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| **National University of Computer and Emerging Sciences, Lahore Campus** | | | | |
|  | **Course Name:** | **Database Systems** | **Course Code:** | **CS2005** |
|  |  | **Semester:** | **Spring 2024** |
| **Type** |  | **Total Marks:** | **100** |
| **Assignment 01** | do these queries with joing |  |  |
| **Assignment 02** | do q1 queries with subqueries | **DUE DATE:** | **24-Feb-24** |
| **Assignment 03** | convert q1 into RA |  |  |

**SUBMIT YOUR QUERIES IN SQL FILE.**

**PLAGIARISM WILL CAUSE ADVERSE CONSEQUENCES.**

**Note:- Each Query carries 3 mark**

**Schema: Café Management system**

**Customers: This table stores information about customers, including their name, date of birth, contact details, address, and email.**

**Staff: This table contains data about cafe staff members, including their name, date of birth, contact details, address, role (e.g., Chef, Waiter), and department they belong to.**

**Departments: This table represents different departments within the cafe, such as Kitchen, Service, and Management.**

**Orders: This table records orders made by customers with cafe staff. It includes the customer's ID, staff member's ID, order details (items ordered and quantity), order date and time, and status (e.g., Pending, Completed).**

**Transaction Records: This table contains transaction records for customer purchases, including the date of service, items purchased, total amount, and payment status (e.g., Paid, Unpaid).**

**Menu Items: This table stores information about menu items available in the cafe, including the item name, description, price, and category (e.g., Appetizers, Main Course, Desserts).**

**Ingredients: This table contains data related to ingredients used in preparing menu items, including the ingredient name, quantity on hand, and unit of measurement.**

**Suppliers: This table stores information about suppliers from whom the cafe purchases ingredients, including the supplier name, contact details, and address.**

**Tables: This table represents the tables available in the cafe for seating customers. It includes attributes such as table number, capacity, and status (e.g., Occupied, Available).**

**Scenario Usage:**

**In this Cafe Management System:**

**Customers can place orders with cafe staff.**

**Cafe staff members, including chefs and waiters, are associated with specific departments such as Kitchen and Service.**

**Transaction records are generated for each customer purchase to track payment status.**

**Menu items are available for ordering and are categorized for easy navigation.**

**Ingredients are managed to ensure availability for menu item preparation.**

**Suppliers provide ingredients necessary for preparing menu items.**

**Create tables with proper datatypes and actions appropriate according to you.**

**Write sql queries for the following:**

* Write a SQL query to retrieve the total number of orders placed by each customer, sorted in descending order of the number of orders.
* Can you construct a SQL query to calculate the total revenue generated by each menu category for the past month, including only categories that have generated revenue?
* Implement a SQL query to find the average price of menu items within each category, rounding the average price to two decimal places.
* Design a SQL query to identify the staff members who have served the highest total amount of transactions in the last quarter.
* Write a SQL query to retrieve the names of all menu items that contain the word "chocolate" in their description, disregarding case sensitivity.
* Construct a SQL query to find the top 3 most popular ingredients used across all menu items, based on the total quantity used.
* Implement a SQL query to calculate the average number of orders served per day for each staff member, considering only those staff members who have served at least 10 orders.
* Design a SQL query to identify any staff members who are assigned to multiple departments and list their names along with the departments they are assigned to.
* Develop a SQL query to find the total number of transactions made on weekends (Saturdays and Sundays) in the past three months.
* Construct a SQL query to calculate the total revenue generated by each staff member, considering both their own transactions and those they assisted with, sorted in descending order of revenue.
* Design a SQL query to find the average time taken to fulfill orders, excluding orders that were canceled or returned, rounded to the nearest minute.
* Develop a SQL query to list all customers who have placed orders for items from more than one category, along with the total number of categories they have ordered from.
* Write a SQL query to calculate the total cost of ingredients used for each menu item, considering the quantity of each ingredient used and its associated cost per unit.
* Construct a SQL query to find the average number of transactions per day during the busiest week of the year, considering all weeks within the last year .
* Design a SQL query to identify any staff members who have not served any orders in the past month, along with their respective roles and departments.

**TOPIC: Relational Data Model**

**Q2. Consider the following database state: (total points =35 )**



Hotel :



Booking:



Guest:



Room:



Apply following operations on the above database. State if the operation would be carried out

successfully or not , give proper explaination with reasoning . In case of successful operation indicate the changes that will be made to the above.

database. Also state all the integrity constraints violated by each operation, if any. Note that all

following operations are independent.

FOREIGN KEY CONTRAINTS ARE FOLLOWING:

On update Cascade.

On delete set NULL.

**INSERT:**

Insert into hotel values('fb01', 'The Ritz', 'London');

Insert into room values(1201, 'fb01', 'single', 99.99);

Insert into booking values('fb01', 10001, '04-04-01', '04-04-08', 501);

Insert into hotel values('hw03', 'The Ritz', 'London');

Insert into booking values('hw03', 10008, '04-06-10', '04-06-15', 1201);

**UPDATE:**

**Update guest Set guestaddress = '25 Maple Ave, London' where guestno = 10008;**

Update room Set price = 109.99 where roomno = 1201 and hotelno = 'fb05';

Update guest Set guestaddress = '25 Maple Ave, London' where guestno = 10009;

Update booking Set roomno = 999 where hotelno = 'fb01' and guestno = 10001 and datefrom = '04-04-01';

Update room Set price = 109.99 where roomno = 1201 and hotelno = 'fb01';

**DELETE:**

Delete from room where hotelno = 'fb05';

Delete from guest where guestno = 10010;

Delete from room where roomno = 1301 and hotelno = 'dc01';

Delete from booking where hotelno = 'fb05';

Delete from booking where hotelno = 'fb01';

Delete from hotel where hotelno = 'fb02';

**QUESTION NO 3 (TOTAL POINTS =20)**

**• Give detailed output for the following queries(also please show your working in the solution as well ) and if any error then correct it.**

**Use the table of question 2 for solving the mentioned questions.**

**1.** SELECT guestname, guestaddress

FROM guest

WHERE guestaddress LIKE '%Glasgow%' AND (guestname LIKE 'Tony%' OR guestname LIKE '%Farrel');

**2**. SELECT DISTINCT h.\*

FROM hotel h

INNER JOIN room r1 ON h.hotelno = r1.hotelno AND r1.type = 'double'

INNER JOIN room r2 ON h.hotelno = r2.hotelno AND r2.type = 'family';

**3.** SELECT DISTINCT h.\*

FROM hotel h

INNER JOIN room r1 ON h.hotelno = r1.hotelno AND r1.type = 'single'

INNER JOIN room r2 ON h.hotelno = r2.hotelno AND r2.type = 'double'

LEFT JOIN room r3 ON h.hotelno = r3.hotelno AND r3.type = 'family'

WHERE r3.hotelno IS NULL;

**4**. SELECT \*

FROM booking

WHERE guestno IN (10003, 10007) AND guestno != 1001;