Islamic University of Technology

CSE 4508

Lab Report 4

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Section   : 1

Lab Group : 1B (shifted from 1A)

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Task A

In task A, I had to make three tables for Teams, Players and Matches firstly.

Then I inserted some values in the tables to test the given queries.

```sql
-- *** Task A ***

CREATE TABLE TEAMS (
    ID NUMBER(10) PRIMARY KEY,
    NAME VARCHAR2(50),
    CITY VARCHAR2(50)
);

-- Create the Players table
CREATE TABLE PLAYERS (
    ID NUMBER(10) PRIMARY KEY,
    NAME VARCHAR2(50),
    TEAM_ID NUMBER(10),
    SALARY NUMBER(10, 2),
    CONSTRAINT FK_TEAM FOREIGN KEY (TEAM_ID) REFERENCES TEAMS(ID)
);

-- Create the Matches table
CREATE TABLE MATCHES (
    ID NUMBER(10) PRIMARY KEY,
    HOME_TEAM NUMBER(10),
    AWAY_TEAM NUMBER(10),
    HOME_GOALS NUMBER(5),
    AWAY_GOALS NUMBER(5),
    CONSTRAINT FK_HOME_TEAM FOREIGN KEY (HOME_TEAM) REFERENCES TEAMS(ID),
    CONSTRAINT FK_AWAY_TEAM FOREIGN KEY (AWAY_TEAM) REFERENCES TEAMS(ID)
);
```

```sql
INSERT INTO TEAMS VALUES (1, 'Doraemon Explorers', 'Tokyo');
INSERT INTO TEAMS VALUES (2, 'Nobi''s Nobitas', 'Tokyo');
INSERT INTO TEAMS VALUES (3, 'Shizuka''s Stars', 'Tokyo');
INSERT INTO TEAMS VALUES (4, 'Gian Giants', 'Tokyo');
INSERT INTO TEAMS VALUES (5, 'Suneo''s Seekers', 'Tokyo');
INSERT INTO TEAMS VALUES (6, 'Doraemon''s Dreamers', 'Tokyo');
INSERT INTO TEAMS VALUES (7, 'Jaiko''s Jugglers', 'Tokyo');
INSERT INTO TEAMS VALUES (8, 'Doraemon''s Dynamos', 'Tokyo');
INSERT INTO TEAMS VALUES (9, 'Doraemon''s Time-Travelers', 'Tokyo');
INSERT INTO TEAMS VALUES (10, 'Nobita''s Ninjas', 'Tokyo');

INSERT INTO Players VALUES (1, 'Nobita Nobi', 2, 5000);
INSERT INTO Players VALUES (2, 'Doraemon', 1, 10000);
INSERT INTO Players VALUES (3, 'Shizuka Minamoto', 3, 5500);
INSERT INTO Players VALUES (4, 'Takeshi Gouda (Gian)', 4, 5200);
INSERT INTO Players VALUES (5, 'Suneo Honekawa', 5, 5300);
INSERT INTO Players VALUES (6, 'Jaiko Gouda', 7, 5600);
INSERT INTO Players VALUES (7, 'Dorami', 1, 9800);
INSERT INTO Players VALUES (8, 'Hidetoshi Dekisugi', 10, 7500);
INSERT INTO Players VALUES (9, 'Tamako Nobi', 2, 4500);
INSERT INTO Players VALUES (10, 'Nobisuke Nobi', 6, 7000);

INSERT INTO Matches VALUES (1, 1, 2, 2, 1);
INSERT INTO Matches VALUES (2, 3, 4, 1, 1);
INSERT INTO Matches VALUES (3, 5, 6, 3, 2);
INSERT INTO Matches VALUES (4, 7, 8, 2, 2);
INSERT INTO Matches VALUES (5, 9, 10, 1, 0);
INSERT INTO Matches VALUES (6, 2, 1, 0, 2);
INSERT INTO Matches VALUES (7, 4, 3, 2, 2);
INSERT INTO Matches VALUES (8, 6, 5, 1, 1);
INSERT INTO Matches VALUES (9, 8, 7, 2, 2);
INSERT INTO Matches VALUES (10, 10, 9, 3, 0);
```

Query 1

```sql
-- 1

SELECT
    TEAMS.NAME,
    TEAM_ID,
    SUM(SALARY)
FROM
    PLAYERS,
    TEAMS
WHERE
    TEAM_ID = TEAMS.ID
GROUP BY
    TEAM_ID, TEAMS.NAME;
```

Result:

```
NAME                                          TEAM_ID SUM(SALARY)
--------------------------------------------- ---------- -----------
Shizuka's Stars                                     3        5500
Suneo's Seekers                                     5        5300
Doraemon Explorers                                  1       19800
Nobi's Nobitas                                      2        9500
Doraemon's Dreamers                                 6        7000
Nobita's Ninjas                                    10        7500
Gian Giants                                         4        5200
Jaiko's Jugglers                                    7        5600

8 rows selected.
```

Query 2:

```sql
-- 2

SELECT
    TEAMS.NAME,
    TEAM_ID,
    SUM(GOALS)
FROM
    (
        SELECT
            ID,
            HOME_TEAM  AS TEAM_ID,
            HOME_GOALS AS GOALS
        FROM
            MATCHES UNION
            SELECT
                ID,
                AWAY_TEAM  AS TEAM_ID,
                AWAY_GOALS AS GOALS
            FROM
                MATCHES
    ),      TEAMS
WHERE
    TEAM_ID = TEAMS.ID
GROUP BY
    TEAM_ID, TEAMS.NAME
HAVING
    SUM(GOALS) > 2;
```

Result:

```
NAME                                                  TEAM_ID SUM(GOALS)
---------------------------------------------------- ---------- ----------
Shizuka's Stars                                            3          3
Suneo's Seekers                                           5          4
Doraemon Explorers                                        1          4
Doraemon's Dreamers                                       6          3
Nobita's Ninjas                                          10          3
Gian Giants                                               4          3
Jaiko's Jugglers                                          7          4
Doraemon's Dynamos                                        8          4

8 rows selected.
```

Query 3:

```sql
-- 3

SELECT
    TEAMS.NAME,
    TEAM_ID,
    COUNT(*)   AS TOTAL_WINS
FROM
    (
        SELECT
            ID,
            AWAY_TEAM  AS TEAM_ID,
            AWAY_GOALS
        FROM
            MATCHES
        WHERE
            HOME_GOALS < AWAY_GOALS UNION ALL
            SELECT
                ID,
                HOME_TEAM  AS TEAM_ID,
                HOME_GOALS
            FROM
                MATCHES
            WHERE
                HOME_GOALS > AWAY_GOALS
    )       COMBINED_MATCHES,
    TEAMS
WHERE
    TEAM_ID = TEAMS.ID
GROUP BY
    TEAM_ID, TEAMS.NAME;
```

Result:

NAME	TEAM_ID	TOTAL_WINS
Suneo's Seekers	5	1
Doraemon's Time-Travelers	9	1
Doraemon Explorers	1	2
Nobita's Ninjas	10	1

Query 4:

```sql
SELECT T.ID AS TEAM_ID, T.NAME AS TEAM_NAME, SUM(TM.SCORE) AS TOTAL_POINTS
FROM (SELECT (CASE WHEN M.HOME_GOALS > M.AWAY_GOALS
                THEN M.HOME_TEAM
                WHEN M.AWAY_GOALS > M.HOME_GOALS
                THEN M.AWAY_TEAM
                ELSE M.HOME_TEAM END) AS TEAM,
            (CASE WHEN M.HOME_GOALS = M.AWAY_GOALS
                THEN 1 ELSE 3 END) AS SCORE
            FROM MATCHES M UNION
      SELECT (CASE WHEN M.HOME_GOALS < M.AWAY_GOALS
                THEN M.HOME_TEAM
                WHEN M.AWAY_GOALS < M.HOME_GOALS
                THEN M.AWAY_TEAM
                ELSE M.AWAY_TEAM END) AS TEAM,
            (CASE WHEN M.HOME_GOALS = M.AWAY_GOALS
                THEN 1
                ELSE 0 END) AS SCORE
            FROM MATCHES M) TM, TEAMS T
WHERE T.ID = TM.TEAM
GROUP BY (T.ID, T.NAME)
ORDER BY SUM(TM.SCORE) DESC;
```

Result:

```
   TEAM_ID TEAM_NAME                                              TOTAL_POINTS
---------- ------------------------------------------------------ ------------
         5 Suneo's Seekers                                                   4
         1 Doraemon Explorers                                                3
        10 Nobita's Ninjas                                                   3
         9 Doraemon's Time-Travelers                                         3
         4 Gian Giants                                                       1
         6 Doraemon's Dreamers                                               1
         7 Jaiko's Jugglers                                                  1
         3 Shizuka's Stars                                                   1
         8 Doraemon's Dynamos                                                1
         2 Nobi's Nobitas                                                    0

10 rows selected.
```

Query 5:

```sql
-- 5

SELECT
    TEAMS.NAME,
    TEAM_ID,
    SUM(GOALS)     AS TOTAL_GOALS,
    SUM(CONCEDED) AS TOTAL_CONCEDED
FROM
    (
        SELECT
            ID,
            HOME_TEAM  AS TEAM_ID,
            HOME_GOALS AS GOALS,
            AWAY_GOALS AS CONCEDED
        FROM
            MATCHES UNION
            SELECT
                ID,
                AWAY_TEAM  AS TEAM_ID,
                AWAY_GOALS AS GOALS,
                HOME_GOALS AS CONCEDED
            FROM
                MATCHES
    ),      TEAMS
WHERE
    TEAM_ID = TEAMS.ID
GROUP BY
    TEAM_ID, TEAMS.NAME;

  6
```

Result:

```
NAME                                         TEAM_ID TOTAL_GOALS TOTAL_CONCEDED
-------------------------------------------- ---------- ----------- --------------
Shizuka's Stars                                    3           3              3
Suneo's Seekers                                    5           4              3
Doraemon's Time-Travelers                          9           1              3
Doraemon Explorers                                 1           4              1
Nobi's Nobitas                                     2           1              4
Doraemon's Dreamers                                6           3              4
Nobita's Ninjas                                   10           3              1
Gian Giants                                        4           3              3
Jaiko's Jugglers                                   7           4              4
Doraemon's Dynamos                                 8           4              4

10 rows selected.
```

Query 6:

```sql
-- 6
CREATE VIEW TEAM_PLAYER_SALARIES AS
    SELECT
        TEAMS.NAME  AS TEAM_NAME,
        TEAM_ID,
        SUM(SALARY) AS TOTAL_SALARY
    FROM
        PLAYERS,
        TEAMS
    WHERE
        TEAM_ID = TEAMS.ID
    GROUP BY
        TEAM_ID, TEAMS.NAME;

SELECT
    TEAM_NAME,
    TEAM_ID,
    TOTAL_SALARY
FROM
    TEAM_PLAYER_SALARIES
WHERE
    TOTAL_SALARY > 1000;
```

Result:

```
TEAM_NAME                                             TEAM_ID TOTAL_SALARY
---------------------------------------------------- ---------- ------------
Shizuka's Stars                                            3         5500
Suneo's Seekers                                           5         5300
Doraemon Explorers                                        1        19800
Nobi's Nobitas                                            2         9500
Doraemon's Dreamers                                       6         7000
Nobita's Ninjas                                          10         7500
Gian Giants                                               4         5200
Jaiko's Jugglers                                          7         5600

8 rows selected.
```

Task B

At first we will create the Grades table and insert data in it.

```
-- *** Task B ***


CREATE TABLE GRADES (
    ID NUMBER PRIMARY KEY,
    DEPARTMENT VARCHAR2(10),
    PROGRAMME VARCHAR2(10),
    COURSE_CODE VARCHAR2(10),
    GRADE VARCHAR2(3)
);
```

```
INSERT INTO GRADES VALUES (1, 'CSE', 'BSc', 'CSE 4508', 'A');
INSERT INTO GRADES VALUES (2, 'CSE', 'BSc', 'CSE 4551', 'B+');
INSERT INTO GRADES VALUES (3, 'EEE', 'BSc', 'EEE 3201', 'A-');
INSERT INTO GRADES VALUES (4, 'EEE', 'HD', 'EEE 5203', 'A+');
INSERT INTO GRADES VALUES (5, 'CSE', 'BSc', 'CSE 4508', 'A+');
INSERT INTO GRADES VALUES (6, 'CSE', 'HD', 'CSE 5502', 'A-');
INSERT INTO GRADES VALUES (7, 'EEE', 'BSc', 'EEE 3201', 'B');
INSERT INTO GRADES VALUES (8, 'CSE', 'HD', 'CSE 5502', 'A');
INSERT INTO GRADES VALUES (9, 'CSE', 'BSc', 'CSE 4551', 'B');
INSERT INTO GRADES VALUES (10, 'EEE', 'HD', 'EEE 5203', 'A+');
```

Query 1:

```sql
-- 1
SELECT DEPARTMENT, PROGRAMME, COURSE_CODE, GRADE, COUNT(*)
FROM GRADES
GROUP BY ROLLUP (DEPARTMENT, PROGRAMME, COURSE_CODE, GRADE)
ORDER BY DEPARTMENT, PROGRAMME, COURSE_CODE, GRADE;
```

Result:

```
DEPARTMENT PROGRAMME  COURSE_COD GRA   COUNT(*)
---------- ---------- ---------- ---   ----------
CSE        BSc        CSE 4508   A            1
CSE        BSc        CSE 4508   A+           1
CSE        BSc        CSE 4508                2
CSE        BSc        CSE 4551   B            1
CSE        BSc        CSE 4551   B+           1
CSE        BSc        CSE 4551                2
CSE        BSc                                4
CSE        HD         CSE 5502   A            1
CSE        HD         CSE 5502   A-           1
CSE        HD         CSE 5502                2
CSE        HD                                 2

DEPARTMENT PROGRAMME  COURSE_COD GRA   COUNT(*)
---------- ---------- ---------- ---   ----------
CSE                                         6
EEE        BSc        EEE 3201   A-           1
EEE        BSc        EEE 3201   B            1
EEE        BSc        EEE 3201                2
EEE        BSc                                2
EEE        HD         EEE 5203   A+           2
EEE        HD         EEE 5203                2
EEE        HD                                 2
EEE                                          4
                                            10

21 rows selected.
```

Query 2:

```sql
-- 2
SELECT DEPARTMENT, PROGRAMME, COURSE_CODE, GRADE, COUNT(*)
FROM GRADES
GROUP BY CUBE (DEPARTMENT, PROGRAMME, COURSE_CODE, GRADE);
```

Result:

DEPARTMENT	PROGRAMME	COURSE_COD	GRA	COUNT(*)
				10
			A	2
			B	2
			A+	3
			A-	2
			B+	1
		CSE 4508		2
		CSE 4508	A	1
		CSE 4508	A+	1
		CSE 4551		2
		CSE 4551	B	1

DEPARTMENT	PROGRAMME	COURSE_COD	GRA	COUNT(*)
		CSE 4551	B+	1
		CSE 5502		2
		CSE 5502	A	1
		CSE 5502	A-	1
		EEE 3201		2
		EEE 3201	B	1
		EEE 3201	A-	1
		EEE 5203		2
		EEE 5203	A+	2
	HD			4
	HD		A	1

DEPARTMENT	PROGRAMME	COURSE_COD	GRA	COUNT(*)
	HD		A+	2
	HD		A-	1
	HD	CSE 5502		2
	HD	CSE 5502	A	1
	HD	CSE 5502	A-	1
	HD	EEE 5203		2
	HD	EEE 5203	A+	2
	BSc			6
	BSc		A	1
	BSc		B	2
	BSc		A+	1

DEPARTMENT	PROGRAMME	COURSE_COD	GRA	COUNT(*)
	BSc		A-	1
	BSc		B+	1
	BSc	CSE 4508		2
	BSc	CSE 4508	A	1
	BSc	CSE 4508	A+	1
	BSc	CSE 4551		2
	BSc	CSE 4551	B	1
	BSc	CSE 4551	B+	1
	BSc	EEE 3201		2
	BSc	EEE 3201	B	1
	BSc	EEE 3201	A-	1

```
DEPARTMENT PROGRAMME  COURSE_COD GRA   COUNT(*)
---------- ---------- ---------- ---   ----------
CSE                                           6
CSE                               A           2
CSE                               B           1
CSE                               A+          1
CSE                               A-          1
CSE                               B+          1
CSE                   CSE 4508                2
CSE                   CSE 4508   A           1
CSE                   CSE 4508   A+          1
CSE                   CSE 4551                2
CSE                   CSE 4551   B           1

DEPARTMENT PROGRAMME  COURSE_COD GRA   COUNT(*)
---------- ---------- ---------- ---   ----------
CSE                   CSE 4551   B+          1
CSE                   CSE 5502                2
CSE                   CSE 5502   A           1
CSE                   CSE 5502   A-          1
CSE        HD                                 2
CSE        HD                     A           1
CSE        HD                     A-          1
CSE        HD         CSE 5502                2
CSE        HD         CSE 5502   A           1
CSE        HD         CSE 5502   A-          1
CSE        BSc                                4
```

```
DEPARTMENT PROGRAMME  COURSE_COD GRA   COUNT(*)
---------- ---------- ---------- --- ----------
CSE        BSc                   A            1
CSE        BSc                   B            1
CSE        BSc                   A+           1
CSE        BSc                   B+           1
CSE        BSc        CSE 4508                2
CSE        BSc        CSE 4508   A            1
CSE        BSc        CSE 4508   A+           1
CSE        BSc        CSE 4551                2
CSE        BSc        CSE 4551   B            1
CSE        BSc        CSE 4551   B+           1
EEE                                           4

DEPARTMENT PROGRAMME  COURSE_COD GRA   COUNT(*)
---------- ---------- ---------- --- ----------
EEE                              B            1
EEE                              A+           2
EEE                              A-           1
EEE                   EEE 3201                2
EEE                   EEE 3201   B            1
EEE                   EEE 3201   A-           1
EEE                   EEE 5203                2
EEE                   EEE 5203   A+           2
EEE        HD                                 2
EEE        HD                    A+           2
EEE        HD         EEE 5203                2

DEPARTMENT PROGRAMME  COURSE_COD GRA   COUNT(*)
---------- ---------- ---------- --- ----------
EEE        HD         EEE 5203   A+           2
EEE        BSc                                2
EEE        BSc                   B            1
EEE        BSc                   A-           1
EEE        BSc        EEE 3201                2
EEE        BSc        EEE 3201   B            1
EEE        BSc        EEE 3201   A-           1

95 rows selected.
```