CS214 DATA STRUCTURE PROJECT

(SEMESTER 462, 10 MARKS)

PROJECT OVERVIEW:

This project aims to demonstrate your ability to design and implement programming code while selecting the most suitable data structure to meet system requirements. You will develop a system of your choice, such as a Restaurant Reservation System (RRS), Hotel Booking System, Makeup Store Product Database, or any other topic that aligns with the course requirements and demonstrates your understanding of C++ programming.

REQUIREMENTS/TASK(S):

1. Presentation:

   A well-organized presentation explaining your design, implementation, and justification for the chosen data structure and functions.

2. C++ Code:

   A fully functional C++ program implementing your chosen system.

PROJECT OUTLINES:

You are tasked with implementing a system of your choice (e.g., Restaurant Reservation System, Hotel Booking System, Makeup Store Product Database, etc.). The system should include:

- For a Restaurant Reservation System (RRS):

 - Store customer information, including:

- Name

- Date and time of reservation

- Number of people

- Contact number

- Reservation status (Confirmed, Cancelled, or Completed)

- Charge a reservation fee of 150 SAR per reservation.

- Deduct the reservation fee from the total bill when customers complete their meal, allowing them to pay the remaining balance.

- Update the reservation status to "Completed" after payment.

- Ensure reservations are ordered by date and time.

- Allow canceled reservations to be replaced with new reservations on the same date and time.

Example Menu for RRS: Welcome to the Restaurant Reservation System (RRS)…

Please choose from the following menu:

1. Add reservation.

2. Search for a reservation.

3. Make a payment.

4. Cancel a reservation.

5. Exit.

- For Other Systems (e.g., Hotel Booking, Makeup Store Database)

- Define similar functionalities tailored to your chosen topic.

BEFORE WRITING YOUR CODE:

Answer the following questions:

1. Data Structure Selection (1 mark):

   - Which data structure will you use to implement the system? Justify your choice.

2. Main Functions (2 marks):

   - List the main functions your system needs, along with a brief definition of each.

3. C++ Class Implementation (7 marks):

   - Write a C++ class to implement the system.

4. Bonus Functionality (2 marks):

   - Extend your system with an additional feature, such as calculating daily income, generating reports, or managing inventory.

PROJECT SUBMISSION:

- This is a group-based project (**5** students per group).

- Submit the project requirements in one compressed file containing:

- The presentation slides (e.g., PowerPoint or PDF).

- The C++ code (fully documented and commented).

- Submit the file via the course page on Blackboard.

- Due Date: <mark>**Sunday, 20 April 2025, at 10:00 PM**</mark>. No submissions will be accepted after the deadline.

Project Discussion and Demonstration:

- Scheduled in <mark>**Week 15**</mark> during lab lecture times.

Evaluation Criteria:

 - Quality of the presentation and demonstration.

 - Ability to answer questions and explain the code.

 - Creativity and functionality of the implemented system.

❖ <u>Group members</u> are required to register their names and project topic through the attached <u>link</u> by **12 March 2025**, at the latest:
https://quedusa-my.sharepoint.com/:x:/g/personal/ho_alsultan_qu_edu_sa/ERY2S-Pz3P5Gr8ygTu2jJQgBT3-8nu5J1VL8BzWx9gtCeg?e=Jp2NkQ

Best of Luck,

Hoba Alsultan