INFORMATICS LARGE PRACTICAL

REPORT – COURSEWORK 2

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Contents:

SOFTWARE ARCHITECTURE DESCRIPTION

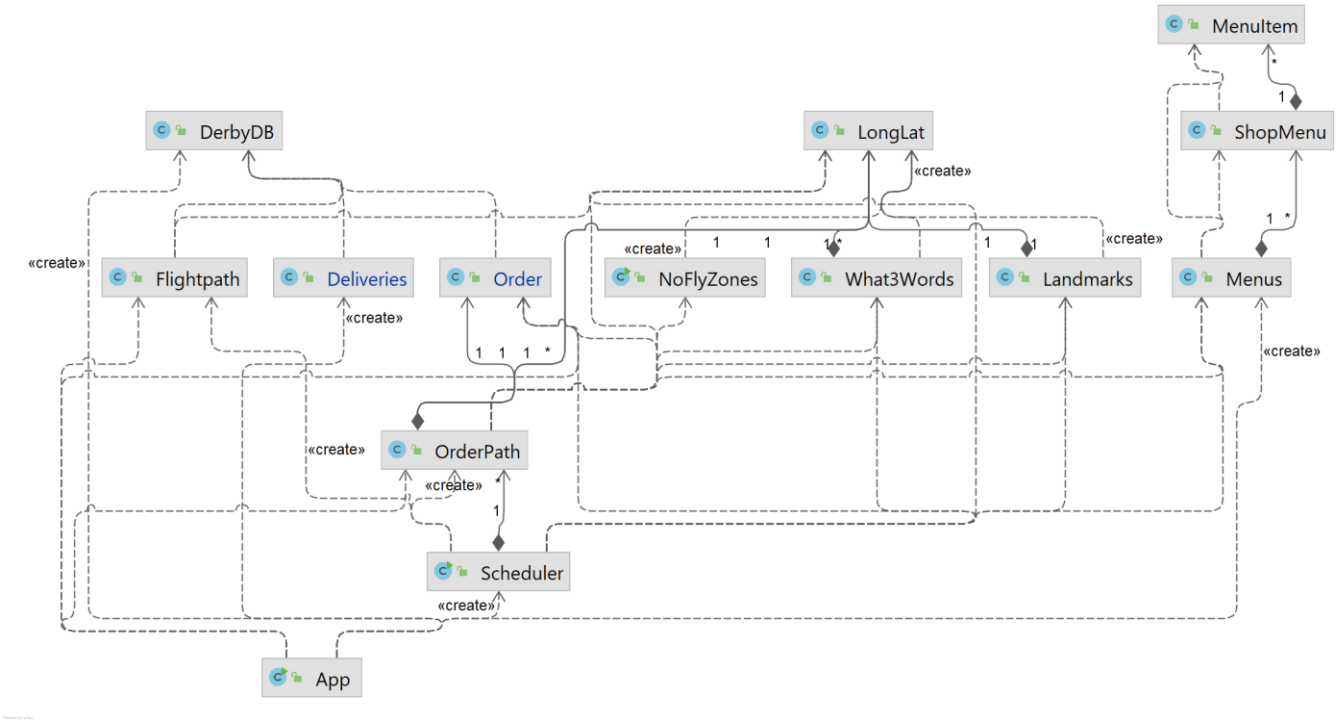

Figure 1: Flowchart of the entire application; brief overview of classes used.

The application consists of 14 important Classes: App, Scheduler, OrderPath, Flightpath, Deliveries, Order, NoFlyZones, What3Words, Landmarks, Menus, DerbyDB, LongLat, ShopMenu and MenuItem. They form the application which takes machine and port, and gives the result of flightpaths of deliveries, for particular dates.

The App Class: It's the main class, which integrates all other classes of the application. It puts together the results obtained from various classes, combines them for the final result, pushes the tables into the Derby DB database and also makes the final GeoJson files required in the project.

The main() method creates a menus object by passing the string for the machine and port number, DerbyDB object by passing the jdbc string. We then retrieve delivery dates from

orders and store it in the deliveryDates ArrayList<Date>. Each element of the deliveryDates arraylist is used to create an order object (subsequently stored in an arrayList<Order> of Order objects). Then a schedule object, of the Scheduler class is made, by using – a deliveryDate, it's corresponding orders and the menu object. This object contains all the required attributes and then it is pushed into the database using various methods from the Deliveries and Flightpath classes.

The makeGeoJson method creates the Json object, and writes it onto the disk, with the required attributes ready to be plotted in GeoJson directly.

The heart of the application is made up of three main classes- Scheduler, OrderPath and NoFlyZones. The Scheduler class takes all order objects for a particular day and uses OrderPath and NoFlyZones to get the final schedule of orders to be performed that day- in a chronological order, to achieve best results and to maximize the revenue, keeping in mind the daily limit for maximum number of moves. What3Words class is used to handle all conversions between the what3words string and it's coordinates, by referring to the json files provided. The Classes Menus, ShopMenu and MenuItems deal with all food items from restaurants and the restaurant locations. The LongLat class handles all calculations and operations on coordinates. Landmark class stores all the important constant coordinates for use throughout the application (e.g., Appleton tower)

The classes Flightpath, Deliveries and DerbyDB deal with the database side of things, which includes querying and pushing values into a new table.

Overall, these classes are important in providing a proper structure to the application, where each class handles an important aspect, and when put together, it gives rise to an application which is highly cohesive and easy to read, maintain and upgrade. The encapsulation and abstraction of the java programming language is used, by using private classes and methods wherever necessary.