Database Systems(CY-T) ASSIGNMENT # 2

Due Date: - 22/10/2023. **MARKS: 140**

HONOR POLICY

This assignment is a learning opportunity that will be evaluated based on your ability to think, work through a problem in a logical manner. You may however discuss verbally or via email the assignment with your course Instructor or the course TA, and use the Internet to do your research, but the written work or code should be your own. Plagiarized reports or code will get a zero. If in doubt, ask the course instructor.

GRADING
20% for submission.
80% based on demo/quiz.

CASE STUDY

Imagine an **e-commerce system** where sellers, customers, products, and orders seamlessly interact. Sellers, identified by unique IDs, contribute to the platform by adding products. Each product has distinct attributes, and sellers are crucial in maintaining the product catalog. Customers, with their unique IDs, create accounts to explore and interact with the product catalog. They can add products to their shopping carts and place orders. Orders have unique identifiers, order numbers, creation timestamps, and total amounts. Each order is associated with a customer through foreign keys. Within an order, individual items are tracked in the OrderItem table, linking back to the order and the respective product. Shopping carts, identified by unique IDs, are managed for each customer. Cart items, linked to the cart and product, track the items in a customer's cart. Payment information is stored in the Payment table, including unique identifiers, payment methods, amounts, creation timestamps, and references to the corresponding order. Customers can also leave reviews for products, each review identified uniquely and linked to the product and customer. The Address table manages customer addresses, associated with customer IDs and includes details such as address lines, city, state, zip code, country, and flags indicating billing and/or shipping addresses. Lastly, there's an Inventory table with unique identifiers for each inventory record. It references the associated product, tracks the quantity in stock, and includes a timestamp for the last stock update. Other attributes include the reorder threshold and the unit cost incurred by the seller for each unit of the product.

Question

1) Draw a complete ERD diagram for the above-mentioned scenario. Do not forget to underline the keys and to mention the cardinalities. Marks / 10

2) Convert to relational model and create all required tables in SQL. Insert at least 20 rows of meaningful dummy data into each table.
Marks / 5

3) Write 4 Queries Other than this and write their Importance in the Comments why do you think they are important and where can they be used. Marks /10

4) List the top 5 customers who spent the most money Marks /5

5) Retrieve products with the highest average ratings Marks /5

6) Find customers who have made more than one purchase on the same day Marks /5

7) Calculate the total revenue for each product category Marks /5

8) List customers who have not reviewed any products: Marks /5

9) Find products with quantities below the average quantity in stock Marks /5

10) Calculate the total number of orders for each customer and show only those with more than 5 orders. Marks /5

11) Retrieve the 3 most recent orders for a specific customer Marks /5

12) List customers who have purchased products from at least two different sellers. Marks /5

13) Find customers who have placed an order in the last 30 days. Marks /5

14) List customers who have made a purchase in every product category Marks /5

15) Calculate the total number of products sold by each seller Marks /5

16) Retrieve the top 5 products with the highest sales in the last month Marks /5

17) Retrieve the latest 5 orders along with customer details and order items for each order. Marks /5

18) Retrieve customers who have made purchases in every product category, along with the total number of categories they have purchased from. Marks /5

19) List products that have never been reviewed and have quantities in stock greater than zero, along with the average rating for their category. Marks /5

20) Find the top 3 products with the highest total sales, including details of the reviews for each product. Marks /5

21) Retrieve all customers who have placed orders, and include details of their orders, even for orders with no associated customers. Include information about the shipping addresses for each order. Marks /5

22) Write a SQL query to retrieve the total number of products and the total revenue for each product category. Include products that may not have been sold. Additionally, order the product in descending order based on total revenue. Marks /5

23) Write a SQL query to retrieve detailed information about products and their associated orders. Include the product ID, product name, product category, order quantity, order price, and total revenue for each product. Ensure that products that have not been sold are also included in the result. Filter the results to include only products in the 'Electronics' category with order quantities between 5 and 10. Additionally, order results in descending order based on total revenue. Marks /10

24) Retrieve product categories with the total number of products sold, ordered in descending order by the total number of products sold, and show only categories with more than 10 products sold. Marks /5

25) Retrieve customers with the total number of orders they have placed, ordered in descending order by the total number of orders, and show only customers who have placed more than 5 orders. Marks /5

Submission

-You will submit your assignment using GitHub. You will provide the link to the assignment GitHub repo. Make sure you have set your repo as private. You will add Aubakerzzz (github.com/Aubakerzzz) as collaborators. You must do this as soon as possible to avoid any last-minute hassle. (Bonus 10 Marks)

-If you fail to submit using Github no worries you can zip your File. You must follow the Folder Structure as below. And upload it on Google Classroom.

README.md is the Explanation and Implementation of each question, what challenges you faced and what solution you did to make it correct all in one file. This will act as Report add Images of your result in this file. Also Explain your ERD in this file.

Note: It is mandatory to submit your assignment on GCR
-Submission format is RollNumber1_RollNumber2.zip
- Files format should be same as given below.
-Failure to adhere to the specified submission format will result in a deduction of 5 marks.

|____GithubUser/i21XXXX_Assignment_2_CY_T_DB
|____ERD.png
|____Q1.sql
|____Q2.sql
|____Q3.sql
|____Q4.sql
|____Q5.sql
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|____README.md

Good Luck