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Few SQL projects

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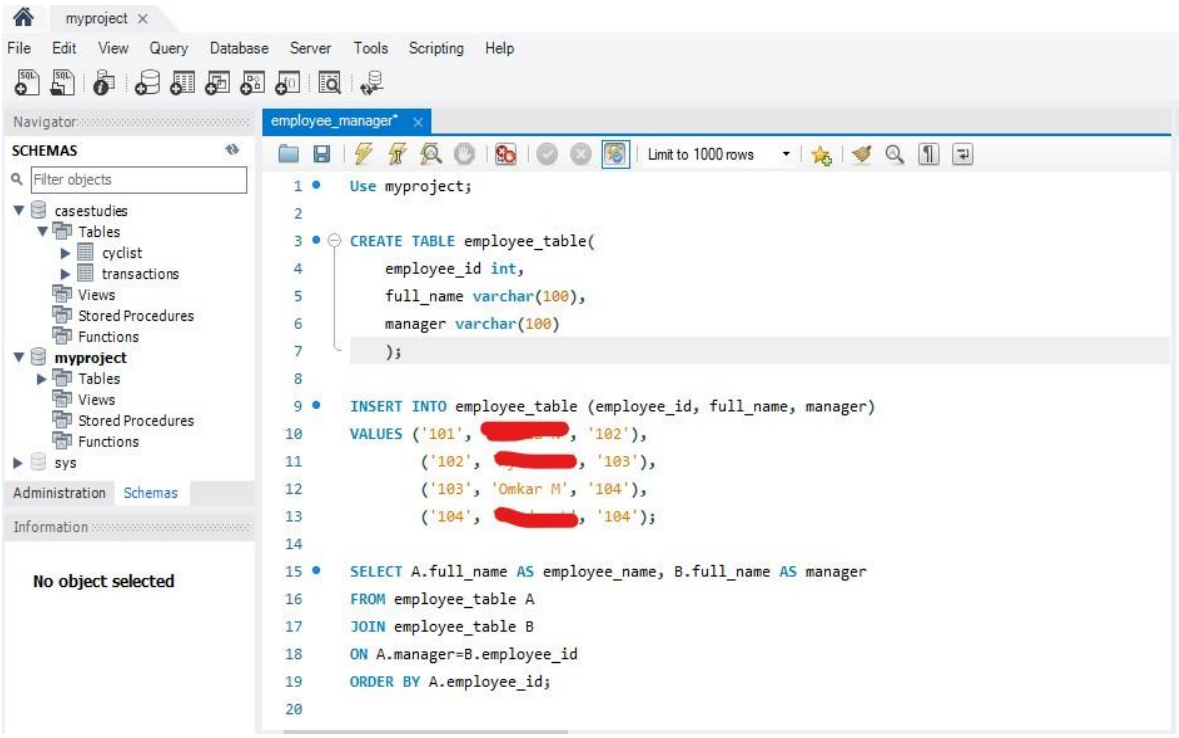
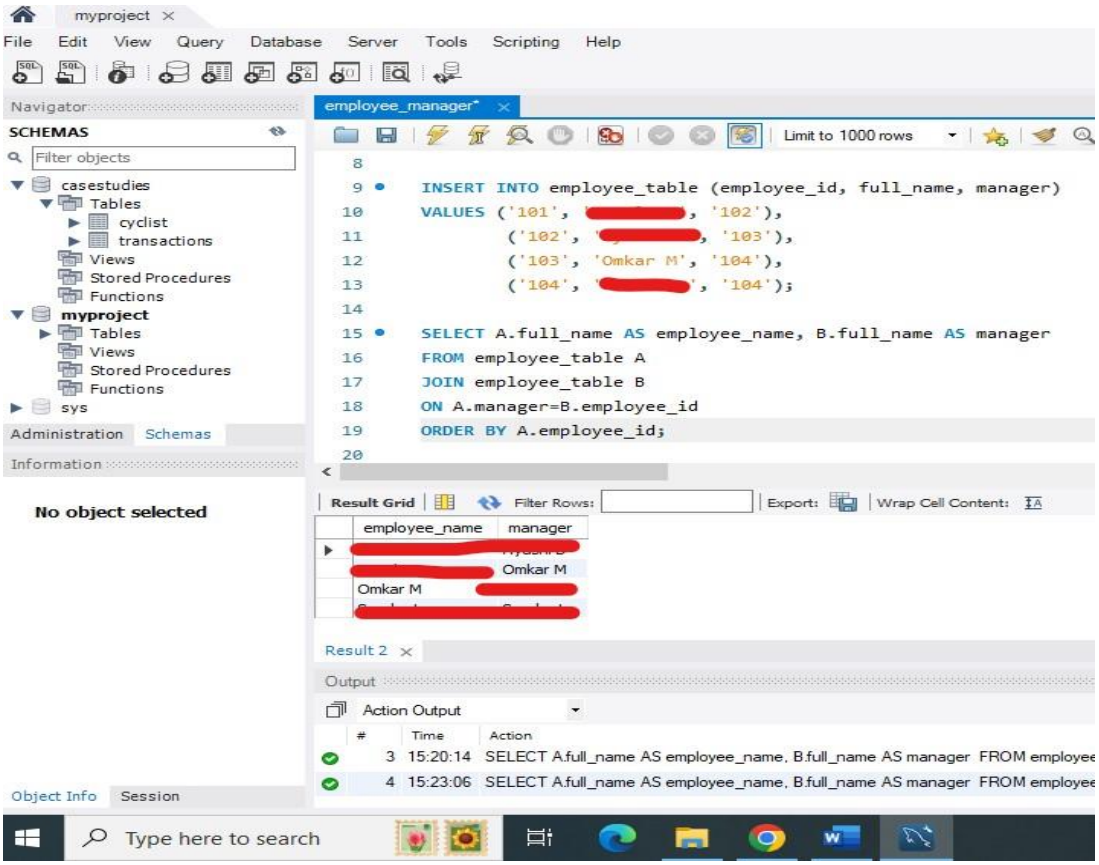
I have done a few projects using SQL for data analysis. I have shared three complex and concise projects in this document. Others have been shared in the GitHub repository. The code is also mentioned in the GitHub codespace.

Project 1 - Employee_Manager Table

1. Created database.
2. Created a table with employees, id and manager. Inserted values.



3. Joined table using self join to produce result as seen below.



SQL code (Also available in GitHub Codespace) –

```
Use myproject;


CREATE TABLE employee_table(
            employee_id int,
   full_name varchar(100),
   manager varchar(100)
   );


INSERT INTO employee_table (employee_id, full_name, manager)
VALUES ('101',                ', '102'),
                    ('102',              ', '103'),
```

```
('103', 'Omkar M', '104'),
('104', '              ', '104');

SELECT A.full_name AS employee_name, B.full_name AS manager
FROM employee_table A
JOIN employee_table B
ON A.manager=B.employee_id
ORDER BY A.employee_id;
```

Project 2 – Credit Limit of Credit Card

1. Created database and Table with transaction id, credit card number, credit card limit and transaction date.
2. Inserted values in the table.

```sql
USE casestudies;

CREATE TABLE Transactions (
    Transaction_Id int,
    Credit_Card_No int,
    Current_Credit_Limit int,
    Transaction_Date date
    );

INSERT INTO Transactions (Transaction_Id, Credit_Card_No, Current_
VALUES ('101', '5909', '5000', '2024-04-04'),
       ('102', '5909', '3000', '2024-01-01'),
       ('103', '5909', '2000', '2023-12-12'),
       ('104', '5000', '1000', '2024-07-07'),
       ('105', '5000', '5000', '2024-05-05'),
       ('106', '5000', '3000', '2023-12-12'),
       ('107', '5000', '3000', '2023-11-11');

SELECT Credit_Card_No,
     Current_Credit_Limit,
```

3. Understood data and framed results using joins.

```
SELECT Credit_Card_No,
     Current_Credit_Limit,
     max(Transaction_Date)
FROM transactions
GROUP BY Credit_Card_No, Current_Credit_Limit;

SELECT Credit_Card_No,
     Current_Credit_Limit
FROM transactions
WHERE Transaction_Date = (SELECT max(Transaction_Date)
                          FROM transactions);

/*
SELECT Credit_Card_No,
     Current_Credit_Limit
FROM transactions
WHERE Transaction_Date = (SELECT max(Transaction_Date)
                          FROM transactions
                          GROUP BY Credit_Card_No)
```

4. Final result was attained using joins, group by and alias.

```
    FROM transactions
    GROUP BY Credit_Card_No)
ON Credit_Card_No.home = groupedtt.home
AND tt.datetime = groupedtt.MaxDateTime;
*/

SELECT Credit_Card_No,
     Current_Credit_Limit
FROM transactions AS a
WHERE Transaction_Date = (SELECT max(Transaction_Date)
                          FROM transactions as b
                          WHERE a.Credit_Card_No = b.Credit_Card_No);
```

Credit_Card_No	Current_Credit_Limit
5909	5000
5000	1000

SQL code (Also available in GitHub Codespace) –

```
USE casestudies;

CREATE TABLE Transactions (
            Transaction_Id int,
   Credit_Card_No int,
   Current_Credit_Limit int,
   Transaction_Date date
   );

INSERT INTO Transactions (Transaction_Id, Credit_Card_No, Current_Credit_Limit, Transaction_Date)
VALUES ('101', '5909', '5000', '2024-04-04'),
                        ('102', '5909', '3000', '2024-01-01'),
      ('103', '5909', '2000', '2023-12-12'),
      ('104', '5000', '1000', '2024-07-07'),
      ('105', '5000', '5000', '2024-05-05'),
      ('106', '5000', '3000', '2023-12-12'),
      ('107', '5000', '3000', '2023-11-11');

SELECT Credit_Card_No,
            Current_Credit_Limit,
    max(Transaction_Date)
FROM transactions
GROUP BY Credit_Card_No, Current_Credit_Limit;

SELECT Credit_Card_No,
            Current_Credit_Limit
FROM transactions
WHERE Transaction_Date = (SELECT max(Transaction_Date)
```

```
                                                    FROM transactions);

/*
SELECT Credit_Card_No,
        Current_Credit_Limit
FROM transactions
WHERE Transaction_Date = (SELECT max(Transaction_Date)
                                                FROM transactions
                                                GROUP BY Credit_Card_No)
                GROUP BY Transaction_Date
    ORDER BY Transaction_Date;

SELECT Credit_Card_No,
        Current_Credit_Limit
FROM transactions AS s1
JOIN (SELECT
  Credit_Card_No,
        Current_Credit_Limit,
  MAX(`Transaction_Date`)
FROM transactions AS dt
GROUP BY Credit_Card_No) AS s2;

  ON s1.Credit_Card_No = s2.Credit_Card_No
ORDER BY `datetime`;

SELECT Credit_Card_No,
        Current_Credit_Limit
FROM transactions
 Transcation_Date;
```

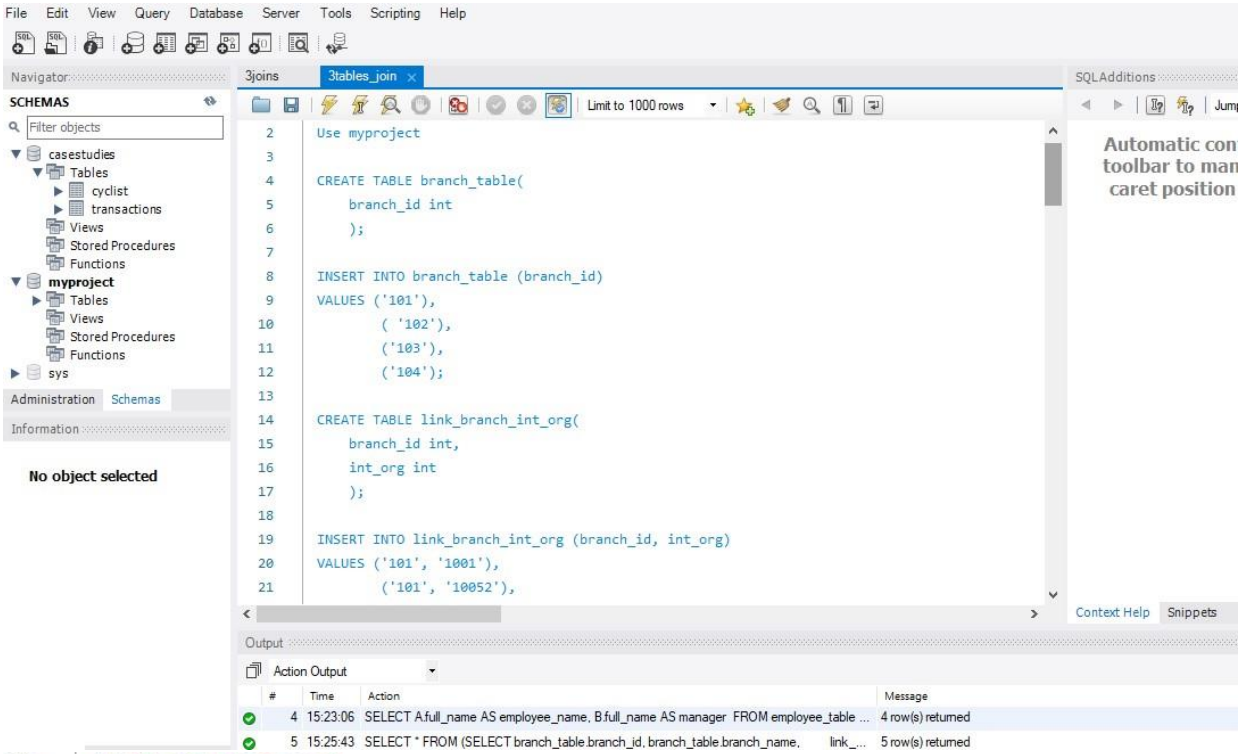
```
SELECT Credit_Card_No,
        Current_Credit_Limit
FROM transactions
INNER JOIN
  (SELECT Credit_Card_No, MAX(Transaction_Date)
  FROM transactions
  GROUP BY Credit_Card_No)
ON Credit_Card_No.home = groupedtt.home
AND tt.datetime = groupedtt.MaxDateTime;
*/

SELECT Credit_Card_No,
        Current_Credit_Limit
FROM transactions AS a
WHERE Transaction_Date = (SELECT max(Transaction_Date)
                          FROM transactions as b
                     WHERE a.Credit_Card_No = b.Credit_Card_No);

SELECT max(Transaction_Date)
                          FROM transactions;
```

Project 3 – Joining 3 tables

1. Created a database and 3 tables.
2. Inserted values in the table.




```
CREATE TABLE int_org(
    int_org int,
    org_name varchar(100),
    code_ int
    );

INSERT INTO int_org (int_org, org_name, code_)
VALUES ('1001', 'Toronto', '03'),
       ('1002', 'Guelph', '03'),
       ('10052', 'null', '04');

SELECT link_branch_int_org.branch_id,
       link_branch_int_org.int_org AS group_code,
       int_org.org_name AS group_name,
       int_org.code_ AS region_code
FROM link_branch_int_org
LEFT JOIN int_org
    ON link_branch_int_org.int_org = int_org.int_org;

ALTER TABLE branch_table
```

```
SELECT *
FROM (SELECT link_branch_int_org.branch_id,
        link_branch_int_org.int_org,
        int_org.org_name,
        int_org.code_
FROM link_branch_int_org
LEFT JOIN int_org
    ON link_branch_int_org.int_org = int_org.int_org
    WHERE int_org.code_ = '03') AS A
LEFT JOIN (SELECT link_branch_int_org.branch_id,
        link_branch_int_org.int_org,
        int_org.org_name,
        int_org.code_
FROM link_branch_int_org
LEFT JOIN int_org
    ON link_branch_int_org.int_org = int_org.int_org
    WHERE int_org.code_ = '04') AS B
    ON A.int_org = B.int_org;
```

Joins 3tables_join

Limit to 1000 rows

```
        link_branch_int_org.int_org
FROM branch_table
INNER JOIN link_branch_int_org
    ON link_branch_int_org.branch_id = branch_table.branch_id) AS A
LEFT JOIN (SELECT link_branch_int_org.branch_id,
        link_branch_int_org.int_org,
        int_org.org_name,
        int_org.code_
FROM link_branch_int_org
LEFT JOIN int_org
    ON link_branch_int_org.int_org = int_org.int_org
    WHERE int_org.code_ = '03') AS B
    ON A.int_org = B.int_org;
```

Result Grid Filter Rows: Export: Wrap Cell Content:

branch_id	int_org	org_name	code_	branch_id	int_org	org_name	code_
101	1001	Toronto	3	NULL	NULL	NULL	NULL
102	1002	Guelph	3	NULL	NULL	NULL	NULL

3. The complex query above created a join and another join in the subquery made it possible to get the desired result.

SQL code (Also available in GitHub Codespace) –

```
/*
Use myproject

CREATE TABLE branch_table(
        branch_id int
  );

INSERT INTO branch_table (branch_id)
VALUES ('101'),
                ( '102'),
    ('103'),
    ('104');

CREATE TABLE link_branch_int_org(
        branch_id int,
  int_org int
  );

INSERT INTO link_branch_int_org (branch_id, int_org)
VALUES ('101', '1001'),
                ('101', '10052'),
    ('102', '1002'),
    ('103', '10052'),
    ('104', null);

CREATE TABLE int_org(
        int_org int,
  org_name varchar(100),
```

```
   code_ int
   );

INSERT INTO int_org (int_org, org_name, code_)
VALUES ('1001', 'Toronto', '03'),
                    ('1002', 'Guelph', '03'),
      ('10052', 'null', '04');

SELECT link_branch_int_org.branch_id,
                    link_branch_int_org.int_org AS group_code,
      int_org.org_name AS group_name,
      int_org.code_ AS region_code
FROM link_branch_int_org
LEFT JOIN int_org
           ON link_branch_int_org.int_org = int_org.int_org;

ALTER TABLE branch_table
ADD branch_name varchar(100);

ALTER TABLE branch_table
ADD PRIMARY KEY (branch_id);

UPDATE branch_table
SET branch_name ='Toronto'
WHERE branch_id = '101';

UPDATE branch_table
SET branch_name ='Guelph'
WHERE branch_id = '102';
```

```
UPDATE branch_table
SET branch_name ='Mississauga'
WHERE branch_id = '103';

UPDATE branch_table
SET branch_name ='Oakville'
WHERE branch_id = '104';

SELECT branch_table.branch_id,
                    branch_table.branch_name,
    link_branch_int_org.int_org
FROM branch_table
INNER JOIN link_branch_int_org
        ON link_branch_int_org.branch_id = branch_table.branch_id;

SELECT link_branch_int_org.branch_id,
                    link_branch_int_org.int_org,
    int_org.org_name,
    int_org.code_
FROM link_branch_int_org
LEFT JOIN int_org
        ON link_branch_int_org.int_org = int_org.int_org;

SELECT link_branch_int_org.branch_id,
                    link_branch_int_org.int_org,
    int_org.org_name,
    int_org.code_
FROM link_branch_int_org
```

```
LEFT JOIN int_org
        ON link_branch_int_org.int_org = int_org.int_org
  WHERE int_org.code_ = '03';

SELECT link_branch_int_org.branch_id,
                link_branch_int_org.int_org,
    int_org.org_name,
    int_org.code_
FROM link_branch_int_org
LEFT JOIN int_org
        ON link_branch_int_org.int_org = int_org.int_org
  WHERE int_org.code_ = '04';
*/

SELECT *
FROM (SELECT link_branch_int_org.branch_id,
                link_branch_int_org.int_org,
    int_org.org_name,
    int_org.code_
FROM link_branch_int_org
LEFT JOIN int_org
        ON link_branch_int_org.int_org = int_org.int_org
  WHERE int_org.code_ = '03') AS A
LEFT JOIN (SELECT link_branch_int_org.branch_id,
                link_branch_int_org.int_org,
    int_org.org_name,
    int_org.code_
FROM link_branch_int_org
LEFT JOIN int_org
```

```
        ON link_branch_int_org.int_org = int_org.int_org
  WHERE int_org.code_ = '04') AS B
        ON A.int_org = B.int_org;


SELECT *
FROM (SELECT branch_table.branch_id,
                 branch_table.branch_name,
     link_branch_int_org.int_org
FROM branch_table
INNER JOIN link_branch_int_org
        ON link_branch_int_org.branch_id = branch_table.branch_id) AS A
LEFT JOIN (SELECT link_branch_int_org.branch_id,
                 link_branch_int_org.int_org,
     int_org.org_name,
     int_org.code_
FROM link_branch_int_org
LEFT JOIN int_org
        ON link_branch_int_org.int_org = int_org.int_org
  WHERE int_org.code_ = '03') AS B
        ON A.int_org = B.int_org;
```