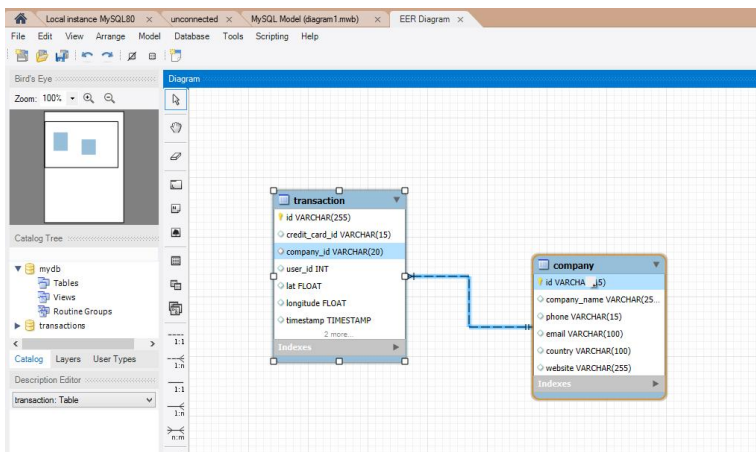


LEVEL1

- Exercise 1

Based on the attached documents (data_structure and input_data), import the two tables. Show the main features of the schema created and explain the different tables and variables that exist. Be sure to include a diagram that illustrates the relationship between the different tables and variables.

Database>Reverse Engineer:



- Exercise 2

Using JOIN you will perform the following queries:

2-1- List of countries that are making purchases:

```
select distinct c.country
```

```
from company c
```

```
Join transaction t on c.id=t.company_id
```

where t.declined=0;

The screenshot shows the SQL Server Enterprise Manager interface. The left pane displays the 'Schemas' tree with 'transactions' expanded. The central pane shows a query in the 'SQL File 9' window:

```
1 #M1-E2-1: list of countries that are making purchases: (assuming that declined=1 is false)
2 select distinct c.country
3 from company c
4 Join transaction t on c.id=t.company_id
5 where t.declined=0;
6
```

The right pane shows the 'Result Grid' with the following data:

country
Canada
Germany
Italy
United Kingdom
Sweden

Below the result grid, the 'Output' pane shows the 'Action Output' table:

#	Time	Action	Message	Duration / Fetch
6	11:25:41	select count(distinct c.country) as num_countries_purchase_made from comp...	1 row(s) returned	0.000 sec / 0.000 sec
7	11:25:58	select distinct c.country from company c Join transaction t on c.id=t.company...	15 row(s) returned	0.000 sec / 0.000 sec

2-2- From how many countries purchases are made:

select count(distinct c.country) as num_countries_purchase_made

from company c

Join transaction t on c.id=t.company_id

where t.declined=0;

The screenshot shows the SQL Server Enterprise Manager interface. The left pane displays the 'Schemas' tree with 'transactions' expanded. The central pane shows a query in the 'SQL File 9' window:

```
1 #M1-E2-2: From how many countries are purchases made?
2 * select count(distinct c.country) as num_countries_purchase_made
3 from company c
4 Join transaction t on c.id=t.company_id
5 where t.declined=0;
6
```

The right pane shows the 'Result Grid' with the following data:

num_countries_purchase_made
15

Below the result grid, the 'Output' pane shows the 'Action Output' table:

#	Time	Action	Message	Duration / Fetch
7	11:25:58	select distinct c.country from company c Join transaction t on c.id=t.company...	15 row(s) returned	0.000 sec / 0.000 sec
8	11:27:49	select count(distinct c.country) as num_countries_purchase_made from compa...	1 row(s) returned	0.000 sec / 0.000 sec

2-3- Identify the company with the highest average sales.

#1 (sin subquery)

```
select c.company_name, avg(t.amount) as avg_amount_company  
  
from company c  
  
Join transaction t on c.id=t.company_id  
  
where t.declined=0  
  
group by 1  
  
order by 2 desc limit 1;
```

#with subquery:

```
select company_name, avg_sales  
  
from (  
  
    select c.company_name, avg(t.amount) as avg_sales  
  
    from company c  
  
    join transaction t on c.id = t.company_id  
  
    where t.declined = 0  
  
    group by c.company_name  
  
) as sales_data  
  
order by avg_sales desc  
  
limit 1;
```

The screenshot shows the SQL Server Enterprise Manager interface. The left pane displays the 'Schemas' tree with 'company' and 'transaction' tables. The main query window contains the following SQL code:

```

1  -- con subquery
2  SELECT tt.transaction_date, tt.total_transaction
3  FROM (SELECT DATE(t.timestamp) AS transaction_date, SUM(t.amount) AS total_transaction
4        FROM transaction t
5        WHERE t.declined = 0
6        GROUP BY DATE(t.timestamp))
7  ) AS tt
8  ORDER BY tt.total_transaction DESC
9  LIMIT 5;
10

```

The 'Results' pane shows the output of the query:

transaction_date	total_transaction
2021-12-20	1332.36
2021-04-22	1307.96
2021-05-09	1344.37
2022-03-26	1337.62
2021-03-29	1325.12

The 'Output' pane shows the execution plan and messages:

Time	Action	Message	Duration / Feat
8 11:27:49	select count(distinct c.country) as num_countries_purchased_made from comp...	1 row(s) returned	0.000 sec / 0.000 sec
9 11:29:30	SELECT transaction_date, total_transaction FROM (SELECT DATE(t.timestamp) AS transac...	5 row(s) returned	0.000 sec / 0.000 sec

- Exercise 3

Using only subqueries (without using JOIN):

3-1- Show all transactions made by companies in Germany.

select * from transaction t

where t.company_id in (select c.id

from company c

where c.country = 'Germany');

The screenshot shows the SQL Server Enterprise Manager interface. The left pane displays the 'Schemas' tree with 'company' and 'transaction' tables. The main query window contains the following SQL code:

```

1  select * from transaction t
2  where t.company_id in (select c.id
3    from company c
4    where c.country = 'Germany');

```

The 'Results' pane shows the output of the query:

id	credit_card_id	company_id	user_id	lat	longitude	timestamp	amount	declined	
1088	1D-8B23-A76C-58EF-C58B-60A05D0	CU-2938	b-2222	275	83.7839	-176.86	2021-07-07 17:45:16	293.57	0
84AC2B1-C0C1-A307-4F8F-709F-8B5AC76	CU-2938	b-2222	275	20.2004	-165.84	2021-05-09 00:25:08	119.36	1	
0C028508-5C9E-0383-4999-999F-43AD735A	CU-2939	b-211-2222	275	8.68811	130.282	2021-04-17 05:30:17	252.47	1	
A8099F51-560E-A2A8-C206-CAC0-4F952051	CU-2234	b-2234	275	1.64018	-158.007	2021-04-15 13:37:18	60.99	0	
0466A4E-407-6024F0D1-C0869713128	CU-4219	b-2302	170	-53.9695	-117.523	2021-07-20 07:29:18	49.53	0	
0A47MED9-0C13-1962-F87B-D35639248539	CU-4339	b-2302	221	-56.4901	114.801	2022-02-26 20:33:94	430.49	0	
1220C333-E19F-0629-C03B-9C54CF1B8B9A	CU-4366	b-2302	221	29.6372	-166.173	2021-06-09 06:04:14	172.01	0	
1153878A-5E7D-4D7C-CC0C-6160A3B85041	CU-4520	b-2302	710	29.4724	-94.9752	2021-12-20 20:38:23	17.97	0	
1ACAE3B5-8F81-8E4A-43B0-6E4167534F4	CU-4849	b-2302	189	-53.6302	93.0533	2021-12-31 00:20:42	388.04	0	
158A3ACB-941C-DBCC-438D-6373C59F1C	CU-4849	b-2302	183	-42.3424	-170.347	2022-03-08 03:05:19	245.29	0	
16C7C7B-2686-797A-4F42-12A67732451	CU-4507	b-2302	710	-69.1381	56.0517	2021-04-11 05:05:18	231.26	0	
171F08B-ADAD-7082-A748-9112B8923CC	CU-4219	b-2302	172	69.4892	-138.411	2021-12-29 16:18:54	249.91	0	

The 'Output' pane shows the execution plan and messages:

Time	Action	Message	Duration / Feat
9 11:29:30	SELECT transaction_date, total_transaction FROM (SELECT DATE(t.timestamp) AS transac...	5 row(s) returned	0.000 sec / 0.000 sec
10 11:32:06	select * from transaction t where t.company_id in (select c.id from company c where c.c...	118 row(s) returned	0.000 sec / 0.000 sec

3-2- List the companies that have made transactions for an amount greater than the average of all transactions.

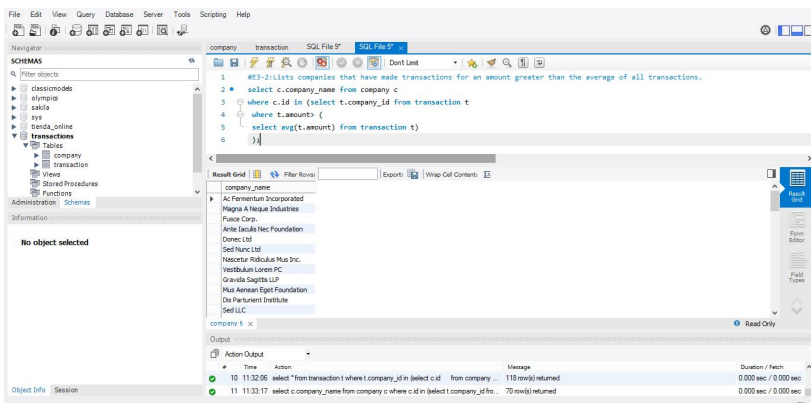
```
select c.company_name from company c

where c.id in (select t.company_id from transaction t

where t.amount> (

select avg(t.amount) from transaction t)

);
```



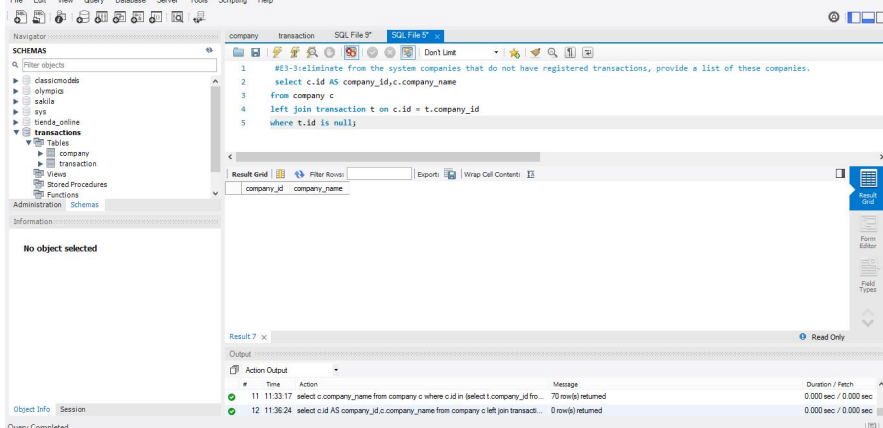
3-3- Remove from the system the companies that have no transactions recorded, return the list of these companies.

```
SELECT c.id AS company_id, c.company_name

FROM company c

LEFT JOIN transaction t ON c.id = t.company_id

WHERE t.id IS NULL;
```



LEVEL2

Exercise 1

Identify the five days that generated the highest amount of revenue for the company from sales. Show the date of each transaction along with the total sales.

#sin subquery

select date(t.timestamp), sum(t.amount) as total_transaction from
transaction t

where t.declined= 0

group by 1 order by 2 desc limit 5;

#2 con subquery

SELECT tt.transaction_date, tt.total_transaction

FROM (SELECT date(t.timestamp) AS transaction_date, SUM(t.amount)

AS total_transaction

FROM transaction t

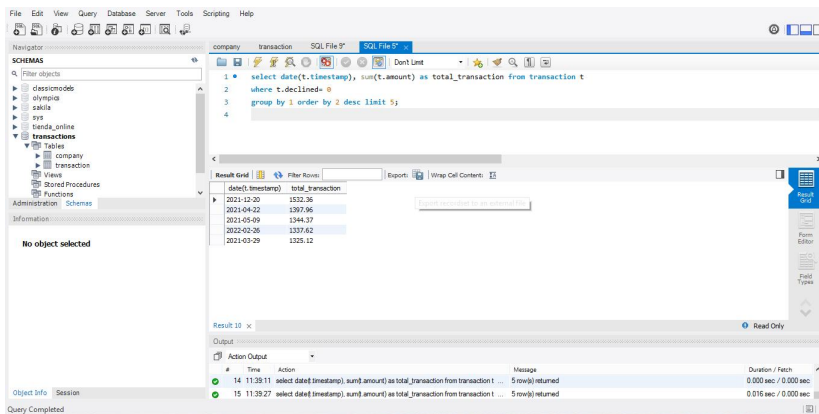
WHERE t.declined = 0

GROUP BY DATE(t.timestamp)

) AS tt

ORDER BY tt.total_transaction DESC

LIMIT 5;



Exercise 2

What is the average sales by country? Present the results in order from highest to lowest average.

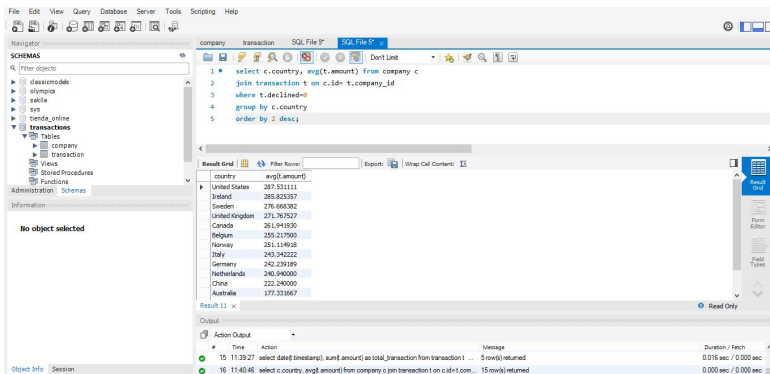
select c.country, avg(t.amount) from company c

join transaction t on c.id= t.company_id

where t.declined=0

group by c.country

order by 2 desc;



Exercise 3

Your company is considering a new project to launch some advertising campaigns to compete with the company "Non Institute". To do this, you are asked for a list of all the transactions made by companies that are located in the same country as this company.

3-1- Show the list using JOIN and subqueries.

select * from transaction t

join company c on t.company_id=c.id

where c.country=(select c.country from company c

where c.company_name='non institute');


```
select *
```

from transaction t

```
where t.company_id in (select c.id from company c
```

where c.country = (select country from company

```
where company_name = 'Non Institute'));
```

Level 3

Exercise 1

Present the name, telephone number, country, date and amount of those companies that made transactions with a value between 100 and 200 euros and on any of these dates: April 29, 2021, July 20, 2021 and March 13, 2022. Sort the results from highest to lowest amount.

```
select c.company_name, c.phone, c.country, date(t.timestamp),  
t.amount from transaction t
```

```
join company c ON t.company_id = c.id
```

where t.amount between 100 and 200

```
and date(t.timestamp) in ('2021-04-29', '2021-07-20', '2022-03-13')  
and t.declined=0
```

order by t.amount desc;

The screenshot shows the SQL Developer interface with a query window titled 'SQL File 1'. The query is as follows:

```
1 select c.company_name, c.phone, c.country, date(t.timestamp), t.amount from transaction t  
2 join company c ON t.company_id = c.id  
3 where t.amount between 100 and 200  
4 and date(t.timestamp) in ('2021-04-29', '2021-07-20', '2022-03-13') and t.declined=0  
5 order by t.amount desc;  
6
```

The 'Result Grid' displays the following data:

company_name	phone	country	date(timestamp)	amount
Praterman Feagat Seel Associates	04 88 40 32 52	United Kingdom	2021-07-20	164.86
Nanc Interban Incorporated	05 18 15 48 13	Germany	2022-03-13	164.32
Banc Condemban Ltd	09 55 51 66 25	United Kingdom	2021-04-29	149.89
Larem Bu Incorporated	01 83 66 62 07	Canada	2021-07-20	133.39
Nanc Interban Incorporated	05 18 15 48 13	Germany	2021-04-29	111.51

The 'Output' window shows the execution of the query:

Action	Message	Duration / Fetch
18 11:59:25 select * from transaction t where t.company_id in (select c.id from company c ...	100 row(s) returned	0.000 sec / 0.000 sec
19 12:06:31 select c.company_name, c.phone, c.country, date(timestamp), t.amount from t...	5 row(s) returned	0.000 sec / 0.000 sec

Exercise 2

We need to optimize the allocation of resources and it will depend on the operational capacity required, so they ask you for information on the number of transactions that companies make, but the human resources department is demanding and wants a list of companies where you specify if they have more than 4 transactions or less.

#1:union

```
select c.company_name, count(t.id) as transaction_count, 'More  
than 4 transactions' as transaction_status
```

```
from company c join transaction t on c.id = t.company_id
```

```
group by c.id, c.company_name
```

```
having COUNT(t.id) > 4
```

union

```
select c.company_name, count(t.id) as transaction_count, '4 or  
fewer transactions' as transaction_status
```

```
from company c
```

```
join transaction t on c.id = t.company_id
```

```
group by c.id, c.company_name
```

```
having count(t.id) <= 4 order by 2 desc;
```

#2:Case

```
SELECT c.company_name, COUNT(t.id) AS transaction_count,
```

CASE

WHEN COUNT(t.id) > 4 THEN 'More than 4 transactions'

ELSE '4 or fewer transactions'

END AS transaction_status

FROM company c

JOIN transaction t

ON c.id = t.company_id

GROUP BY c.id, c.company_name

ORDER By transaction_count DESC;

The screenshot shows a SQL IDE interface with a query editor and a results grid. The query editor contains the following SQL code:

```
6 union
7 select c.company_name, count(t.id) as transaction_count, '4 or fewer transactions' as transaction_status
8 from company c
9 join transaction t on c.id = t.company_id
10 group by c.id, c.company_name
11 having count(t.id) <= 4 order by 2 desc;
```

The results grid displays the following data:

company_name	transaction_count	transaction_status
Nunc Interdum Incorporated	105	More than 4 transactions
Ut Semper Foundation	89	More than 4 transactions
Erin Condemnum Ltd	87	More than 4 transactions
Arcu LLP	56	More than 4 transactions
Loren Eu Incorporated	54	More than 4 transactions
Malesuada PC	52	More than 4 transactions
Nam Institute	30	More than 4 transactions
Ac Fermentum Incorporated	2	4 or fewer transactions
Magna A Neque Industries	2	4 or fewer transactions
Ruam Corp	2	4 or fewer transactions
Convallis In Incorporated	2	4 or fewer transactions
Ante Jaculis Nec Foundation	2	4 or fewer transactions

The output pane at the bottom shows the execution details:

Time	Action	Message	Duration / Fetch
20 12:13:06	SELECT	c.company_name, COUNT(t.id) AS transaction_count, CASE... 100 row(s) returned	0.000 sec / 0.000 sec
21 12:13:29	select	c.company_name, count(t.id) as transaction_count, 'More than 4 transact... 100 row(s) returned	0.015 sec / 0.000 sec