CSE302 (Section 1)
[SUMMER 2023]

Lab Assignment Submission Report

Assignment Title: Lab 05 OFFLINE

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Lab Tusk 1:

```
SQL> --1 non sub
SQL> SELECT
  2      CUSTOMER_NAME,
  3      CUSTOMER_CITY,
  4      CUSTOMER_STREET
  5  FROM
  6      CUSTOMER
  7      NATURAL JOIN DEPOSITOR
  8      NATURAL JOIN ACCOUNT
  9      NATURAL JOIN BRANCH INTERSECT
 10      SELECT
 11          CUSTOMER_NAME,
 12          BRANCH_CITY,
 13          CUSTOMER_STREET
 14      FROM
 15          CUSTOMER
 16          NATURAL JOIN DEPOSITOR
 17          NATURAL JOIN ACCOUNT
 18          NATURAL JOIN BRANCH;

CUSTOMER_NAME   CUSTOMER_CITY   CUSTOMER_STR
--------------- --------------- ------------
Majeris         Rye             First
Smith           Rye             Main
```

```
SQL> SELECT
  2      CUSTOMER_NAME,
  3      CUSTOMER_STREET,
  4      CUSTOMER_CITY
  5  FROM
  6      CUSTOMER  CUS
  7  WHERE
  8      CUSTOMER_CITY = SOME (
  9          SELECT
 10              BRANCH_CITY
 11          FROM
 12              BRANCH
 13              NATURAL JOIN ACCOUNT
 14              NATURAL JOIN DEPOSITOR
 15          WHERE
 16              CUS.CUSTOMER_NAME = DEPOSITOR.CUSTOMER_NAME
 17      );

CUSTOMER_NAME   CUSTOMER_STR CUSTOMER_CITY
--------------- ------------ ---------------
Majeris         First        Rye
Smith           Main         Rye
```

Lab Tusk 2:

```
SQL> SELECT
  2      CUSTOMER_NAME,
  3      CUSTOMER_CITY,
  4      CUSTOMER_STREET
  5  FROM
  6      CUSTOMER
  7      NATURAL JOIN BORROWER
  8      NATURAL JOIN LOAN
  9      NATURAL JOIN BRANCH INTERSECT
 10      SELECT
 11          CUSTOMER_NAME,
 12          BRANCH_CITY,
 13          CUSTOMER_STREET
 14      FROM
 15          CUSTOMER
 16          NATURAL JOIN BORROWER
 17          NATURAL JOIN LOAN
 18          NATURAL JOIN BRANCH;

CUSTOMER_NAME   CUSTOMER_CITY   CUSTOMER_STR
--------------- --------------- ------------
McBride         Rye             Safety
Smith           Rye             Main
```

```
SQL>
SQL> SELECT
  2      CUSTOMER_NAME,
  3      CUSTOMER_STREET,
  4      CUSTOMER_CITY
  5  FROM
  6      CUSTOMER CUS
  7  WHERE
  8      CUS.CUSTOMER_CITY = SOME(
  9          SELECT
 10              BRANCH_CITY
 11          FROM
 12              BRANCH
 13              NATURAL JOIN BORROWER
 14              NATURAL JOIN LOAN
 15          WHERE
 16              CUS.CUSTOMER_NAME = BORROWER.CUSTOMER_NAME
 17      );

CUSTOMER_NAME   CUSTOMER_STR CUSTOMER_CITY
--------------- ------------ ---------------
McBride         Safety       Rye
Smith           Main         Rye

SQL>
```

Lab Tusk 3:

```
SQL> WITH BALANCE_FROM_1001 AS(
  2      SELECT
  3          BRANCH_NAME,
  4          BRANCH_CITY,
  5          SUM(BALANCE) AS SUM_BALANCE,
  6          AVG(BALANCE) AS AVG_BALANCE
  7      FROM
  8          BRANCH
  9          NATURAL JOIN ACCOUNT
 10      GROUP BY
 11          BRANCH_NAME,
 12          BRANCH_CITY
 13  )
 14  SELECT
 15      BRANCH_CITY,
 16      AVG_BALANCE
 17  FROM
 18      BALANCE_FROM_1001 BF
 19  WHERE
 20      BF.SUM_BALANCE >= 1000;

BRANCH_CITY     AVG_BALANCE
--------------- -----------
Horseneck               650

SQL>
```

```
SQL> SELECT
  2      BRANCH_CITY,
  3      AVG(TEMP.AVG_B)
  4  FROM
  5      (
  6          SELECT
  7              BRANCH_NAME,
  8              AVG(BALANCE) AS AVG_B,
  9              SUM(BALANCE) AS SUM_B
 10          FROM
 11              BRANCH
 12              NATURAL JOIN ACCOUNT
 13          GROUP BY
 14              BRANCH_NAME
 15          HAVING
 16              SUM(BALANCE) >=1000
 17      )       TEMP,
 18      BRANCH B
 19  WHERE
 20      B.BRANCH_NAME = TEMP.BRANCH_NAME
 21  GROUP BY
 22      BRANCH_CITY;

BRANCH_CITY     AVG(TEMP.AVG_B)
--------------- ---------------
Horseneck                   650

SQL>
```

Lab Tusk 4:

```
SQL> WITH TEMP AS(
  2      SELECT
  3          BRANCH_CITY,
  4          BRANCH_NAME,
  5          AVG(AMOUNT) AS AVG_AM
  6      FROM
  7          LOAN
  8          NATURAL JOIN BRANCH
  9      GROUP BY
 10          BRANCH_CITY,
 11          BRANCH_NAME
 12  )
 13  SELECT
 14      TEMP2.BRANCH_CITY,
 15      AVG(AVG_AM)
 16  FROM
 17      (
 18          SELECT
 19              BRANCH_CITY,
 20              BRANCH_NAME,
 21              AVG_AM
 22          FROM
 23              TEMP
 24          WHERE
 25              1500 < AVG_AM
 26      )TEMP2,      BRANCH B
 27  WHERE
 28      B.BRANCH_NAME = TEMP2.BRANCH_NAME
 29  GROUP BY
 30      TEMP2.BRANCH_CITY;

BRANCH_CITY     AVG(AVG_AM)
--------------- -----------
Palo Alto              2000
Rye                    7500

SQL>
```

```
SQL> SELECT
  2      BRANCH_CITY,
  3      AVG(AVG_L)
  4  FROM
  5      (
  6          SELECT
  7              BRANCH_NAME,
  8              AVG(AMOUNT) AS AVG_L
  9          FROM
 10              LOAN
 11          WHERE
 12              BRANCH_NAME = LOAN.BRANCH_NAME
 13          GROUP BY
 14              BRANCH_NAME
 15          HAVING
 16              AVG(AMOUNT) >= 1500
 17      )
 18      NATURAL JOIN BRANCH
 19  GROUP BY
 20      BRANCH.BRANCH_CITY;

BRANCH_CITY     AVG(AVG_L)
--------------- ----------
Palo Alto             2000
Rye                   7500

SQL>
```

Lab Tusk 5:

```
SQL> SELECT
  2      CUSTOMER_NAME,
  3      CUSTOMER.CUSTOMER_STREET,
  4      CUSTOMER.CUSTOMER_CITY,
  5      BALANCE
  6  FROM
  7      ACCOUNT
  8      NATURAL JOIN CUSTOMER
  9      NATURAL JOIN DEPOSITOR
 10  WHERE
 11      BALANCE >= ALL(
 12          SELECT
 13              BALANCE
 14          FROM
 15              ACCOUNT
 16      );

CUSTOMER_NAME   CUSTOMER_STR CUSTOMER_CITY      BALANCE
--------------- ------------ --------------- ----------
Johnson         Alma         Palo Alto              900

SQL>
```

```
SQL> SELECT
  2      CUSTOMER_NAME,
  3      CUSTOMER.CUSTOMER_STREET,
  4      CUSTOMER.CUSTOMER_CITY,
  5      BALANCE
  6  FROM
  7      ACCOUNT
  8      NATURAL JOIN CUSTOMER
  9      NATURAL JOIN DEPOSITOR
 10  WHERE
 11      BALANCE = (
 12          SELECT
 13              MAX(BALANCE)
 14          FROM
 15              ACCOUNT
 16      );

CUSTOMER_NAME   CUSTOMER_STR CUSTOMER_CITY      BALANCE
--------------- ------------ --------------- ----------
Johnson         Alma         Palo Alto              900

SQL>
```

Lab Tusk 6:

```
SQL> SELECT
  2      CUSTOMER_NAME,
  3      CUSTOMER.CUSTOMER_STREET,
  4      CUSTOMER.CUSTOMER_CITY
  5  FROM
  6      LOAN
  7      NATURAL JOIN BORROWER
  8      NATURAL JOIN CUSTOMER
  9  WHERE
 10      AMOUNT >= ALL(
 11          SELECT
 12              AMOUNT
 13          FROM
 14              LOAN
 15      );

CUSTOMER_NAME   CUSTOMER_STR CUSTOMER_CITY
--------------- ------------ ---------------
McBride         Safety       Rye
```

```
SQL> SELECT
  2      CUSTOMER_NAME,
  3      CUSTOMER.CUSTOMER_STREET,
  4      CUSTOMER.CUSTOMER_CITY
  5  FROM
  6      LOAN
  7      NATURAL JOIN BORROWER
  8      NATURAL JOIN CUSTOMER
  9  WHERE
 10      AMOUNT = (
 11          SELECT
 12              MAX(AMOUNT)
 13          FROM
 14              LOAN
 15      );

CUSTOMER_NAME   CUSTOMER_STR CUSTOMER_CITY
--------------- ------------ ---------------
McBride         Safety       Rye
```

Lab Tusk 7:

```
SQL> SELECT
  2      DISTINCT BRANCH_NAME,
  3      BRANCH_CITY
  4  FROM
  5      ACCOUNT
  6      NATURAL JOIN DEPOSITOR
  7      NATURAL JOIN BRANCH
  8  WHERE
  9      BRANCH_NAME IN (
 10          SELECT
 11              BRANCH_NAME
 12          FROM
 13              LOAN
 14              NATURAL JOIN BORROWER
 15              NATURAL JOIN BRANCH
 16      );

BRANCH_NAME     BRANCH_CITY
--------------- ---------------
Downtown        Brooklyn
Perryridge      Horseneck
North Town      Rye
Round Hill      Horseneck
Redwood         Palo Alto
Central         Rye
Mianus          Horseneck

7 rows selected.
```

```
SQL> SELECT
  2      DISTINCT B.BRANCH_NAME,
  3      BRANCH_CITY
  4  FROM
  5      ACCOUNT   A,
  6      DEPOSITOR D,
  7      BRANCH    B
  8  WHERE
  9      A.ACCOUNT_NUMBER = D.ACCOUNT_NUMBER
 10      AND B.BRANCH_NAME = A.BRANCH_NAME
 11      AND EXISTS(
 12          SELECT
 13              *
 14          FROM
 15              LOAN      L,
 16              BORROWER  BO,
 17              BRANCH    BR
 18          WHERE
 19              L.LOAN_NUMBER = BO.LOAN_NUMBER
 20              AND L.BRANCH_NAME = BR.BRANCH_NAME
 21              AND B.BRANCH_NAME = BR.BRANCH_NAME
 22      );

BRANCH_NAME     BRANCH_CITY
--------------- ---------------
Downtown        Brooklyn
Perryridge      Horseneck
North Town      Rye
Round Hill      Horseneck
Redwood         Palo Alto
Central         Rye
Mianus          Horseneck
```

Lab Tusk 8:

```
SQL> SELECT
  2      DISTINCT C.CUSTOMER_NAME,
  3      CUSTOMER_CITY
  4  FROM
  5      CUSTOMER  C,
  6      DEPOSITOR D
  7  WHERE
  8      C.CUSTOMER_NAME = D.CUSTOMER_NAME
  9      AND NOT EXISTS(
 10          SELECT
 11              CUS.CUSTOMER_NAME
 12          FROM
 13              CUSTOMER  CUS,
 14              BORROWER  B
 15          WHERE
 16              CUS.CUSTOMER_NAME = B.CUSTOMER_NAME
 17              AND C.CUSTOMER_NAME = CUS.CUSTOMER_NAME
 18      );

CUSTOMER_NAME   CUSTOMER_CITY
--------------- ---------------
Lindsay         Pittsfield
Majeris         Rye
Johnson         Palo Alto
Turner          Stamford
```

```
SQL> SELECT
  2      DISTINCT CUSTOMER_NAME,
  3      CUSTOMER_CITY
  4  FROM
  5      CUSTOMER
  6      NATURAL JOIN DEPOSITOR
  7  WHERE
  8      CUSTOMER_NAME NOT IN (
  9          SELECT
 10              CUSTOMER_NAME
 11          FROM
 12              CUSTOMER
 13              NATURAL JOIN BORROWER
 14      );

CUSTOMER_NAME   CUSTOMER_CITY
--------------- ---------------
Lindsay         Pittsfield
Majeris         Rye
Turner          Stamford
Johnson         Palo Alto
```

Lab Tusk 9:

```
SQL> WITH TOTAL_BALANCE AS(
  2      SELECT
  3          BRANCH_NAME,
  4          SUM(BALANCE) AS SUM_BALANCE
  5      FROM
  6          DEPOSITOR
  7          NATURAL JOIN ACCOUNT
  8      GROUP BY
  9          BRANCH_NAME
 10  ), AVG_TOTAL_BALANCE AS(
 11      SELECT
 12          AVG(SUM_BALANCE) AS AVG_TOTAL_BALANCE
 13      FROM
 14          TOTAL_BALANCE
 15  )
 16  SELECT
 17      BRANCH.BRANCH_NAME,
 18      BRANCH_CITY
 19  FROM
 20      BRANCH,
 21      TOTAL_BALANCE,
 22      AVG_TOTAL_BALANCE
 23  WHERE
 24      TOTAL_BALANCE.BRANCH_NAME = BRANCH.BRANCH_NAME
 25      AND TOTAL_BALANCE.SUM_BALANCE> AVG_TOTAL_BALANCE.AVG_TOTAL_BALANCE;

BRANCH_NAME     BRANCH_CITY
--------------- ---------------
Perryridge      Horseneck
Central         Rye
Downtown        Brooklyn
```

```
SQL> SELECT
  2      BRANCH.BRANCH_NAME,
  3      BRANCH_CITY
  4  FROM
  5      BRANCH,
  6      (
  7          SELECT
  8              BRANCH_NAME,
  9              SUM(BALANCE) AS SUM_BALANCE
 10          FROM
 11              DEPOSITOR
 12              NATURAL JOIN ACCOUNT
 13          GROUP BY
 14              BRANCH_NAME
 15      )       TOTAL_BALANCE,
 16      (
 17          SELECT
 18              AVG(SUM_BALANCE) AS AVG_TOTAL_BALANCE
 19          FROM
 20              (
 21                  SELECT
 22                      BRANCH_NAME,
 23                      SUM(BALANCE) AS SUM_BALANCE
 24                  FROM
 25                      DEPOSITOR
 26                      NATURAL JOIN ACCOUNT
 27                  GROUP BY
 28                      BRANCH_NAME
 29              ) TOTAL_BALANCE
 30      )       AVG_TOTAL_BALANCE
 31  WHERE
 32      TOTAL_BALANCE.BRANCH_NAME = BRANCH.BRANCH_NAME
 33      AND TOTAL_BALANCE.SUM_BALANCE> AVG_TOTAL_BALANCE.AVG_TOTAL_BALANCE;

BRANCH_NAME     BRANCH_CITY
--------------- ---------------
Central         Rye
Downtown        Brooklyn
Perryridge      Horseneck
```

Lab Tusk 10:

```
SQL> WITH TOTAL_AMOUNT AS(
  2       SELECT
  3           BRANCH_NAME,
  4           SUM(AMOUNT) AS SUM_AMOUNT
  5       FROM
  6           BORROWER
  7           NATURAL JOIN LOAN
  8       GROUP BY
  9           BRANCH_NAME
 10   ), AVG_TOTAL_AMOUNT AS(
 11       SELECT
 12           AVG(SUM_AMOUNT) AS AVG_TOTAL_AMOUNT
 13       FROM
 14           TOTAL_AMOUNT
 15   )
 16   SELECT
 17       BRANCH.BRANCH_NAME,
 18       BRANCH_CITY
 19   FROM
 20       BRANCH,
 21       TOTAL_AMOUNT,
 22       AVG_TOTAL_AMOUNT
 23   WHERE
 24       TOTAL_AMOUNT.BRANCH_NAME = BRANCH.BRANCH_NAME
 25       AND TOTAL_AMOUNT.SUM_AMOUNT> AVG_TOTAL_AMOUNT.AVG_TOTAL_AMOUNT;

BRANCH_NAME     BRANCH_CITY
--------------- ---------------
Perryridge      Horseneck
Downtown        Brooklyn
North Town      Rye
```

```
SQL> SELECT
  2      BRANCH.BRANCH_NAME,
  3      BRANCH_CITY
  4  FROM
  5      BRANCH,
  6      (
  7          SELECT
  8              BRANCH_NAME,
  9              SUM(AMOUNT) AS SUM_AMOUNT
 10          FROM
 11              BORROWER
 12              NATURAL JOIN LOAN
 13          GROUP BY
 14              BRANCH_NAME
 15      )       TOTAL_AMOUNT,
 16      (
 17          SELECT
 18              AVG(SUM_AMOUNT) AS AVG_TOTAL_AMOUNT
 19          FROM
 20              (
 21                  SELECT
 22                      BRANCH_NAME,
 23                      SUM(AMOUNT) AS SUM_AMOUNT
 24                  FROM
 25                      BORROWER
 26                      NATURAL JOIN LOAN
 27                  GROUP BY
 28                      BRANCH_NAME
 29              ) TOTAL_AMOUNT
 30      )       AVG_TOTAL_AMOUNT
 31  WHERE
 32      TOTAL_AMOUNT.BRANCH_NAME = BRANCH.BRANCH_NAME
 33      AND TOTAL_AMOUNT.SUM_AMOUNT> AVG_TOTAL_AMOUNT.AVG_TOTAL_AMOUNT;

BRANCH_NAME     BRANCH_CITY
--------------- ---------------
Downtown        Brooklyn
North Town      Rye
Perryridge      Horseneck
```

Learning Outcomes:

1. Learned how to use subqueries.
2. Learned to use ALL, SOME, IN, NOT IN, EXISTS, NOT EXISITS operator.
3. Developed critical thinking (when had to redesign a conventional query).