

CourseWork 4 London COVID-19 Statistics

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GitHub Repository: <https://github.kcl.ac.uk/k23010388/CourseWork-4-COVID-19>

1 Functionality

1.1 Overview

To start the application, please run the JavaFx application from *Frame* class. On the top of the application window, there are date selectors. If the user enters an invalid start and end date, they are prompted to re-enter. In the middle of the window is the pane view - this displays the welcome/map/statistics pane. At the bottom are the navigation buttons which are used to switch panes. Initially, they're disabled until the user enters a valid date period.

1.2 Panes

- **Welcome Pane** - displays a guide on how to use the application.
- **Map Pane** - displays the map of the all London boroughs. Each assigned a particular colour based on the number of COVID-19 deaths. Upon selecting a borough, a new window is displayed which shows the statistics associated with it for a particular period.
- **Statistics Pane** - Displays statistics for: average over retail and workplaces traffic (Google Mobility measures), total number of deaths and average total cases. There are buttons to toggle which statistics to view.
- **Graph Pane** - calculates accumulative data from all boroughs (total cases/deaths) for a specific period and plots it on a line graph.

2 Unit Tests

White-box testing has been used to ensure the class *LocShape* is functioning correctly and to produce appropriate test cases. A new class *LocShapeTest* has been created (implements *JUnit*) to test all methods in *LocShape*.

Methods tested:

Note that *setUp* method in the test class initializes a *LocShape* object with constructor arguments: "Bromley", 5 ,6 (borough name, x-coordinate and y-coordinate attributes respectively). This is executed before the test methods.

- **checkInBounds** - method called by test method *checkInBounds*. Normal test value used in assertion to confirm a point lies within bounds of the *LocShape's* polygon. Extreme test value used in another assertion to confirm a point lies outside the bounds.
- **determineColour/getColour** - methods called by test method *checkDetermineColour*. Several test cases used by several assertions to check if the correct colours are returned for specific number of deaths.
- **getName** - method called by test method *checkName*. Assertion used to compare returned value with "Bromley".
- **getShape** - method called by test method *checkGetShape*. Assertion used to check if returned value isn't null.
- **addData/getData** - methods called by test method *checkAddData*. Single *CovidData* test case used by several assertions to check if *LocShape* adds and returns data.
- **resetData** - method called by test method *checkClearData*. Assertion used to check if an empty list is returned when all Covid data is cleared from a borough.

- **getOrigin** - method called by test method *checkGetOrigin*. Assertion used to check if x and y coordinates returned correspond to the coordinates passed in the constructor arguments of *LocShape* in *setUp* method.
- **resetShape** - method called by test method *checkResetShape*. Test case passed in as new coordinates and assertion used to check if successful operation.

Outcomes from testing these methods above were successful.

3 Contributions

Thien Nguyen - Worked on format of the application window, dividing it into three sections: date selection bar, pane display and navigation bar. Coded and implemented three classes (*MapHandler*, *LocShape* and *Point*) for custom polygon buttons on the map pane. Added additional method *getDataDateRange* in *CovidDataLoader* class for data extraction for a particular interval of time. Created *JUnit* class *LocShapeTest* for unit testing. Wrote report.

Tawyeeb Soetan - Worked on custom date selection by creating class *DateSelector* and implementing it on the the date selection bar on the application window. Created class *PanelSelector* to manage and switch between different panes. Developed custom *BoroughStatsWindow* window to display data for a particular borough after map selection. Developed custom class *GraphPane* as part of challenge task to display a graph showing total deaths/cases for a particular period.

Sihab Abeywickrama - Worked on *CovidStatisticsWindow* class to calculate and display statistics over a period of time. Used *CovidDataLoader* to extract data. Added comments to classes to provide a clear understanding of what each method does.

Arjan Bedi - Worked on welcome page class. Added a guide on the pane to guide the user on how to use the application. Modified *MapHandler* class to display a colour-key so users can understand what colours correspond to certain number of deaths. Please note, some of the commits pushed by Arjan are under the name "RapidShotzz."