E-commerce Database with User Data

Introduction

In the ever-evolving landscape of e-commerce, managing user data and order information is crucial for delivering a seamless shopping experience. This SQL script creates a simulated e-commerce database with a focus on Indian user names and addresses. The dataset includes realistic details about users, their registration dates, and orders they have placed. The products table encompasses various electronic items to simulate a diverse range of purchases.

>Users Table

The users table stores comprehensive information about users, including their names, usernames, email addresses, phone numbers, addresses, ages, and registration dates. The unique usernames and email addresses ensure the integrity of user identification.

>Orders Table

The orders table tracks each user's purchase history. It includes details such as order ID, user ID (foreign key linked to the users table), product name, order date, order status, and the purchase amount. This information enables analysis of user behavior and order fulfillment processes.

>Products Table

The products table contains information about various electronic items available for purchase. Each product has a unique identifier, a name, and a category. This table provides context for the types of items users can order.

Wriritng code for SQL code to create the tables:

```
-- Create users table
CREATE TABLE users (
    user_id INT PRIMARY KEY,
    first_name VARCHAR(50),
    last_name VARCHAR(50),
    username VARCHAR(50) UNIQUE,
    email VARCHAR(100) UNIQUE,
    phone_number VARCHAR(15),
    address VARCHAR(255),
    age INT,
    registration_date DATE
);

-- Insert data into users table
INSERT INTO users (user_id, first_name, last_name, username, email, phone_number, address, age, registration_date) VALUES
(1, 'Amit', 'Sharma', 'AmitS123', 'amit.sharma@example.com', '123-456-7890', '23 MG Road, Delhi', 28, '2023-01-15'),
(2, 'Priya', 'Patel', 'PriyaP', 'priya.patel@example.com', '987-654-3210', '45 Gandhi Nagar, Mumbai', 35, '2023-02-20'),
(3, 'Rahul', 'Verma', 'RahulV', 'rahul.verma@example.com', '555-123-4567', '789 Rajput Street, Jaipur', 24, '2023-03-10'),
(4, 'Neha', 'Singh', 'NehaS', 'neha.singh@example.com', '777-888-9999', '567 Palika Bazaar, Delhi', 32, '2023-04-05'),
(5, 'Rajat', 'Yadav', 'RajatY', 'rajat.yadav@example.com', '111-222-3333', '890 Subhash Nagar, Mumbai', 28, '2023-05-12'),
(6, 'Shalini', 'Gupta', 'ShaliniG', 'shalini.gupta@example.com', '333-444-5555', '12 Civil Lines, Jaipur', 30, '2023-06-18'),
(7, 'Karan', 'Mishra', 'KaranM', 'karan.mishra@example.com', '666-777-8888', '34 Pink City, Jaipur', 25, '2023-07-25'),
(8, 'Anjali', 'Verma', 'AnjaliV', 'anjali.verma@example.com', '999-000-1111', '456 Tonk Road, Jaipur', 22, '2023-08-30'),
(9, 'Arun', 'Joshi', 'ArunJ', 'arun.joshi@example.com', '222-333-4444', '678 Mansarovar, Jaipur', 26, '2023-09-10'),
(10, 'Pooja', 'Goyal', 'PoojaG', 'pooja.goyal@example.com', '888-999-0000', '789 Malviya Nagar, Jaipur', 29, '2023-10-15'),
(11, 'Manoj', 'Rawat', 'ManojR', 'manoj.rawat@example.com', '444-555-6666', '890 Vaishali Nagar, Jaipur', 31, '2023-11-20'),
(12, 'Swati', 'Chauhan', 'SwatiC', 'swati.chauhan@example.com', '123-456-7890', '12 Kishangarh, Ajmer', 27, '2023-12-25'),

(13, 'Vikram', 'Yadav', 'VikramY', 'vikram.yadav@example.com', '987-654-3210', '45 Pushkar, Ajmer', 34, '2024-01-05'),

(14, 'Ritu', 'Shukla', 'RituS', 'ritu.shukla@example.com', '555-123-4567', '789 Bhilwara, Ajmer', 23, '2024-02-10'),

(15, 'Sanjay', 'Meena', 'SanjayM', 'sanjay.meena@example.com', '111-222-3333', '567 Gulabpura, Bhilwara', 25, '2024-03-15');


-- Create orders table

CREATE TABLE orders (

   order_id INT PRIMARY KEY,

   user_id INT,

   product_name VARCHAR(100),

   order_date DATE,

   order_status VARCHAR(20),

   amount DECIMAL(10, 2),

   FOREIGN KEY (user_id) REFERENCES users(user_id)

);


-- Insert data into orders table

INSERT INTO orders (order_id, user_id, product_name, order_date, order_status, amount) VALUES

(101, 1, 'Laptop', '2024-01-01', 'Completed', 1200.00),

(102, 2, 'Smartphone', '2024-01-02', 'Pending', 800.00),

(103, 1, 'Headphones', '2024-01-03', 'Completed', 100.00),

(104, 3, 'Tablet', '2024-01-04', 'Shipped', 500.00),

(105, 2, 'Monitor', '2024-01-05', 'Completed', 300.00),

(106, 1, 'Mouse', '2024-01-06', 'Completed', 50.00),

(107, 4, 'Camera', '2024-01-07', 'Pending', 700.00),

(108, 5, 'Printer', '2024-01-08', 'Shipped', 250.00),

(109, 6, 'External Hard Drive', '2024-01-09', 'Completed', 120.00),

(110, 7, 'Keyboard', '2024-01-10', 'Pending', 80.00),

(111, 8, 'Graphic Tablet', '2024-01-11', 'Completed', 400.00),

(112, 9, 'Wireless Router', '2024-01-12', 'Shipped', 60.00),
(113, 10, 'Webcam', '2024-01-13', 'Completed', 30.00),
(114, 11, 'Microphone', '2024-01-14', 'Completed', 40.00),
(115, 12, 'USB Flash Drive', '2024-01-15', 'Shipped', 20.00);

-- Create products table
CREATE TABLE products (
    product_id INT PRIMARY KEY,
    product_name VARCHAR(100),
    category VARCHAR(50)
);

-- Insert  data into products table
INSERT INTO products (product_id, product_name, category) VALUES
(1, 'Laptop', 'Electronics'),
(2, 'Smartphone', 'Electronics'),
(3, 'Headphones', 'Electronics'),
(4, 'Tablet', 'Electronics'),
(5, 'Monitor', 'Electronics'),
(6, 'Mouse', 'Electronics'),
(7, 'Camera', 'Electronics'),
(8, 'Printer', 'Electronics'),
(9, 'External Hard Drive', 'Electronics'),
(10, 'Keyboard', 'Electronics'),
(11, 'Graphic Tablet', 'Electronics'),
(12, 'Wireless Router', 'Electronics'),
(13, 'Webcam', 'Electronics'),
(14, 'Microphone', 'Electronics'),
(15, 'USB Flash Drive', 'Electronics');
```

Users Table:-

```
+---------+------------+-----------+----------+----------------------------+----------
---+-----------------------------+------+-------------------+
| user_id | first_name | last_name | username | email                      |
phone_number | address                     | age  | registration_date |
+---------+------------+-----------+----------+----------------------------+----------
---+-----------------------------+------+-------------------+
|       1 | Amit       | Sharma    | AmitS123 | amit.sharma@example.com    | 123-456-
7890 | 23 MG Road, Delhi           |   28 | 2023-01-15        |
|       2 | Priya      | Patel     | PriyaP   | priya.patel@example.com    | 987-654-
3210 | 45 Gandhi Nagar, Mumbai     |   35 | 2023-02-20        |
|       3 | Rahul      | Verma     | RahulV   | rahul.verma@example.com    | 555-123-
4567 | 789 Rajput Street, Jaipur   |   24 | 2023-03-10        |
|       4 | Neha       | Singh     | NehaS    | neha.singh@example.com     | 777-888-
9999 | 567 Palika Bazaar, Delhi    |   32 | 2023-04-05        |
|       5 | Rajat      | Yadav     | RajatY   | rajat.yadav@example.com    | 111-222-
3333 | 890 Subhash Nagar, Mumbai   |   28 | 2023-05-12        |
|       6 | Shalini    | Gupta     | ShaliniG | shalini.gupta@example.com  | 333-444-
5555 | 12 Civil Lines, Jaipur      |   30 | 2023-06-18        |
|       7 | Karan      | Mishra    | KaranM   | karan.mishra@example.com   | 666-777-
8888 | 34 Pink City, Jaipur        |   25 | 2023-07-25        |
|       8 | Anjali     | Verma     | AnjaliV  | anjali.verma@example.com   | 999-000-
1111 | 456 Tonk Road, Jaipur       |   22 | 2023-08-30        |
|       9 | Arun       | Joshi     | ArunJ    | arun.joshi@example.com     | 222-333-
4444 | 678 Mansarovar, Jaipur      |   26 | 2023-09-10        |
|      10 | Pooja      | Goyal     | PoojaG   | pooja.goyal@example.com    | 888-999-
0000 | 789 Malviya Nagar, Jaipur   |   29 | 2023-10-15        |
|      11 | Manoj      | Rawat     | ManojR   | manoj.rawat@example.com    | 444-555-
6666 | 890 Vaishali Nagar, Jaipur  |   31 | 2023-11-20        |
|      12 | Swati      | Chauhan   | SwatiC   | swati.chauhan@example.com  | 123-456-
7890 | 12 Kishangarh, Ajmer        |   27 | 2023-12-25        |
|      13 | Vikram     | Yadav     | VikramY  | vikram.yadav@example.com   | 987-654-
3210 | 45 Pushkar, Ajmer           |   34 | 2024-01-05        |
|      14 | Ritu       | Shukla    | RituS    | ritu.shukla@example.com    | 555-123-
4567 | 789 Bhilwara, Ajmer         |   23 | 2024-02-10        |
|      15 | Sanjay     | Meena     | SanjayM  | sanjay.meena@example.com   | 111-222-
3333 | 567 Gulabpura, Bhilwara     |   25 | 2024-03-15        |
+---------+------------+-----------+----------+----------------------------+----------
---+-----------------------------+------+-------------------+
```

Orders Tabel:

```
+----------+---------+---------------------+------------+--------------+---------+
| order_id | user_id | product_name        | order_date | order_status | amount  |
+----------+---------+---------------------+------------+--------------+---------+
|      101 |       1 | Laptop              | 2024-01-01 | Completed    | 1200.00 |
|      102 |       2 | Smartphone          | 2024-01-02 | Pending      |  800.00 |
|      103 |       1 | Headphones          | 2024-01-03 | Completed    |  100.00 |
|      104 |       3 | Tablet              | 2024-01-04 | Shipped      |  500.00 |
|      105 |       2 | Monitor             | 2024-01-05 | Completed    |  300.00 |
|      106 |       1 | Mouse               | 2024-01-06 | Completed    |   50.00 |
|      107 |       4 | Camera              | 2024-01-07 | Pending      |  700.00 |
|      108 |       5 | Printer             | 2024-01-08 | Shipped      |  250.00 |
|      109 |       6 | External Hard Drive | 2024-01-09 | Completed    |  120.00 |
|      110 |       7 | Keyboard            | 2024-01-10 | Pending      |   80.00 |
|      111 |       8 | Graphic Tablet      | 2024-01-11 | Completed    |  400.00 |
|      112 |       9 | Wireless Router     | 2024-01-12 | Shipped      |   60.00 |
|      113 |      10 | Webcam              | 2024-01-13 | Completed    |   30.00 |
|      114 |      11 | Microphone          | 2024-01-14 | Completed    |   40.00 |
|      115 |      12 | USB Flash Drive     | 2024-01-15 | Shipped      |   20.00 |
+----------+---------+---------------------+------------+--------------+---------+
```

Products Table:

```
+------------+---------------------+-------------+
| product_id | product_name        | category    |
+------------+---------------------+-------------+
|          1 | Laptop              | Electronics |
|          2 | Smartphone          | Electronics |
|          3 | Headphones          | Electronics |
|          4 | Tablet              | Electronics |
|          5 | Monitor             | Electronics |
|          6 | Mouse               | Electronics |
|          7 | Camera              | Electronics |
|          8 | Printer             | Electronics |
|          9 | External Hard Drive | Electronics |
|         10 | Keyboard            | Electronics |
|         11 | Graphic Tablet      | Electronics |
|         12 | Wireless Router     | Electronics |
|         13 | Webcam              | Electronics |
|         14 | Microphone          | Electronics |
|         15 | USB Flash Drive     | Electronics |
+------------+---------------------+-------------+
```

1) List all users and their registration dates:

Code:

SELECT username, registration_date FROM users;

```
Output: +----------+-------------------+
| username | registration_date |
+----------+-------------------+
| AmitS123 | 2023-01-15        |
| PriyaP   | 2023-02-20        |
| RahulV   | 2023-03-10        |
| NehaS    | 2023-04-05        |
| RajatY   | 2023-05-12        |
| ShaliniG | 2023-06-18        |
| KaranM   | 2023-07-25        |
| AnjaliV  | 2023-08-30        |
| ArunJ    | 2023-09-10        |
| PoojaG   | 2023-10-15        |
| ManojR   | 2023-11-20        |
| SwatiC   | 2023-12-25        |
| VikramY  | 2024-01-05        |
| RituS    | 2024-02-10        |
| SanjayM  | 2024-03-15        |
+----------+-------------------+
```

2) Retrieve the details of orders placed by user 'AmitS123':

Code:

SELECT order_id, product_name, order_date, order_status, amount

FROM orders

WHERE user_id = (SELECT user_id FROM users WHERE username = 'AmitS123');

Output:

```
+----------+--------------+------------+--------------+---------+
| order_id | product_name | order_date | order_status | amount  |
+----------+--------------+------------+--------------+---------+
|      101 | Laptop       | 2024-01-01 | Completed    | 1200.00 |
|      103 | Headphones   | 2024-01-03 | Completed    |  100.00 |
|      106 | Mouse        | 2024-01-06 | Completed    |   50.00 |
+----------+--------------+------------+--------------+---------+
```

3)Find the total amount spent by each user:

Code:

```
SELECT u.username, SUM(o.amount) AS total_spent

FROM users u

JOIN orders o ON u.user_id = o.user_id

GROUP BY u.username;
```

Output:

```
+----------+-------------+
| username | total_spent |
+----------+-------------+
| AmitS123 |     1350.00 |
| AnjaliV  |      400.00 |
| ArunJ    |       60.00 |
| KaranM   |       80.00 |
| ManojR   |       40.00 |
| NehaS    |      700.00 |
| PoojaG   |       30.00 |
| PriyaP   |     1100.00 |
| RahulV   |      500.00 |
| RajatY   |      250.00 |
| ShaliniG |      120.00 |
| SwatiC   |       20.00 |
+----------+-------------+
```

4)Find the user who has placed the highest total amount of orders:

Code:

```
SELECT u.username, SUM(o.amount) AS total_spent

FROM users u

JOIN orders o ON u.user_id = o.user_id

GROUP BY u.username

ORDER BY total_spent DESC

LIMIT 1;
```

Output:

```
+----------+-------------+
| username | total_spent |
+----------+-------------+
| AmitS123 |     1350.00 |
+----------+-------------+
```

5)List all users who have pending orders:

Code:

```
SELECT u.username, o.product_name, o.order_date

FROM users u

JOIN orders o ON u.user_id = o.user_id

WHERE o.order_status = 'Pending';
```

Output:

```
+----------+--------------+------------+
| username | product_name | order_date |
+----------+--------------+------------+
| PriyaP   | Smartphone   | 2024-01-02 |
| NehaS    | Camera       | 2024-01-07 |
| KaranM   | Keyboard     | 2024-01-10 |
+----------+--------------+------------+
```

6) Find the users who have not placed any orders::

Code:

```
SELECT u.username

FROM users u

LEFT JOIN orders o ON u.user_id = o.user_id

WHERE o.order_id IS NULL;
```

Output:

```
+----------+
| username |
+----------+
| RituS    |
| SanjayM  |
| VikramY  |
+----------+
```

7) Calculate the total revenue generated by each product category:

Code:

```
SELECT p.category, SUM(o.amount) AS total_revenue

FROM products p

JOIN orders o ON p.product_name = o.product_name

GROUP BY p.category;
```

Output:

```
+-------------+---------------+
| category    | total_revenue |
+-------------+---------------+
| Electronics |       4650.00 |
+-------------+---------------+
```

Key Points from the Database Project:

1) Realistic User Profiles:

The users table incorporates diverse Indian names, addresses, and contact details to simulate a realistic user base.

2) Comprehensive Order Tracking:

The orders table captures essential details such as order ID, user ID, product name, order date, order status, and purchase amount, providing a comprehensive view of transaction history.

3) Product Diversity:

The products table introduces various electronic items, enabling analysis of product popularity and revenue generation across different categories.

4) Structured Database Design:

The database is designed with appropriate relationships between tables, ensuring data integrity and facilitating meaningful analysis.

5) SQL Queries for Analysis:

The project includes SQL queries that explore user registration patterns, order trends, financial metrics, and user engagement for insightful data analysis.