0.Academic Task Number: 02

Date of allotment: 21-Mar-2025

Date of submission: 21-Mar-2025

Course code: CSI322

Course Title: SPARKS AND SCALA
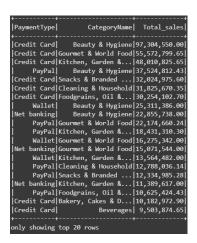
Maximum Marks: 30 marks

The E-commerce dataset is provided. Please solve the questions below, ensuring your answers match the screenshots included in the question.

Data set link- https://drive.google.com/drive/folders/1MB1dP57WwUaBY_Ang02hEScn-bWNW-rK?usp=sharing

5 marks Q1: Find top 5 cities with highest revenue along with top products sold in each.

```
+---------+----------+
|     City|total_sales|
+---------+----------+
|Amsterdam| 3825993.32|
|   Zurich| 3753449.87|
|  Belfast| 3732753.48|
| Brussels| 3485226.21|
|   Vienna| 2511282.69|
+---------+----------+
```

5 marks Q2: Which combination of category and payment type generates the most revenue and apply round if required.

```
+-----------+-----------------+------------+
|PaymentType|     CategoryName|  Total_sales|
+-----------+-----------------+------------+
|Credit Card|    Beauty & Hygiene|97,304,550.00|
|Credit Card|Gourmet & World Food|55,572,799.65|
|Credit Card|Kitchen, Garden &...|48,010,825.65|
|     PayPal|    Beauty & Hygiene|37,524,812.43|
|Credit Card|Snacks & Branded ...|32,024,975.60|
|Credit Card|Cleaning & Household|31,825,670.35|
|Credit Card|Foodgrains, Oil &...|30,254,102.70|
|     Wallet|    Beauty & Hygiene|25,311,386.00|
|Net banking|    Beauty & Hygiene|22,855,738.00|
|     PayPal|Gourmet & World Food|22,174,660.24|
|     PayPal|Kitchen, Garden &...|18,431,310.30|
|     Wallet|Gourmet & World Food|16,275,342.00|
|Net banking|Gourmet & World Food|15,071,544.00|
|     Wallet|Kitchen, Garden &...|13,564,482.00|
|     PayPal|Cleaning & Household|12,788,036.14|
|     PayPal|Snacks & Branded ...|12,334,985.28|
|Net banking|Kitchen, Garden &...|11,389,617.00|
|     PayPal|Foodgrains, Oil &...|10,625,424.43|
|Credit Card|Bakery, Cakes & D...|10,182,972.90|
|Credit Card|        Beverages| 9,503,874.65|
+-----------+-----------------+------------+
only showing top 20 rows
```

_____

5 marks Q3: Compare customer order frequency vs. order value (repeat customers vs. one-timers).

```
+---------------------+-------------+-----------------+------------------+------------------+
|CustomerType         |NumCustomers|AvgOrderCount    |AvgTotalSpent     |AvgOrderValue     |
+---------------------+-------------+-----------------+------------------+------------------+
|One-Time Customer|1   |1.0              |36306.0           |36306.0           |
|Repeat Customer  |524 |9.538167938931299|175348.93664122143|18287.947302524637|
+---------------------+-------------+-----------------+------------------+------------------+
```

5 Marks Q4: Which product categories are generating the highest profit margins in United States regions?

```
+-------------------------+------------+
|CategoryName             |total_profit|
+-------------------------+------------+
|Fruits & Vegetables      |-298.0      |
|Eggs, Meat & Fish        |-1317.0     |
|Bakery, Cakes & Dairy    |-1921.0     |
|Snacks & Branded Foods   |-2971.0     |
|Beverages                |-3579.0     |
|Baby Care                |-5815.0     |
|Foodgrains, Oil & Masala |-6295.0     |
|Cleaning & Household     |-10891.0    |
|Gourmet & World Food     |-17424.0    |
|Kitchen, Garden & Pets   |-71311.0    |
|Beauty & Hygiene         |-73982.0    |
+-------------------------+------------+
```

5 marks Q5: Question: What is the customer retention rate, calculated as the percentage of customers who have placed more than one order out of the total number of unique customers?
This question clearly defines the objective:

- Customer Retention Rate: This is the metric we want to calculate.
- Repeat Orders: We are specifically interested in customers who have placed more than one order, indicating they have returned for more purchases.
- Total Unique Customers: The denominator for our calculation is the total number of distinct customers in the dataset.

```
Customer Retention Rate: 99.80952380952381 %
```

5 marks Q6 - Which sub-categories perform well in terms of both quantity sold and average rating?

```
+--------------------+-----------------+------------------+
|        Sub_Category|TotalQuantitySold|     AverageRating|
+--------------------+-----------------+------------------+
|           Skin Care|            25638| 3.042914979757085|
|   Health & Medicine|            12676| 3.001655629139073|
|Storage & Accesso...|            10031|3.1317427385892116|
|           Hair Care|             9803|2.9058823529411764|
|     Masalas & Spices|             9569| 2.903050108932462|
|   Fragrances & Deos|             9233| 3.089861751152074|
|   Crockery & Cutlery|             9137| 3.026284348864994|
|     Bath & Hand Wash|             9097|2.9588100686498855|
|Snacks, Dry Fruit...|             8598|2.9841075794621026|
|  Ready To Cook & Eat|             8342| 2.839240506329114|
|   Drinks & Beverages|             8088|3.0140664961636827|
|Sauces, Spreads &...|             8053|2.9563492063492065|
|Cooking & Baking ...|             7454|3.1127717391304346|
|Chocolates & Bisc...|             6643| 3.018633540372671|
|      Organic Staples|             6372|2.9764309764309766|
|       Men's Grooming|             5973|3.0017452006980805|
|All Purpose Cleaners|             5341|3.0153846153846153|
|    Snacks & Namkeen|             5311| 3.061099796334012|
|          Stationery|             4559| 3.071269487750557|
| Kitchen Accessories|             4515| 2.756501182033097|
+--------------------+-----------------+------------------+
only showing top 20 rows
```

Fill the google form after completing the CA - https://forms.gle/bpXXmxMF3BdcQTGBA