

SOFTWARE DESIGN: CSE 564

ASSIGNMENT 03: PATTERNS

DESIGN PATTERN

DESIGN IDEA:

In our implementation we used only ONE for adding new cities whether it is for creating a new city or Loading cities, that is Workspace. In this class we used two constructors for the above two functionalities (New & Load). The Default constructor is for the “New” methodology and Parameterized constructor is for “Load” methodology. This saves a new class creation for implementing the above functionalities individually. The string parameterized constructor is used for calling methods when load is required. Another classes City is used for creating new City and class Mouse is the main class where previous classes are called on need. Each method inside each class has its own usage for creating cities, drawing cities, plotting cities, connecting cities etc.

IMPLEMENTATION GUIDE:

- We have implemented the required output with the help of 3 classes. Each class has its own functionality which helps other classes to work with flow.
- Workspace, City and Mouse are the three classes we used to implement the program.
- Workspace class deals functions those find distance matrix, create new cities, load cities, drawing new cities.
- City class helps with creating a new city every time it is called, draw the shape of city on GUI screen.
- Class Mouse is the main class where it creates 3 buttons (New, Save & Load) for different functionalities.
- Pictorial representation is illustrated below with some more details.

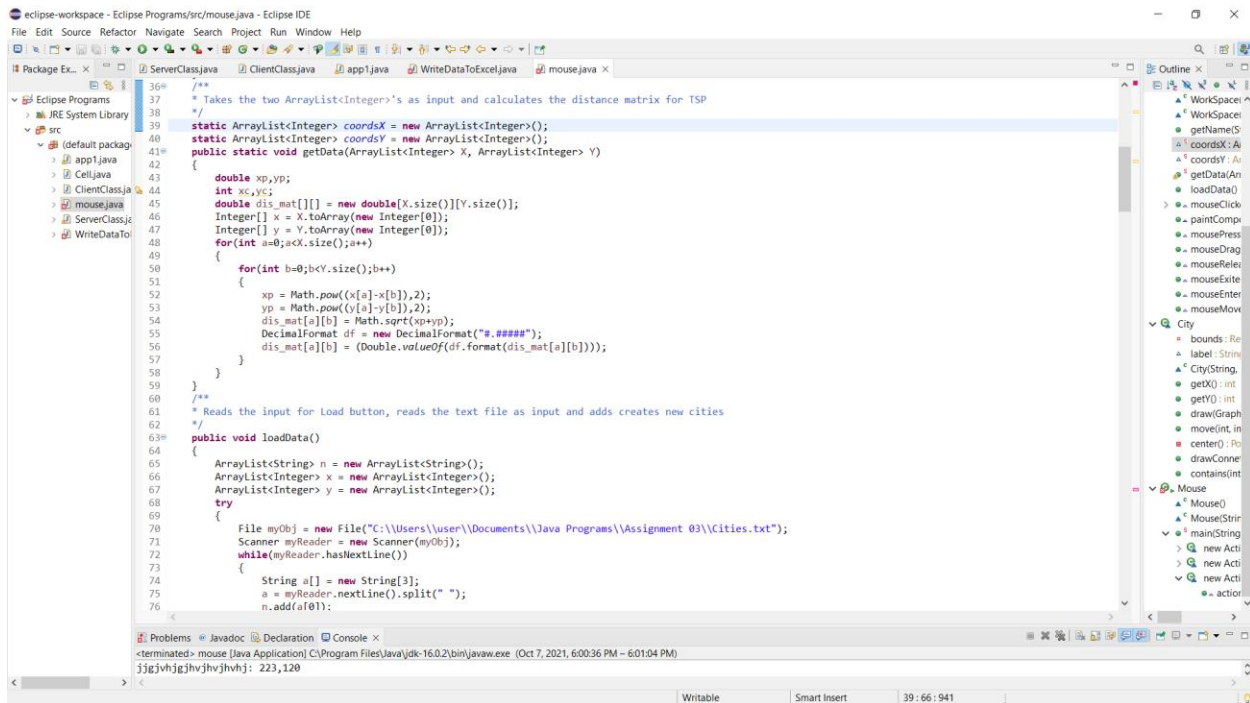


Fig 1. Image showing the method that calculates the distance matrix.

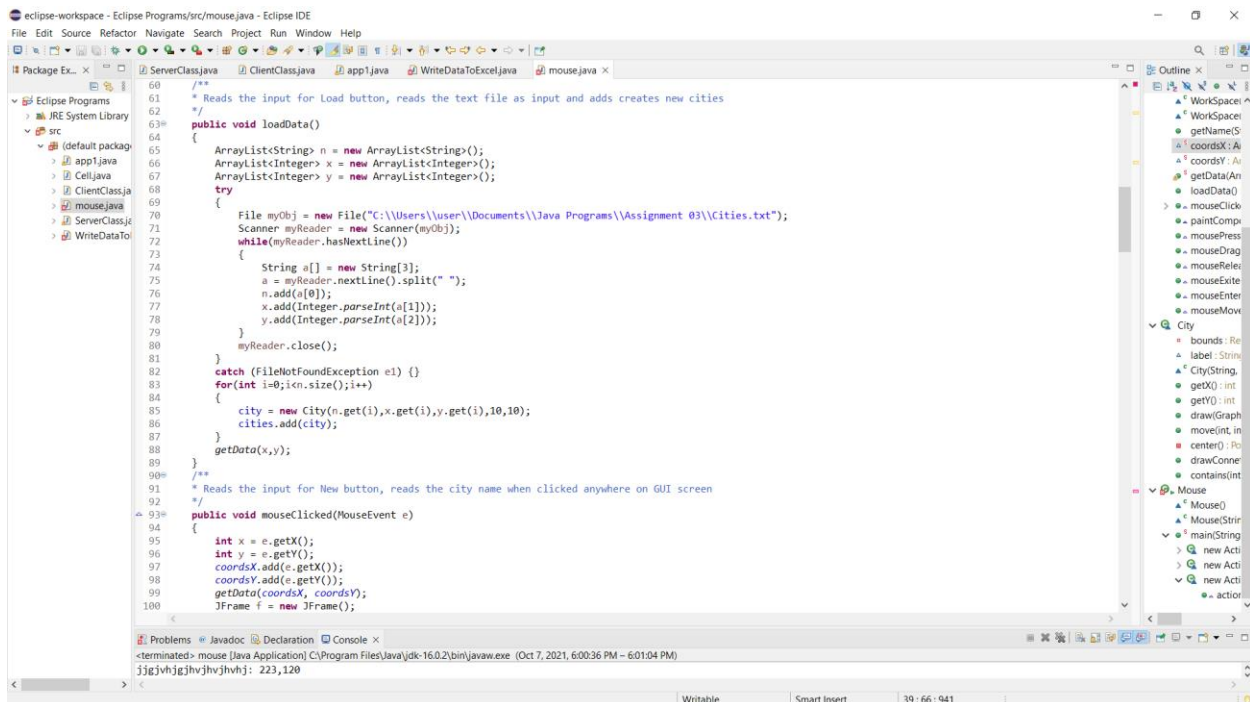


Fig 2. loadData method is invoked when the user click the button Load for loading coordinates manually.

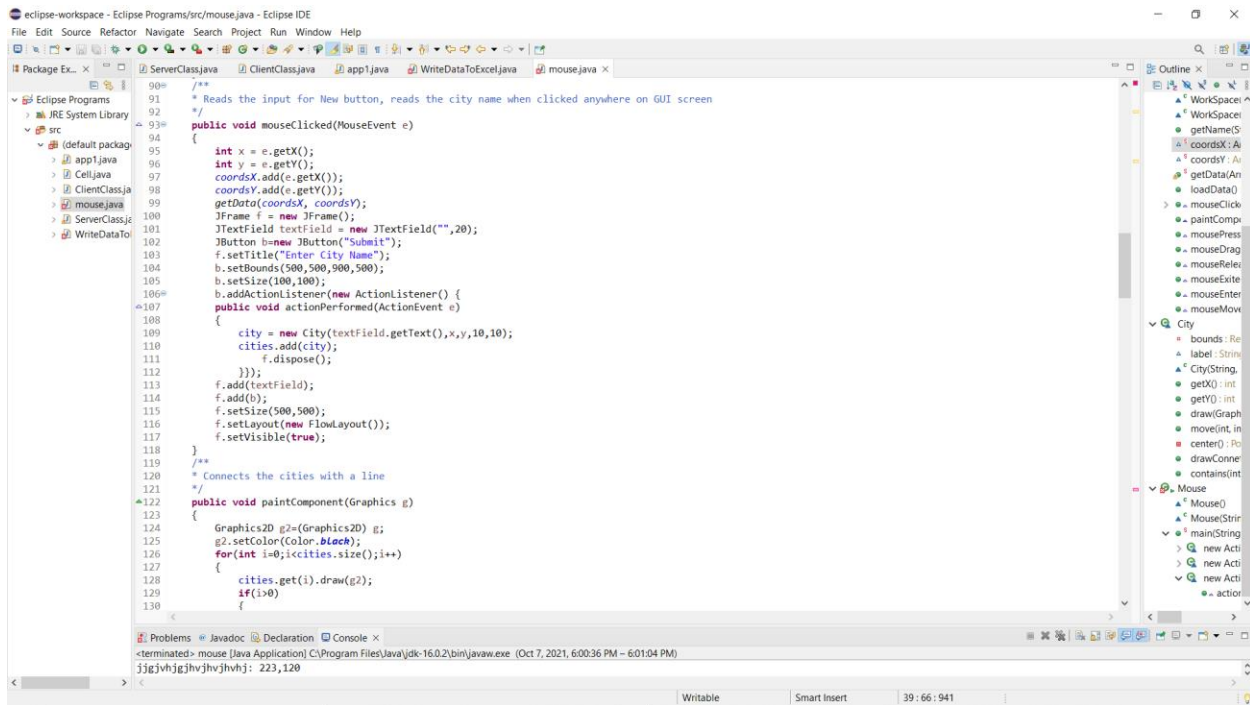


Fig 3. mouseClicked method is used to create new cities when ever the user clicks on the GUI screen.

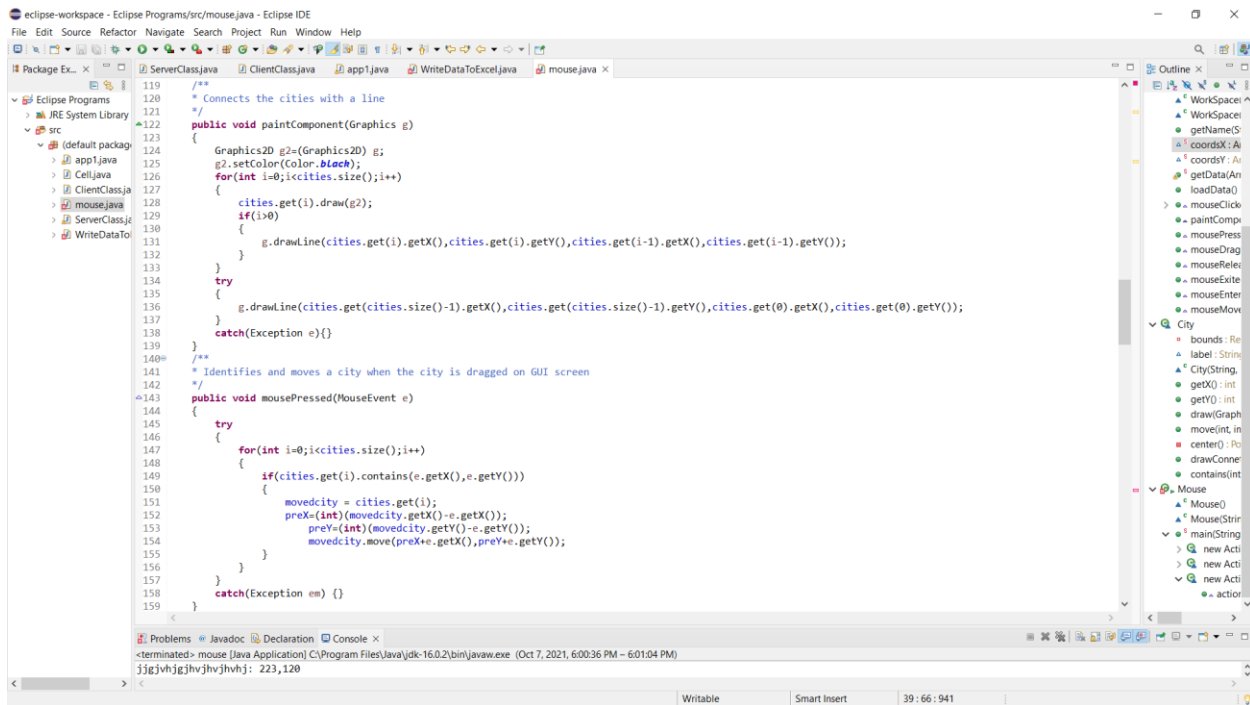


Fig 4. paintComponent method is used to call other method which draws the cities when the user clicks on the GUI screen.

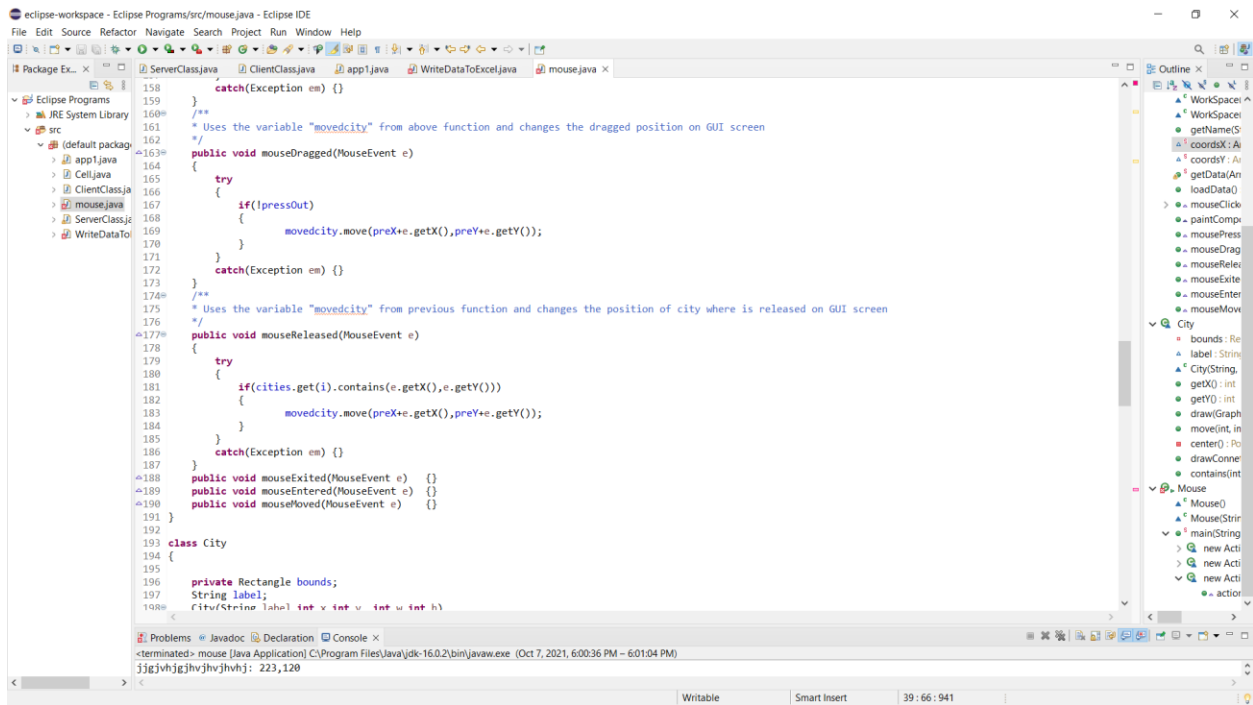


Fig 5. Methods `mousePressed()`, `mouseDragged()`, `mouseReleased()` helps in moving the city when it is drag-and-dropped in new position.

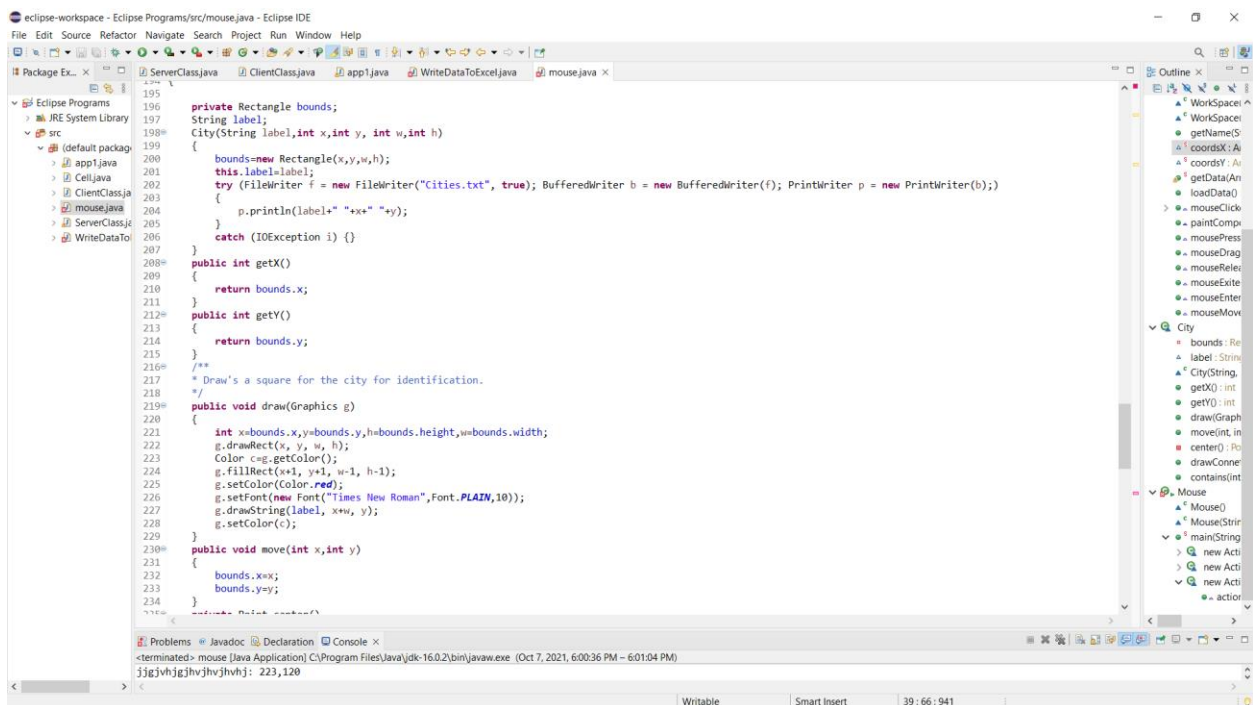


Fig 6. Parameterized constructor `City` helps in creating a new city and label it with name, x coordinate and y coordinate. Draw method is called when the city is created and to represent the image of it in GUI screen.

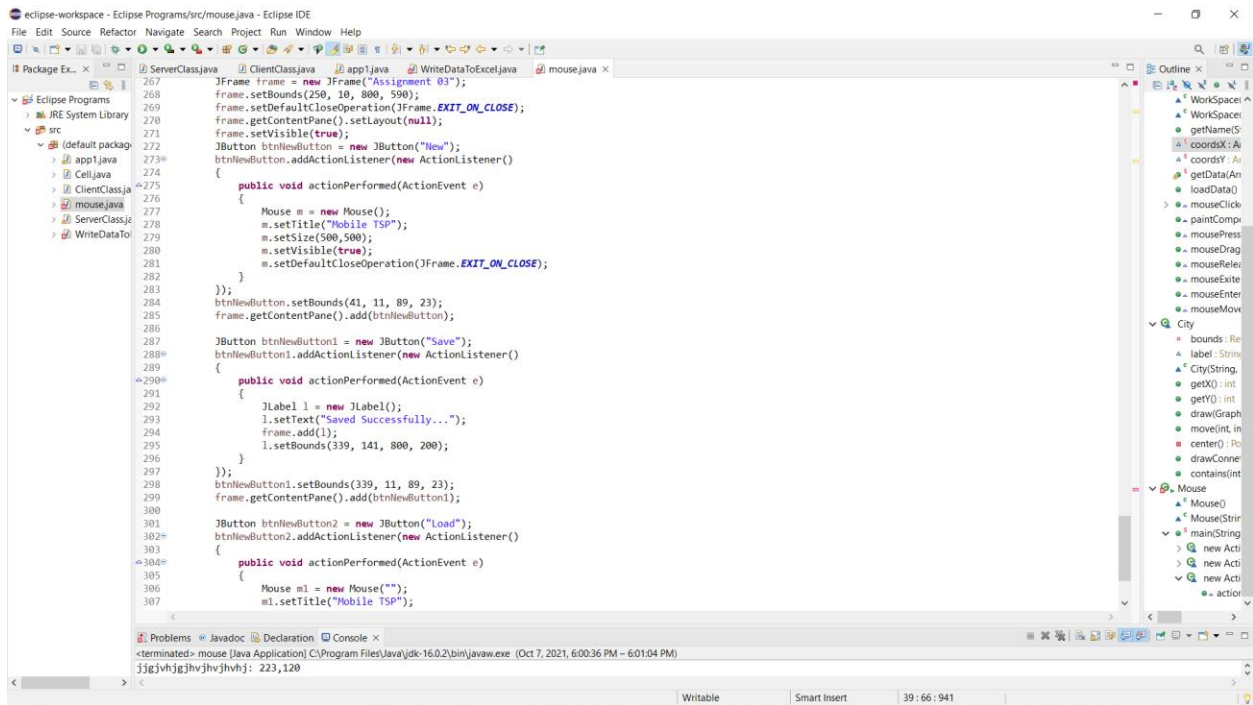
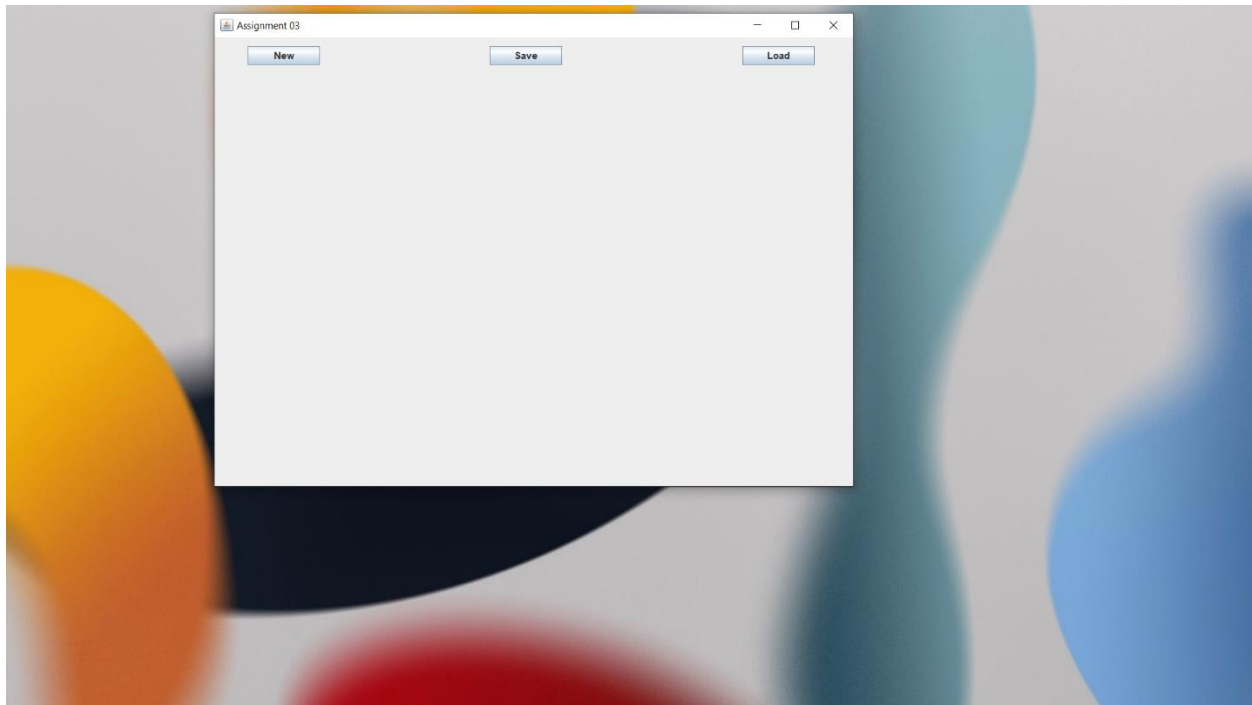


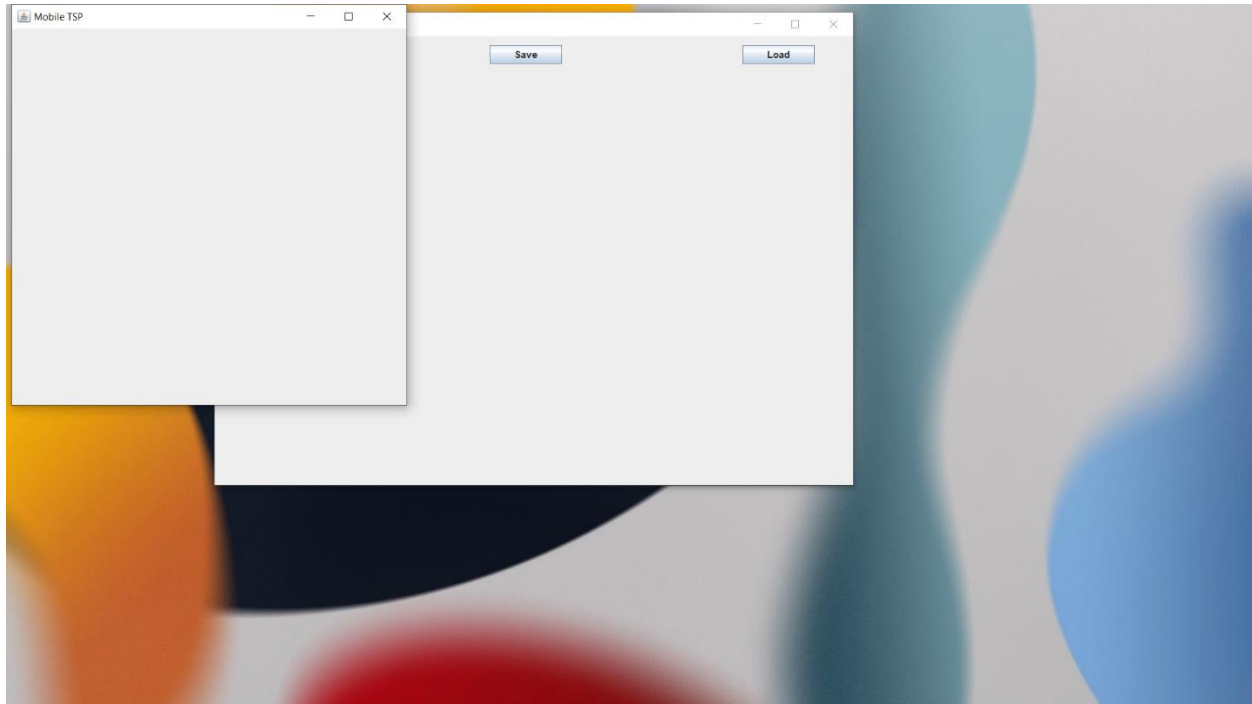
Fig 7. Main method buttons New, Safe and Load have their own specific functionalities.

COMPILATION GUIDE:

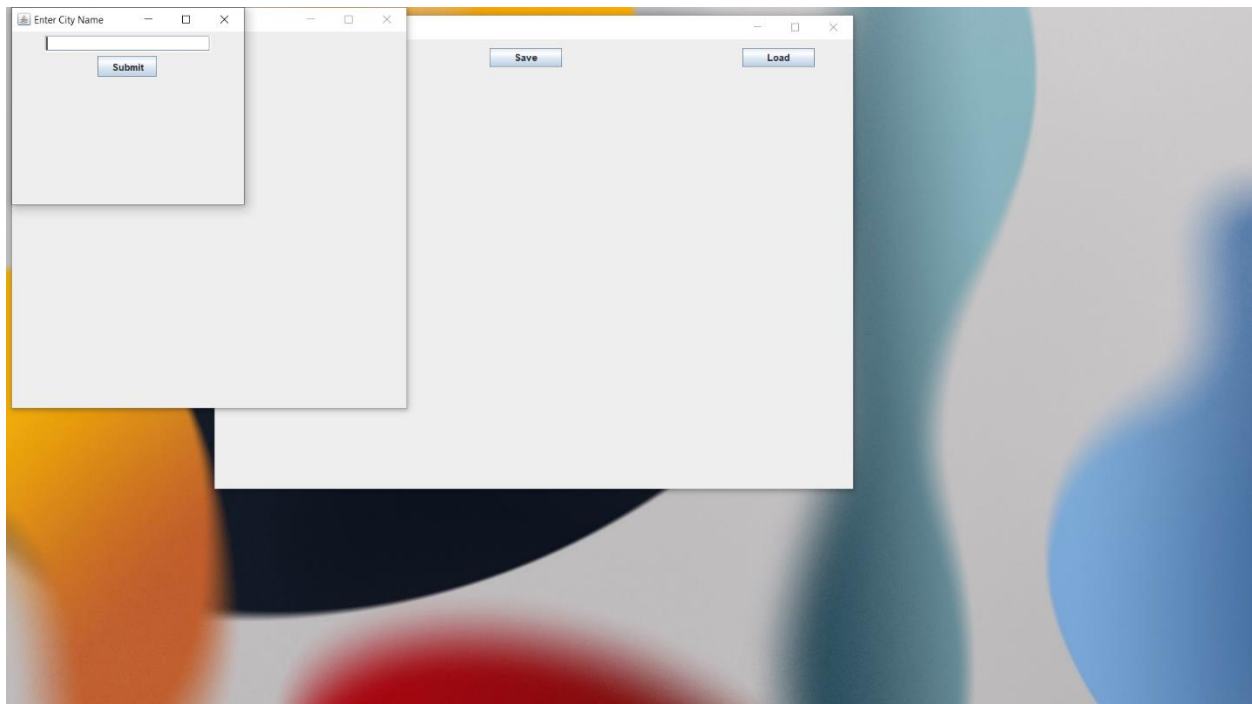
- When the user compiles the program, they can click any of three buttons (New, Save or Load).



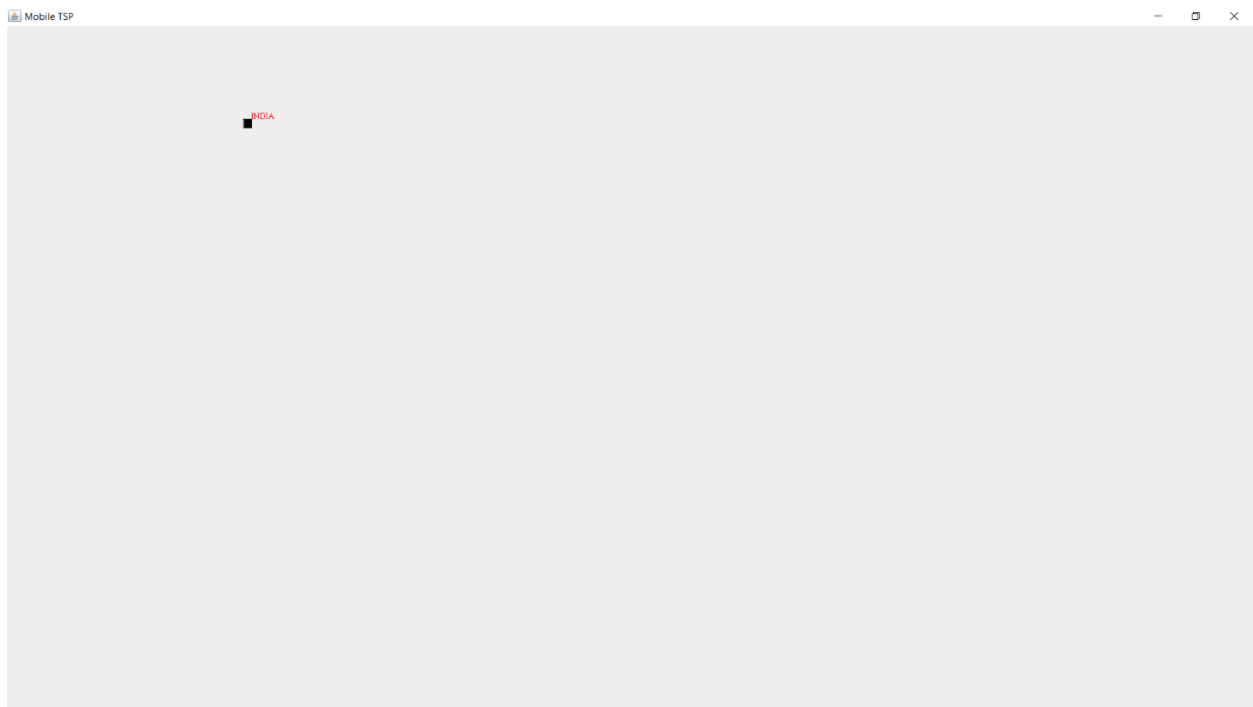
- Let's take the instance of New. Once the user click the New button user can click on any where on the GUI screen (JFrame) and can name it. After naming, user can see the city plotted on the screen once the window is maximized. Any number of cities can be created with this button.



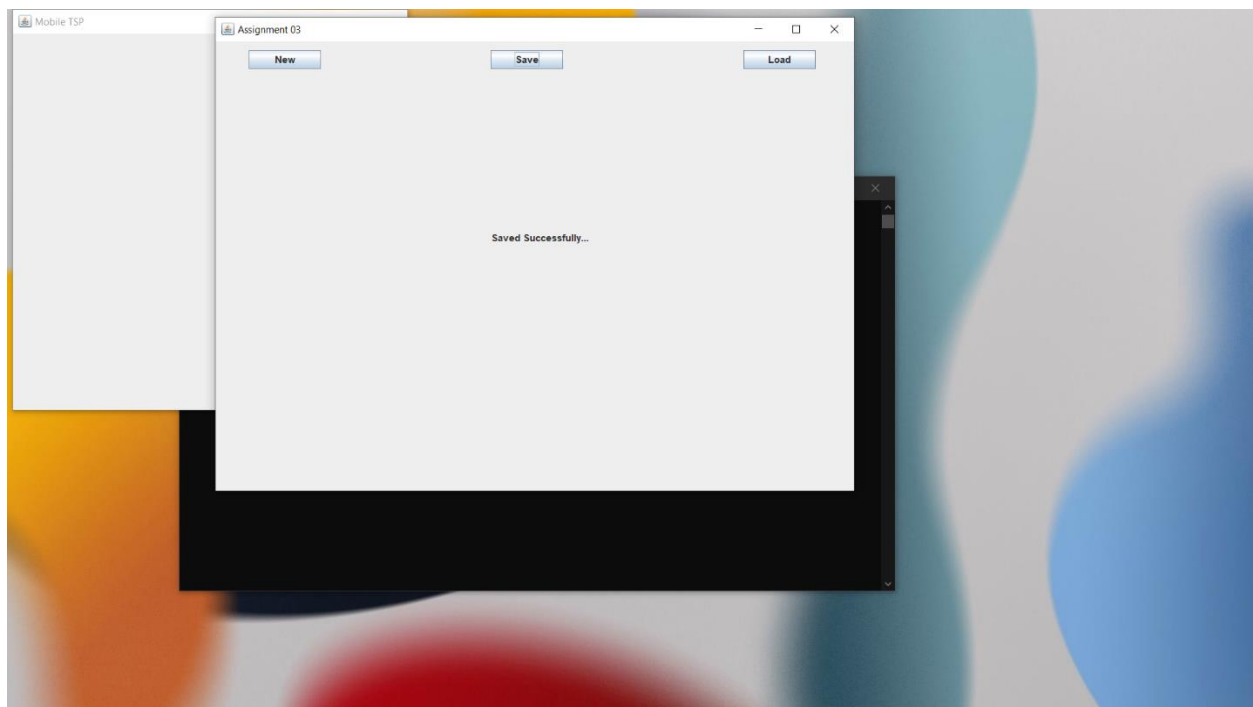
- Once the New button is clicked, a new window is opened for entering the name of the city.



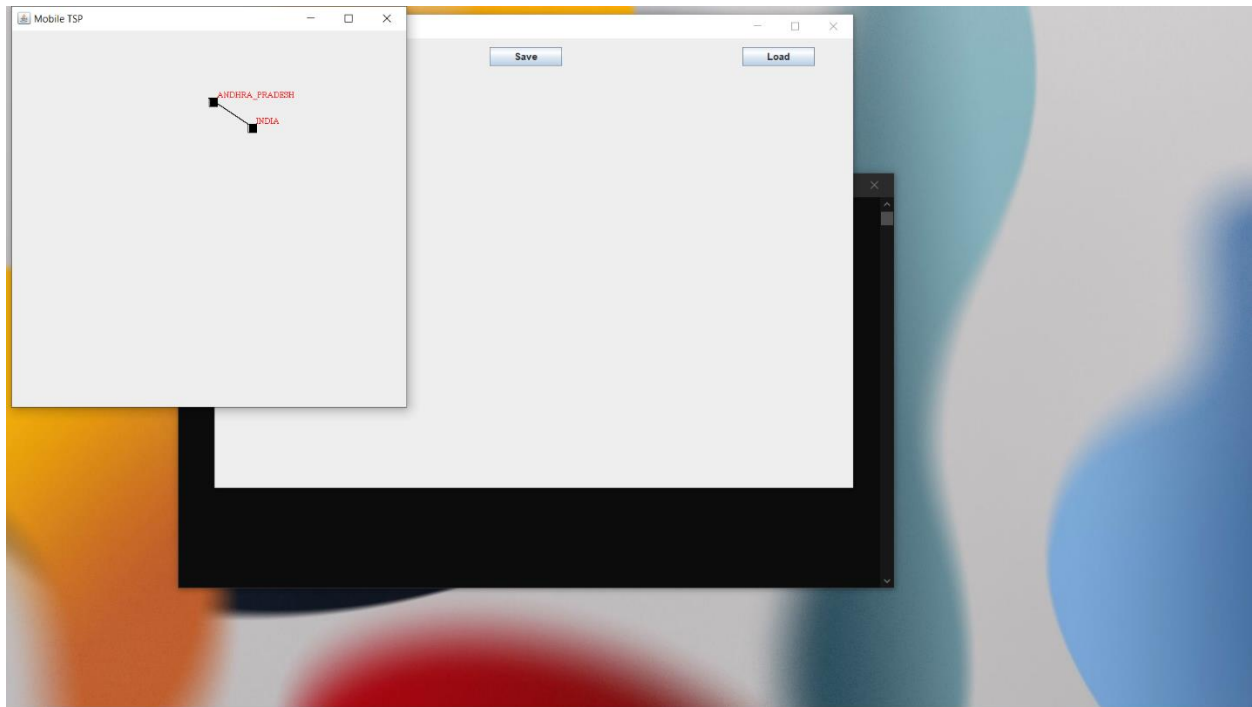
- A city name INDIA is given, and it is plotted on the GUI screen.



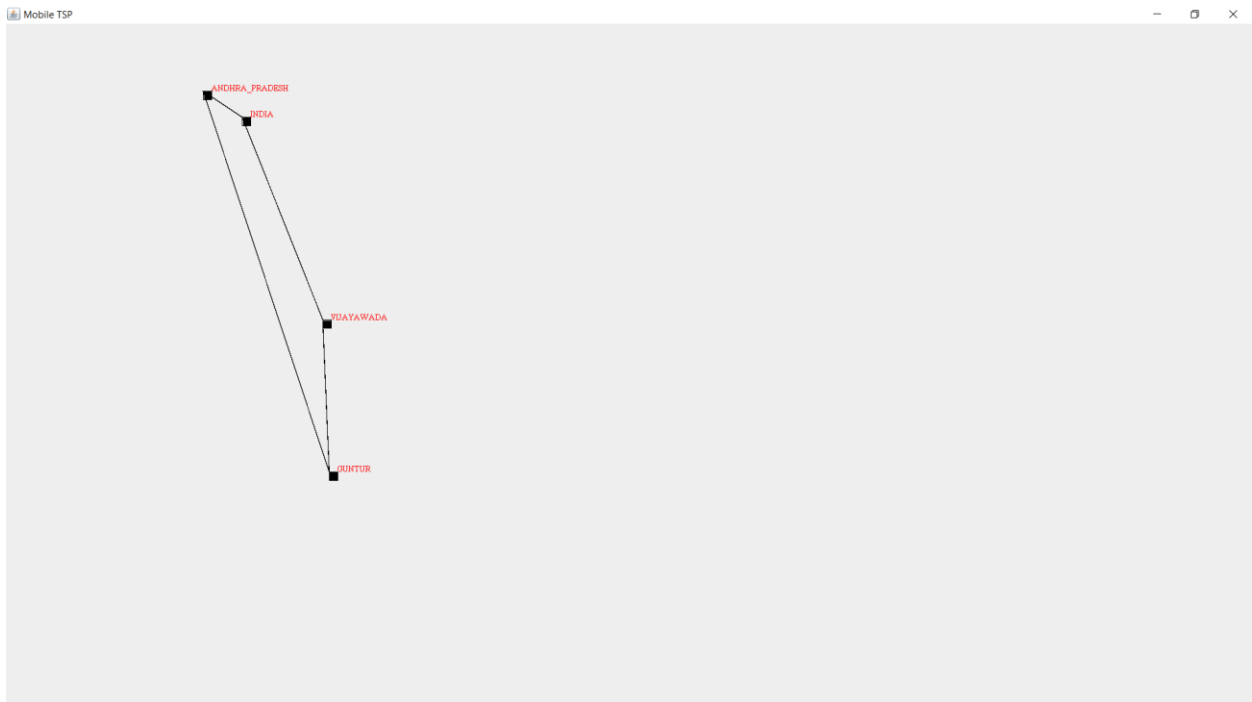
- When the user clicks on the button Save, a message is displayed for user confirmation.



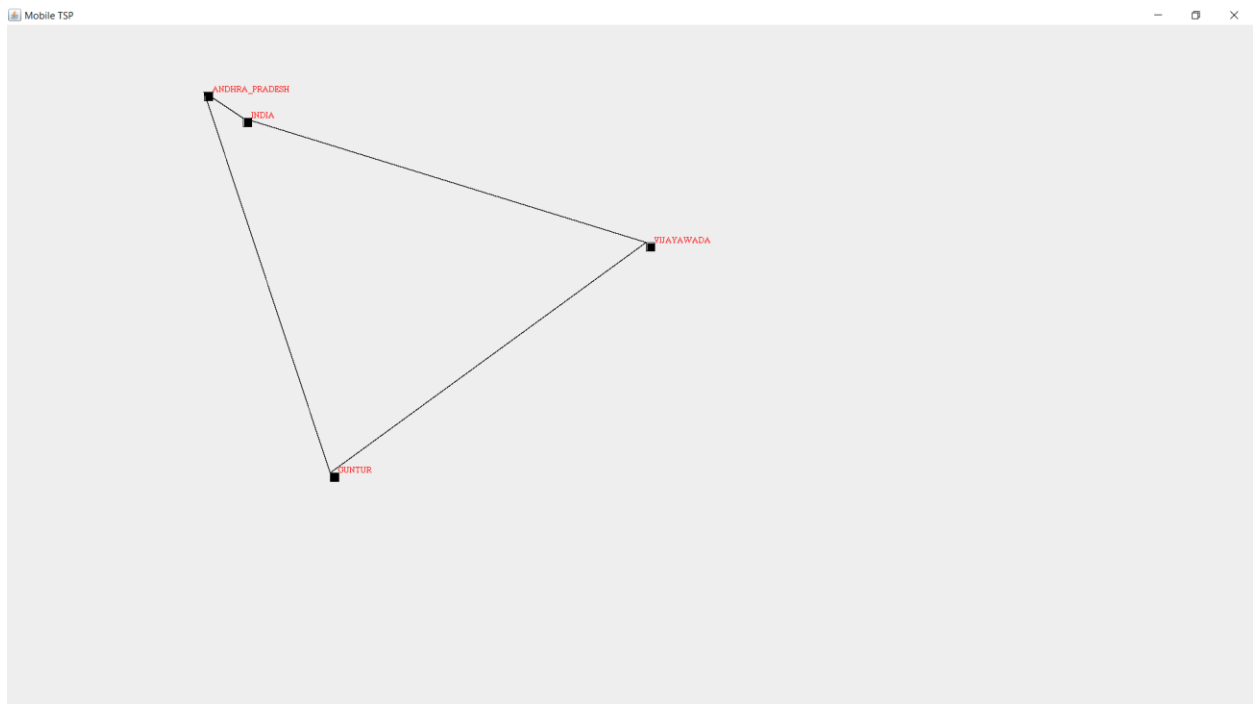
- When the Load button is clicked, a text file specified in the path is loaded and plotted on the GUI screen.



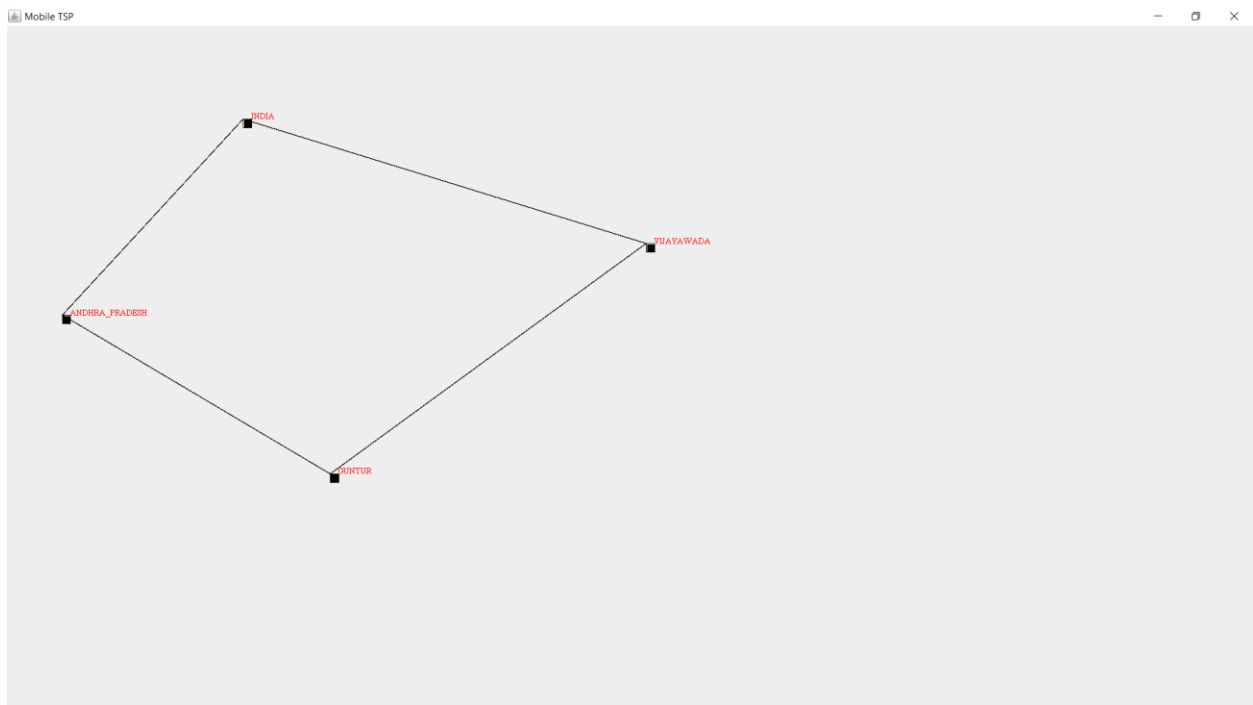
- Drag and Drop functionality do work for any city on GUI screen. Here are the images of multiple cities dragged and dropped into new positions. Before dragging, the cities are at image like below.



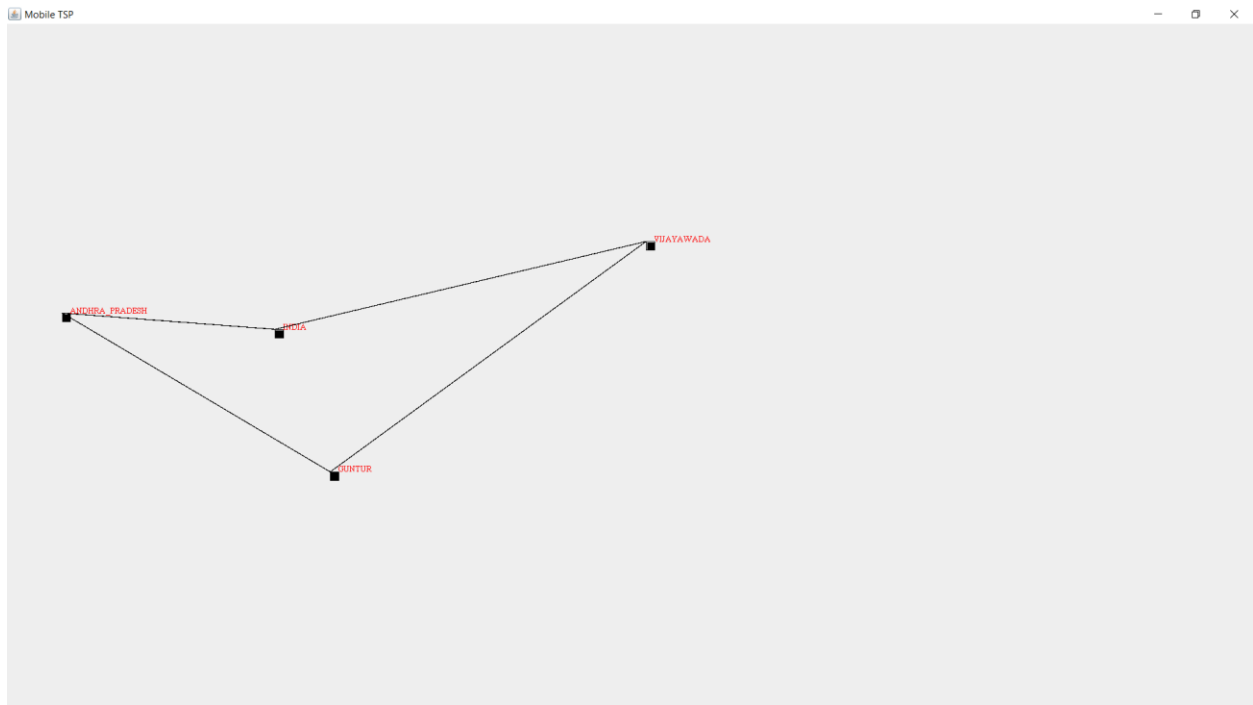
- When the city VIJAYAWADA is dragged and dropped into new location.



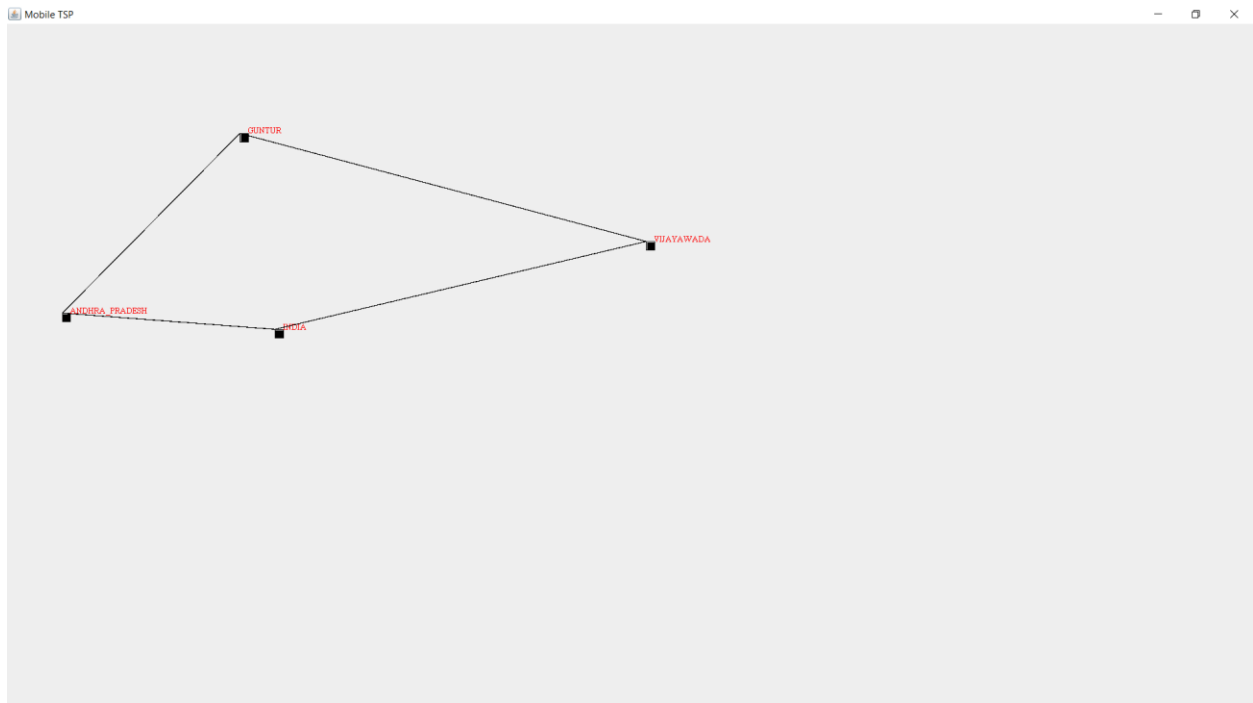
- When the city ANDHRA_PRADESH is dragged and dropped into new location.



- When the city INDIA is dragged and dropped into new location.



- When the city INDIA is dragged and dropped into new location.



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