# SSN COLLEGE OF ENGINEERING,CHENNAI.

A

Project Report

On

"FIFA18World Cup"

For the course

Database management using SQL

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# INTRODUCTION

The main objective of this project is to create and store information regarding the world cup tournament in a database and then we might be able to answer some business,sports analyst questions

such as who is the best performing player in the tournament,team that finished runner up, names of coaches producing the best prospects etc. using a variety of SQL queries that PostgreSQL offers.

The database contains information of players,teams and referees among all others.

# DEVELOPMENT TOOLS

1) Language used: SQL(PostgreSQL)

2) We use PgAdmin which is a management tool for PostgreSQL and derivative relational databases.It may run either as web or desktop application.

3) Web-Browser- Google Chrome

## SYSTEM REQUIREMENTS(Server side)

- PostgreSQL
- PgAdmin 4
- Web-Browser(to run PgAdmin as web application)

## FEATURES

- User-friendly.
- Data Definition Language- We have SQL commands to define the data.
- Data Manipulation Language-We can manipulate the data to fit our convenience.
- Ease of Management of data.
- High Security- To access server side a master password needs to be bypassed making it highly secure.

# ABOUT THE DATABASE

**Entities/Tables:**

1) *Team* is a table that has many attributes like team name which uses the data type varchar. Every team has been given a Team ID which is the primary key which is of data type varchar. Team Ranking, Number of players are of the data type integer. There is another attribute - goalkeeper which is of multivalued type and accepts varchar data type. Primary key cannot have null value.
2) *Player* is an entity type which has an attribute – Player Name which is of the data type varchar. It has a primary key, Player ID, which cannot have null value. It has a foreign key, Team ID which is the primary key of the entity, Team. There is a complex attribute, Number of matches played.
3) *Referees* is an entity type which has the attributes name and country of origin of data type varchar. The primary key of this is Umpire Id which is of Serail data type. It also has an attribute Number of matches of data type Integer.
4) *Coach* is an entity type with a foreign key, Team ID, which is a primary key of entity type, Team. It has a primary key, Coach ID, of data type Serial. It also has another attribute of data type varchar, Name.
5) *Captain* is an entity type with a primary key, Captain ID of data type Serial. It has two foreign keys, i) Player id from table Players

and ii) Team ID from table Team. Number of years of captaincy and Number of wins are also attributes of this table of data type integer.

6) *Matches* is an entity type with a primary key, match ID, of varchar Serial. It has attributes like Team1 Name, Team2 Name, Stadium, Winner Team and Loser Team of data type varchar. Match date time is an attribute which uses the datatype Timestamp with timezone.

# Question 1)

Tables:

- Team
- GoalKeeper
- Referees
- Player
- Coach
- Captain
- Matches
- Plays
- Refereed_By

Code to create tables:

Query Editor | Query History

```
CREATE TABLE team(
    team_id VARCHAR(50) PRIMARY KEY,
    rank INTEGER,
    team_name VARCHAR(20) NOT NULL,
    no_of_wins INTEGER,
    no_of_losses INTEGER,
    no_of_draws INTEGER,
    no_of_defenders INTEGER,
    no_of_strikersmid INTEGER
);
CREATE TABLE goalkeeper(
    team_id VARCHAR(50) REFERENCES team(team_id),
    gk_name VARCHAR(30)
);
CREATE TABLE refrees(
    ref_id SERIAL PRIMARY KEY,
    ref_name VARCHAR(30),
    no_of_matches INTEGER,
    country VARCHAR(20)
);
```

Query Editor | Query History

```sql
CREATE TABLE player(
    player_id SERIAL PRIMARY KEY,
    team_id VARCHAR(50) REFERENCES team(team_id),
    no_of_worldcups INTEGER,
    number_of_matches INTEGER,
    avgrating REAL,
    goal_cont INTEGER,
    chances_per_ninety REAL,
    blocks_per_ninety REAL,
    interceptions_per_ninety REAL,
    type_of_player VARCHAR(25)
);
CREATE TABLE coach(
    coach_id SERIAL PRIMARY KEY,
    team_id VARCHAR(50) REFERENCES team(team_id),
    coach_name VARCHAR(30)
);
CREATE TABLE captain(
    captain_id SERIAL PRIMARY KEY,
    captain_name VARCHAR(30),
    team_id VARCHAR REFERENCES team(team_id),
    player_id VARCHAR(30),
    year_of_captaincy INTEGER,
```

Query Editor | Query History

```sql
CREATE TABLE matches(
    match_id SERIAL PRIMARY KEY,
    match_date_time TIMESTAMPTZ,
    team1 VARCHAR(30),
    team2 VARCHAR(30),
    loser VARCHAR(30),
    winner VARCHAR(30),
    stadium VARCHAR(30),
    ref_id INTEGER REFERENCES referees(ref_id)
);
CREATE TABLE plays(
    team_id VARCHAR(50) REFERENCES team(team_id),
    match_id INTEGER REFERENCES matches(match_id)
);
CREATE TABLE refereed_by(
    match_id INTEGER REFERENCES matches(match_id),
    ref_id INTEGER REFERENCES referees(ref_id)
);
```

Table Team:

| | team_id [PK] character varying (50) | rank integer | team_name character varying (20) | no_of_wins integer | no_of_losses integer | no_of_draws integer | no_of_defenders integer | no_of_strikersmid integer | total_matches integer |
|---|---|---|---|---|---|---|---|---|---|
| 1 | FRA123 | 1 | France | 2 | 0 | 1 | 8 | 12 | 3 |
| 2 | PER456 | 3 | Peru | 1 | 2 | 0 | 8 | 12 | 3 |
| 3 | AUS153 | 4 | Australia | 0 | 2 | 1 | 6 | 14 | 3 |
| 4 | DEN426 | 2 | Denmark | 1 | 0 | 2 | 7 | 13 | 3 |

Table goalkeeper:

| | team_id character varying (50) | gk_name character varying (30) |
|---|---|---|
| 1 | DEN426 | Kasper Schmeichel |
| 2 | FRA123 | Hugo Lloris |
| 3 | FRA123 | Alphonse Areola |
| 4 | AUS153 | Mat Ryan |
| 5 | PER456 | Pedro Gallese |

Table referees:

| | ref_id [PK] integer | ref_name character varying (30) | no_of_matches integer | country character varying (20) |
|---|---|---|---|---|
| 1 | 1 | Mike Dean | 418 | England |
| 2 | 2 | Antonio Lahoz | 311 | Spain |
| 3 | 3 | Bibiana Steinhaus | 173 | Germany |
| 4 | 4 | Martin Akinson | 397 | England |

Table player:

| | player_id [PK] integer | team_id character varying (50) | no_of_worldcups integer | avgrating real | goal_cont integer | chances_per_ninety real | blocks_per_ninety real | interceptions_per_ninety real | type_of_player character varying (25) | player_name character varying (20) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | FRA123 | 1 | 8.2 | 6 | 1.3 | 0.3 | 0.8 | Forward | Kyllian Mbappe |
| 2 | 2 | PER456 | 1 | 6.4 | 1 | 0.2 | 1.4 | 1.9 | Defender | Miguel Araujo |
| 3 | 3 | FRA123 | 2 | 7.2 | 4 | 1.6 | 0.5 | 0.6 | Midfielder | Paul Pogba |
| 4 | 4 | AUS153 | 1 | 5.6 | 0 | 0.1 | 0.9 | 1.1 | Defender | James Meredith |
| 5 | 5 | DEN426 | 3 | 7.1 | 2 | 1.4 | 0.4 | 0.6 | Midfielder | Christian Eriksen |

Table coach:

| | coach_id [PK] integer | team_id character varying (50) | coach_name character varying (30) |
|---|---|---|---|
| 1 | 1 | FRA123 | Didier Deschamps |
| 2 | 2 | PER456 | Ricardo Gareca |
| 3 | 3 | AUS153 | Graham Arnold |
| 4 | 4 | DEN426 | Kasper Hjulmand |
| | | | |

Table captain:

| | captain_id [PK] integer | captain_name character varying (30) | team_id character varying | player_id character varying (30) | year_of_captaincy integer | no_of_wins integer |
|---|---|---|---|---|---|---|
| 1 | 1 | Hugo Lloris | FRA123 | PLR123 | 10 | 55 |
| 2 | 2 | Simon Kjaer | DEN426 | PLR426 | 3 | 16 |
| 3 | 3 | Paolo Guerrero | PER456 | PLR456 | 5 | 23 |
| 4 | 4 | Mark Milligan | AUS153 | PLR153 | 2 | 6 |
| | | | | | | |

Table matches:

| | match_id [PK] integer | match_date_time timestamp with time zone | team1 character varying (30) | team2 character varying (30) | loser character varying (30) | winner character varying (30) | stadium character varying (30) | ref_id integer |
|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 2018-06-16 13:00:00+05:30 | France | Australia | Australia | France | Kazan Arena | 1 |
| 2 | 2 | 2018-06-16 19:00:00+05:30 | Peru | Denmark | Peru | Denmark | Mordovia Arena | 2 |
| 3 | 3 | 2018-06-21 19:00:00+05:30 | Denmark | Australia | - | - | Cosmos Arena | 3 |
| 4 | 4 | 2018-06-21 20:00:00+05:30 | France | Peru | Peru | France | Central Stadium | 4 |
| 5 | 5 | 2018-06-26 17:00:00+05:30 | Denmark | France | - | - | Luzhniki Stadium | 2 |
| 6 | 6 | 2018-06-26 17:00:00+05:30 | Australia | Peru | Australia | Peru | Fisht Olympic Stadium | 3 |
| | | | | | | | | |

Table plays:

| | team_id character varying (50) | match_id integer |
|---|---|---|
| 1 | FRA123 | 1 |
| 2 | DEN426 | 2 |
| 3 | [null] | 3 |
| 4 | FRA123 | 4 |
| 5 | [null] | 5 |
| 6 | PER456 | 6 |

Table refereed_by:

| | match_id integer | ref_id integer |
|---|---|---|
| 1 | 1 | 1 |
| 2 | 2 | 2 |
| 3 | 3 | 3 |
| 4 | 4 | 4 |
| 5 | 5 | 2 |
| 6 | 6 | 3 |

# Question 2)

Write down the necessary SQL statements for implementation of functional requirements through SQL queries, DELETE and

UPDATE statements.

## UPDATE:

1.Add column total matches in the table team. Update rows

Using total matches=no.of wins+no.of draws+no.of losses.

Code:

```sql
ALTER TABLE team ADD total_matches INTEGER;
UPDATE team SET total_matches=no_of_wins+no_of_losses+no_of_draws;
```

2. Add column named ‘PLAYER_NAME’ in table PLAYER.

Code:

```sql
ALTER TABLE player ADD player_name VARCHAR(20);

UPDATE player
SET player_name =
(CASE player_id
    WHEN 1 THEN 'Kyllian Mbappe'
    WHEN 2 THEN 'Miguel Araujo'
    WHEN 3 THEN 'Paul Pogba'
    WHEN 4 THEN 'James Meredith'
    WHEN 5 THEN 'Christian Eriksen'
END
);
```

# SQL queries using JOIN/NESTING operations:

1.Display the name of the umpires who have not umpired matches in Cosmos Arena

Code & Output:

```
1  SELECT ref_name FROM referees WHERE ref_id NOT IN
2  (SELECT DISTINCT ref_id FROM matches WHERE stadium='Cosmos Arena');
```

Data Output | Explain | Messages | Notifications

| | ref_name character varying (30) |
|---|---|
| 1 | Mike Dean |
| 2 | Antonio Lahoz |
| 3 | Martin Akinson |

2.Display names of teams which have experienced players.

Code & Output:

```
1  SELECT team_name FROM team WHERE team_id IN
2  (SELECT team_id FROM player WHERE no_of_worldcups>1);
```

Data Output | Explain | Messages | Notifications

| | team_name character varying (20) |
|---|---|
| 1 | France |
| 2 | Denmark |

3. Display name of coach who has coached a player with average rating greater than 7.0 .

Code & Output:

```
1  SELECT DISTINCT coach_name from coach INNER JOIN player ON coach.team_id
2  = player.team_id WHERE(avgrating>7);
```

Data Output | Explain | Messages | Notifications

| | coach_name character varying (30) |
|---|---|
| 1 | Kasper Hjulmand |
| 2 | Didier Deschamps |

4. Display name of goalkeeper who is also the captain of his team.

Code & Output:

```
1  SELECT gk_name FROM goalkeeper WHERE team_id IN
2  (SELECT team_id FROM captain WHERE captain_name=gk_name);
```

Data Output | Explain | Messages | Notifications

| | gk_name<br>character varying (30) |
|---|---|
| 1 | Hugo Lloris |

# GROUP BY HAVING CLAUSE QUERY:

Display the name of players who have same type of playing position.

Code & Output:

```
1  SELECT player_id,player_name FROM player WHERE type_of_player IN
2  (SELECT type_of_player FROM player GROUP BY type_of_player HAVING COUNT(*)>1);
```

Data Output | Explain | Messages | Notifications

| | player_id [PK] integer | player_name character varying (20) |
|---|---|---|
| 1 | 2 | Miguel Araujo |
| 2 | 3 | Paul Pogba |
| 3 | 4 | James Meredith |
| 4 | 5 | Christian Eriksen |

# Future Scope:

- SQL is a massive technology.
- The future is not just limited to Computer Science.
- It revolves around retailing, sales etc.
- All organisations need to store data and manipulate data.
- FIFA18WorldCup allows for easy analysis of statistics which pundits can use to justify an argument that they state on their channels.