Datum Labs Assessment

Python Questions:

1.

```
def fill_none_value(array): #function definition with array as
#argument
  if len(array) == 0: # handling a case for length of array=0
    return f"List is empty"
  else:
    for i in range(len(array)):
      if(array[i] == None):
        array[i] = array[i-1] # if current element is None then
#fill with the last element
      if (array[0] == None):
        array[i] = array[i+1]

    return array

array1 = [None,2,3,None,None] #function usage
fill_none_value(array1)
```

Code output:

[2, 2, 3, 3, 3]

2.

```
def split_and_return_list(string1, string2): #function declaration
#taking two strings as arguments.
    words1 = string1.split() #list
    words2 = string2.split() #list
    mismatched_Words = []
    for i in range (len(words2)): #condition checking the case.
      if (words1[i]  != words2[i]):
        mismatched_Words.append(words1[i])

    return f"{mismatched_Words}"
```

```
# Example usage
input_string = "This is a sample string" #defining string
input_string1 = "THIS IS A sample string" #defining string

split_and_return_list(input_string, input_string1) #function usage
```

Code output:

['This', 'is', 'a']

3.

```
def get_char_frequency(str): #function definition
  frequency = {} #deifining of dictionary
  for i in str: #increment each character in the string
    if i in frequency:
      frequency[i] += 1
    else:
      frequency[i] = 1 #if not present then make frequency to one.
  return f"Frequency of each character in list is {frequency}"


def get_specific_char_frequency(str, char): #function for computing
#frequency of specific character.
  count = 0
  for i in str:
    if i == char:
      count += 1

  return f"Count of {char} in string {str} is {count}"



my_string = "This is This is usman usman"
get_specific_char_frequency(my_string,"i")
```

Code ouput:

Count of i in string This is This is usman usman is 4

SQL Questions:

1.

```
SELECT
    customers_with_both_paid,
    total_unique_customers.unique_customers,
    ROUND((customers_with_both_paid * 100.0 / total_unique_customers.unique_customers), 2) AS
percentage
FROM (
    SELECT
        COUNT(DISTINCT cp1.customer_id) AS customers_with_both_paid
    FROM
        CustomerPurchases AS cp1
    WHERE
        cp1.product_id = 'ProductA'
        AND cp1.payment_status = 'Paid'
        AND EXISTS (
            SELECT 1
            FROM CustomerPurchases AS cp2
            WHERE cp1.customer_id = cp2.customer_id
            AND cp2.product_id = 'ProductB'
            AND cp2.payment_status = 'Paid'
        )
) AS customers_with_paid_number,
(
    SELECT
        COUNT(DISTINCT customer_id) AS unique_customers
    FROM
        CustomerPurchases
) AS total_unique_customers;
```

Code output:

Output

customers_with_both_paid	unique_customers	percentage
3	6	50

3.

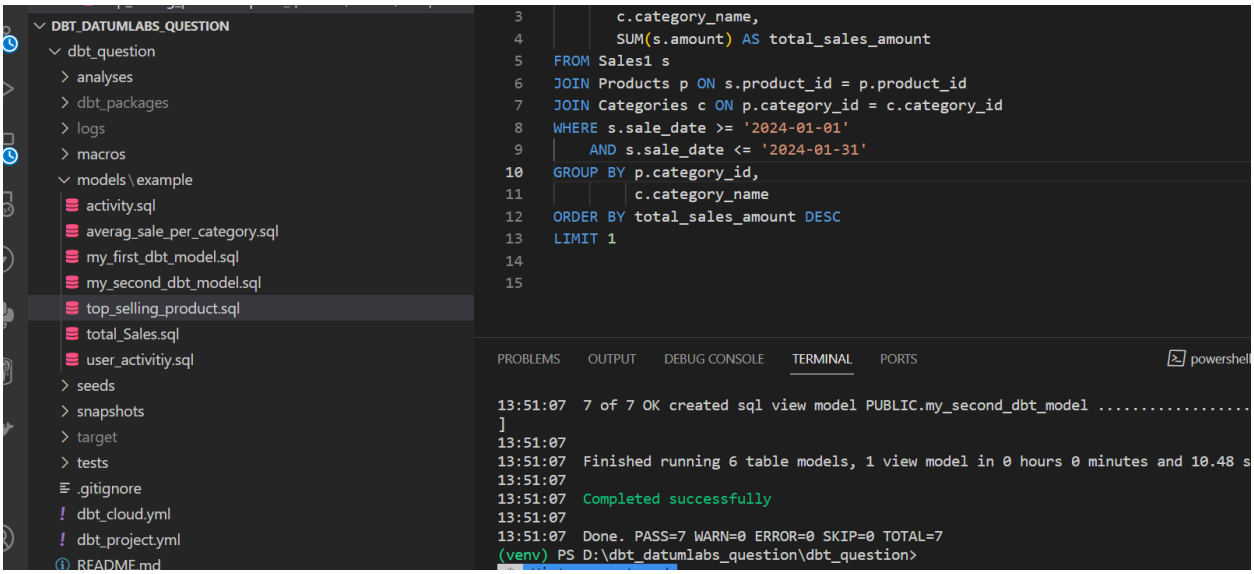
```
SELECT
    cp.product_id AS complementary_product_id,
    COUNT(*) AS frequency
FROM
    CustomerPurchases cp
JOIN
    CustomerPurchases cp_a ON cp.customer_id = cp_a.customer_id
WHERE
    cp_a.product_id = 'ProductA'
    AND cp.product_id <> 'ProductA'
GROUP BY
    cp.product_id
ORDER BY
    frequency DESC
LIMIT 5;
```

Code output

complementary_product_id	frequency
ProductB	4

Dbt Question:

The following is the screenshot of the overall environment.



1.

```
{{ config(materialized='table') }}
SELECT COUNT(DISTINCT user_id) AS active_users
FROM USERACTIVITY

WHERE activity_date >= '2024-01-01' and activity_date <= '2024-01-30'
```

Code output in the snowflake database

• COMPUTE_WH 1 Row. Updated just now

	ACTIVE_USERS
1	5

2.

```
{{ config(materialized='table') }}

SELECT SUM(amount) AS total_sales_revenue
FROM Sales
WHERE sale_date >= '2024-01-01'
    AND sale_date <= '2024-01-31'
```

Code output:

• COMPUTE_WH 1 Row. Updated just now

	TOTAL_SALES_REVENUE
1	168.00

3.

```
{{ config(materialized='table') }}



SELECT category_id,
       AVG(amount) AS average_sale_amount
FROM SALES1
GROUP BY category_id
```

Code output:

• COMPUTE_WH 3 Rows • Updated just now

	CATEGORY_ID	AVERAGE_SALE_AMOUNT
1	C1	100.000000
2	C3	200.000000
3	C2	150.000000

4.

```
{{ config(materialized='table') }}
SELECT user.user_id,
       user.user_name,
       activity.activity_id,
       activity.activity_date,
       user.join_date
FROM USERACTIVITY activity
JOIN USERS user ON user.user_id = activity.user_id
WHERE user.join_date >= '2024-01-01'
    AND user.join_date <= '2024-01-31'
```

Code output:
No output as there were no users who joined in the January.

5.

```
{{ config(materialized='table') }}
SELECT p.category_id,
       c.category_name,
       SUM(s.amount) AS total_sales_amount
FROM Sales1 s
JOIN Products p ON s.product_id = p.product_id
JOIN Categories c ON p.category_id = c.category_id
WHERE s.sale_date >= '2024-01-01'
    AND s.sale_date <= '2024-01-31'
GROUP BY p.category_id,
         c.category_name
ORDER BY total_sales_amount DESC
LIMIT 1
```

Code output:

• COMPUTE_WH 1 Row. Updated just now

	CATEGORY_ID	CATEGORY_NAME	TOTAL_SALES_AMOUNT
1	C2	Clothing	300