Manual for Web Based Population Clustering Configuration

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March 6, 2022

**Requirements**

* Eclipse 2021 IDE for Enterprise Java and Web Developers – 2021-12 ([Download](https://www.eclipse.org/downloads/packages/release/2021-12))
* GitHub account.
* Microsoft Excel

**How to download and Run the Program (Import)**

1. Import the Project from GitHub. (<https://github.com/samthangiah/Spring-2022---Web-Based-Population-Clustering-.git>)
2. Create a workspace folder for the Eclipse Project.
3. Open a new Workspace in Eclipse (Browse 🡪 select the created folder).
4. Import the project into Eclipse.
   1. File 🡪 Import 🡪 Git (folder) 🡪 Projects from Git (with smart import) 🡪 Clone URI 🡪 copy paste the project URI and enter Username and Password 🡪 select local directory 🡪 finish.

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Figure . Import Project Location

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Figure . With Smart import Location

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Figure . Clone URI Location

* Next copy and paste in the URI for the project and enter your GitHub information. Check the box next to “Store in Secure Store” for easy use next time (<https://github.com/samthangiah/Spring-2022---Web-Based-Population-Clustering-.git>).

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Figure . Repository Information Screen

* Deselect All of the boxes and only check the box called “master” and click “Next >”.

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Figure . Branch Selection (master)

* Click “Browse” and select your folder named “Git” (local directory) that was created in your workspace folder.
* If the folder was not already created simply follow the same steps, create the folder, and name it “Git”.

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Figure . Select Local Destination Screen

* Lastly, click “Finish”.

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Figure . Last step clicking Finish

**Run the Program**

1. Under edu.sru.group1.proj package.
   1. Right Click Group1Application.java
   2. Run As 🡪 Java Application.
   3. Go to <http://localhost:8080/>

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Figure . How to run the application

* If there is an error in the Junit package you may need to add the JUnit 4 library.

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Figure . Fixing Junit 4 library error

**Alternative Approach: Downloading the ZIP File**

1. Download the ZIP file from GitHub.
   1. <>Code 🡪 Code (dropdown box) 🡪 Download ZIP
2. Open a new Workspace in Eclipse.
3. Import the file into Eclipse.
   1. File 🡪 Import 🡪 General (Folder) 🡪 Projects from Folder or Archive 🡪 Directory… 🡪 Select the Unzipped Folder 🡪 Finish

**Run the Program**

1. Under src/main/java 🡪 edu.sru.group1.proj package 🡪 Group1Application.java
   1. Right Click Group1Application.java
   2. Run As 🡪 Java Application.
   3. Go to <http://localhost:8080/>

* Once on the GitHub page click the green dropdown box labeled “Code”.
* Then click “Download ZIP”.

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Figure . ZIP Dowload location on GitHub

* Once downloaded unzip the file by right clicking the file and selecting “Extract All…”
* If there is an error, you may need to use a program like 7-Zip to unzip the file.

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Figure . Extracting the ZIP File

* To import the ZIP file into Eclipse open Eclipse and select the workspace.
* Then click import projects.

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Figure . Import project location

* Next click “Projects from Folder or Archive” and hit Next.

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Figure . Projects from Folder or Archive location

* Next you can either copy and paste the path name of the unzipped file or select the box labeled “Directory…” and then select the file from your PC.

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Figure . Selecting Directory/Location of the ZIP File

* Follow the steps in figure 8 to run the program.
* To run the batch processing open the “src/main/java” folder then under the “edu.sru.group1.proj.batch” package run the “BatchProcessing.java” file.

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Figure . Where to run the Batch Processing

* Some examples of the batch files can be found under the “BatchFiles” folder and then in the “AddrInfo” folder.

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Figure . Location of the addresses in the BatchFiles

* The naming of the files in order from left to right is the County name, district number, school number, District name (abbreviated), type of school, and the name of the school (abbreviated).

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Figure . Batch file address names

***\*To see all Hook Points – See Technical Manual***

**House Addresses Folder Location:**

* The folder containing the file of all addresses is located under the “states” folder 🡪 “pennsylvania” folder 🡪 “Addr-pennsylvania.zip” folder. This contains a text file that holds all of the longitude and latitude locations.

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Figure 18. House address location.

**GEOJSON File and Hook point:**

* The shapefile can be obtained in the project and is named “shapefile-GEOJSON.geojson”.

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Figure . GEOJSON Shapefile File Location

* The file created and stored on line 489 – 491 in the controller file.

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Figure . Controller Location

Text

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Figure . StateCountyController Location

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Figure 22. Lines of Code for the GEOJSON Shapefile

**Hook point for bus Routing:**

* The hook point for the bus routing code is in the “edu.sru.group1.proj.controller” package and in the “StateCountyController.java” file.

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Figure . Controller Location

Text

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Figure . StateCountyController Location

* Once in the “StateCountyController.java” file the hook point is located near the bottom shown in figure 17.

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Figure . Code location for Routing Hook Point

**Hook point for adding new clustering method:**

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Figure 26. Controller Location

Text

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Figure 27. StateCountyController Location.

* Once in the “StateCountyController.java” file the hook point is located on line 370 (shown in figure 20).

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Figure 28. Code hook point for adding new clustering method

* The centroid is calculated using the calculateCentroid method. This method is located in the “Cluster.java” file under the “edu.sru.group1.proj.dbscan” package.

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Figure 29. Cluster.java file location.

* The method itself is located on line 74.

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Figure 30. Code location for calculating the centroid

**Hook point for changing the DBScan Diameter:**

* The DBScan diameter is calculated using the option on the website and the html file “district-info.html”. This file is located under the “src/main/resources” folder 🡪 “templates” folder.

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Figure . district-info.html file location

* The code itself is located on lines 33-46.

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Figure . Code location for editing the diameter in miles

* The diameter is calculated by dividing the miles by 69 (Example: .25 / 69).

**Hook point for Batch Processing:**

* The Batch processing is found under the “src/main/java” folder 🡪 “edu.sru.group1.proj.batch” package 🡪 “BatchProcessing.java” file.
* This hook point can be used to edit what schools are clustered together, what counties you want to be processed and what districts you want to be processed.

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Figure . BatchProcessing.java file location

* The code can be found in the file on lines 41 – 65.

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Figure . Code location for the Batch Processing