CSE 225

Homework 2

Question 1 (10 points)

For each of the use cases below pick a data structure (from the ones you have seen in the classes so far) that is best suited for that use case, and explain your choice. If you think there is more than one suitable data structure, briefly discuss the trade-offs.

Example: You want to store the names of weekdays and access them by the number of a day within the week.

Answer. An array, because the number of weekdays is fixed, and access by index has to be efficient.

1. You want to store the stations of a public transportation line. New stations can be added to both ends of the line, but not between existing stations. You should be able to traverse the line in both directions.
2. You are writing software for a call center. When a client calls, his call should be stored until there is a free operator to pick it up. Calls should be processed in the same order they are received.

Question 2 (30 points)

Write an airline ticket reservation program in C++. The program should display a menu with the following options: reserve a ticket, cancel a reservation, check whether a ticket is reserved for a particular person, and display the passengers on a certain flight. The information is maintained on an alphabetized list of names. Place no limit on the number of flights. Create list of flights with each flights referring to a list of passengers. Choose appropriate Data Structures amongst the ones we covered in class so far to do this and explain your choice based on algorithmic complexity. Your answer should contain both the code and the explanation of your choice.