BVRITHYDERABAD

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PPS Lab Activity	
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BUS RESERVATION SYSTEM USING C LANGUAGE:-

Brief introduction:-

Bus Reservation system is a tool that allows users to book tickets for their journey in advance. It offers multiple features to provide a hassle-free experience to a traveller.

Key Features of this bus reservation system:-

- **Login System**:- Users can access the system by entering their username and password. The program provides a collection of preconfigured users and their credentials.
- **Ticket purchase** :- Logged-in individuals may reserve tickets for available buses by entering the bus number, their name, and age. The program allocates a seat number and decreases the number of available seats on the selected bus.
- **Ticket cancellation**:- By entering their name, users can cancel their tickets. The program expands the number of available seats while removing the passenger entry.
- **Checking Bus status**:- Users may check the status of the bus they are currently scheduled to ride on. The program displays information such as the bus number, origin and destination, total number of seats, available seats, and fare.

CODE FOR BUS RESERVATION SYSTEM:-

```
// C Program to implement Bus Reservation System
#include <stdio.h>
#include <stdlib.h>
#include <string.h>

// Define a structure to store bus information
struct Bus {
    int busNumber;
    char source[50];
    char destination[50];
    int totalSeats;
    int availableSeats;
    float fare;
};

// Define a structure to store passenger information
struct Passenger {
    char name[50];
    int age;
    int seatNumber;
    int busNumber;
};

// Define a structure to store user login information
```

```
struct User {
    char username[50];
    char password[50];
};

// Function to display the main menu
void displayMainMenu()
{
    printf("\n=== Bus Reservation System ===\n");
    printf("1. Login\n");
    printf("2. Exit\n");
    printf("Enter your choice: ");
}

// Function to display the user menu
void displayUserMenu()
{
    printf("\n=== User Menu ===\n");
    printf("1. Book a Ticket\n");
    printf("2. Cancel a Ticket\n");
    printf("3. Check Bus Status\n");
    printf("4. Logout\n");
    printf("Enter your choice: ");
}
```

```
// Function to perform user login
int loginUser(struct User users[], int numUsers,
                    char username[], char password[])
{
        for (int i = 0; i < numUsers; i++) {
                if (strcmp(users[i].username, username) == 0
                        && strcmp(users[i].password, password) == 0) {
                        return i; // Return the index of the logged-in
                                        // user
                }
        }
        return -1; // Return -1 if login fails
}

// Function to book a ticket
void bookTicket(struct Bus buses[], int numBuses,
                                struct Passenger passengers[],
                                int* numPassengers, int userId)
{
        printf("\nEnter Bus Number: ");
        int busNumber;
        scanf("%d", &busNumber);

        // Find the bus with the given busNumber
        int busIndex = -1;
```

```
for (int i = 0; i < numBuses; i++) {
        if (buses[i].busNumber == busNumber) {
                busIndex = i;
                break;
        }
}

if (busIndex == -1) {
        printf("Bus with Bus Number %d not found.\n",
                busNumber);
}
else if (buses[busIndex].availableSeats == 0) {
        printf("Sorry, the bus is fully booked.\n");
}
else {
        printf("Enter Passenger Name: ");
        scanf("%s", passengers[*numPassengers].name);

        printf("Enter Passenger Age: ");
        scanf("%d", &passengers[*numPassengers].age);

        // Assign a seat number to the passenger
        passengers[*numPassengers].seatNumber
                = buses[busIndex].totalSeats
                - buses[busIndex].availableSeats + 1;
```

```
            // Update the passenger's bus number
            passengers[*numPassengers].busNumber = busNumber;

            // Update available seats
            buses[busIndex].availableSeats--;

            printf("Ticket booked successfully!\n");
            (*numPassengers)++;
        }
}

// Function to cancel a ticket
void cancelTicket(struct Bus buses[], int numBuses,
                  struct Passenger passengers[],
                  int* numPassengers, int userId)
{
        printf("\nEnter Passenger Name: ");
        char name[50];
        scanf("%s", name);

        int found = 0;
        for (int i = 0; i < *numPassengers; i++) {
            if (strcmp(passengers[i].name, name) == 0
                && passengers[i].busNumber
```

```
                == buses[userId].busNumber) {
            // Increase available seats
            int busIndex = -1;
            for (int j = 0; j < numBuses; j++) {
                if (buses[j].busNumber
                    == passengers[i].busNumber) {
                    busIndex = j;
                    break;
                }
            }
            buses[busIndex].availableSeats++;

            // Remove the passenger entry
            for (int j = i; j < (*numPassengers) - 1; j++) {
                passengers[j] = passengers[j + 1];
            }
            (*numPassengers)--;
            found = 1;
            printf("Ticket canceled successfully!\n");
            break;
        }
    }
    if (!found) {
        printf("Passenger with name %s not found on this "
            "bus.\n",
```

```
                name);
        }
}

// Function to check bus status
void checkBusStatus(struct Bus buses[], int numBuses,
                                int userId)
{
        printf("\nBus Number: %d\n", buses[userId].busNumber);
        printf("Source: %s\n", buses[userId].source);
        printf("Destination: %s\n", buses[userId].destination);
        printf("Total Seats: %d\n", buses[userId].totalSeats);
        printf("Available Seats: %d\n",
                buses[userId].availableSeats);
        printf("Fare: %.2f\n", buses[userId].fare);
}

int main()
{
        // Initialize user data
        struct User users[5] = {
                { "user1", "password1" }, { "user2", "password2" },
                { "user3", "password3" }, { "user4", "password4" },
                { "user5", "password5" },
        };
```

```
int numUsers = 5;

// Initialize bus data
struct Bus buses[3] = {
        { 101, "City A", "City B", 50, 50, 25.0 },
        { 102, "City C", "City D", 40, 40, 20.0 },
        { 103, "City E", "City F", 30, 30, 15.0 },
};
int numBuses = 3;

struct Passenger
        passengers[500]; // Array to store passenger
                                // information
int numPassengers = 0; // Number of passengers

int loggedInUserId = -1; // Index of the logged-in user

while (1) {
        if (loggedInUserId == -1) {
                displayMainMenu();
                int choice;
                scanf("%d", &choice);

                if (choice == 1) {
                        char username[50];
```

```
            char password[50];

            printf("Enter Username: ");
            scanf("%s", username);
            printf("Enter Password: ");
            scanf("%s", password);

            loggedInUserId = loginUser(
                users, numUsers, username, password);
            if (loggedInUserId == -1) {
                printf("Login failed. Please check "
                    "your username and password.\n");
            }
            else {
                printf(
                    "Login successful. Welcome,
%s!\n",
                    username);
            }
        }
        else if (choice == 2) {
            printf("Exiting the program.\n");
            break;
        }
        else {
```

```
            printf(
                    "Invalid choice. Please try again.\n");
        }
    }
    else {
        displayUserMenu();
        int userChoice;
        scanf("%d", &userChoice);

        switch (userChoice) {
        case 1:
            bookTicket(buses, numBuses, passengers,
                       &numPassengers, loggedInUserId);
            break;
        case 2:
            cancelTicket(buses, numBuses, passengers,
                         &numPassengers,
                         loggedInUserId);
            break;
        case 3:
            checkBusStatus(buses, numBuses,
                           loggedInUserId);
            break;
        case 4:
            printf("Logging out.\n");
```

```
                loggedInUserId = -1;
                break;
            default:
                printf(
                    "Invalid choice. Please try again.\n");
            }
        }
    }

    return 0;
}
```

OUTPUT:-

```
=== Bus Reservation System ===
1. Login
2. Exit
Enter your choice: 1
Enter Username: kesava
Enter Password: 123
Login failed. Please check your username and password.

=== Bus Reservation System ===
1. Login
2. Exit
Enter your choice: 1
Enter Username: user1
Enter Password: password1
Login successful. Welcome, user1!

=== User Menu ===
1. Book a Ticket
2. Cancel a Ticket
3. Check Bus Status
4. Logout
Enter your choice: 1
Enter Bus Number: 101
Enter Passenger Name: kesav
Enter Passenger Age: 20
Ticket booked successfully!

=== User Menu ===
1. Book a Ticket
2. Cancel a Ticket
3. Check Bus Status
4. Logout
```

```
2. Cancel a Ticket
3. Check Bus Status
4. Logout
Enter your choice: 3
Bus Number: 101
Source: City A
Destination: City B
Total Seats: 50
Available Seats: 49
Fare: 25.00

=== User Menu ===
1. Book a Ticket
2. Cancel a Ticket
3. Check Bus Status
4. Logout
Enter your choice: 2
Enter Passenger Name: kesav
Ticket canceled successfully!

=== User Menu ===
1. Book a Ticket
2. Cancel a Ticket
3. Check Bus Status
4. Logout
Enter your choice: 4
Logging out.

=== Bus Reservation System ===
1. Login
2. Exit
Enter your choice:
```