CS 432: Databases

Assignment 2: SQL and Database Design

Total marks: 50
Submission deadline: 11:59 PM, 1st Feb 2021.
Submission guidelines: Submit the zipped folder containing all the files (database, query files per question, an image of the database schema, images of all the SQL queries, and their respective outputs in a pdf report) in the Google form. Name your submission as 'Roll number_Name'. Submissions with the incorrect format will not be accepted. **Late submissions will be penalized 20% per day.**

Note: By submitting this assignment solution you confirm to follow the IITGN's honor code. We shall strictly penalize the submissions containing plagiarized text/code.

If you have any questions/doubts, write them in this doc.

You can download MySQL from here and here is a beginners tutorial.

Design a database schema of an E-commerce platform X.

You have to implement the following functionalities available to the customers:

- Search for products.
- Browse through products available on sale.
- Add products to their cart and save them for later.
- Buy products.
- Rate and add reviews for products they bought in the past.
- Browse through their past orders.
- Product recommendation by the platform based on their purchase and search history.

A user can sign up on the platform by using a valid email id (email-verification while inserting it into the database, for example- abcd@gmail.com) and password.

X has a fixed set of retailers in various cities from which it procures products. (and for simplicity X only sells three types of products - novels, electronics, and clothes).

Each product contains information about the Retailer from which it was purchased by the platform, along with other information like description, date of manufacture, etc. Product prices are dynamic and can be updated.

Create a database schema for the above application. Your database must include the name of the tables you have identified, the attributes of the table, and the integrity constraints like Primary key, Foreign key, and NOT NULL.
[5 marks = 3 (table and attribute definitions) + 2 (defining integrity constraints)]

Write SQL queries for the following questions. Questions 1-20 carries 2 marks each. Question 21 carries 5 marks. **No partial marks for questions 1-21.**

1. Fill the tables with at least 20 dummy records. (Please ensure that the database constraints are satisfied.)
2. Delete a user from the database. After deleting the user update name of the user as 'Anonymous' in all the ratings and reviews written by that user.
3. Increment the price of all products priced below Rs. 5000 by 10%, which were viewed by more than 10 users in the last 3 months.
4. Add 3 new delivery addresses for a user with user_id = 1.
5. Find phone numbers and email IDs of all users who reside in the city 'Madrid' and have made a total purchase greater than or equal to Rs. 10000 in the past.
6. Find all products in the database whose name contains the string *'mi'*. E.g. Xiaomi, etc, and all users who bought them at least once.
7. Find all retailers and their email addresses who operate from the city 'Ahmedabad'.
8. Find the last 3 orders of the last user.
   Note: The last user is the user who signed up on the platform last. This can be determined by the time & date when the user signed up on the platform.
9. Find products in the cart of the first and second users.
10. List all novels published after 2010.
11. List all electronics products in the price range of 10k-20k.
12. List all users who bought more than 3 electronic items and more than 3 novels.
13. Sort all laptops according to the price in increasing order.
14. List all products that were added to the database after 11/11/2011.
15. List all novels authored by 'Dan Brown'.
16. Print the UserId, mobile number, and Email Id of all users who have saved a product in the cart, whose quantity is less than 5.
17. Find the order with the maximum number of products.
18. List all products added to the database in the past 10 days.
19. List all retailer ids whose products, user_id = 1 have purchased.
20. Write a query to update the discount on all new products by 15% and store it as a new table holi_Deals.
    Note: Any product that is added to the database in the last 100 days is considered to be a new product.
21. List the top 10 recommended products for the user_id=1 based on the user's purchase and search history(use any recommendation algorithm).