**Data Structures project Idea:**

Jason Daou: 20231323 - Part II and III

Edward Ghazal: 20231576 - Part IV

Giorgio khoury: 20230866 - Part I and II

Domain: Airport application – “JEG Airlines”

Legend: Word: algorithm

Word: data structures

Activities:

1. Sign up
   1. Class called user that has the user’s: name - address – phone number – email and a unique ID that is given to him after signing up with a password of his choice (password will have conditions such as it needs to be at least 8 characters long- contain lowercase and uppercase letters as well as numbers and symbols). Here we can implement a linear search algorithm that iterates through each element in the password and checks whether the overall password matches the conditions.

We will also create a class called flight which contains the flight ID and all the information related to the flight. We will use composition as each user has one or zero flights. Each flight has one departure airport (Beirut Rafik Hariri airport), arrival airport and can have a stop-over airport.

Each flight also has a date and time of departure and arrival (time will be represented in military time).

Each flight will also be assigned a single linked list (check III for full explanation)

* 1. After signing up the user can now log into the app using his provided ID and password

1. Booking for flights
   1. We will create a vector of limited flight options; there will be 4 main flight destinations and each flight has 2 different departure and arrival time so a total of 8 flights.
   2. We will use a map assigning a price to each flight and each user will choose one and only one flight; take in consideration the number of seats, if the seats are booked do not show it to the user, put price in flight, maybe add bank account
2. Google AirMaps
   1. While in the plane; according to your location and time u can open the app and it will show you your current trajectory; how much time till landing and some facts about the countries you are flying over (we will use the sleep function accordingly). Here we can use a singly linked list to show the trajectory just like in google maps.

We will create a class called Country that has a name – capital– an age – language – string array of historical monuments – best dish and time needed to arrive to destination

The singly linked list will contain Country objects.

1. Task schedule + searching algorithm
   1. The airport app can also create a schedule for you to follow (here we use queue)
   2. We will create a class called Activity that contains a start time and end time; the user will create multiple activities and we will sort them using a sorting algorithm. If an activity is added and it is happening before 1 hour or less then the departure time then it will not be added, also all activities that take place during the flight will not be added. At the end the user can either save the schedule or if it is not to his liking the user can delete it and start anew.
   3. for example:
      1. Wake up at 6h am and finish preparing until 9h am
      2. Get a taxi to the airport at 9h and arrive at 9h30 am
      3. Shop (most popular duty free items) from 9h30 till 11h
         1. we ask the user what would he like to buy, we then search using a search algorithm if the product is available in the shops at the airport (there is an array that contains the most popular items in the airport)
      4. Checking in for the flight at the gate according to his username and password from at 12h
      5. If there is a stop-over maybe go and visit the areas near the stop-over airport and shop
      6. And many more