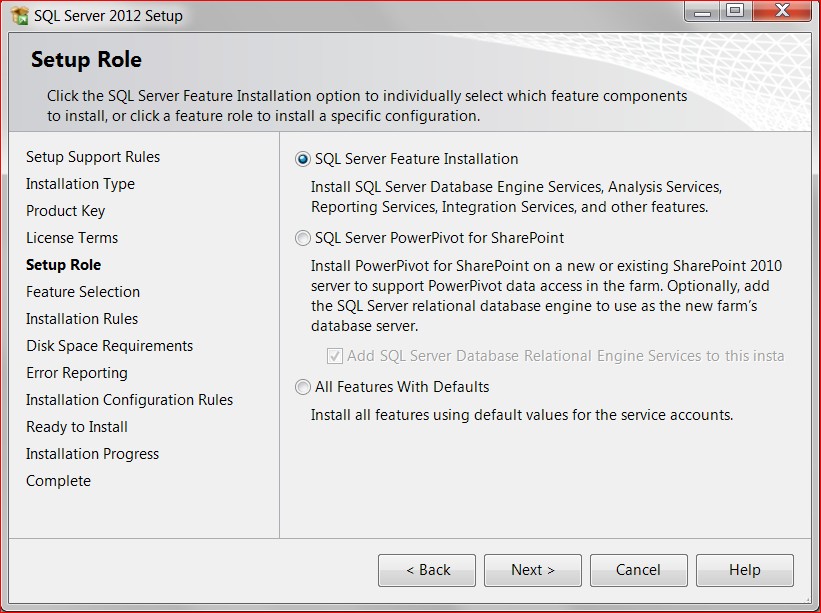
**Figure 54: Installation Type**

Click “Next” through the next two screens until you see the screen as depicted in Figure 55.



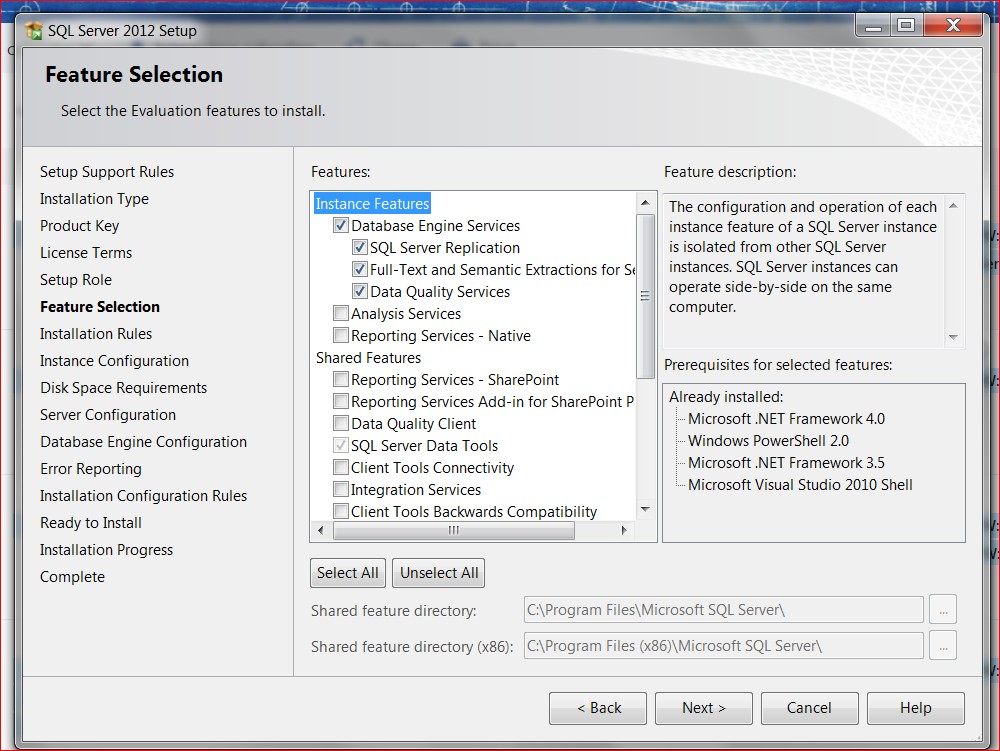
**Figure 54: Product Key**

Click “**Next**” and accept the license terms. Click “**Next**.” Ensure that the “**SQL Server Feature Installation**” is checked as shown in Figure 55. Click “**Next**.”



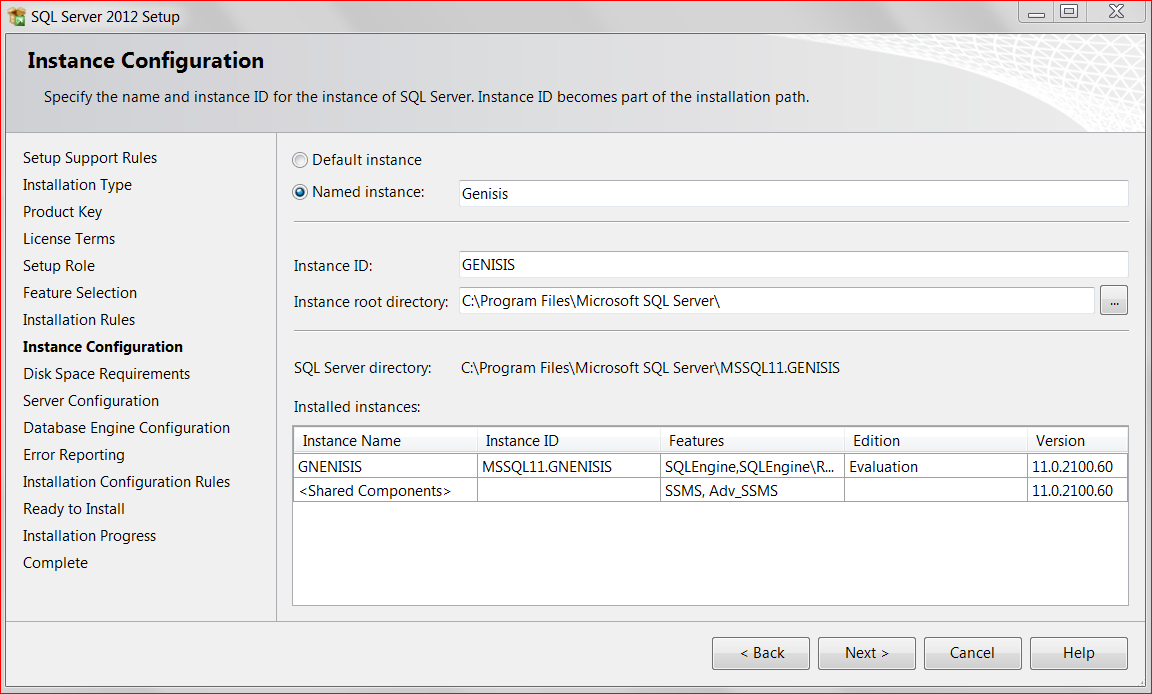
**Figure 55: Setup Role**

Select the evaluation features to install as shown in Figure 56, and then click “**Next**.”



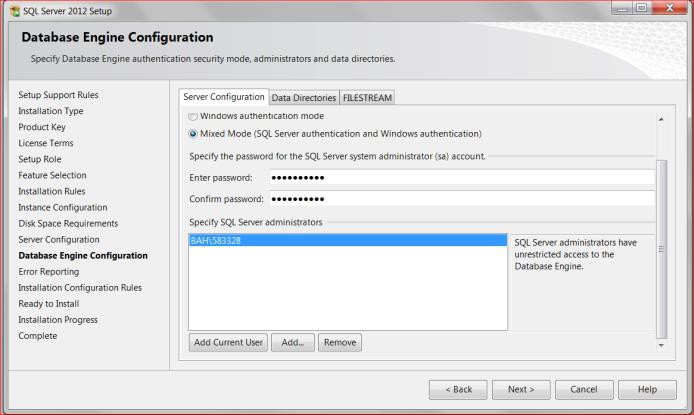
**Figure 56: Feature Selection**

Click “Next” through the next three screens.



**Figure 57: Instance Configuration**

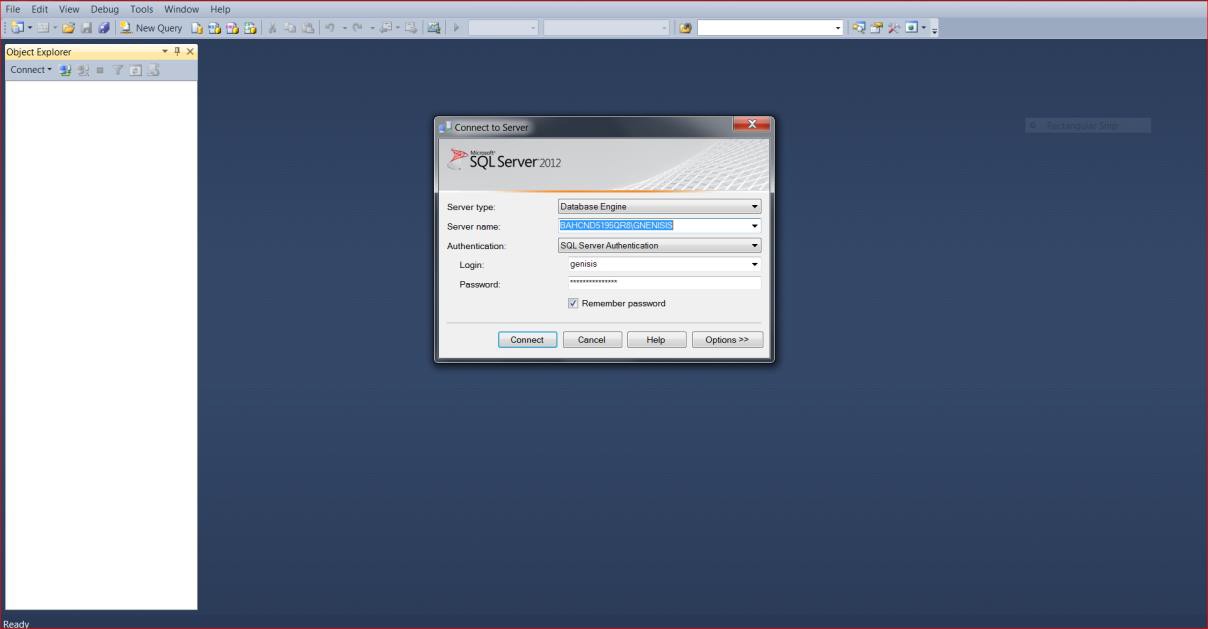
As shown in Figure 58, enter “**admin2$123**” as the password and confirm. Click the “**Add Current User**” button. The box automatically populates the with BAH\ id.



**Figure 58: xx**

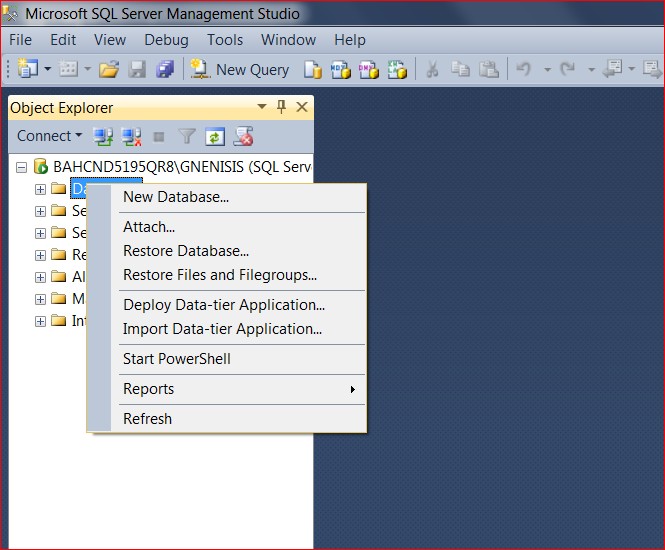
Click the “**Next**” button for the next three screens. Click “**Install**” and then click “**Complete**.”

Once you have installed, go to the Start window, click “**All Programs**” and then click “**Microsoft SQL server 2012**.” Click “**SQL Server Management Studio**” and click “Connect” as illustrated in Figure 59.



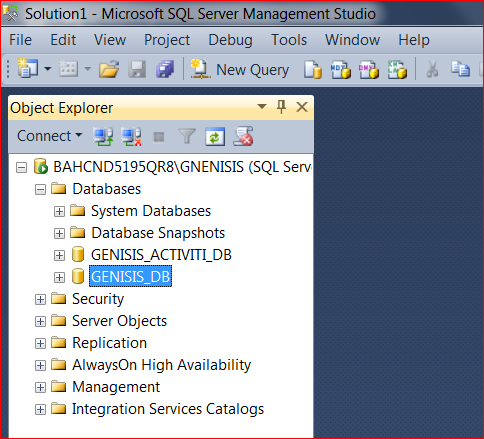
**Figure 59: Connect to Server**

Right click on “**Databases**” then click “**New Database**” as shown in Figure 60. Create GENISIS\_DB and then create GENISIS\_ACTIVITI\_DB.



**Figure 60: Create New Databases**

Both databases should be created as depicted in Figure 61.



**Figure 61: Genesis Databases**

Once you have created dbs, execute the following script. First, right click on “**GENISIS\_DB**” and select “**New query**”:

USE GENISIS\_DB

CREATE LOGIN genisis

WITH PASSWORD = 'admin2$123'; GO

-- Creates a database user for the login created above. CREATE USER genisis FOR LOGIN genisis;

GO

USE GENISIS\_ACTIVITI\_DB

exec sp\_addrolemember 'db\_owner', 'genisis'; GO

USE GENISIS\_ACTIVITI\_DB

CREATE LOGIN genisis

WITH PASSWORD = 'admin2$123'; GO

-- Creates a database user for the login created above. CREATE USER genisis FOR LOGIN genisis;

GO

USE GENISIS\_ACTIVITI\_DB

exec sp\_addrolemember 'db\_owner', 'genisis'; GO

Once the database, schema, and users have been created, contact the Genisis2 team Database Administrator to acquire a set of scripts to execute. This will create your own instance of a local database and will aid in development activities. You can also connect to the development database to verify your installation of Services and Angular application, if needed.

### Note: Turn back on the Window firewall.

# Angular Application Setup

This section explains the typical development process for setting up and running the UI project on your computer locally.

### Software Requirements

In order to develop locally, you must have Node v4.5.0, GIT Bash, XAMPP and an IDE. We also recommend using Console2 for multi-window and tabbed viewing of the MINGW64 console you will be using.

## Install Node 4.5.0

A list of all of the downloads for this version of node are available as follows: <https://nodejs.org/download/release/v4.5.0/>.

Documentation for this version of node is available as follows: <https://nodejs.org/download/release/v4.5.0/docs/api/>.

## Install GIT

Download the windows version which includes MINGW64 Bash program that you will be using as your console: <https://git-for-windows.github.io/>.

## Install Console 2

It's *strongly recommended* that you install and use Console2. It will make developing with the MINGW64 console a lot easier versus having a multitude of console windows all over your desktop <https://sourceforge.net/projects/console/>.

### Configuration

Once you have Console2 installed, you want to update it to use the MINGW64 bash provided when you downloaded GIT.

* + - 1. Open the Console2 program.
      2. Go to Edit > Settings.
      3. In the settings window, locate the Shell field.
      4. Enter: C:\Windows\SysWOW64\cmd.exe /c ""C:\Users\{USERID}\AppData\Local\Programs\Git\bin\sh.exe" --login -i"
      5. Replace {USERID} with your BAH 6-digit ID number (if you are not sure, locate it in the C:\Users folder).
      6. In the Startup Directory field, enter: C:\xampp\htdocs\genisis
      7. Click “**OK**” at the bottom of the settings window.
      8. Restart Console2 once you have cloned the Genisis project in the step.

## Atom IDE Editor

It is *strongly recommended* that you use the Atom IDE; however, you can use whatever IDE you prefer. There are several great plugins that work well with Atom and make it easier to catch errors as you write code for the project.

Download Atom here from this location: <https://atom.io/>

### Install Atom Plugins

The recommended plugins to install once you have Atom downloaded are provided below. To add a new plugin first, open Atom then go to File > Settings. Find the Install section at the bottom of the left-hand side of the settings menu and click on it. Enter the following plugins into the package search box and then hit install.

* atom-jasmine (by zacharytamas)
* csslint (by tcarlsen)
* grunt-runner (by kokarn)
* linter (by atom-community)
* linter-csslint (by AtomLinter)
* linter-htmlhint (by AtomLinter)
* linter-jshint (by AtomLinter)
* atom-wallaby (by wallabyjs)

*Note:* atom-wallaby requires a separate license purchase, it is not required to get the project working, but it will help with writing unit tests and will notify you immediately if something you do has broken a unit test and it can provide code coverage reports for your unit tests. Buy a license here: <https://wallabyjs.com/>

Once you are done installing all the plugins, you will need to restart Atom to see some of them in action. You can access all of the plugin commands by pressing Ctrl + Shift + P and then starting to type in the name of the plugin. Try typing Grunt or Wallaby.

### Install XAMPP

This will setup and install and allow you to easily manage a local Apache server that runs on your computer as you develop and test the project. Download it from this

location: <https://www.apachefriends.org/download.html>

### Download the Source Code

Before you can start any local development, you will need a copy of the project source code.

### Create an SSH Key

You will need an SSH key before you can gain access to the code repo. Open Console2 and in the command line type in the following:

cd ~/.ssh/

This changes you into the SSH directory. Generate your new SSH key. When it prompts you, just keep hitting enter. Do not create a password and do not change the name of the file it wants to generate.

ssh-keygen

If you display the contents of your .ssh folder you will see two new files. One is called id\_rsa and the other is called id\_rsa.pub:

ls -la

### Add SSH Key

Now that you have an id\_rsa and a .pub file, you will need to add this SSH key to the repo. If you do not have access to the SSP, you can request it by using project and team name Genisis20: <https://selfserviceportal.boozallencsn.com/ad>

If you already have access to the SSP, then locate the SSH Keys on the left-hand side menu and enter the contents of your id\_rsa.pub file into the input field, then click the “**Add**” button. You can get the contents of your id\_rsa.pub file by entering the following:

cat ~/.ssh/id\_rsa.pub

This should provide you with SSH access to the repo. If you want to see the files in the repo on Github, you can click on the Github link under the Genisis2Client project in SSP.

### Clone the Project

Open Console2 and you will see the command line for the MINGW64 console if the initial setup was performed correctly. If not, refer back to the section above.

Change into the XAMPP file system location. This will allow you to view your files and changes when XAMPP is running:

cd /c/xampp/htdocs

Clone the project into a Genisis folder: git clone git@github.boozallencsn.com:HEALTH- ACCT-GROUP/Genisis2Client.git genisis

### Setup the Project

This section will show you how to get the project setup once all your software has been installed and you have cloned the project.

### Install NPM Dependencies Project

Once you have cloned the project, you must download all of the dependencies and generate the dist folder. In Console2, type the following:

cd /c/xampp/htdocs/genisis Install grunt-cli globally: npm install -g grunt-cli

Install grunt locally at GIT home: npm install grunt

This places you into the genisis folder where you cloned the project. Now you can install and build:

npm install && grunt build

This installs all of the NPM dependencies and then creates the initial build of the project. You should now see that a new dist folder has appeared. This is the folder that contains the deployable version of the project.

## Start XAMPP Apache Server

Open the XAMPP executable program. You will see the XAMPP control panel. Click on the “**Start**” button for the APACHE webserver.

### View Project in Browser

Once the XAMPP Apache webserver is running and you have initialized and built the project, you can view the project in your browser by going to the dist file that was generated:

<http://localhost/dist>

*Note:* If you are using an IDE like Atom or Sublime, you will not see the dist folder in your file tree because it is listed in .gitignore configuration and by default these IDEs remove those files from your file tree. However, the file is there and available if you navigate to it.

## Typical Daily Development Process

* + - 1. Start Apache on XAMPP.
      2. Open Console2 and go into your genisis directory: cd /c/xampp/htdocs/genisis
      3. Run the development environment and start grunt: npm run watch
      4. Make changes to the code in the src folder.
      5. Check the console output results from grunt watch (or IDE plugin) for any errors.
      6. Fix any errors or breaking unit tests.
      7. Test your changes in the browser when the tests run clean by going to: <http://localhost/dist>

## Testing API - Postman Tests

If you would like to run some simple API tests that were developed in Postman you can enter the following command from the root directory: newman run postman\_tests.json For the full list of Newman options you can consult the documentation at this location: <https://github.com/postmanlabs/newman>

## Generating Postman HTML Output

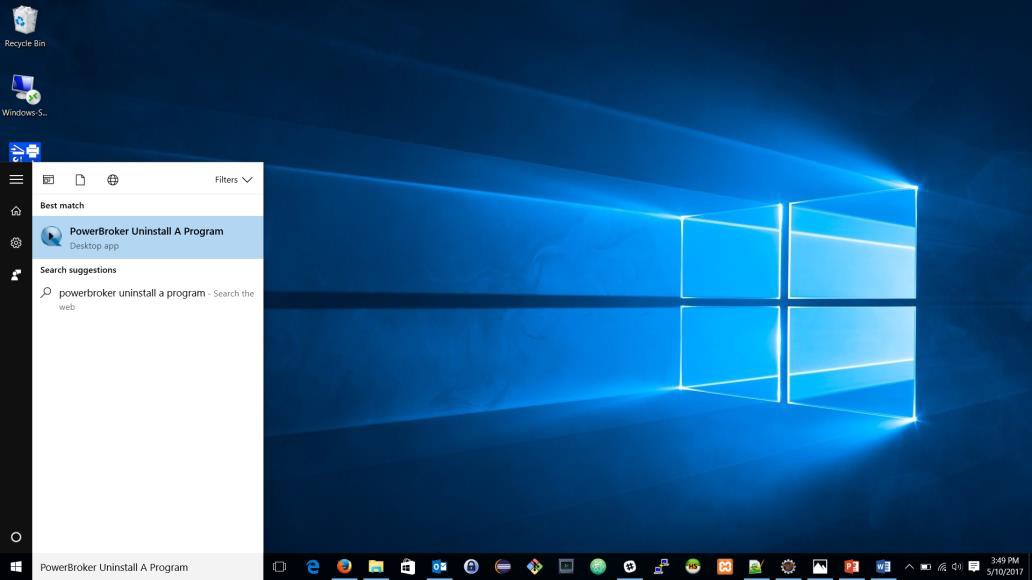
If you would like to see an HTML version of the Newman output, you can run the following and a new folder called Newman will be created with the results of your test runs: newman run postman\_tests.json --reporters html

## Generating Postman CLI Output

If you want to get results from the postman test to see in the command line if the tests have succeeded or failed, you can run the following: newman run postman\_tests.json --reporter-cli-no- summary --reporter-cli-no-console --reporter-cli-no-assertions happy coding.

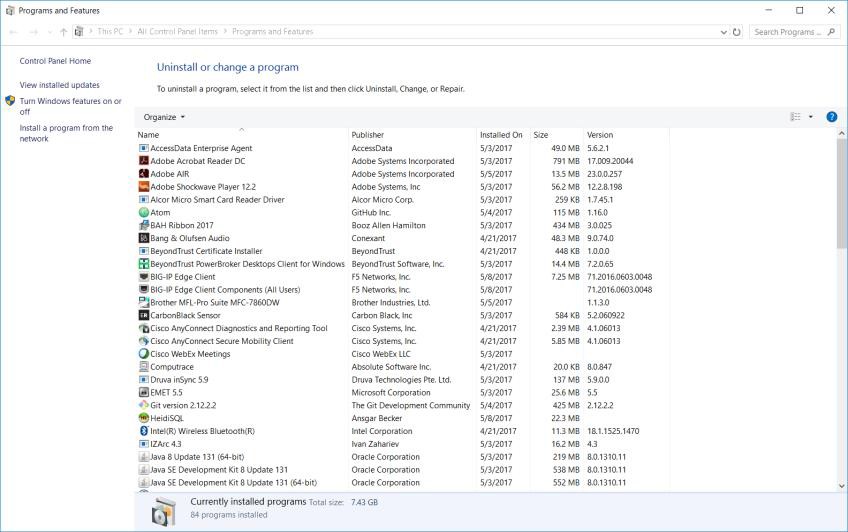
# Uninstall a Program

Type “**PowerBroker Uninstall A Program**” in the Windows search and launch “**PowerBroker Uninstall A Program**” as shown in Figure 62.



**Figure 62: PowerBroker Uninstall a Program**

Unistall the unwanted program by make a selection as illustrated in Figure 63.



**Figure 63: Uninstall a Program**