GO SCHOOL ADVANCED ASSIGNMENT

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The application is a Limo Booking service, where the users can book limousines at different times slots to bring them to their preferred destination.

Features

Login system

- Users can login to view their personal data and bookings
- New users can sign up and create their individual profiles

Core features

- Viewing made bookings
  - View all bookings
  - Filter by Date
  - Retrieve from unique Booking ID
- Make new booking
  - Collects user input and makes a new booking
    - User gets confirmation and Booking ID on successful booking
- Modify booking
  - Users will input the booking ID which pulls up the booking
  - A list of different fields to change will be given
- Delete booking
  - Users can delete their bookings using the Booking ID provided

Admin Features

- Admins are able to print/view all the bookings at one go
- View all the users who have signed up
- Delete Users and all the bookings related to user

Application Design Overview

Data structures

- Each individual user is stored as a node in a BST
  - Each node includes
    - Username
    - Password
    - Array of memory addresses pointing to the linked list of bookings
      - Array is sorted by date and time when ever the user creates a new booking
  - As more users are created, searching in the BST for the user credentials is efficient with the use of the BST
- Each booking is stored in a doubly linked list
  - Each node includes
    - Time, Date, pickup, drop, etc
    - Username
    - Randomly generated booking ID
  - A linked list was chosen because it's dynamic and the efficiency of adding, deleting bookings

- Each car is a 2 dimensional Array
    - Each array holds 365 slots of 24 pointers to bookings in the linked list
        - Each slot in the 1st layer of the array represents a day in the year
        - Each slot in the 2nd layer represents an hour in the day
    - Each slot is initialized as NIL and is only assigned when a booking is made
    - When printing, nil slots are ignored
    - An array was chosen because, getting the data is an O(1)

Files Layout

- Main.go
    - Front end code and functions
- Menus
    - Formats for each menu
    - Wrapper function used in Main
- Bookinginfo.go
    - Code for the booking linked list
    - Initializes the preloaded Data
    - Functions which pertain to the linked list (e.g. newBooking, deleteBooking)
- CarsLists.go
    - Code for each car array
- UserInfo.go
    - Code for user binary search tree
    - Functions which pertain to the BST (e.g. newBooking, deleteBooking)
- Userinput.go
    - Functions to collect various input types from user
- Functions.go
    - Functions that do not fall into the other categories

Error Handling

Errors from users are captured and used with IF statements to prompt users for the correct data input. In case of panics, recovery is in place to display error before closing program.

INSTRUCTIONS

User login info (case-sensitive)

- Username: khai
- Password: password1

Admin login info

- Username: admin
- Password: admin

For testing, uncomment the preloaded data in the INIT function of booking.go