RACHIT CHIKARA
ASSESSMENT - DATA ANALYST, PACKT

NOTE - For this assessment, I have created the sample data in MS Excel and imported it into **Microsoft SQL server management Studio**.

Q1 - Assumptions:

Since LF_1, LF_2 & LF_3 are three stages that users go through before onboarding, So to calculate the duration in days that users take before reaching the current stage I am considering the difference that I have to calculate from LF_1 to the current stage and not from the previous stage to the current stage.

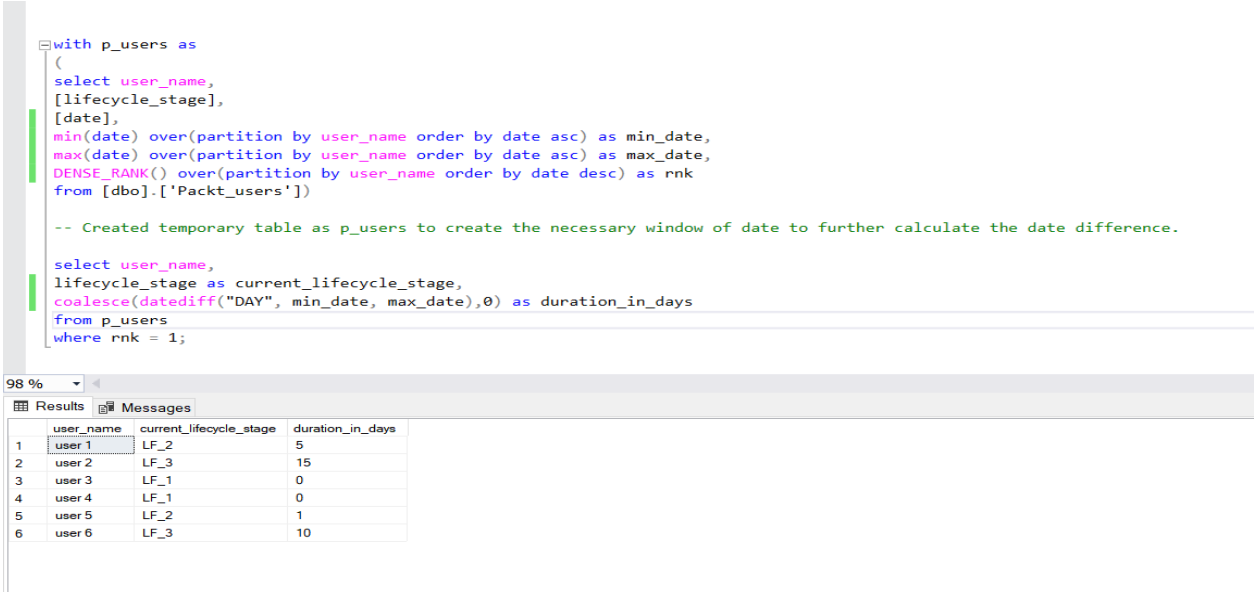
SQL Query 1:

```
with p_users as
(
select user_name,
[lifecycle_stage],
[date],
min(date) over(partition by user_name order by date asc) as min_date,
max(date) over(partition by user_name order by date asc) as max_date,
DENSE_RANK() over(partition by user_name order by date desc) as rnk
from [dbo].['Packt_users'])

-- Created temporary table as p_users to create the necessary window of date
to further calculate the date difference.

select user_name,
lifecycle_stage as current_lifecycle_stage,
coalesce(datediff("DAY", min_date, max_date),0) as duration_in_days
from p_users
where rnk = 1;
```

1st SQL QUERY & OUTPUT IMAGE:



```
with p_users as
(
select user_name,
[lifecycle_stage],
[date],
min(date) over(partition by user_name order by date asc) as min_date,
max(date) over(partition by user_name order by date asc) as max_date,
DENSE_RANK() over(partition by user_name order by date desc) as rnk
from [dbo].['Packt_users'])

-- Created temporary table as p_users to create the necessary window of date to further calculate the date difference.

select user_name,
lifecycle_stage as current_lifecycle_stage,
coalesce(datediff("DAY", min_date, max_date),0) as duration_in_days
from p_users
where rnk = 1;
```

98 %

Results | Messages

	user_name	current_lifecycle_stage	duration_in_days
1	user 1	LF_2	5
2	user 2	LF_3	15
3	user 3	LF_1	0
4	user 4	LF_1	0
5	user 5	LF_2	1
6	user 6	LF_3	10

Q2 - Assumptions:

To write a SQL query to find the days when the sales were higher than the previous day. I am assuming that the ID column in the given sample data is the order ID. Also, I am considering the order ID as a primary key for the given data. it should be unique. If there are any duplicate ID values, this means that there are duplicate records in the data. These **duplicate records** should be **removed** before starting any **analysis**. So I have done the required analysis only after considering that ID(4, 5 & 6) are the duplicate values.

SQL Query 2:

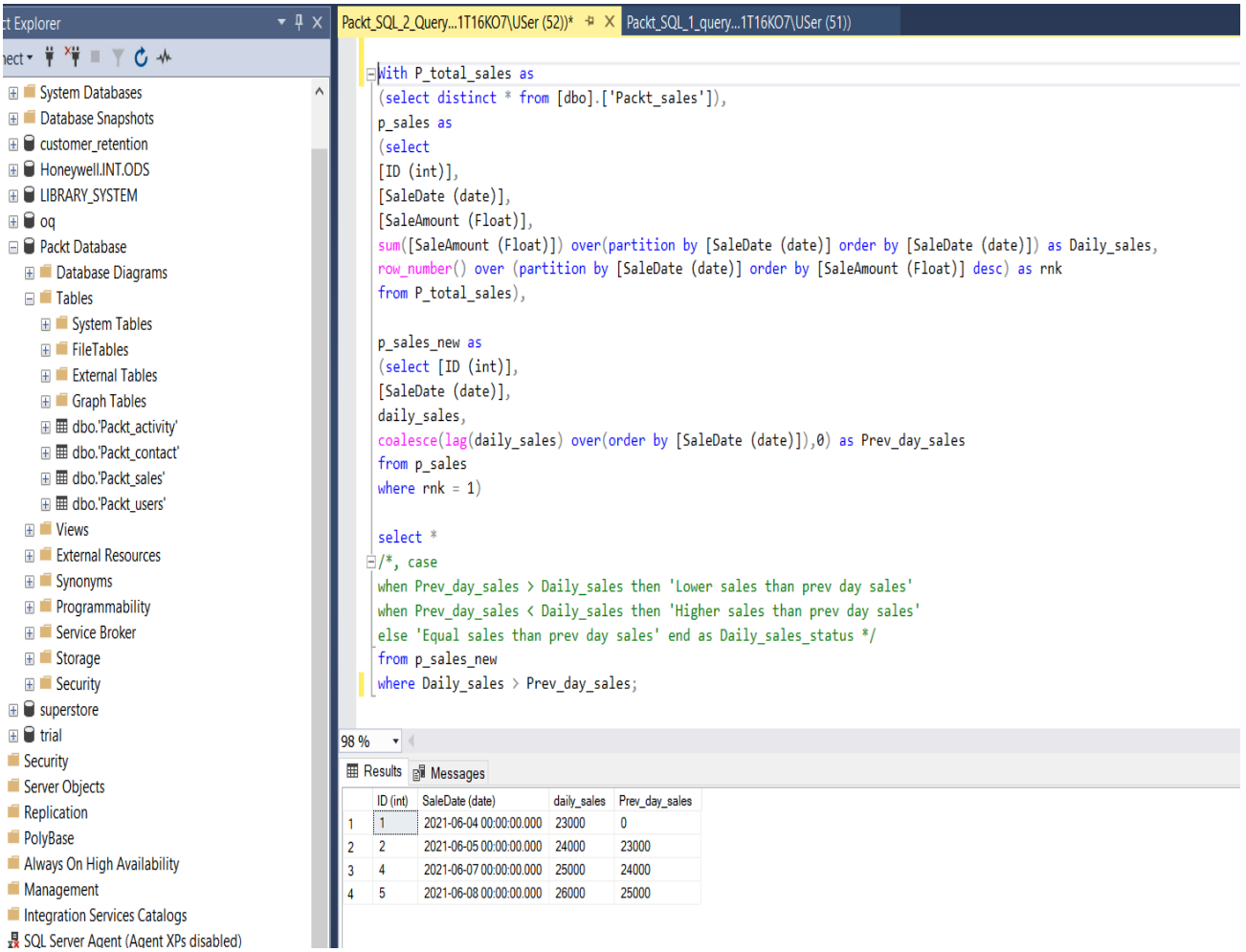
```
With P_total_sales as
(select distinct * from [dbo].['Packt_sales']),
p_sales as
(select
[ID (int)],
[SaleDate (date)],
[SaleAmount (Float)],
sum([SaleAmount (Float)]) over(partition by [SaleDate (date)] order by
[SaleDate (date)]) as Daily_sales,
row_number() over (partition by [SaleDate (date)] order by [SaleAmount (Float)]
desc) as rnk
from P_total_sales),

p_sales_new as
(select [ID (int)],
[SaleDate (date)],
daily_sales,
coalesce(lag(daily_sales) over(order by [SaleDate (date)]),0) as Prev_day_sales
from p_sales
where rnk = 1)

select *
/*, case
when Prev_day_sales > Daily_sales then 'Lower sales than prev day sales'
when Prev_day_sales < Daily_sales then 'Higher sales than prev day sales'
else 'Equal sales than prev day sales' end as Daily_sales_status */
from p_sales_new
where Daily_sales > Prev_day_sales;
```

/* Filtering out only records where present-day sales are higher than the previous day's sales using where clause */

2nd SQL QUERY & OUTPUT IMAGE:



Q3 - Assumptions:

To write a SQL query to delete the duplicate records and to display invalid emails.
I am considering these guidelines for an email address to be a valid email address:

1. It must have at least one @ symbol. The @ symbol separates the username from the domain name.
2. It must have a username. The username is part of the email address that comes before the @ symbol. It can be any combination of letters, numbers, and underscores.
3. It must have a domain name. The domain name is the part of the email address that comes after the @ symbol. It is usually the name of the email service provider, such as Gmail, Yahoo, or Outlook.
4. It must have a top-level domain. The top-level domain is the part of the domain name that comes after the period. It is usually a 2-letter code that indicates the country or region where the email service provider is located, such as .com.

5. It must be at least 3 characters long. The shortest possible email address is 3 characters long, such as "a@b.c".

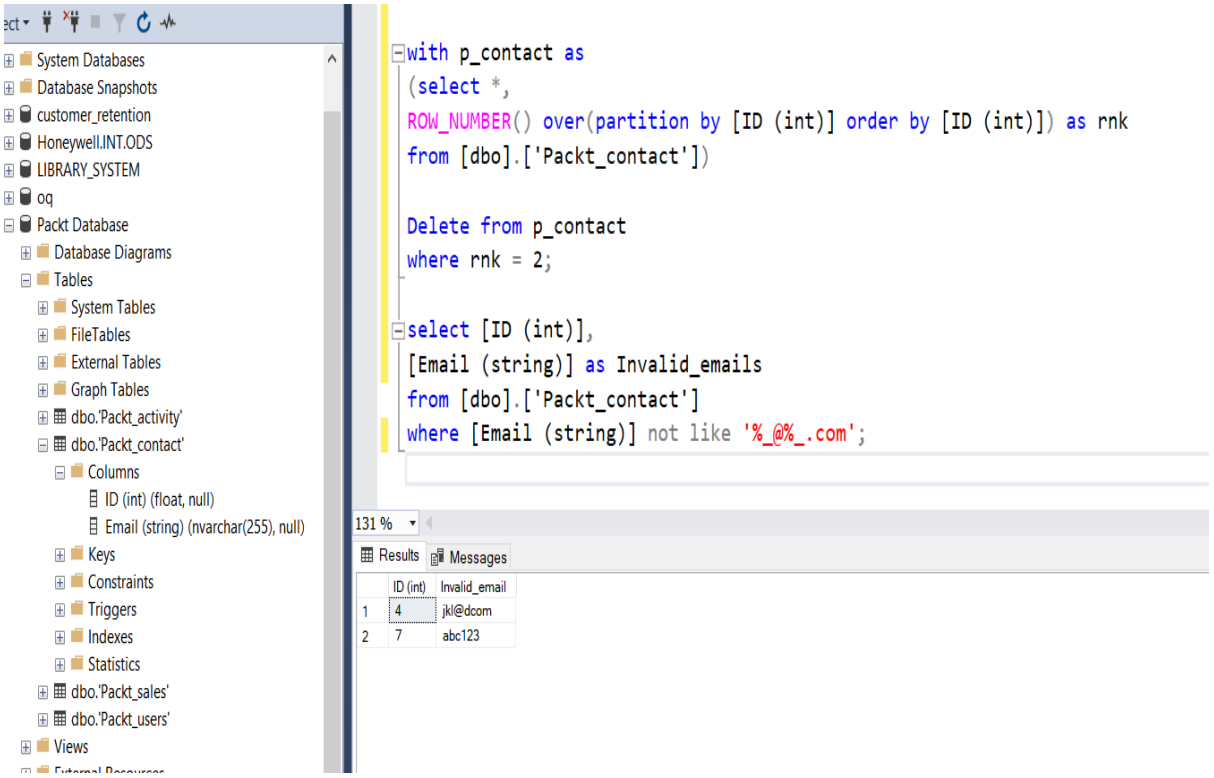
SQL Query 3:

```
with p_contact as
(select *,
ROW_NUMBER() over(partition by [ID (int)] order by [ID (int)]) as rnk
from [dbo].['Packt_contact'])

Delete from p_contact
where rnk = 2;

select [ID (int)],
[Email (string)] as Invalid_emails
from [dbo].['Packt_contact']
where [Email (string)] not like '%_@%_.com';
```

3rd SQL QUERY & OUTPUT IMAGE:



Q4 - Assumptions:

For the given sample data of the activity of users & to write a SQL query to find the users who got a "credit" for their streak completion. Where, a continuous activity of four weeks is considered a streak completion (i.e., a user must be active at least once a week for 4 consecutive weeks Also, I am considering that in case a user is active for more than once in a week will only be considered as the one streak.

SQL Query 4:

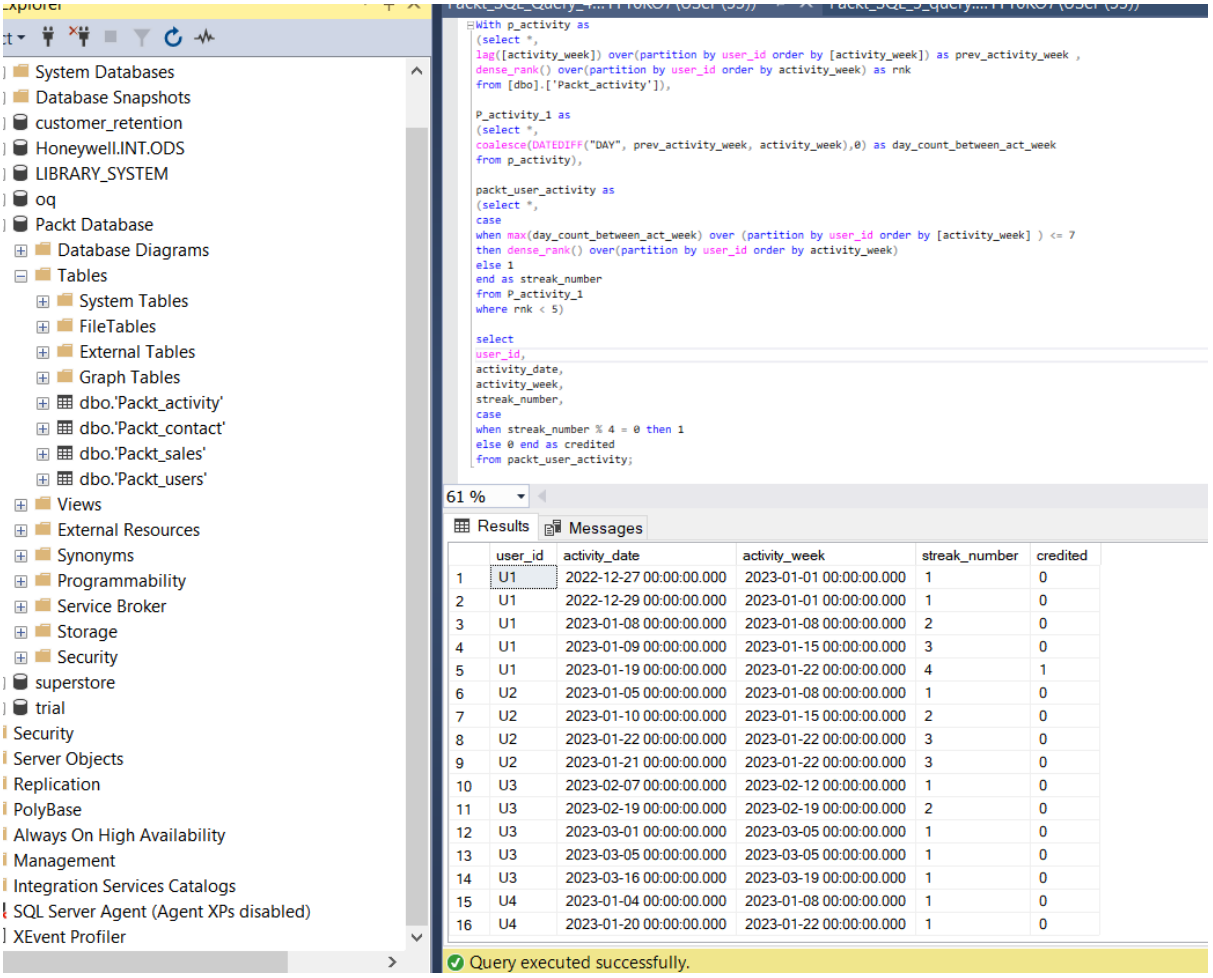
```
With p_activity as
(select *,
lag([activity_week]) over(partition by user_id order by [activity_week]) as
prev_activity_week ,
dense_rank() over(partition by user_id order by activity_week) as rnk
from [dbo].['Packt_activity']),

P_activity_1 as
(select *,
coalesce(DATEDIFF("DAY", prev_activity_week, activity_week),0) as
day_count_between_act_week
from p_activity),

packt_user_activity as
(select *,
case
when max(day_count_between_act_week) over (partition by user_id order by
[activity_week] ) <= 7
then dense_rank() over(partition by user_id order by activity_week)
else 1
end as streak_number
from P_activity_1
where rnk < 5)

select
user_id,
activity_date,
activity_week,
streak_number,
case
when streak_number % 4 = 0 then 1
else 0 end as credited
from packt_user_activity;
```

4th SQL QUERY & OUTPUT IMAGE:



	user_id	activity_date	activity_week	streak_number	credited
1	U1	2022-12-27 00:00:00.000	2023-01-01 00:00:00.000	1	0
2	U1	2022-12-29 00:00:00.000	2023-01-01 00:00:00.000	1	0
3	U1	2023-01-08 00:00:00.000	2023-01-08 00:00:00.000	2	0
4	U1	2023-01-09 00:00:00.000	2023-01-15 00:00:00.000	3	0
5	U1	2023-01-19 00:00:00.000	2023-01-22 00:00:00.000	4	1
6	U2	2023-01-05 00:00:00.000	2023-01-08 00:00:00.000	1	0
7	U2	2023-01-10 00:00:00.000	2023-01-15 00:00:00.000	2	0
8	U2	2023-01-22 00:00:00.000	2023-01-22 00:00:00.000	3	0
9	U2	2023-01-21 00:00:00.000	2023-01-22 00:00:00.000	3	0
10	U3	2023-02-07 00:00:00.000	2023-02-12 00:00:00.000	1	0
11	U3	2023-02-19 00:00:00.000	2023-02-19 00:00:00.000	2	0
12	U3	2023-03-01 00:00:00.000	2023-03-05 00:00:00.000	1	0
13	U3	2023-03-05 00:00:00.000	2023-03-05 00:00:00.000	1	0
14	U3	2023-03-16 00:00:00.000	2023-03-19 00:00:00.000	1	0
15	U4	2023-01-04 00:00:00.000	2023-01-08 00:00:00.000	1	0
16	U4	2023-01-20 00:00:00.000	2023-01-22 00:00:00.000	1	0