Fundamentals of Big data Analytics
Assignment-02

Data:

user_id,name,age,address.city,address.state,purchase_history, user_rating

1001,John,30,New York,NY,"[{product_id: 1, product_name: 'Laptop', purchase_amount: 200.03}, {product_id: 2, product_name: 'Phone', purchase_amount: 800.03}]", "{'Laptop': 4.5, 'Phone': 4.83}"
1002,Jane,25,Los Angeles,CA,"[{product_id: 3, product_name: 'Tablet', purchase_amount: 500.07}]", "{'Tablet': 4.03}"

1003,Alice,28,Chicago,IL,"[{product_id: 4, product_name: 'Headphones', purchase_amount: 150.50}, {product_id: 5, product_name: 'Smartwatch', purchase_amount: 300.00}]", "{'Headphones': 4.7, 'Smartwatch': 4.2}"

1004,Bob,35,Houston,TX,"[{product_id: 6, product_name: 'Camera', purchase_amount: 1200.50}]", "{'Camera': 4.9}"

1005,Charlie,40,Phoenix,AZ,"[{product_id: 7, product_name: 'Laptop', purchase_amount: 950.99}, {product_id: 8, product_name: 'Tablet', purchase_amount: 300.50}]", "{'Laptop': 4.0, 'Tablet': 3.9}"

1006,Diana,22,Seattle,WA,"[{product_id: 9, product_name: 'Phone', purchase_amount: 699.00}, {product_id: 10, product_name: 'Tablet', purchase_amount: 450.00}]", "{'Phone': 4.8, 'Tablet': 4.1}"

1007,Eve,29,Denver,CO,"[{product_id: 11, product_name: 'Smartwatch', purchase_amount: 250.00}]", "{'Smartwatch': 4.6}"

1008,Frank,34,Boston,MA,"[{product_id: 12, product_name: 'Phone', purchase_amount: 899.99}, {product_id: 13, product_name: 'Laptop', purchase_amount: 1000.50}]", "{'Phone': 4.9, 'Laptop': 4.7}"

1009,Grace,38,San Francisco,CA,"[{product_id: 14, product_name: 'Camera', purchase_amount: 1100.00}, {product_id: 15, product_name: 'Laptop', purchase_amount: 850.75}]", "{'Camera': 4.6, 'Laptop': 4.2}"

1010,Henry,27,Miami,FL,"[{product_id: 16, product_name: 'Smartphone', purchase_amount: 550.25}, {product_id: 17, product_name: 'Tablet', purchase_amount: 350.75}]", "{'Smartphone': 4.5, 'Tablet': 4.0}"
1011,Ivy,31,Austin,TX,"[{product_id: 18, product_name: 'Laptop', purchase_amount: 999.99}]", "{'Laptop': 4.1}"

1012,Jack,36,Dallas,TX,"[{product_id: 19, product_name: 'Smartwatch', purchase_amount: 320.00}, {product_id: 20, product_name: 'Camera', purchase_amount: 900.50}]", "{'Smartwatch': 4.3, 'Camera': 4.4}"

Questions:

1."Create the 'CUSTOMERS' table to store the above data in an optimal structure and insert the data into the table."
Note: You need to use struct,array and map while designing the structure

2-List the names of all users who have purchased products with a purchase amount greater than 500.

3-Find the product with the highest rating given by "Jane". Display the product name and its rating.

4-Retrieve the names of all users who have purchased a product named "Phone" and rated it 4.5 or higher.

5-Write a query to calculate the total amount each user has spent on their purchases. Display the user's name and their total purchase amount.

6-Write a query to retrieve the names and cities of all users who live in the state of 'NY'.

7-For each user, retrieve the product with the highest purchase amount and display the user's name, the product name, and its purchase amount.

8-Retrieve the total number of users who have purchased a product named "Tablet". Group the results by state and display the state along with the user count.
9-For each user, count how many products they have purchased. Display the user's name and the total count of products.

10-List the top 3 most frequently purchased products by all users combined. Display the product name and the total number of times it was purchased.