A Project Report Entitled

## "INDIAN PREMIER LEAGUE"

Under the Subject of

# Advanced Database Systems (COEN 380)

Guided By:

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## Introduction:

- This project consists of a database which is for the Indian premier league- a Twenty-20 cricket league where teams are based on Indian cities which started in 2008. The database has information from the year 2008 through the year 2019. This database contains information about teams, every match played, players that participated, locations where the matches were played, and ball-by-ball stats. Using this database, one can retrieve various information about players, matches, etc.

- Database used: Oracle database 19 c

- IDE used: Oracle SQL developer

- JDBC driver type: OJDBC10

## List of Tables:

1. **TEAMS**: This table contains information about the respective team along with team_id's.

2. **LOCATIONS**: This table describes venue_id along with venue name and their respective cities.

3. **PLAYERS**: This table has player_id along with their names, date of birth, batting hand, bowling skill as well as their country.

4. **MATCH**: Match describes match_id along with the venue_id, both the teams that played that match, match date, toss winner, actual winners, player of the match, match won by runs, and match won by wickets.

5. **DELIVERIES**: This table contains ball-by-all deliveries information according to the innings, bowler who bowled to the particular batsmen, total runs scored per ball, teams who played.

## List of Views:

1. **PLAYER_BIO:** This view has player id, name, batting hand and bowling skill from table players.
2. **BATSMEN_STATS:** This view has player name, strike rate and average from table deliveries.

## Entity – Relationship Diagram:
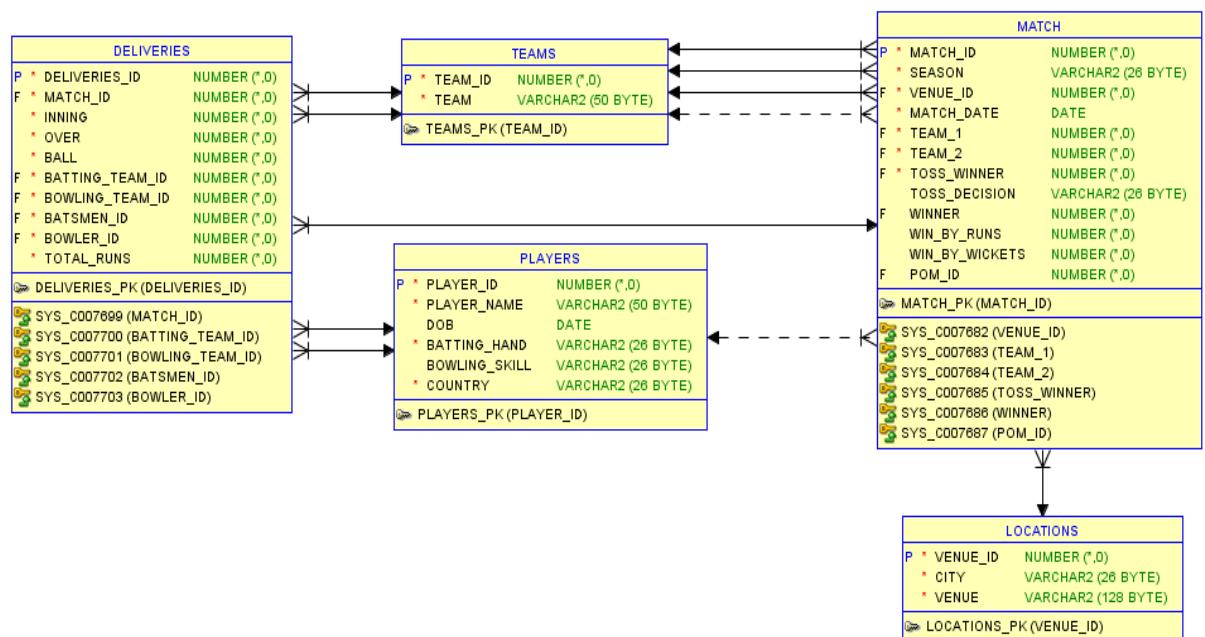


## Type of SQL statements created for the project:

1. CREATE TABLE
2. INSERTION OF DATA
3. SELECT STATEMENTS
4. CREATE VIEW
5. CREATE TRIGGERS
6. INTEGRITY CONSTRAINT

The ordered sequence of scripts that are executed are given below and each output of script execution are given in the next section:

1. Teams.sql
2. Locations.sql
3. Players.sql
4. Matches.sql
5. Deliveries.sql

## Set of SQL operations used on our database:

1.  DDL- CREATE/DROP/ALTER
2.  DML- IUD operations
3.  DQL- SELECT
4.  Aggregate
5.  Group by/ Order by
6.  Subquery
7.  Joins:
    - Left
    - Right
    - Inner
    - Self
    - Theta
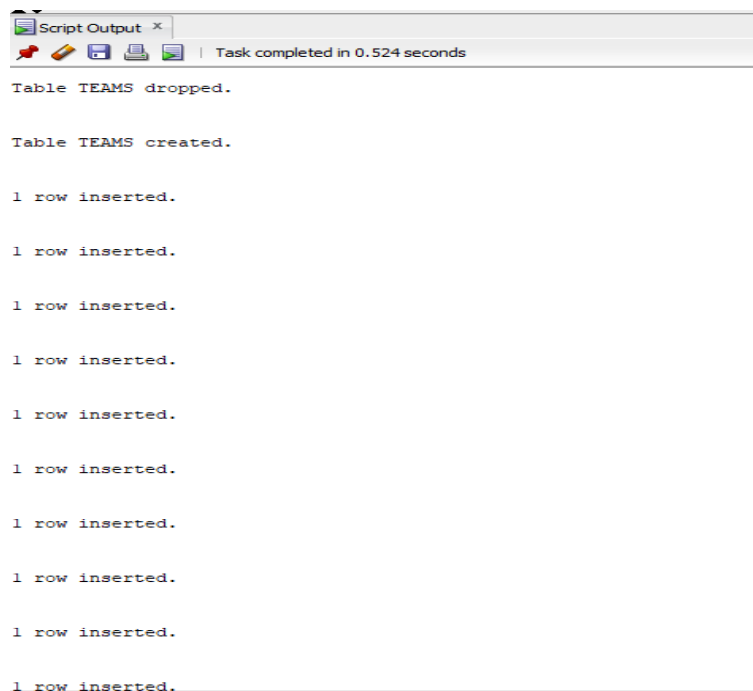    - Multiway joins
8.  Views
9.  Triggers

## SQL scripts in order of execution and their output:

1.  **Teams.sql**

    a)  Create query:
        *CREATE TABLE TEAMS ( TEAM_ID NUMBER(38) NOT NULL,
        TEAM VARCHAR2(50) NOT NULL,*
        *PRIMARY KEY (TEAM_ID));*

    b)  *INSERT INTO TEAMS (TEAM_ID, TEAM)*

        *VALUES (1, 'Pune Warriors');*

## 2. **Locations.sql**

    a) Create query:

    *CREATE TABLE LOCATIONS ( VENUE_ID INTEGER NOT NULL,*
    *CITY VARCHAR2(26) NOT NULL,*
    *VENUE VARCHAR2(128) NOT NULL,*
    *PRIMARY KEY (VENUE_ID));*

    b) Insert query

    *INSERT INTO LOCATIONS (VENUE_ID, CITY, VENUE)*
    *VALUES (1, 'Hyderabad', 'Rajiv Gandhi International Stadium, Uppal');*

```
Script Output  ×    Query Result  ×
  📌  🧹  💾  🖨  📄  |  Task completed in 0.375 seconds
Table LOCATIONS created.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.
```

## 3. **Players.sql**

    a) Create query:

    *CREATE TABLE PLAYERS ( PLAYER_ID INTEGER NOT NULL,*
    *PLAYER_NAME VARCHAR2(50) NOT NULL,*
    *DOB DATE,*
    *BATTING_HAND VARCHAR2(26) NOT NULL,*
    *BOWLING_SKILL VARCHAR2(26),*
    *COUNTRY VARCHAR2(26) NOT NULL,*
    *PRIMARY KEY(PLAYER_ID));*

    b) Insert query:

    *INSERT   INTO   PLAYERS   (PLAYER_ID,   PLAYER_NAME,   DOB,*
    *BATTING_HAND, BOWLING_SKILL, COUNTRY)*

4

*VALUES (1, 'A Ashish Reddy', to_date('24-Feb-91', 'DD-MON-RR'), 'Right_Hand', 'Right-arm medium', 'India');*

```
Table PLAYERS created.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.
```

## 4. **Match.sql**

a)  Create query:
*CREATE TABLE MATCH ( MATCH_ID INTEGER NOT NULL,*
*SEASON VARCHAR2(26) NOT NULL,*
*VENUE_ID INTEGER NOT NULL,*
*MATCH_DATE DATE NOT NULL,*
*TEAM_1 INTEGER NOT NULL,*
*TEAM_2 INTEGER NOT NULL,*
*TOSS_WINNER INTEGER NOT NULL,*
*TOSS_DECISION VARCHAR2(26),*
*WINNER INTEGER,*
*WIN_BY_RUNS INTEGER,*
*WIN_BY_WICKETS INTEGER,*
*POM_ID INTEGER,*
*PRIMARY KEY (MATCH_ID),*
*FOREIGN KEY (VENUE_ID) REFERENCES LOCATIONS(VENUE_ID),*
*FOREIGN KEY (TEAM_1) REFERENCES TEAMS(TEAM_ID),*
*FOREIGN KEY (TEAM_2) REFERENCES TEAMS(TEAM_ID),*
*FOREIGN KEY (TOSS_WINNER) REFERENCES TEAMS(TEAM_ID),*
*FOREIGN KEY (WINNER) REFERENCES TEAMS(TEAM_ID),*
*FOREIGN KEY (POM_ID) REFERENCES PLAYERS(PLAYER_ID));*

b)  Insert query:
*INSERT INTO MATCH (MATCH_ID, SEASON, VENUE_ID, MATCH_DATE, TEAM_1, TEAM_2, TOSS_WINNER, TOSS_DECISION, WINNER, WIN_BY_RUNS, WIN_BY_WICKETS, POM_ID)*

VALUES (1, 'IPL-2017', 1, to_date('04/05/2017', 'MM/DD/RRRR'), 12, 13, 13, 'field', 12, 35, 0, 564);

```
Table MATCH created.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.
```

## 5. **Deliveries.sql**

a) Create query:

CREATE TABLE DELIVERIES ( DELIVERIES_ID INTEGER NOT NULL,
MATCH_ID INTEGER NOT NULL,
INNING INTEGER NOT NULL,
OVER INTEGER NOT NULL,
BALL INTEGER NOT NULL,
BATTING_TEAM_ID INTEGER NOT NULL,
BOWLING_TEAM_ID INTEGER NOT NULL,
BATSMEN_ID INTEGER NOT NULL,
BOWLER_ID INTEGER NOT NULL,
TOTAL_RUNS INTEGER,
PRIMARY KEY (DELIVERIES_ID),
FOREIGN KEY (MATCH_ID) REFERENCES MATCH(MATCH_ID),
FOREIGN KEY (BATTING_TEAM_ID) REFERENCES TEAMS(TEAM_ID),
FOREIGN KEY (BOWLING_TEAM_ID) REFERENCES TEAMS(TEAM_ID),
FOREIGN KEY (BATSMEN_ID) REFERENCES PLAYERS(PLAYER_ID),
FOREIGN KEY (BOWLER_ID) REFERENCES PLAYERS(PLAYER_ID));

b) Insert query:

INSERT INTO DELIVERIES (DELIVERIES_ID, MATCH_ID, INNING, OVER, BALL, BATTING_TEAM_ID, BOWLING_TEAM_ID, BATSMEN_ID, BOWLER_ID, TOTAL_RUNS)

*VALUES (1, 1, 1, 1, 1, 12, 13, 124, 529, 0);*

```
Table DELIVERIES created.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.
```

6. **Describe statement:**

   Describe statement gives information about column, data type of the column as well as Null or Not Null attributes of column.

   a) *DESCRIBE TEAMS;*

   ```
   Name      Null?     Type
   -------   --------  ------------
   TEAM_ID NOT NULL NUMBER(38)
   TEAM     NOT NULL VARCHAR2(50)
   ```

   b) *DESCRIBE LOCATIONS;*

   ```
   Name       Null?     Type
   --------  --------  -------------
   VENUE_ID NOT NULL NUMBER(38)
   CITY      NOT NULL VARCHAR2(26)
   VENUE     NOT NULL VARCHAR2(128)
   ```

   c) *DESCRIBE PLAYERS;*

   ```
   Name            Null?     Type
   -------------  --------  ------------
   PLAYER_ID      NOT NULL NUMBER(38)
   PLAYER_NAME    NOT NULL VARCHAR2(50)
   DOB                      DATE
   BATTING_HAND   NOT NULL VARCHAR2(26)
   BOWLING_SKILL           VARCHAR2(26)
   COUNTRY        NOT NULL VARCHAR2(26)
   ```

*d) DESCRIBE MATCH;*

```
Name            Null?     Type
--------------- --------- ------------
MATCH_ID        NOT NULL  NUMBER(38)
SEASON          NOT NULL  VARCHAR2(26)
VENUE_ID        NOT NULL  NUMBER(38)
MATCH_DATE      NOT NULL  DATE
TEAM_1          NOT NULL  NUMBER(38)
TEAM_2          NOT NULL  NUMBER(38)
TOSS_WINNER     NOT NULL  NUMBER(38)
TOSS_DECISION             VARCHAR2(26)
WINNER                    NUMBER(38)
WIN_BY_RUNS               NUMBER(38)
WIN_BY_WICKETS            NUMBER(38)
POM_ID                    NUMBER(38)
```

*e) DESCRIBE DELIVERIES;*

```
Name             Null?     Type
---------------- --------- ----------
DELIVERIES_ID    NOT NULL  NUMBER(38)
MATCH_ID         NOT NULL  NUMBER(38)
INNING           NOT NULL  NUMBER(38)
OVER             NOT NULL  NUMBER(38)
BALL             NOT NULL  NUMBER(38)
BATTING_TEAM_ID  NOT NULL  NUMBER(38)
BOWLING_TEAM_ID  NOT NULL  NUMBER(38)
BATSMEN_ID       NOT NULL  NUMBER(38)
BOWLER_ID        NOT NULL  NUMBER(38)
TOTAL_RUNS       NOT NULL  NUMBER(38)
```

## 7. **Aggregate and Group by:**

### a) Count

**Team that have won the most number of matches.**

*Select * from (select t.team as team,count(i.winner) as matches_won from match i inner join teams t on i.winner=t.team_id group by t.team order by matches_won desc) res where rownum < 2;*

| TEAM | MATCHES_WON |
|------|-------------|
| 1 Mumbai Indians | 109 |

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```
#Team that have won the most number of matches(COUNT)

Select * from (select t.team as team,count(i.winner) as matches_won from match i inner join teams t on i.winner=t.team_id group by t.team order by matches_won desc) res where rownum < 2

TEAM , MATCHES_WON
Mumbai Indians , 109
```

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### b) Sum

**Total score of teams played in 'IPL-2016' season**

*select d.match_id,t.team,sum(d.total_runs) as total_runs from match m inner join deliveries d on m.match_id=d.match_id inner join teams t on t.team_id=d.Batting_team_id where m.season='IPL-2016' group by d.match_id,t.team order by d.match_id;*

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8. **Order by**
   **List out player data in descending order according to player name.**
   *select * from players order by player_name desc;*



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9. **Sub Query**

   **Give the name of the batsmen who scored only 6 runs facing a Left-arm medium-fast bowler**

   *Select player_name from players where player_id in(Select batsmen_id from deliveries where total_runs=6 and bowler_id in (Select player_id from players where bowling_skill='Left-arm medium-fast'));*



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```
#Give the name of the batsmen who scored 6 runs facing a Left-arm medium-fast bowler(SUB-QUERY)

Select player_name from players where player_id in(Select batsmen_id from deliveries where total_runs=6 and bowler_id in (Select player_id from players where bowling_skill='Left-arm medium-fast'))

PLAYER_NAME
DA Warner
DJ Bravo
DJ Hussey
DJG Sammy
DL Vettori
DR Smith
F du Plessis
G Gambhir
GJ Maxwell
Gurkeerat Singh
HH Pandya
HM Amla
IK Pathan
Ishan Kishan
```

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## 10.    **Left join**

**List out all the players and their details and the match id for which they have won the player of the match, return null for players who have never won player of the match.**

*select   a.player_name,b.season,a.batting_hand,a.bowling_skill,b.match_id,b.pom_id FROM players a LEFT JOIN match b ON a.player_id=b.pom_id   ORDER BY b.match_id;*

Query Result ×

SQL | Fetched 100 rows in 0.007 seconds

| | PLAYER_NAME | SEASON | BATTING_HAND | BOWLING_SKILL | MATCH_ID | POM_ID |
|---|---|---|---|---|---|---|
| 1 | Yuvraj Singh | IPL-2017 | Left_Hand | Slow left-arm orthodox | 1 | 564 |
| 2 | SPD Smith | IPL-2017 | Right_Hand | Legbreak googly | 2 | 494 |
| 3 | CA Lynn | IPL-2017 | Right_Hand | Slow left-arm orthodox | 3 | 101 |
| 4 | GJ Maxwell | IPL-2017 | Right_Hand | Right-arm offbreak | 4 | 166 |
| 5 | KM Jadhav | IPL-2017 | Right_Hand | Right-arm offbreak | 5 | 249 |
| 6 | Rashid Khan | IPL-2017 | Right_hand | Legbreak googly | 6 | 398 |
| 7 | N Rana | IPL-2017 | Left_Hand | Right-arm offbreak | 7 | 333 |
| 8 | AR Patel | IPL-2017 | Left_Hand | Slow left-arm orthodox | 8 | 60 |
| 9 | SV Samson | IPL-2017 | Right_Hand | NULL | 9 | 507 |
| 10 | JJ Bumrah | IPL-2017 | Right_Hand | Right-arm medium | 10 | 215 |
| 11 | SP Narine | IPL-2017 | Left_Hand | Right-arm offbreak | 11 | 493 |
| 12 | KA Pollard | IPL-2017 | Right_Hand | Right-arm medium-fast | 12 | 233 |
| 13 | AJ Tye | IPL-2017 | Right_hand | Right-arm fast-medium | 13 | 44 |
| 14 | RV Uthappa | IPL-2017 | Right_Hand | Right-arm medium | 14 | 422 |
| 15 | CJ Anderson | IPL-2017 | Left_Hand | Left-arm medium-fast | 15 | 105 |
| 16 | N Rana | IPL-2017 | Left_Hand | Right-arm offbreak | 16 | 333 |
| 17 | BA Stokes | IPL-2017 | Left_Hand | Right-arm fast-medium | 17 | 79 |
| 18 | NM Coulter-Nile | IPL-2017 | Right_Hand | Right-arm fast | 18 | 343 |
| 19 | B Kumar | IPL-2017 | Right_Hand | Right-arm medium | 19 | 73 |
| 20 | CH Gayle | IPL-2017 | Left_Hand | Right-arm offbreak | 20 | 103 |
| 21 | KS Williamson | IPL-2017 | Right_Hand | Right-arm offbreak | 21 | 253 |
| 22 | JC Buttler | IPL-2017 | Right_Hand | NULL | 22 | 207 |

| | PLAYER_NAME | SEASON | BATTING_HAND | BOWLING_SKILL | MATCH_ID | POM_ID |
|---|---|---|---|---|---|---|
| 998 | A Chopra | (null) | Right_Hand | Right-arm offbreak | (null) | (null) |
| 999 | AB Agarkar | (null) | Right_Hand | Right-arm fast | (null) | (null) |
| 1000 | ND Doshi | (null) | Right_Hand | Slow left-arm orthodox | (null) | (null) |
| 1001 | NJ Rimmington | (null) | Right_Hand | Right-arm fast-medium | (null) | (null) |
| 1002 | R Ninan | (null) | Right_Hand | Right-arm offbreak | (null) | (null) |
| 1003 | UBT Chand | (null) | Right_Hand | Right-arm offbreak | (null) | (null) |
| 1004 | AM Nayar | (null) | Left_Hand | Right-arm medium | (null) | (null) |
| 1005 | Mohammad Hafeez | (null) | Right_Hand | Right-arm offbreak | (null) | (null) |
| 1006 | J Syed Mohammad | (null) | Left_Hand | Slow left-arm orthodox | (null) | (null) |

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```
#List out all the players and their details and the match id for which they have won the player of the match, return null for players who have never won player of the match(LEFT-JOIN)

select a.player_name,b.season,a.batting_hand,a.bowling_skill,b.match_id,b.pom_id FROM players a LEFT JOIN match b ON a.player_id=b.pom_id  ORDER BY b.match_id

PLAYER_NAME , SEASON , BATTING_HAND , BOWLING_SKILL , MATCH_ID , POM_ID
Yuvraj Singh , IPL-2017 , Left_Hand , Slow left-arm orthodox , 1 , 564
SPD Smith , IPL-2017 , Right_Hand , Legbreak googly , 2 , 494
CA Lynn , IPL-2017 , Right_Hand , Slow left-arm orthodox , 3 , 101
GJ Maxwell , IPL-2017 , Right_Hand , Right-arm offbreak , 4 , 166
KM Jadhav , IPL-2017 , Right_Hand , Right-arm offbreak , 5 , 249
Rashid Khan , IPL-2017 , Right_hand , Legbreak googly , 6 , 398
N Rana , IPL-2017 , Left_Hand , Right-arm offbreak , 7 , 333
AR Patel , IPL-2017 , Left_Hand , Slow left-arm orthodox , 8 , 60
SV Samson , IPL-2017 , Right_Hand , NULL , 9 , 507
JJ Bumrah , IPL-2017 , Right_Hand , Right-arm medium , 10 , 215
SP Narine , IPL-2017 , Left_Hand , Right-arm offbreak , 11 , 493
KA Pollard , IPL-2017 , Right_Hand , Right-arm medium-fast , 12 , 233
AJ Tye , IPL-2017 , Right_hand , Right-arm fast-medium , 13 , 44
RV Uthappa , IPL-2017 , Right_Hand , Right-arm medium , 14 , 422
CJ Anderson , IPL-2017 , Left_Hand , Left-arm medium-fast , 15 , 105
N Rana , IPL-2017 , Left_Hand , Right-arm offbreak , 16 , 333
```

```
Joginder Sharma  ,  null ,  Right_Hand ,  Right-arm fast-medium ,  null ,  null

JR Hopes ,  null ,  Right_Hand ,  Right-arm medium ,  null ,  null

JW Hastings ,  null ,  Right_Hand ,  Right-arm fast-medium ,  null ,  null

K Goel ,  null ,  Left_Hand ,  Right-arm offbreak ,  null ,  null

K Gowtham ,  null ,  Right_hand ,  Right-arm offbreak ,  null ,  null

K Khejroliya ,  null ,  Right_Hand ,  Left-arm fast-medium ,  null ,  null

K Santokie ,  null ,  Left_Hand ,  Left-arm medium ,  null ,  null

K Upadhyay ,  null ,  Right_Hand ,  Right-arm medium ,  null ,  null

KAJ Roach ,  null ,  Right_Hand ,  Right-arm fast ,  null ,  null
```

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## 11.   **Right join**

a) **List the players and the number of times they have won the player of the match:**
*Select p.player_name, count(match_id)  from match m right join players p ON m.pom_id = p.player_id group by(p.player_name);*



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```
#List out the right handed batsmen who have won the player of the match award(RIGHT-JOIN)

select m.match_id,p.player_name,p.batting_hand,m.pom_id FROM match m RIGHT JOIN players p ON p.player_id=m.pom_id WHERE p.batting_hand='Right_Hand'

MATCH_ID ,  PLAYER_NAME ,  BATTING_HAND ,  POM_ID
2 ,  SPD Smith ,  Right_Hand ,  494
3 ,  CA Lynn ,  Right_Hand ,  101
4 ,  GJ Maxwell ,  Right_Hand ,  166
5 ,  KM Jadhav ,  Right_Hand ,  249
9 ,  SV Samson ,  Right_Hand ,  507
10 ,  JJ Bumrah ,  Right_Hand ,  215
12 ,  KA Pollard ,  Right_Hand ,  233
14 ,  RV Uthappa ,  Right_Hand ,  422
18 ,  NM Coulter-Nile ,  Right_Hand ,  343
19 ,  B Kumar ,  Right_Hand ,  73
21 ,  KS Williamson ,  Right_Hand ,  253
22 ,  JC Buttler ,  Right_Hand ,  207
25 ,  MS Dhoni ,  Right_Hand ,  326
26 ,  HM AmLa ,  Right_Hand ,  182
```
JDBC

## 12.     Inner join

### a) List out total number of Player of the match award won by every player:

*select a.player_name,count(b.pom_id),b.pom_id from match b join players a on a.player_id = b.pom_id group by b.pom_id,a.player_name;*

| | PLAYER_NAME | COUNT(B.POM_ID) | POM_ID |
|---|---|---|---|
| 1 | GJ Maxwell | 5 | 166 |
| 2 | SP Narine | 9 | 493 |
| 3 | DA Warner | 17 | 124 |
| 4 | RG Sharma | 17 | 403 |
| 5 | RR Pant | 6 | 411 |
| 6 | AT Rayudu | 9 | 64 |
| 7 | SR Watson | 15 | 496 |
| 8 | YK Pathan | 16 | 561 |
| 9 | JDP Oram | 1 | 210 |
| 10 | WPUJC Vaas | 1 | 554 |
| 11 | AA Jhunjhunwala | 1 | 23 |
| 12 | S Anirudha | 1 | 424 |
| 13 | SB Wagh | 1 | 465 |
| 14 | MM Patel | 2 | 313 |
| 15 | RE Levi | 1 | 400 |
| 16 | M Morkel | 2 | 281 |
| 17 | UT Yadav | 8 | 535 |

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```
#Give the batting hand and name of the players whose strike rate is <100 (INNER-JOIN)

Select p.batting_hand, p.player_name from players p INNER JOIN batsmen_stats b ON p.player_name = b.player_name and b.strike_rate<100

BATTING_HAND ,  PLAYER_NAME
Right_hand ,  D Shorey
Right_Hand ,  DJ Muthuswami
Right_Hand ,  DJ Thornely
Right_Hand ,  DP Nannes
Right_Hand ,  DR Martyn
Right_Hand ,  DS Kulkarni
Right_Hand ,  FH Edwards
Right_Hand ,  GD McGrath
Right_Hand ,  GH Vihari
Right_Hand ,  GR Napier
Right_Hand ,  H Das
Right_Hand ,  H Gurney
```
JDBC

### b) List out venue details where the team decided to field first and won.

*SELECT m.match_id,m.venue_id,m.toss_decision,m.toss_winner,m.winner,l.venue FROM match m INNER JOIN locations l on m.venue_id=l.venue_id where m.toss_winner=m.winner AND m.toss_decision='field';*

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### 13.      **Self-join**

**List down all allrounders who have ever batted and bowled both in the same match(SELF-JOIN);**
*select distinct t.team, p.player_name from deliveries d1 inner join deliveries d2 on d2.match_id = d1.match_id*
*and d1.batsmen_id = d2.bowler_id*
*inner join teams t on t.team_id = d1.batting_team_id*
*inner join players p on p.player_id = d1.batsmen_id*
*order by player_name;*



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```
#List down all allroudners who have ever batted and bowled both in the same match(SELF-JOIN)

select distinct t.team, p.player_name from deliveries d1 inner join deliveries d2 on d2.match_id = d1.match_id
and d1.batsmen_id = d2.bowler_id
inner join teams t on t.team_id = d1.batting_team_id
inner join players p on p.player_id = d1.batsmen_id
order by player_name

TEAM ,  PLAYER_NAME
Chennai Super Kings ,  A Ashish Reddy
Mumbai Indians ,  A Ashish Reddy
Royal Challengers Bangalore ,  A Ashish Reddy
Sunrisers Hyderabad ,  A Ashish Reddy
Chennai Super Kings ,  A Chandila
Kolkata Knight Riders ,  A Chandila
Kings XI Punjab ,  A Choudhary
Kolkata Knight Riders ,  A Choudhary
Royal Challengers Bangalore ,  A Choudhary
```
JDBC
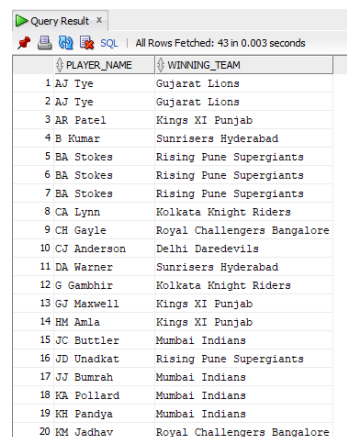
## 14.      **Multiway join**
### a) Two-way join

**Player of the match of winning team for IPL-2017 season.**

*Select p.player_name,t.team as winning_team from players p inner join match m on p.player_id=m.pom_id inner join teams t on m.winner=t.team_id where m.season='IPL-2017';*

| | PLAYER_NAME | WINNING_TEAM |
|---|---|---|
| 1 | AJ Tye | Gujarat Lions |
| 2 | AJ Tye | Gujarat Lions |
| 3 | AR Patel | Kings XI Punjab |
| 4 | B Kumar | Sunrisers Hyderabad |
| 5 | BA Stokes | Rising Pune Supergiants |
| 6 | BA Stokes | Rising Pune Supergiants |
| 7 | BA Stokes | Rising Pune Supergiants |
| 8 | CA Lynn | Kolkata Knight Riders |
| 9 | CH Gayle | Royal Challengers Bangalore |
| 10 | CJ Anderson | Delhi Daredevils |
| 11 | DA Warner | Sunrisers Hyderabad |
| 12 | G Gambhir | Kolkata Knight Riders |
| 13 | GJ Maxwell | Kings XI Punjab |
| 14 | HM Amla | Kings XI Punjab |
| 15 | JC Buttler | Mumbai Indians |
| 16 | JD Unadkat | Rising Pune Supergiants |
| 17 | JJ Bumrah | Mumbai Indians |
| 18 | KA Pollard | Mumbai Indians |
| 19 | KH Pandya | Mumbai Indians |
| 20 | KM Jadhav | Royal Challengers Bangalore |

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```
#Player of the match of winning team for IPL-2017 season(TWO-WAY JOIN)

Select p.player_name,t.team as winning_team from players p inner join match m on p.player_id=m.pom_id inner join teams t on m.winner=t.team_id where m.season='IPL-2017'

PLAYER_NAME ,  WINNING_TEAM
DA Warner ,  Sunrisers Hyderabad
G Gambhir ,  Kolkata Knight Riders
GJ Maxwell ,  Kings XI Punjab
HM Amla ,  Kings XI Punjab
JC Buttler ,  Mumbai Indians
JD Unadkat ,  Rising Pune Supergiants
JJ Bumrah ,  Mumbai Indians
KA Pollard ,  Mumbai Indians
KH Pandya ,  Mumbai Indians
KM Jadhav ,  Royal Challengers Bangalore
```
JDBC

**b) Three-way join**

**List out the player of the match from every ipl matches.**

*select a.player_name, b.season,c.team,a.country as player_country, d.venue from players a inner join match b on a.player_id=b.pom_id inner join teams c on b.winner = c.team_id left join locations d on d.venue_id = b.venue_id order by b.season;*

| | PLAYER_NAME | SEASON | TEAM | PLAYER_COUNTRY | VENUE |
|---|---|---|---|---|---|
| 1 | LMP Simmons | IPL-2008 | Mumbai Indians | West Indies | M Chinnaswamy Stadium |
| 2 | GC Smith | IPL-2008 | Rajasthan Royals | South Africa | Dr DY Patil Sports Academy |
| 3 | DR Smith | IPL-2008 | Gujarat Lions | West Indies | Feroz Shah Kotla |
| 4 | S Dhawan | IPL-2008 | Sunrisers Hyderabad | India | Wankhede Stadium |
| 5 | MM Sharma | IPL-2008 | Kings XI Punjab | India | Eden Gardens |
| 6 | SS Iyer | IPL-2008 | Delhi Daredevils | India | Sawai Mansingh Stadium |
| 7 | WP Saha | IPL-2008 | Kings XI Punjab | India | Rajiv Gandhi International Stadium, Uppal |
| 8 | KK Nair | IPL-2008 | Delhi Daredevils | India | MA Chidambaram Stadium, Chepauk |
| 9 | Mohammed Siraj | IPL-2008 | Sunrisers Hyderabad | India | Rajiv Gandhi International Stadium, Uppal |
| 10 | AT Rayudu | IPL-2008 | Mumbai Indians | India | Punjab Cricket Association Stadium, Mohali |
| 11 | JD Unadkat | IPL-2008 | Rising Pune Supergiants | India | M Chinnaswamy Stadium |
| 12 | HV Patel | IPL-2008 | Royal Challengers Bangalore | India | MA Chidambaram Stadium, Chepauk |
| 13 | Washington Sundar | IPL-2008 | Rising Pune Supergiants | India | Dr DY Patil Sports Academy |
| 14 | NM Coulter-Nile | IPL-2008 | Kolkata Knight Riders | Australia | Punjab Cricket Association Stadium, Mohali |
| 15 | KV Sharma | IPL-2008 | Mumbai Indians | India | M Chinnaswamy Stadium |
| 16 | KH Pandya | IPL-2008 | Mumbai Indians | India | Eden Gardens |

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```
#List out the player of the match from every ipl matches(THREE-WAY JOIN)

SELECT a.PLAYER_NAME, b.season,c.team,a.country as player_country, d.venue from players a inner join match b on a.player_id=b.pom_id inner join teams c on b.winner =  c.team_id left join

PLAYER_NAME ,  SEASON ,  TEAM ,  PLAYER_COUNTRY ,  VENUE
LMP Simmons ,  IPL-2008 ,  Mumbai Indians ,  West Indies ,  M Chinnaswamy Stadium
AT Rayudu ,  IPL-2008 ,  Mumbai Indians ,  India ,  Punjab Cricket Association Stadium, Mohali
KV Sharma ,  IPL-2008 ,  Mumbai Indians ,  India ,  M Chinnaswamy Stadium
KH Pandya ,  IPL-2008 ,  Mumbai Indians ,  India ,  Eden Gardens
ST Jayasuriya ,  IPL-2008 ,  Mumbai Indians ,  Sri Lanka ,  MA Chidambaram Stadium, Chepauk
SM Pollock ,  IPL-2008 ,  Mumbai Indians ,  South Africa ,  Feroz Shah Kotla
A Nehra ,  IPL-2008 ,  Mumbai Indians ,  India ,  Rajiv Gandhi International Stadium, Uppal
CRD Fernando ,  IPL-2008 ,  Mumbai Indians ,  Sri Lanka ,  Wankhede Stadium
ST Jayasuriya ,  IPL-2008 ,  Mumbai Indians ,  Sri Lanka ,  Eden Gardens
SM Pollock ,  IPL-2008 ,  Mumbai Indians ,  South Africa ,  Wankhede Stadium
```

JDBC

## 15.       **Theta join**

**List the players with their total runs and the no of batsmen scoring more runs than them.**

*with total_runs as (*
*select batsmen_id, sum(total_runs) as runs from deliveries group by batsmen_id)*
*select p.player_name, b.runs, count(distinct a.batsmen_id)-1 num_of_batsmen from total_runs a inner join total_runs b*
*on a.runs>b.runs*
*inner join players p on p.player_id = b.batsmen_id group by p.player_name, b.runs*
*order by num_of_batsmen;*

| | PLAYER_NAME | RUNS | NUM_OF_BATSMEN |
|---|---|---|---|
| 1 | V Kohli | 5334 | 0 |
| 2 | RG Sharma | 4855 | 1 |
| 3 | CH Gayle | 4775 | 2 |
| 4 | DA Warner | 4771 | 3 |
| 5 | S Dhawan | 4754 | 4 |
| 6 | AB de Villiers | 4476 | 5 |
| 7 | RV Uthappa | 4431 | 6 |
| 8 | MS Dhoni | 4305 | 7 |
| 9 | G Gambhir | 4263 | 8 |
| 10 | KD Karthik | 3744 | 9 |
| 11 | SR Watson | 3627 | 10 |
| 12 | AM Rahane | 3558 | 11 |
| 13 | AT Rayudu | 3324 | 12 |
| 14 | YK Pathan | 3264 | 13 |
| 15 | PA Patel | 2951 | 14 |
| 16 | MK Pandey | 2946 | 15 |
| 17 | BB McCullum | 2928 | 16 |
| 18 | V Sehwag | 2915 | 17 |
| 19 | KA Pollard | 2866 | 18 |
| 20 | Yuvraj Singh | 2836 | 19 |
| 21 | M Vijay | 2658 | 20 |

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```
#List the players with their total runs and the no of batsmen scoring more runs than them(THETA-JOIN)

with total_runs as (
select batsmen_id, sum(total_runs) as runs from deliveries group by batsmen_id)
select p.player_name, b.runs, count(distinct a.batsmen_id)-1 num_of_batsmen from total_runs a inner join total_runs b
on a.runs>b.runs
inner join players p on p.player_id = b.batsmen_id group by p.player_name, b.runs
order by num_of_batsmen

PLAYER_NAME , RUNS , NUM_OF_BATSMEN
V Kohli , 5507 , 0
RG Sharma , 4968 , 1
CH Gayle , 4873 , 2
DA Warner , 4862 , 3
S Dhawan , 4826 , 4
RV Uthappa , 4599 , 5
AB de Villiers , 4545 , 6
G Gambhir , 4391 , 7
MS Dhoni , 4382 , 8
KD Karthik , 3819 , 9
SR Watson , 3698 , 10
```
JDBC

## 16. **View**

### a) Create a view that shows batsmen statistics including strike rate and average.

*CREATE OR REPLACE VIEW batsmen_stats AS*
*SELECT*
    *p.player_name,*
    *round(sum(d.total_runs)/count(d.deliveries_id),2)* 100 as strike_rate,*
    *round(sum(d.total_runs)/count(distinct d.match_id),2) as average*
*FROM*
    *deliveries d*
    *INNER JOIN players p ON p.player_id = d.batsmen_id*
*GROUP BY*
    *p.player_name*
*ORDER BY*
        *average desc, strike_rate desc;*

Script Output

Task completed in 0.202 seconds
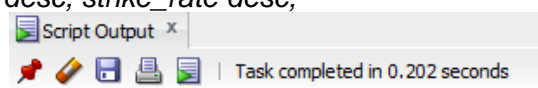
View BATSMEN_STATS created.

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select * from batsmen_stats;

| | PLAYER_NAME | STRIKE_RATE | AVERAGE |
|---|---|---|---|
| 1 | J Bairstow | 166 | 32.47 |
| 2 | LMP Simmons | 131 | 31.91 |
| 3 | DA Warner | 147 | 31.78 |
| 4 | HM Amla | 146 | 31.78 |
| 5 | CH Gayle | 156 | 31.24 |
| 6 | KS Williamson | 139 | 31.09 |
| 7 | SE Marsh | 137 | 30.98 |
| 8 | ML Hayden | 144 | 30.9 |
| 9 | JC Buttler | 157 | 30.13 |
| 10 | RR Pant | 169 | 29.8 |
| 11 | Q de Kock | 137 | 29.42 |
| 12 | MN van Wyk | 130 | 29.17 |
| 13 | KL Rahul | 142 | 28.99 |
| 14 | MEK Hussey | 125 | 28.27 |
| 15 | AB de Villiers | 155 | 28.06 |

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```
#Show the contents of view- batsmen_stats (VIEW)

select * from batsmen_stats

PLAYER_NAME , STRIKE_RATE , AVERAGE
J Bairstow , 166 , 32.47
LMP Simmons , 131 , 31.91
DA Warner , 147 , 31.78
HM Amla , 146 , 31.78
CH Gayle , 156 , 31.24
KS Williamson , 139 , 31.09
SE Marsh , 137 , 30.98
ML Hayden , 144 , 30.9
JC Buttler , 157 , 30.13
RR Pant , 169 , 29.8
Q de Kock , 137 , 29.42
MN van Wyk , 130 , 29.17
KL Rahul , 142 , 28.99
MEK Hussey , 125 , 28.27
```
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**b) Create a view named player_bio that has the player's data.**

*CREATE OR REPLACE VIEW player_bio AS*
  *SELECT*
    *player_id,*
    *player_name,*
    *batting_hand,*
    *bowling_skill*
  *FROM*
    *Players;*

View PLAYER_BIO created.

*select * from player_bio*

| | PLAYER_ID | PLAYER_NAME | BATTING_HAND | BOWLING_SKILL |
|---|---|---|---|---|
| 1 | 1 | A Ashish Reddy | Right_Hand | Right-arm medium |
| 2 | 2 | A Chandila | Right_Hand | Right-arm offbreak |
| 3 | 3 | A Chopra | Right_Hand | Right-arm offbreak |
| 4 | 4 | A Choudhary | Right_hand | Left-arm fast-medium |
| 5 | 5 | A Dananjaya | Right_Hand | Right-arm offbreak |
| 6 | 6 | A Flintoff | Right_Hand | Right-arm fast-medium |
| 7 | 7 | A Hales | Right_hand | (null) |
| 8 | 8 | A Joseph | Right_Hand | Right-arm fast |
| 9 | 9 | A Kumble | Right_Hand | Legbreak googly |
| 10 | 10 | A Mishra | Right_Hand | Legbreak |
| 11 | 11 | A Mithun | Right_Hand | Right-arm medium |
| 12 | 12 | A Mukund | Right_Hand | Legbreak googly |
| 13 | 13 | A Nehra | Right_Hand | Left-arm medium-fast |
| 14 | 14 | A Nel | Right_Hand | Right-arm fast-medium |
| 15 | 15 | A Roy | Left_Hand | Slow left-arm orthodox |
| 16 | 16 | A Singh | Right Hand | Right-arm medium-fast |

```
#Show the contents of view- Player_bio (VIEW)

select * from player_bio

PLAYER_ID , PLAYER_NAME , BATTING_HAND , BOWLING_SKILL
118 , D Salunkhe , Right_Hand , Legbreak
119 , D Shorey , Right_hand , Slow left-arm orthodox
120 , D Short , Left_Hand , Slow left-arm orthodox
121 , D Wiese , Right_Hand , Right-arm medium-fast
122 , D Willey , Right_Hand , Left-arm fast-medium
123 , DA Miller , Left_Hand , Right-arm offbreak
124 , DA Warner , Left_Hand , Legbreak
125 , DAJ Bracewell , Right_Hand , Right-arm fast-medium
126 , DB Das , Right_Hand , Legbreak googly
127 , DB Ravi Teja , Right_Hand , Legbreak googly
128 , DE Bollinger , Left_Hand , Left-arm fast-medium
129 , DH Yagnik , Left_Hand , NULL
```

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## 17.    **Trigger**

**INSTEAD of TRIGGER:**

*CREATE OR REPLACE TRIGGER update_player_bio_trigger*
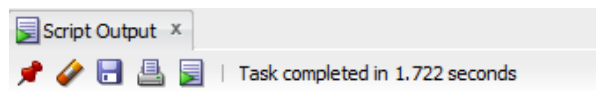
*INSTEAD OF UPDATE ON player_bio*
*BEGIN*
  *UPDATE players SET*
    *batting_hand = :NEW.batting_hand,*
    *bowling_skill = :NEW.bowling_skill*
  *WHERE player_id = :OLD.player_id;*
*END;*

Script Output X

Task completed in 1.722 seconds

Trigger UPDATE_PLAYER_BIO_TRIGGER compiled

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*Select \* from players;*

| | PLAYER_ID | PLAYER_NAME | DOB | BATTING_HAND | BOWLING_SKILL | COUNTRY |
|---|---|---|---|---|---|---|
| 1 | 353 | P Krishna | (null) | Right_hand | Right-arm fast | India |
| 2 | 354 | P Kumar | 02-10-86 | Right_Hand | Right-arm medium | India |
| 3 | 355 | P Negi | 06-01-93 | Left_Hand | Slow left-arm orthodox | India |
| 4 | 356 | P Parameswaran | 30-05-85 | Right_Hand | Left-arm medium | India |
| 5 | 357 | P Prasanth | 22-05-85 | Left_Hand | Slow left-arm orthodox | India |
| 6 | 358 | P R Barman | (null) | Right_hand | Legbreak | India |
| 7 | 359 | P Raj | (null) | Right_Hand | Left-arm medium | India |
| 8 | 360 | P Sahu | 21-08-85 | Right Hand | Legbreak googly | India |

*update player_bio set batting_hand = 'Left_Hand' where player_id = 353;*

1 row updated.

*select \* from players;*

SQL | Fetched 50 rows in 0.003 seconds

| | PLAYER_ID | PLAYER_NAME | DOB | BATTING_HAND | BOWLING_SKILL | COUNTRY |
|---|---|---|---|---|---|---|
| 1 | 353 | P Krishna | (null) | Left_Hand | Right-arm fast | India |
| 2 | 354 | P Kumar | 02-10-86 | Right_Hand | Right-arm medium | India |
| 3 | 355 | P Negi | 06-01-93 | Left_Hand | Slow left-arm orthodox | India |
| 4 | 356 | P Parameswaran | 30-05-85 | Right_Hand | Left-arm medium | India |
| 5 | 357 | P Prasanth | 22-05-85 | Left_Hand | Slow left-arm orthodox | India |
| 6 | 358 | P R Barman | (null) | Right_hand | Legbreak | India |
| 7 | 359 | P Raj | (null) | Right_Hand | Left-arm medium | India |
| 8 | 360 | P Sahu | 21-08-85 | Right_Hand | Legbreak googly | India |
| 9 | 361 | P Shaw | (null) | Right_hand | (null) | India |
| 10 | 362 | P Suyal | 15-10-89 | Right_Hand | Left-arm medium | India |
| 11 | 363 | PA Patel | 09-03-85 | Left_Hand | NULL | India |

Update the view to update the player's batting hand. This should also update the Players table.

## 18.      **Constraint violation and integrity Constraint**

*insert                                                                                           into deliveries(DELIVERIES_ID,MATCH_ID,INNING,OVER,BALL,BATTING_TEA M_ID,BOWLING_TEAM_ID,BATSMEN_ID,BOWLER_ID) values(179017,739,2,20,4,6,11,64,399);*
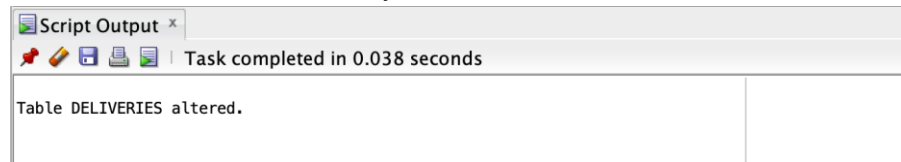
Script Output

Task completed in 0.012 seconds

```
Error starting at line : 1 in command -
insert into deliveries(DELIVERIES_ID,MATCH_ID,INNING,OVER,BALL,BATTING_TEAM_ID,BOWLING_TEAM_ID,BATSMEN_ID,BOWLER_ID) values(179017,739,2,20,4,6,11,64,399)
Error report -
ORA-01400: cannot insert NULL into ("HR"."DELIVERIES"."TOTAL_RUNS")
```
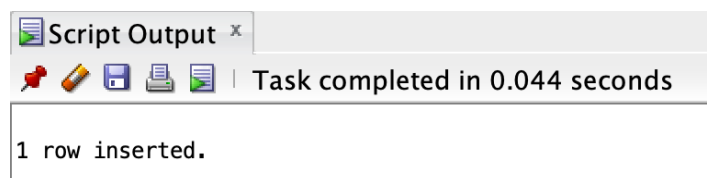
19

**Constraint Handling:**

To maintain the integrity of the table, we have set a default value to TOTAL_RUNS using the following command

alter table deliveries modify TOTAL_RUNS default 0;



Record gets inserted into the table once the table is altered with total_runs column set to 0.





## 19.     **Update**

**Update venue_id in match table, for match_id = 78**
*update match set venue_id = 5 where match_id = 78*



before update



After update

## 20.     **Delete**

**Delete an entry from Delivery table:**
*delete from deliveries where deliveries_id = 1788*



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## 21.     **Alter**
**Alter the team column to varchar(75) datatype.**
ALTER table TEAMS MODIFY team varchar2(75);



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