CS202

Ching-Wei Lin

987563037

assignment #1

This assignment is about OOP, so let us talk about how do we work on it briefly. First of all, our goal is to manage our delivery order. There comes a Delivery class and it has point of origination and list of packages as its data member. Also, a member function named add package can add a package into the list and set the way of delivery at the same time. Another member function named display all is doing our main job. It displays all the packages in the list and show different detail of them according to the way of delivery. Like, for standard delivery shows the estimate delivery time, for express shows the estimate delivery fee and for by drone shows yes or no. Second, under the class of delivery, there are three classes which are standard, express and drone. In standard, there are two data members which are volume of car and list of package. Volume of car is an integer and once the total weight of delivery is bigger volume of car, the left package belongs to the next car. The list of package helps the function to do the calculation.

Let us talk about package first. Class package contains weight, destination, and way to delivery as its data members. Weight is used for calculation of volume of car, destination is used for calculation of delivery time and way to deliver is used for recognition. Similarly, there is a class called node. It is a LLL data structure. It helps fulfill the list of package.

Go back to standard class. There are two member functions are take package which is adding the package into the list and estimate delivery time which do the time-distance calculation to generate the result. Then, as same as standard, under class delivery, express class is very similar to standard class, it also has volume of car and list of package as data member and take package as a member function. However, it can contain three packages at once. They are all same as the ones in standard class. Except, the member function named estimate the delivery fee according to the time-distance relationship and find the fastest route for delivery. The last class under the delivery class, drone, it has one data member which is list of package. However, it can only contain one package one time. It also has a take package member function which acts as same as the previous one.

Mentioned several times of time-distance calculation, but how does it work? Here comes map class. In the map class, there is a data member which is list of city. It contains every city in the map. Also, I create a node1 class which is a LLL data structure to help fulfill the list of city. There are two member functions in the map class. First one is calculate estimate time which according to the package list connects all the destination and return the delivery time. Second one is calculate estimate delivery fee which after calculate all possible route of delivery and also consider the situation of the route, conclude with the fastest route and return the estimate fee. The faster is the delivery, the more expensive.

Under the map class, there is a city class which contains a list of connections as a data member and no member functions. The connection means the possible route to next city and one city might have many connections or only one. Likely, I create a node2 class which is a LLL data structure for fulfilling the list of connections. Under city class, there is a connection class, having type of road as a integer, speed limitation as a integer, length as a integer and status as a status data type. All of these help do the calculation of estimate delivery time and fee. Also, there is a member function named random the status which can choose the status of connection randomly which affects the speed of traveling the road. Finally, there is a status class under the connection class, having only a data member named situation. Situation has traffic slow, closure and equipment failure which also affects the speed of traveling on the road differently.