**The University of Azad Jammu & Kashmir Chella Campus**

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| Roll no | 2024-SE-37 |
| Course Title | Programming Fundamentals |
| Course Code | CS-1101 |
| Instructor | Engr. Muhammad Awais |
| Task | Open-ended Lab (Report) |

**Report: Airline Booking and Reservation System**

**1. Overview**

The “Airline Booking and Reservation System” is a C++ program designed to manage flight seat bookings, cancellations, and invoice generation. It provides a user-friendly, menu-driven interface for users to interact with the system. The program includes features like seat booking, cancellations, discounts, and invoice generation.

**{ Key Features}**

**1. Seat Booking:**

Users can book seats in Business or Economy Class.

Seats are selected from available options.

**2. Seat Cancellation:**

Users can cancel booked seats with a **5% penalty**.

Refunds are calculated automatically.

**3. Invoice Generation:**

Detailed invoices are generated with seat numbers, class, price, and destination.

Discounts for Hajj Packages and group bookings are applied.

**4. Discounts:**

Hajj Package: 5% discount for Saudi Arabia bookings.

Group Discount: 5% discount for booking more than 5 seats.

**5. User-Friendly Interface:**

The program is menu-driven, making it easy to navigate.

**Example Workflow**

1. **User Books Seats:**

- Selects destination: Saudi Arabia.

- Chooses Hajj Package (5% discount).

- Books 6 seats in Business Class.

- Group discount (5%) is applied.

- Total price is calculated and displayed.

**2. User Cancels Seats:**

- Cancels 1 seat (seat number 5).

- Refund is calculated after deducting a 5% penalty.

**3. User Generates Invoice:**

- Invoice is generated with details of the remaining 5 seats.

- Total amount reflects applicable discounts.

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| Summary of Techniques | |
| Technique | Purpose |
| Input and Output | Interact with the user and display information. |
| Variables and Data Types | Store and manipulate data. |
| Control Structures | Control the flow of the program. |
| Functions | Modularize the code and improve readability. |
| Data Structures | Organize and manage data efficiently. |
| Error Handling | Handle invalid user input and edge cases. |
| Discount Calculations | Apply discounts based on specific conditions. |
| Invoice Generation | Display booking details and the total price. |
| Program Termination | Exit the program gracefully. |

**Conclusion**

The “Airline Booking and Reservation System” is a comprehensive program that simplifies flight seat bookings, cancellations, and invoice generation. It includes features like discounts and a user-friendly interface, making it a valuable tool for airlines and passengers. The program is designed to be efficient, easy to use, and scalable for future enhancements.