UNIVERSITÉ ISLAMIQUE DE TECHNOLOGIE

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DHAKA, BANGLADESH

ORGANIZATION OF ISLAMIC COOPERATION

CSE 4308: Database Management System

Lab-4 Assignment

Name: Nazifa Tasneem

Student ID: 210042114

Department: Computer Science and Engineering

Program: B.Sc. in Software Engineering

TASK DESCRIPTION

This lab report covers all SQL commands and code snippets, Table creation, Data type, and my approach to the last lab task and how I arrived at my solution in the lab.

Here is the problem statement -

Execute the movie.sql script using command. It creates a set of tables along with values that maintain the following schema:

ACTOR

ACT_ID NUMBER

ACT_FIRSTNAME
VARCHAR2

ACT_LASTNAME
VARCHAR2

ACT_GENDER

CASTS

ACT_ID NUMBER

MOV_ID NUMBER

ROLE VARCHAR2

REVIEWER

REV_ID NUMBER

REV_NAME VARCHAR2

DIRECTOR

DIR_ID NUMBER

DIR_FIRSTNAME
VARCHAR2

DIR_LASTNAME
VARCHAR2

MOVIE

MOV_ID NUMBER

MOV_TITLE VARCHAR2

MOV_YEAR NUMBER

MOV_LANGUAGE
VARCHAR2

MOV_RELEASEDATE
DATE

MOV_COUNTRY
VARCHAR2

RATING

MOV_ID NUMBER

REV_ID NUMBER

REV_STARS NUMBER

DIRECTION

DIR_ID NUMBER

MOV_ID NUMBER

Write SQL statements for the following queries:

SOLUTION APPROACH

1. Find the name of the actors/actresses that are also directors (with and without set operator).

SELECT ACT_FIRSTNAME, ACT_LASTNAME FROM ACTOR

INTERSECT

SELECT DIR_FIRSTNAME, DIR_LASTNAME FROM DIRECTOR;

```
SQL> --TASK-1 PART-1
SQL> SELECT ACT_FIRSTNAME, ACT_LASTNAME FROM ACTOR
  2  INTERSECT
  3  SELECT DIR_FIRSTNAME, DIR_LASTNAME FROM DIRECTOR;

ACT_FIRSTNAME        ACT_LASTNAME
-------------------- --------------------
Kevin                Spacey
Orson                Welles
Woody                Allen
```

SELECT ACT_FIRSTNAME, ACT_LASTNAME

FROM ACTOR, DIRECTOR

WHERE ACTOR.ACT_FIRSTNAME = DIRECTOR.DIR_FIRSTNAME AND

ACTOR.ACT_LASTNAME = DIRECTOR.DIR_LASTNAME;

```
SQL> SELECT ACT_FIRSTNAME, ACT_LASTNAME
  2  FROM ACTOR, DIRECTOR
  3  WHERE ACTOR.ACT_FIRSTNAME = DIRECTOR.DIR_FIRSTNAME AND
  4     ACTOR.ACT_LASTNAME = DIRECTOR.DIR_LASTNAME;

ACT_FIRSTNAME        ACT_LASTNAME
-------------------- --------------------
Woody                Allen
Kevin                Spacey
Orson                Welles
```

2. Find the actresses with the same first name.

SELECT ACT_FIRSTNAME, COUNT(ACT_FIRSTNAME) AS NAME_COUNT

FROM ACTOR

WHERE ACT_GENDER = 'F'

GROUP BY ACT_FIRSTNAME

HAVING COUNT(ACT_FIRSTNAME) > 1;

```
SQL> SELECT ACT_FIRSTNAME, COUNT(ACT_FIRSTNAME) AS NAME_COUNT
  2  FROM ACTOR
  3  WHERE ACT_GENDER = 'F'
  4  GROUP BY ACT_FIRSTNAME
  5  HAVING COUNT(ACT_FIRSTNAME) > 1;

ACT_FIRSTNAME        NAME_COUNT
-------------------- ----------
Kate                          2
Jennifer                      2
```

3. Find the list of all the full names stored in the database.

SELECT ACT_FIRSTNAME || ' ' || ACT_LASTNAME AS FULL_NAME

FROM ACTOR

UNION

SELECT DIR_FIRSTNAME || ' ' || DIR_LASTNAME

FROM DIRECTOR

UNION

SELECT REV_NAME

FROM REVIEWER;

```
SQL> SELECT ACT_FIRSTNAME || ' ' || ACT_LASTNAME AS FULL_NAME
  2  FROM ACTOR
  3  UNION
  4  SELECT DIR_FIRSTNAME || ' ' || DIR_LASTNAME
  5  FROM DIRECTOR
  6  UNION
  7  SELECT REV_NAME
  8  FROM REVIEWER;

FULL_NAME
----------------------------------------
Al Pacino
Alec Shaw
Alfred Hitchcock
Ali Astin
Andrei Tarkovsky
Brandt Sponseller
Bryan Singer
Christian Bale
Christopher Nolan
Claire Danes
Danny Boyle

FULL_NAME
----------------------------------------
David Aston
David Lean
Deborah Kerr
Dev Patel
Eddie Redmayne
Ewan McGregor
F. Murray Abraham
Felicity Jones
Flagrant Baronessa
Frank Darabont
George Raft
```

```
FULL_NAME
----------------------------------------
Gus Van Sant
Hannah Steele
Harrison Ford
Hayao Miyazaki
Jack Clayton
Jack Malvern
Jack Nicholson
Jackie Chan
James Cameron
James Marsh
James Stewart

FULL_NAME
----------------------------------------
Jennifer Aniston
Jennifer Garner
John Boorman
Jon Voight
Josh Cates
Kate Mara
Kate Winslet
Kevin Spacey
Krug Stillo
Lana Condor
Maggie Gyllenhaal

FULL_NAME
----------------------------------------
Mark Wahlberg
Michael Cimino
Mike Salvati
Milos Forman
Neal Wruck
Nicole Kidman
Orson Welles
Paul Monks
Paul Thomas Anderson
Peter Jackson
```

```
Peter OToole

FULL_NAME
----------------------------------------
Raoul Walsh
Richard Adams
Richard Kelly
Ridley Scott
Righty Sock
Robert De Niro
Robert Duvall
Robin Williams
Roman Polanski
Sam Mendes
Sasha Goldshtein

FULL_NAME
----------------------------------------
Scott LeBrun
Shelley Duvall
Sigourney Weaver
Simon Wright
Stanley Kubrick
Stephen Baldwin
Susan Johnson
Tim Robbins
Victor Woeltjen
Vincent Cadena
Wesley S. Walker

FULL_NAME
----------------------------------------
Woody Allen


79 rows selected.
```

4. Find the movie titles that did not receive any ratings.

SELECT MOV_TITLE

FROM MOVIE M,

(SELECT MOV_ID FROM RATING WHERE REV_STARS IS NULL) N

WHERE N.MOV_ID = M.MOV_ID;

```
SQL> SELECT MOV_TITLE
  2  FROM MOVIE M,
  3  (SELECT MOV_ID FROM RATING WHERE REV_STARS IS NULL) N
  4  WHERE N.MOV_ID = M.MOV_ID;

MOV_TITLE
--------------------------------------------------
The Innocents
Lawrence of Arabia
Amadeus
Chinatown
American Beauty
Titanic
Good Will Hunting
Slumdog Millionaire
Aliens
Beyond the Sea
Avatar

11 rows selected.
```

5. Find the average rating of all movies.

SELECT avg (REV_STARS) AS AVG_STARS

FROM RATING

WHERE REV_STARS IS NOT NULL;

```
SQL> SELECT avg(REV_STARS) AS AVG_STARS
  2  FROM RATING
  3  WHERE REV_STARS IS NOT NULL;

 AVG_STARS
----------
       6.8
```

6. Find the minimum rating for each movie and display them in descending order of rating.

SELECT M.MOV_TITLE,

(SELECT min(R.REV_STARS)

FROM RATING R

WHERE R.MOV_ID = M.MOV_ID

AND R.REV_STARS IS NOT NULL) AS MIN_RATING

FROM MOVIE M

WHERE M.MOV_ID IN (SELECT MOV_ID FROM RATING)

ORDER BY MIN_RATING DESC;

```
SQL> SELECT M.MOV_TITLE,
  2         (SELECT min(R.REV_STARS)
  3          FROM RATING R
  4          WHERE R.MOV_ID = M.MOV_ID
  5          AND R.REV_STARS IS NOT NULL) AS MIN_RATING
  6  FROM MOVIE M
  7  WHERE M.MOV_ID IN (SELECT MOV_ID FROM RATING)
  8  ORDER BY MIN_RATING DESC;

MOV_TITLE                                          MIN_RATING
-------------------------------------------------- ----------
The Shining                                                 7
Avatar                                                      6
Deliverance                                                 6
The Shawshank Redemption                                    5
Chinatown                                                   5
Good Will Hunting                                           5
Lawrence of Arabia                                          5
Amadeus                                                     4
The Deer Hunter                                             4
Vertigo                                                     4
The Innocents                                               4
```

```
MOV_TITLE                                          MIN_RATING
-------------------------------------------------- ----------
The Prestige                                                4
Boogie Nights                                               3
American Beauty                                             3
Titanic                                                     3
Braveheart                                                  3
Blade Runner                                                3
Beyond the Sea                                              3
Eyes Wide Shut                                              3
Trainspotting                                               3
Annie Hall                                                  3
Donnie Darko                                                3

MOV_TITLE                                          MIN_RATING
-------------------------------------------------- ----------
Slumdog Millionaire                                         3
Aliens                                                      2
The Usual Suspects                                          2
Princess Mononoke                                           1

26 rows selected.
```

7. Find the title of the movie having an average rev_star higher than the average rev_star of all the movies.

```
SELECT M.MOV_TITLE
FROM MOVIE M
WHERE(
   SELECT AVG(REV_STARS)
   FROM RATING
   WHERE REV_STARS IS NOT NULL
) < (
   SELECT AVG(REV_STARS)
   FROM RATING R
   WHERE R.MOV_ID = M.MOV_ID
   AND R.REV_STARS IS NOT NULL
```

)

AND M.MOV_ID IN (SELECT MOV_ID FROM RATING);

```
SQL> SELECT M.MOV_TITLE
  2  FROM MOVIE M
  3  WHERE(
  4       SELECT AVG(REV_STARS)
  5       FROM RATING
  6       WHERE REV_STARS IS NOT NULL
  7  ) < (
  8       SELECT AVG(REV_STARS)
  9       FROM RATING R
 10       WHERE R.MOV_ID = M.MOV_ID
 11       AND R.REV_STARS IS NOT NULL
 12  )
 13  AND M.MOV_ID IN (SELECT MOV_ID FROM RATING);

MOV_TITLE
--------------------------------------------------
The Innocents
Amadeus
Eyes Wide Shut
Chinatown
Annie Hall
The Shawshank Redemption
Titanic
Good Will Hunting
Deliverance
The Prestige
Avatar

MOV_TITLE
--------------------------------------------------
Braveheart
The Shining

13 rows selected.
```

8. Find the name of actors/actresses and the number of ratings received by the movies in which they played a role.

SELECT A.ACT_FIRSTNAME || ' ' || A.ACT_LASTNAME AS ACT_NAME,

(

```
    SELECT sum(nvl(R.REV_STARS, 0))
    FROM RATING R
    WHERE R.MOV_ID
    IN
    (
        SELECT C.MOV_ID
        FROM CASTS C
        WHERE C.ACT_ID = A.ACT_ID
    )
) AS SUM_RATING
FROM ACTOR A
WHERE A.ACT_ID
IN
(
    SELECT C2.ACT_ID
    FROM CASTS C2
    WHERE C2.MOV_ID
    IN
    (
        SELECT MOV_ID FROM RATING
    )
)
ORDER BY SUM_RATING DESC;
```

```
SQL> SELECT A.ACT_FIRSTNAME || ' ' || A.ACT_LASTNAME AS ACT_NAME,
  2  (
  3      SELECT sum(nvl(R.REV_STARS, 0))
  4      FROM RATING R
  5      WHERE R.MOV_ID
  6      IN
  7      (
  8          SELECT C.MOV_ID
  9          FROM CASTS C
 10          WHERE C.ACT_ID = A.ACT_ID
 11      )
 12  ) AS SUM_RATING
 13  FROM ACTOR A
 14  WHERE A.ACT_ID
 15  IN
 16  (
 17      SELECT C2.ACT_ID
 18      FROM CASTS C2
 19      WHERE C2.MOV_ID
 20      IN
 21      (
 22          SELECT MOV_ID FROM RATING
 23      )
 24  )
 25  ORDER BY SUM_RATING DESC;
```

```
ACT_NAME                                SUM_RATING
--------------------------------------- ----------
Kevin Spacey                                   111
Tim Robbins                                    107
Robin Williams                                 104
Ewan McGregor                                  102
Sigourney Weaver                               102
Kate Winslet                                    98
Woody Allen                                     97
Nicole Kidman                                   93
Shelley Duvall                                  84
Maggie Gyllenhaal                               84
F. Murray Abraham                               83

ACT_NAME                                SUM_RATING
--------------------------------------- ----------
Deborah Kerr                                    83
Harrison Ford                                   81
Jon Voight                                      80
Stephen Baldwin                                 79
Mark Wahlberg                                   74
Jack Nicholson                                  74
Peter OToole                                    73
Claire Danes                                    65
Robert De Niro                                  63
Christian Bale                                  62
James Stewart                                   60

ACT_NAME                                SUM_RATING
--------------------------------------- ----------
Dev Patel                                       46

23 rows selected.
```

9. Find the name of the director of the movie having the highest average rev_star.

```
SELECT DIR_NAME, AVG_RATING FROM
(
   SELECT D.DIR_FIRSTNAME || ' ' || D.DIR_LASTNAME AS DIR_NAME,
   (
```

```
        SELECT avg(R.REV_STARS)
        FROM RATING R
        WHERE R.MOV_ID IN
        (
            SELECT DN.MOV_ID
            FROM DIRECTION DN
            WHERE DN.DIR_ID = D.DIR_ID
        )
        AND R.REV_STARS IS NOT NULL
    ) AS AVG_RATING
    FROM DIRECTOR D
    WHERE DIR_ID IN
    (
        SELECT DIR_ID FROM DIRECTION DN2
        WHERE DN2.MOV_ID IN
        (
            SELECT MOV_ID FROM RATING
        )
    )
    ORDER BY AVG_RATING DESC
)
WHERE ROWNUM = 1;
```

```
SQL> SELECT DIR_NAME, AVG_RATING FROM
  2  (
  3      SELECT D.DIR_FIRSTNAME || ' ' || D.DIR_LASTNAME AS DIR_NAME,
  4      (
  5          SELECT avg(R.REV_STARS)
  6          FROM RATING R
  7          WHERE R.MOV_ID IN
  8          (
  9              SELECT DN.MOV_ID
 10              FROM DIRECTION DN
 11              WHERE DN.DIR_ID = D.DIR_ID
 12          )
 13          AND R.REV_STARS IS NOT NULL
 14      ) AS AVG_RATING
 15      FROM DIRECTOR D
 16      WHERE DIR_ID IN
 17      (
 18          SELECT DIR_ID FROM DIRECTION DN2
 19          WHERE DN2.MOV_ID IN
 20          (
 21              SELECT MOV_ID FROM RATING
 22          )
 23      )
 24      ORDER BY AVG_RATING DESC
 25  )
 26  WHERE ROWNUM = 1;

DIR_NAME                                AVG_RATING
--------------------------------------- ----------
Frank Darabont                          8.23076923
```

10. Find all the movie-related information of movies acted and directed by the same person.

```
SELECT *
FROM MOVIE
WHERE MOV_ID
IN
(
    SELECT DN.MOV_ID
    FROM DIRECTION DN
    WHERE DN.DIR_ID
```

```
    IN
    (
        SELECT D.DIR_ID
        FROM DIRECTOR D
        WHERE D.DIR_FIRSTNAME || ' ' || D.DIR_LASTNAME
        IN
        (
            SELECT D1.DIR_FIRSTNAME || ' ' ||
D1.DIR_LASTNAME AS DIR_NAME1
            FROM DIRECTOR D1
            INTERSECT
            SELECT A.ACT_FIRSTNAME || ' ' ||
A.ACT_LASTNAME AS ACT_NAME
            FROM ACTOR A
        )
    )
);
```

```
SQL> SELECT *
  2  FROM MOVIE
  3  WHERE MOV_ID
  4  IN
  5  (
  6      SELECT DN.MOV_ID
  7      FROM DIRECTION DN
  8      WHERE DN.DIR_ID
  9      IN
 10      (
 11          SELECT D.DIR_ID
 12          FROM DIRECTOR D
 13          WHERE D.DIR_FIRSTNAME || ' ' || D.DIR_LASTNAME
 14          IN
 15          (
 16              SELECT D1.DIR_FIRSTNAME || ' ' || D1.DIR_LASTNAME AS DIR_NAME1
 17              FROM DIRECTOR D1
 18              INTERSECT
 19              SELECT A.ACT_FIRSTNAME || ' ' || A.ACT_LASTNAME AS ACT_NAME
 20              FROM ACTOR A
 21          )
 22      )
 23  );

   MOV_ID MOV_TITLE                                           MOV_YEAR   MOV_TIME MOV_LANGUAGE                MOV_RELEA MOV_COUNTRY
--------- -------------------------------------------------- ---------- ---------- ------------------------- --------- --------------------
      911 Annie Hall                                               1977         93 English                   20-APR-77 USA
      923 Beyond the Sea                                           2004        118 English                   26-NOV-04 UK
      932 Citizen Kane                                             1941        119 English                   05-SEP-41 USA
```

11. Find the title and average rating of the movies that have an average rev_star of more than 7.

```
SELECT M.MOV_TITLE,
(
   SELECT avg(R.REV_STARS)
   FROM RATING R
   WHERE R.MOV_ID = M.MOV_ID
   AND R.REV_STARS IS NOT NULL
) AS AVG_RATE
FROM MOVIE M
WHERE M.MOV_ID
IN
(
   SELECT R1.MOV_ID
   FROM RATING R1
   WHERE R1.REV_STARS IS NOT NULL
   GROUP BY R1.MOV_ID
   HAVING avg (R1.REV_STARS) > 7
)
ORDER BY AVG_RATE DESC;
```

```
SQL> SELECT M.MOV_TITLE,
  2  (
  3      SELECT avg(R.REV_STARS)
  4      FROM RATING R
  5      WHERE R.MOV_ID = M.MOV_ID
  6      AND R.REV_STARS IS NOT NULL
  7  ) AS AVG_RATE
  8  FROM MOVIE M
  9  WHERE M.MOV_ID
 10  IN
 11  (
 12      SELECT R1.MOV_ID
 13      FROM RATING R1
 14      WHERE R1.REV_STARS IS NOT NULL
 15      GROUP BY R1.MOV_ID
 16      HAVING avg(R1.REV_STARS) > 7
 17  )
 18  ORDER BY AVG_RATE DESC;

MOV_TITLE                                          AVG_RATE
-------------------------------------------------- ----------
The Shining                                               8.4
The Shawshank Redemption                           8.23076923
Braveheart                                         7.54545455
Avatar                                             7.42857143
Good Will Hunting                                  7.42857143
Chinatown                                                 7.4
Deliverance                                        7.27272727
Eyes Wide Shut                                     7.15384615

8 rows selected.
```

12. Find the reviewer who gives the highest number of lowest rev_star.

```
SELECT R.REV_NAME
FROM REVIEWER R
WHERE R.REV_ID
IN
(
   SELECT RT.REV_ID
   FROM RATING RT
```

```
   WHERE RT.REV_STARS =
   (
      SELECT min (REV_STARS)
      FROM RATING
   )
);
```

```
SQL> SELECT R.REV_NAME
  2  FROM REVIEWER R
  3  WHERE R.REV_ID
  4  IN
  5  (
  6       SELECT RT.REV_ID
  7       FROM RATING RT
  8       WHERE RT.REV_STARS =
  9       (
 10            SELECT min(REV_STARS)
 11            FROM RATING
 12       )
 13  );

REV_NAME
------------------------------
Scott LeBrun
```

13. Find the name and average runtime of movies of different actors/actresses. Do not include any actor/actress who worked with ‘James Cameron’.

```
SELECT A.ACT_FIRSTNAME || ' ' ||A.ACT_LASTNAME AS
ACT_NAME,
(
   SELECT avg(M.MOV_TIME)
   FROM MOVIE M
   WHERE M.MOV_ID
   IN
```

```
    (
        SELECT C.MOV_ID
        FROM CASTS C
        WHERE C.ACT_ID = A.ACT_ID
    )
    AND M.MOV_TIME IS NOT NULL
) AS AVG_RUNTIME
FROM ACTOR A
WHERE A.ACT_ID
IN
(
    SELECT ACT_ID FROM CASTS
)
AND A.ACT_ID
NOT IN
(
    SELECT C2.ACT_ID
    FROM CASTS C2
    WHERE C2.MOV_ID
    IN
    (
        SELECT DN.MOV_ID
        FROM DIRECTION DN
        WHERE DN.DIR_ID =
        (
            SELECT DR.DIR_ID
```

FROM DIRECTOR DR

WHERE DR.DIR_FIRSTNAME = 'James' AND DR.DIR_LASTNAME = 'Cameron'

)

)

)

ORDER BY ACT_NAME;

```
SQL> SELECT A.ACT_FIRSTNAME || ' ' ||A.ACT_LASTNAME AS ACT_NAME,
  2  (
  3      SELECT avg(M.MOV_TIME)
  4      FROM MOVIE M
  5      WHERE M.MOV_ID
  6      IN
  7      (
  8          SELECT C.MOV_ID
  9          FROM CASTS C
 10          WHERE C.ACT_ID = A.ACT_ID
 11      )
 12      AND M.MOV_TIME IS NOT NULL
 13  ) AS AVG_RUNTIME
 14  FROM ACTOR A
 15  WHERE A.ACT_ID
 16  IN
 17  (
 18      SELECT ACT_ID FROM CASTS
 19  )
 20  AND A.ACT_ID
 21  NOT IN
 22  (
 23      SELECT C2.ACT_ID
 24      FROM CASTS C2
 25      WHERE C2.MOV_ID
 26      IN
 27      (
 28          SELECT DN.MOV_ID
 29          FROM DIRECTION DN
 30          WHERE DN.DIR_ID =
 31          (
 32              SELECT DR.DIR_ID
 33              FROM DIRECTOR DR
 34              WHERE DR.DIR_FIRSTNAME = 'James' AND DR.DIR_LASTNAME = 'Cameron'
 35          )
 36      )
 37  )
 38  ORDER BY ACT_NAME;
```

ACT_NAME	AVG_RUNTIME
Christian Bale	130
Claire Danes	134
Deborah Kerr	100
Dev Patel	120
Eddie Redmayne	123
Ewan McGregor	94
F. Murray Abraham	160
Felicity Jones	123
George Raft	95
Harrison Ford	117
Jack Nicholson	130

ACT_NAME	AVG_RUNTIME
James Stewart	128
Jon Voight	109
Kevin Spacey	120
Lana Condor	99
Maggie Gyllenhaal	113
Mark Wahlberg	155
Nicole Kidman	159
Orson Welles	119
Peter OToole	216
Robert De Niro	183
Robin Williams	126

ACT_NAME	AVG_RUNTIME
Shelley Duvall	146
Stephen Baldwin	106
Tim Robbins	142
Woody Allen	93

26 rows selected.

Throughout the completion of these tasks, several challenges were encountered:

1. Data Integrity: Ensuring that the data within the tables was accurate and consistent posed a challenge. Any inconsistencies in the data could lead to incorrect query results.

2. Complex Joins: Some tasks required complex JOIN operations involving multiple tables, which necessitated careful consideration of the relationships between the tables.

3. Performance Optimization: As the database grows, the performance of SQL queries becomes crucial. We had to ensure that queries are efficient and optimized was a priority.

4. Subquery Complexity: Tasks involving subqueries required careful construction to ensure the correct results were obtained. Subqueries within HAVING and WHERE clauses added complexity to some queries.

5. Data Filtering: Filtering data based on specific conditions, such as excluding branches with certain city names, required creativity in formulating SQL conditions.