EE477 HW1

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[Task]

1.

```
SELECT firstName, lastName, income
FROM Customer
WHERE income >= 30000 AND income <= 80000
ORDER BY income DESC, lastName, firstName
LIMIT 10;
```

2.

```
SELECT sin, branchName, salary,
    (SELECT salary
    FROM Employee, Branch
    WHERE Branch.branchNumber = OldBranch.branchNumber
    AND managerSIN = sin) - salary AS diffSalary
FROM Employee, Branch OldBranch
WHERE (branchName = 'London' OR branchName = 'New York')
AND Employee.branchNumber = OldBranch.branchNumber
ORDER BY diffSalary
LIMIT 10;
```

3.

```
SELECT firstName, lastName, income
FROM Customer
WHERE income >= ALL
    (SELECT 2*income
    FROM Customer
    WHERE lastName = 'Butler')
ORDER BY lastName, firstName
LIMIT 10;
```

4.

```
SELECT customerID, income, accNumber, branchNumber
FROM Customer
INNER JOIN Owns USING(customerID)
INNER JOIN Account USING(accNumber)
WHERE income > 70000
AND customerID IN
    (SELECT * FROM
        ((SELECT customerID
        FROM Customer
        INNER JOIN Owns USING(customerID)
        INNER JOIN Account USING(accNumber)
        INNER JOIN Branch USING(branchNumber)
```

```
        WHERE branchName = 'London')
        UNION
        (SELECT customerID
        FROM Customer
        INNER JOIN Owns USING(customerID)
        INNER JOIN Account USING(accNumber)
        INNER JOIN Branch USING(branchNumber)
        WHERE branchName = 'Latveria')) A)
ORDER BY customerID, accNumber
LIMIT 10;
```

5.

```
SELECT customerID, type, accNumber, balance
FROM Customer
INNER JOIN Owns USING(customerID)
INNER JOIN Account USING(accNumber)
WHERE type = 'BUS' OR type = 'SAV'
ORDER BY customerID, type, accNumber
LIMIT 10;
```

6.

```
SELECT branchName, accNumber, balance
FROM Account
INNER JOIN Branch USING(branchNumber)
INNER JOIN Employee ON sin = managerSIN
WHERE firstName = 'Phillip'
AND lastName = 'Edwards'
AND balance > 80000
ORDER BY accNumber
LIMIT 10;
```

7.

```
SELECT DISTINCT customerID FROM
    (SELECT customerID
    FROM Customer
    INNER JOIN Owns USING(customerID)
    INNER JOIN Account USING(accNumber)
    INNER JOIN Branch USING(branchNumber)
    WHERE branchName = 'New York') A
LEFT JOIN
    (SELECT customerID
    FROM Owns
    WHERE accNumber IN
```

```
        (SELECT accNumber
        FROM Owns
        WHERE customerID IN
            (SELECT customerID
            FROM Customer
            INNER JOIN Owns USING(customerID)
            INNER JOIN Account USING(accNumber)
            INNER JOIN Branch USING(branchNumber)
            WHERE branchName = 'London'))) B USING(customerID)
WHERE B.customerID IS NULL
ORDER BY customerID
LIMIT 10;
```

8.

```
SELECT sin, firstName, lastName, salary, branchName
FROM Employee
LEFT JOIN Branch ON sin = managerSIN
WHERE salary > 60000
ORDER BY branchName DESC, firstName
LIMIT 10;
```

9.

```
SELECT * FROM
    ((SELECT sin, firstName, lastName, salary, branchName
    FROM Employee, Branch
    WHERE salary > 60000
    AND sin = managerSIN)
    UNION
    (SELECT sin, firstName, lastName, salary, NULL AS branchName
    FROM Employee, Branch
    WHERE salary > 60000
    AND sin NOT IN
        (SELECT managerSIN
        FROM Branch))) A
ORDER BY branchName DESC, firstName
LIMIT 10;
```

10.

```
SELECT customerID, firstName, lastName, income
FROM Customer
WHERE income > 6000
AND customerID NOT IN
    (SELECT B.customerID FROM
        (SELECT customerID, branchNumber
```

```
        FROM Customer,
            (SELECT branchNumber
            FROM Customer
            INNER JOIN Owns USING(customerID)
            INNER JOIN Account USING(accNumber)
            INNER JOIN Branch USING(branchNumber)
            WHERE firstName = 'Helen' AND lastName = 'Morgan') A) B
    LEFT JOIN
        (SELECT customerID, branchNumber
        FROM Customer
        INNER JOIN Owns USING(customerID)
        INNER JOIN Account USING(accNumber)
        INNER JOIN Branch USING(branchNumber)) C
    ON B.customerID = C.customerID
    AND B.branchNumber = C.branchNumber
    WHERE C.branchNumber IS NULL)
ORDER BY income DESC
LIMIT 10;
```

11.

```
SELECT sin, firstName, lastName, salary
FROM Employee
INNER JOIN Branch USING(branchNumber)
WHERE branchName = 'Berlin'
And salary =
    (SELECT MIN(salary)
    FROM Employee
    INNER JOIN Branch USING(branchNumber)
    WHERE branchName = 'Berlin')
ORDER BY sin
LIMIT 10;
```

12.

```
SELECT branchName, MAX(salary) - MIN(salary) AS salarygap, AVG(salary) AS avgSalary
FROM Employee
INNER JOIN Branch USING(branchNumber)
GROUP BY branchName
ORDER BY salarygap
LIMIT 10;
```

13.

```
SELECT COUNT(sin) AS numEmployee , COUNT(DISTINCT lastName) AS numLastname
FROM Employee
INNER JOIN Branch USING(branchNumber)
WHERE branchName = 'New York'
LIMIT 10;
```

14.

```
SELECT SUM(salary) AS sumSalary
FROM Employee
INNER JOIN Branch USING(branchNumber)
WHERE branchName = 'Berlin'
LIMIT 10;
```

15.

```
SELECT customerID, firstName, lastName
FROM Customer
INNER JOIN Owns USING(customerID)
INNER JOIN Account USING(accNumber)
INNER JOIN Branch USING(branchNumber)
GROUP BY customerID
HAVING COUNT(DISTINCT branchName) = 3
ORDER BY lastName, firstName
```

```
LIMIT 10;
```

16.

```
SELECT * FROM
    (SELECT
        (SELECT AVG(income)
        FROM Customer
        WHERE TIMESTAMPDIFF(YEAR, birthData, '2021-04-02') > 58)
    AS avgIncomeOld,
        (SELECT AVG(income)
        FROM Customer
        WHERE TIMESTAMPDIFF(YEAR, birthData, '2021-04-02') < 28)
    AS avgIncomeYoung) A
LIMIT 10;
```

17.

```
SELECT customerID, firstName, income, avgBalance FROM
    (SELECT customerID, firstName, lastName, income, AVG(balance) AS avgBalance
    FROM Customer
    INNER JOIN Owns USING(customerID)
    INNER JOIN Account USING(accNumber)
    GROUP BY customerID
    HAVING COUNT(accNumber) >= 3
```

```
    AND lastName LIKE 'S%e%') A
ORDER BY customerID
LIMIT 10;
```

18.

```
SELECT accNumber, balance, SUM(amount) AS sumAmount, balance - SUM(amount) AS remain
FROM Account
INNER JOIN Branch USING(branchNumber)
INNER JOIN Transactions USING(accNumber)
WHERE branchName = 'London'
GROUP BY accNumber
HAVING COUNT(transNumber) >= 14
ORDER BY sumAmount
LIMIT 10;
```

19.

```
SELECT branchName, type, AVG(amount) AS avgAmount
FROM Branch
INNER JOIN Account USING(branchNumber)
INNER JOIN Transactions USING(accNumber)
WHERE branchName IN
    (SELECT branchName
    FROM Branch
```

```
    INNER JOIN Account USING(branchNumber)
    GROUP BY branchName
    HAVING COUNT(accNumber) >= 40)
GROUP BY branchName, type
ORDER BY branchName, type
LIMIT 10;
```

20.

```
SELECT type, accNumber, transNumber, amount
FROM Account
INNER JOIN Transactions USING(accNumber)
WHERE accNumber IN
    (SELECT accNumber
    FROM
        (SELECT type, 2.5*AVG(amount) AS stdAvgAmount
        FROM Account
        INNER JOIN Transactions USING(accNumber)
        GROUP BY type) A
    INNER JOIN
        (SELECT accNumber, AVG(amount) AS avgAmount, type
        FROM Account
        INNER JOIN Transactions USING(accNumber)
        GROUP BY accNumber) B USING(type)
```

```
    WHERE avgAmount > stdAvgAmount)
ORDER BY type, accNumber, transNumber
LIMIT 10;
```