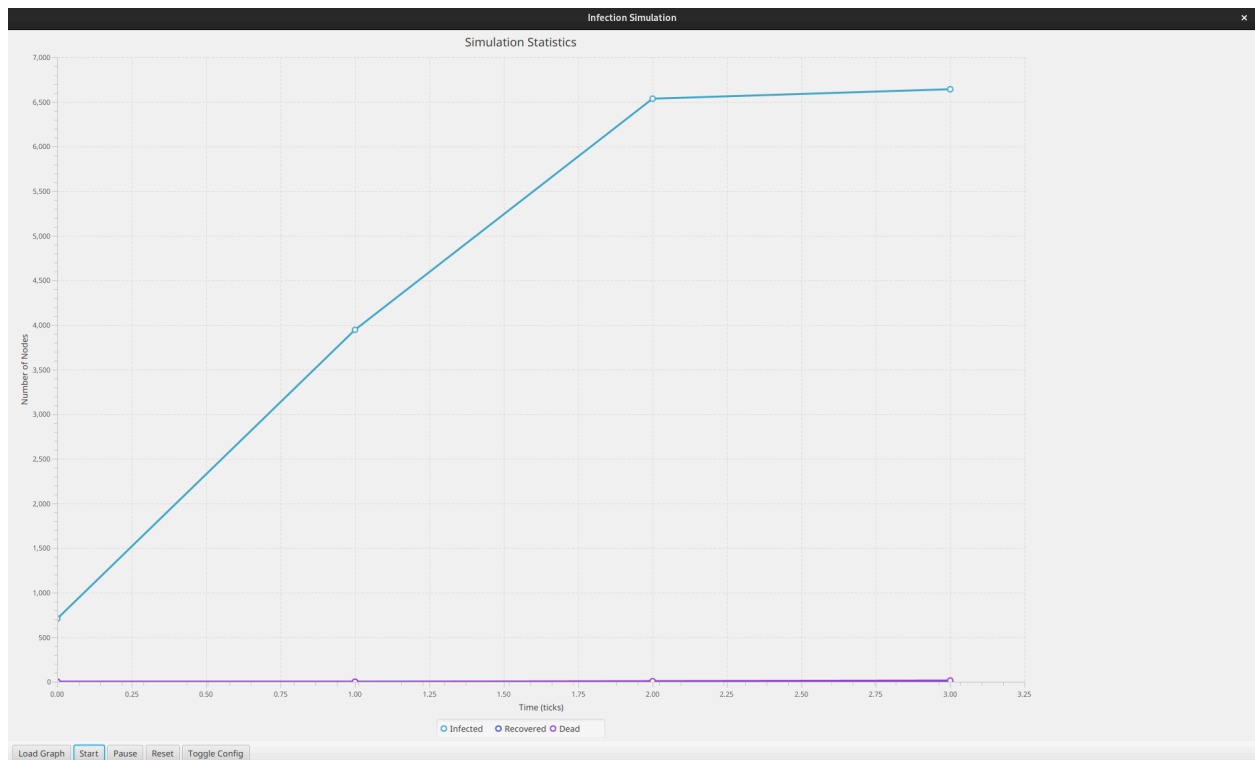


# User Manual for Epidemic Simulation



## **Table Of Contents**

|  |          |
|--|----------|
| <b>User Manual for Epidemic Simulation</b> | <b>1</b> |
| Introduction                               | 3        |
| Starting the Application                   | 3        |
| Prerequisites:                             | 3        |
| Running the Program:                       | 3        |
| Summary:                                   | 3        |
| Playing the Simulation                     | 4        |
| Loading the File:                          | 4        |
| Configuring Simulation Settings:           | 5        |
| Starting the Simulation:                   | 6        |
| Pausing the Simulation:                    | 6        |
| Resetting the Simulation:                  | 6        |
| UI Features:                               | 6        |
| Configuration Panel:                       | 7        |
| Tool Bar:                                  | 7        |
| Conclusion                                 | 9        |

# Introduction

This is the user manual for the implementation of an epidemic simulation. The main goal of the manual is to provide a comprehensive guide on how the program works and how to use the program at different steps. It includes a detailed explanation of the features and common errors that you may encounter.

## Starting the Application

### Prerequisites:

- Java Development Kit (JDK) installed on your system.
- JavaFX SDK installed.

### Running the Program:

1. **Navigate to the Source Directory.**
2. **Compile the Java files:** Use the `javac` command to compile all Java files in the specified package directory.
3. **Run the JavaFX Application:** Use the `java` command to run the main application class. Ensure that you specify the fully qualified class name, including the package.

Notes:

**JavaFX Modules:** Since JavaFX is not included in the JDK by default, ensure you have the JavaFX SDK installed and properly configured. If you are using Java 11 or later, you might need to add the JavaFX modules explicitly:

```
java --module-path /path/to/javafx-sdk/lib --add-modules  
javafx.controls,javafx.fxml  
edu.rpi.cs.csci4963.u24.wangn4.hw04.graph.InfectionApplication.java
```

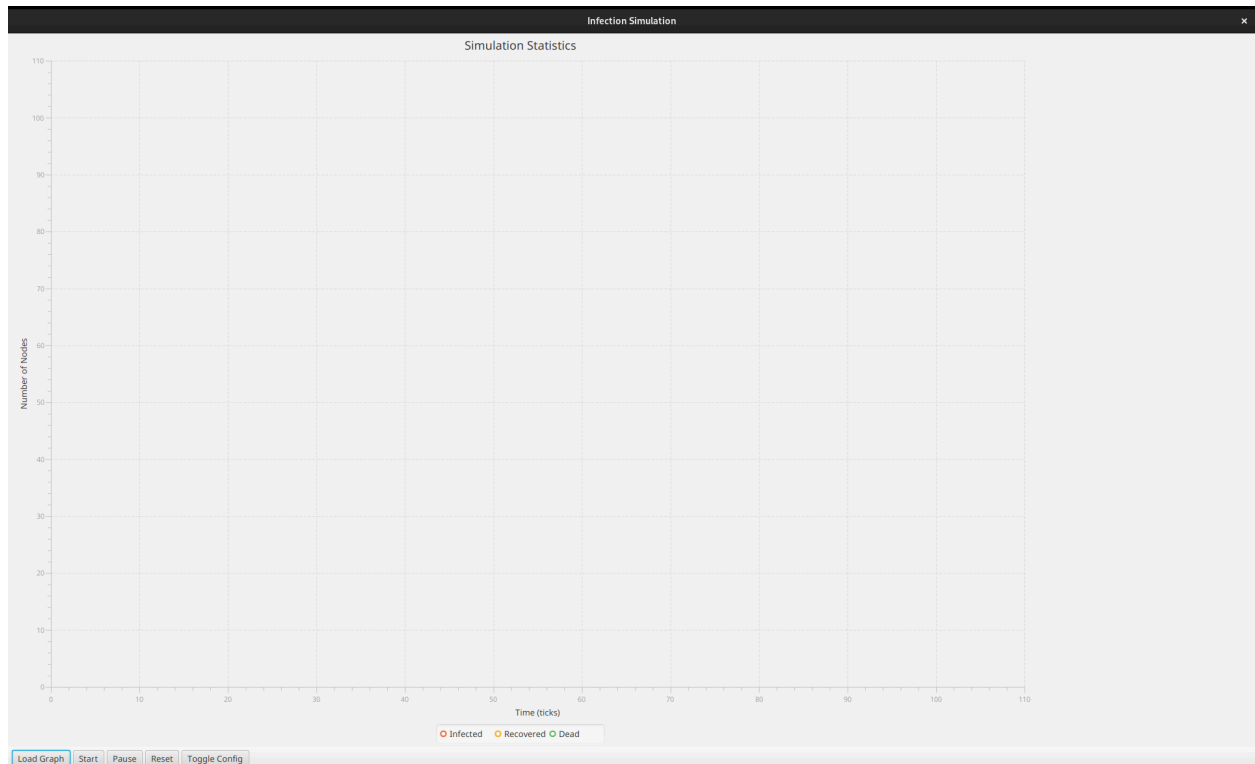
### Summary:

To start the program:

1. Ensure you have Java and JavaFX installed on your system.
2. Compile and run the `InfectionApplication` class.

# Playing the Simulation

Upon launch application should look like this:



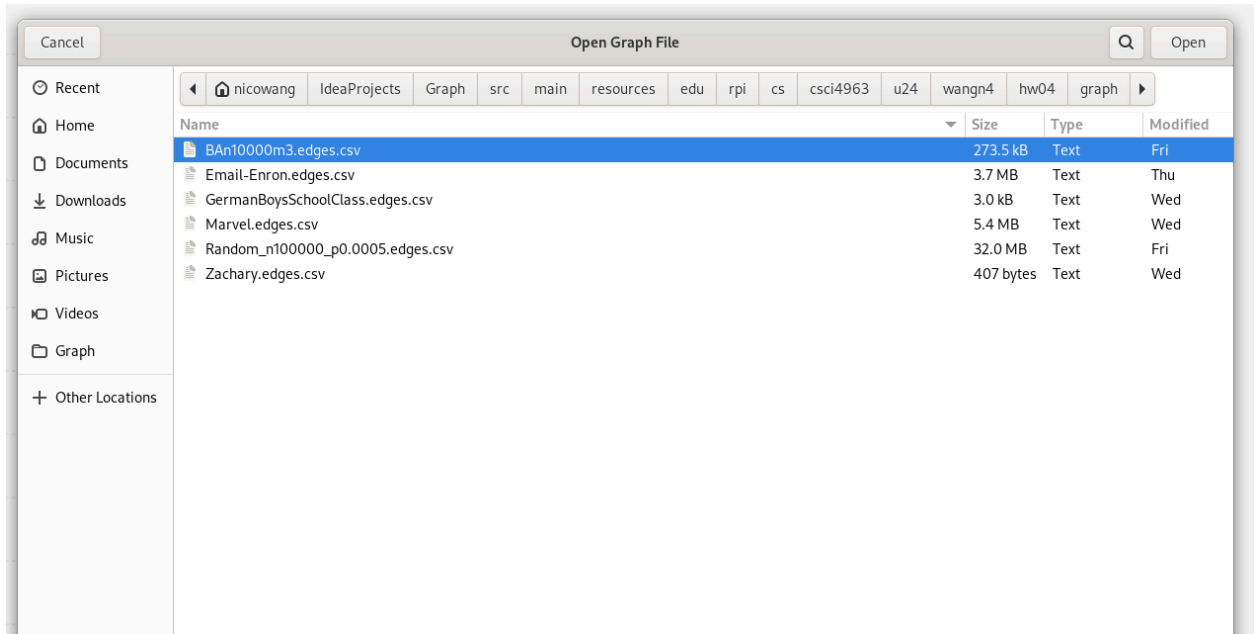
## Loading the File:

Once in the application, you want to select a CSV file to work with to load the graph from a file.

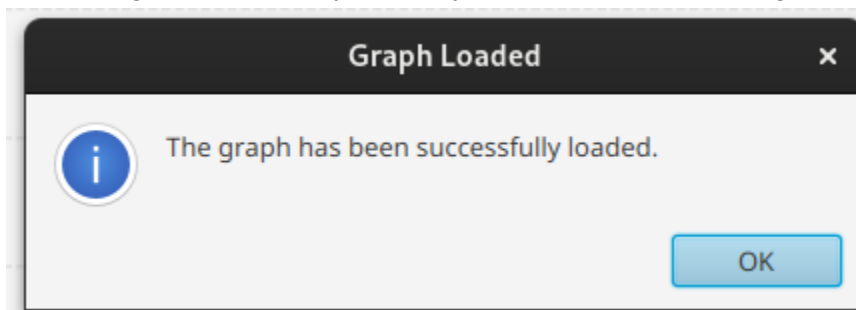
1. Click on Load Graph in the toolbar located on the bottom left of the window:



2. Select the file to load



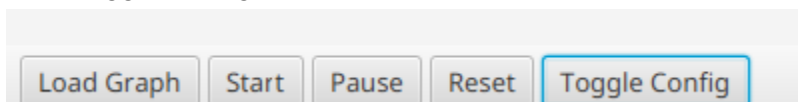
- Once the graph is properly loaded you should see this dialogue:



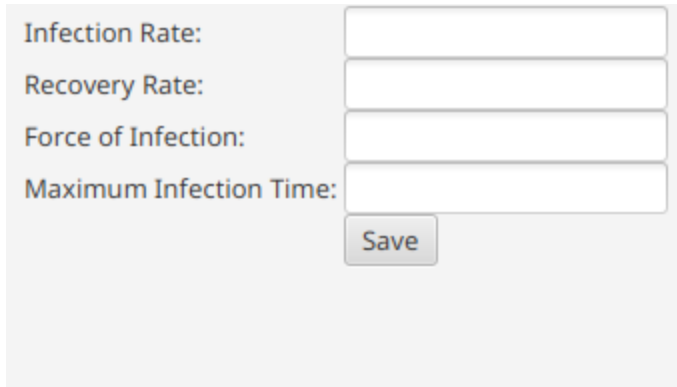
## Configuring Simulation Settings:

To Configure the Simulation:

- Click Toggle Config button located on the toolbar.



- A config panel should pop out on the right hand side of the program.

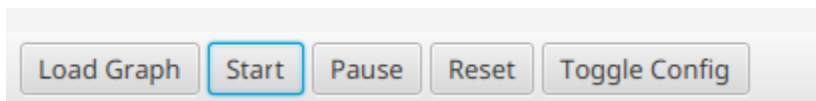


A configuration panel with a light gray background. It contains four labels on the left: 'Infection Rate:', 'Recovery Rate:', 'Force of Infection:', and 'Maximum Infection Time:'. Each label is followed by a white rectangular input field. Below the input fields is a small gray button with the text 'Save' in white.

3. Set your desired values and save.

### Starting the Simulation:

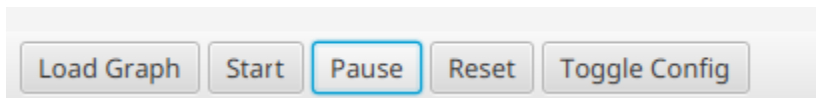
1. After loading the graph and setting config (or just using default config values) the user can start the simulation.
2. Start the simulation by clicking the Start button on the toolbar:



3. Upon starting the graph should update.

### Pausing the Simulation:

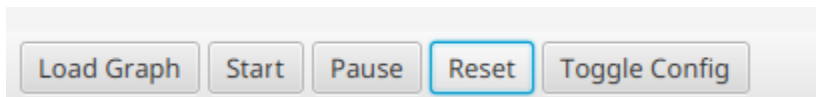
1. Pause the simulation by clicking the Pause button on the toolbar:



2. The graph should stop updating.

### Resetting the Simulation:

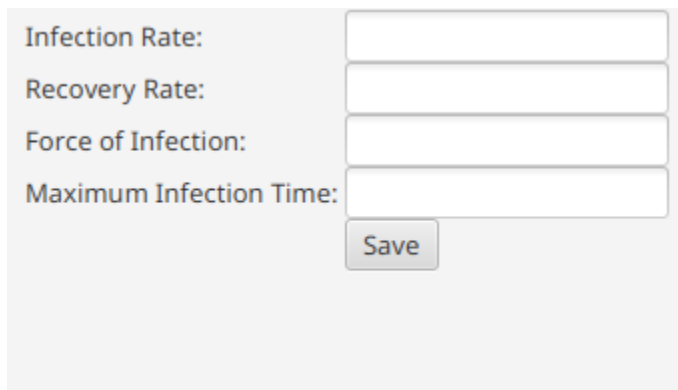
1. Reset the simulation by clicking on the Reset button on the toolbar:



2. The graph should be cleared and paused.

### UI Features:

## Configuration Panel:

The Configuration Panel is a light gray rectangular area. It contains four labels on the left, each followed by a white rectangular input field: 'Infection Rate:', 'Recovery Rate:', 'Force of Infection:', and 'Maximum Infection Time:'. Below the input fields is a small gray button with the text 'Save' in white.

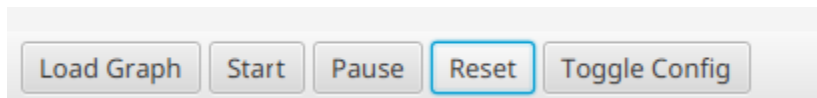
**Infection Rate** - the rate at which each of the nodes is infected

**Recovery Rate** - the rate at which each of the nodes recovers

**Force of Infection** - the rate at which susceptible nodes become infected

**Max Infection Time** - the maximum time that each nodes can be infected for

## Tool Bar:



**Load Graph** - loads a graph to simulate on

**Start** - starts the simulation once the graph is loaded

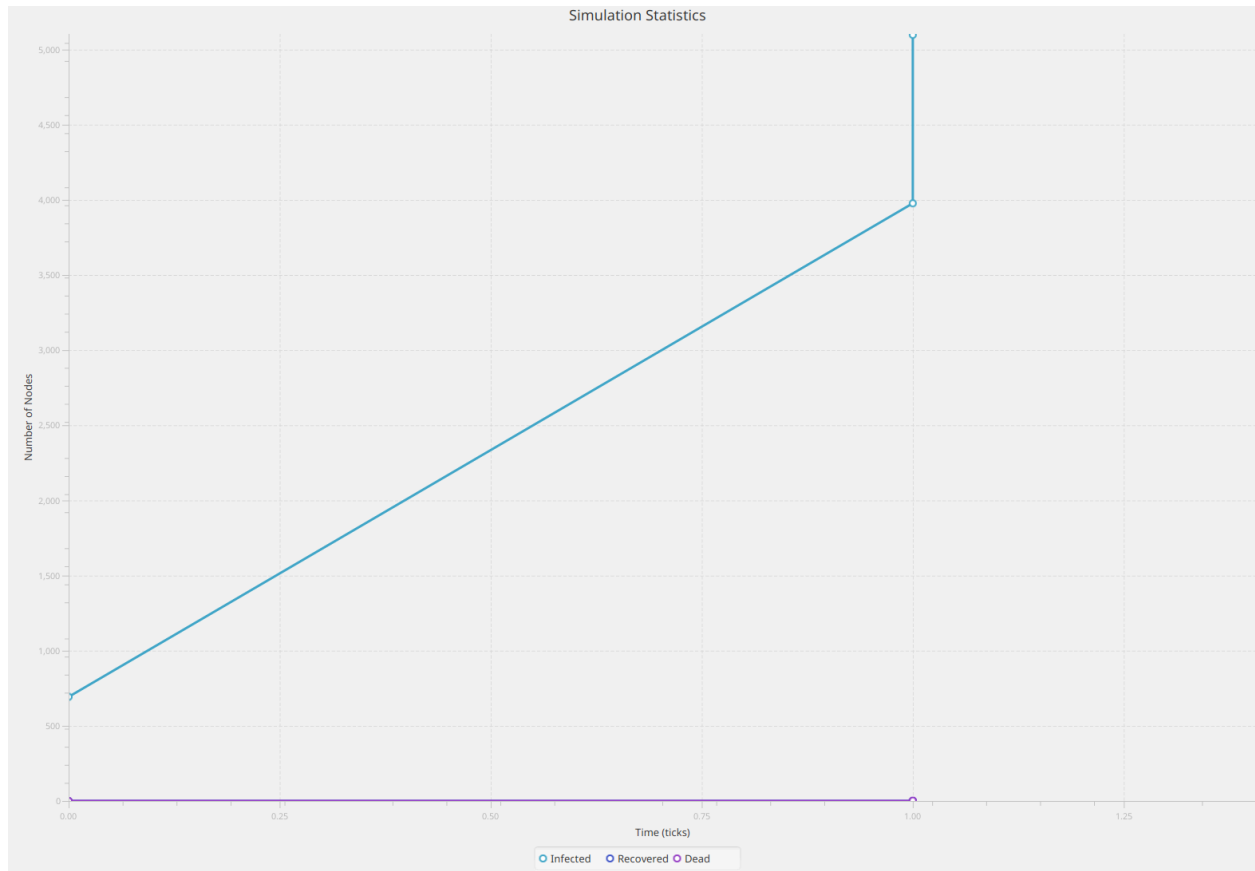
**Pause** - pauses the simulation if the start button has already been pressed

**Reset** - pauses and resets the simulation

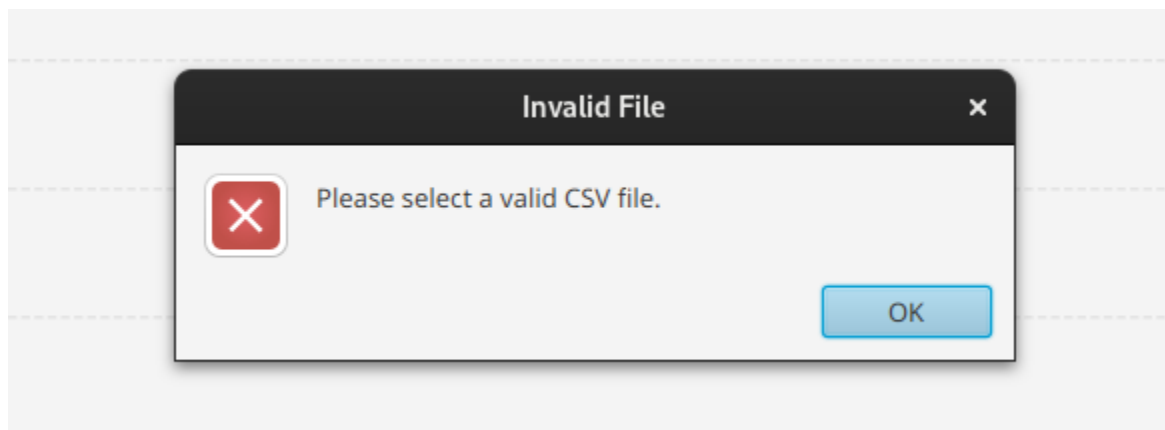
**Toggle Config** - toggles configuration panel

## Main Window:

**Statistics Window** - shows the simulation statistics of infected nodes, recovered nodes, and dead nodes, each distinguished by respective colors.

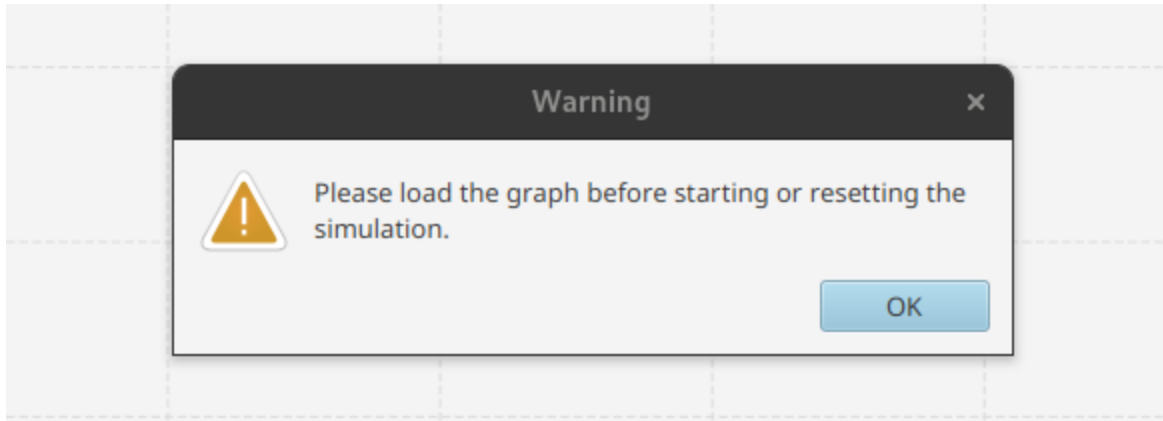


## Common Error Cases:



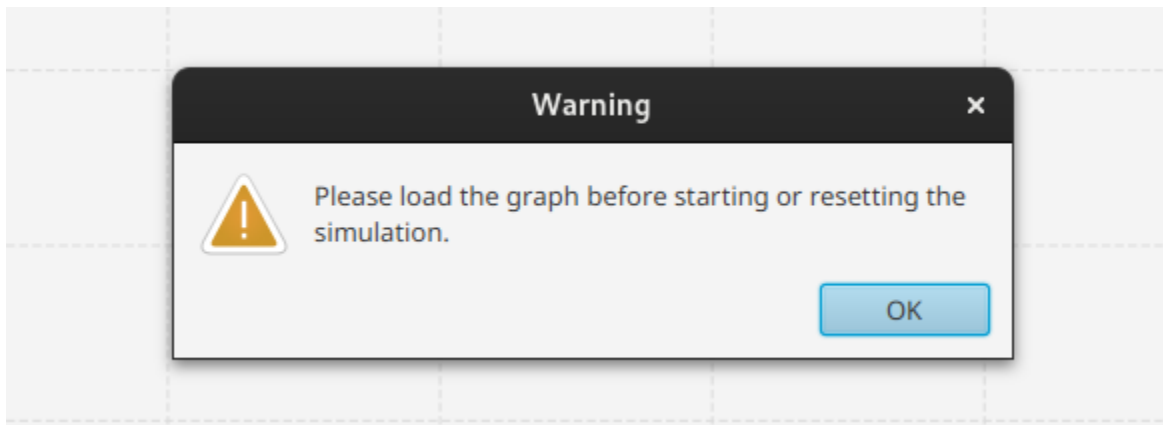
Test Case: Load an invalid file (not CSV)  
Result: Invalid File Warning Popup





Test Case: Starting simulation before loading graph

Result: Warning popup



Test Case: Resetting simulation before loading graph

Result: Warning popup

## Conclusion

This is a comprehensive guide on the usage of the Epidemic Simulation Program.