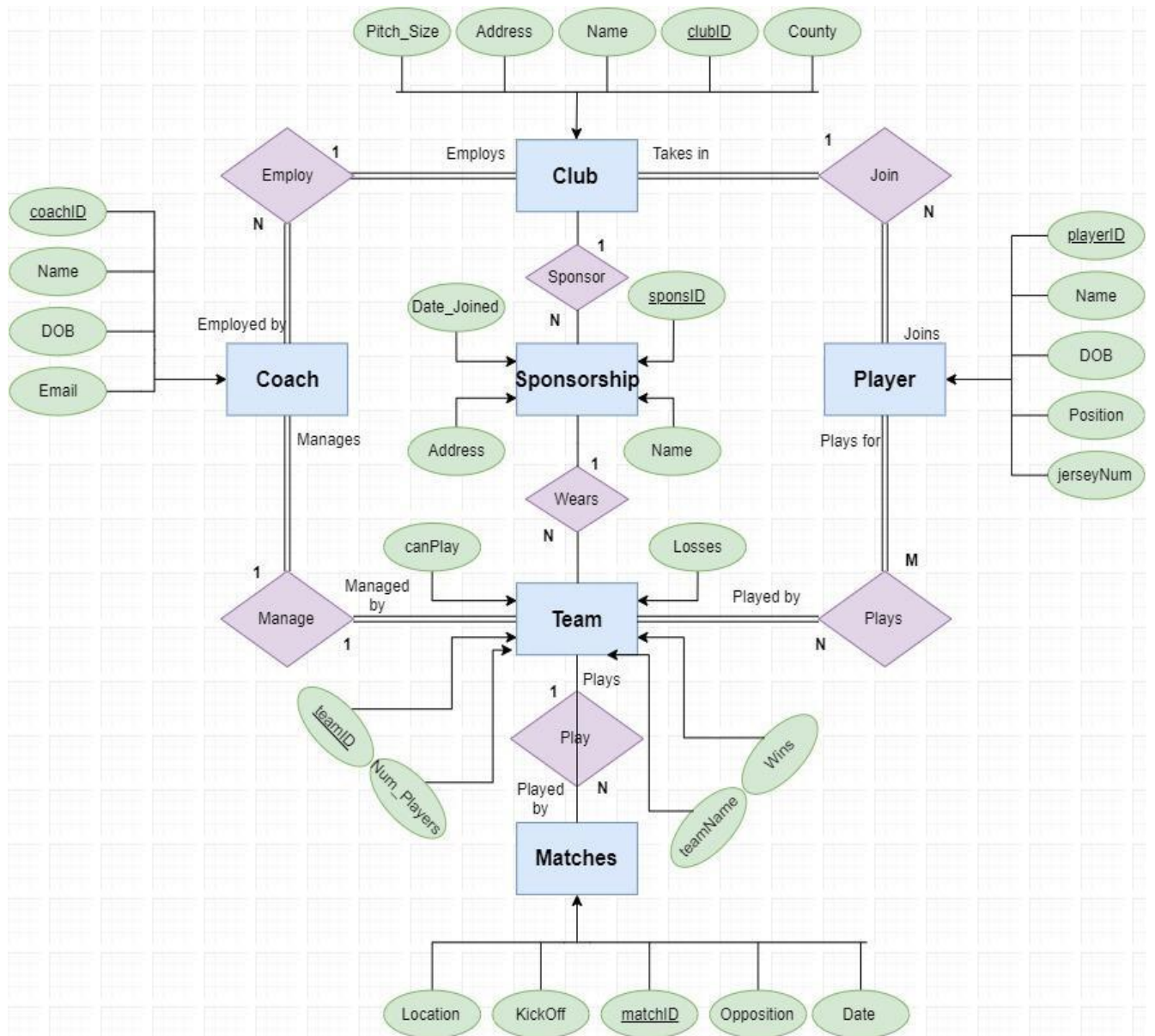


## **Information Management II Project: Report**

I created a database for a GAA Club. While there are a lot of aspects to the successful running of a GAA club, I focused on the team aspect of the club. The club has teams with players and a coach for each team. The club also has sponsorships and these sponsorships can be worn by different teams within club. Teams play matches. The attributes and relations can be seen in the diagrams in this report.

- The Club Table has a clubID, name, address, pitch size (in square metres) and the county is in in.
- The Players Table contains a playerID, name, date of birth, the position they play and the jersey number they wear. It is related to the club by using the clubID as a foreign key. It is normalized using a composite primary key of the playerID and teamID as a player can play for more than one team and a team has many players.
- The Coach Table has a coachID, name, date of birth and email. It is related to the the club by clubID as a foreign key and the team by teamID as a foreign.
- The Sponsorship Table has a sponsID, the date which they joined, address and name. It is related to the club using clubID as a foreign key.
- The Team Table contains a teamID, number of players, teamName, wins, losses, a Boolean whether they can play matches or not. As mentioned above, it is related to the players using composite primary keys in a separate table using teamID and playerID. It is also related to the sponsorship table using sponsID as a foreign key.
- The Match table consists of a matchID, location, kick-off time, opposition name, and date of match. It is related to the Team table using teamID as a foreign key.

## Entity Relationship Diagram



# Functional Dependency

Club

<u>clubID</u>	Address	Name	County	pitch_Size_SqM
---------------	---------	------	--------	----------------

```
graph LR; clubID --> Address; clubID --> Name; clubID --> County; clubID --> pitch_Size_SqM;
```

Player

<u>playerID</u>	Name	DOB	Position	jerseyNum	club_id
-----------------	------	-----	----------	-----------	---------

```
graph LR; playerID --> Name; playerID --> DOB; playerID --> Position; playerID --> jerseyNum; playerID --> club_id;
```

Coach

<u>coachID</u>	Name	DOB	Email	ID	club_id	team_id
----------------	------	-----	-------	----	---------	---------

```
graph LR; coachID --> Name; coachID --> DOB; coachID --> Email; coachID --> ID; coachID --> club_id; coachID --> team_id;
```

Sponsorship

<u>sponsID</u>	dateJoined	Name	Address	club_id
----------------	------------	------	---------	---------

```
graph LR; sponsID --> dateJoined; sponsID --> Name; sponsID --> Address; sponsID --> club_id;
```

Team

<u>teamID</u>	numPlayers	Losses	Wins	canPlay	teamName	spons_id
---------------	------------	--------	------	---------	----------	----------

```
graph LR; teamID --> numPlayers; teamID --> Losses; teamID --> Wins; teamID --> canPlay; teamID --> teamName; teamID --> spons_id;
```

Players\_on\_Team

<u>player_id</u>	<u>team_id</u>
------------------	----------------

```
graph LR; player_id --> team_id;
```

Match

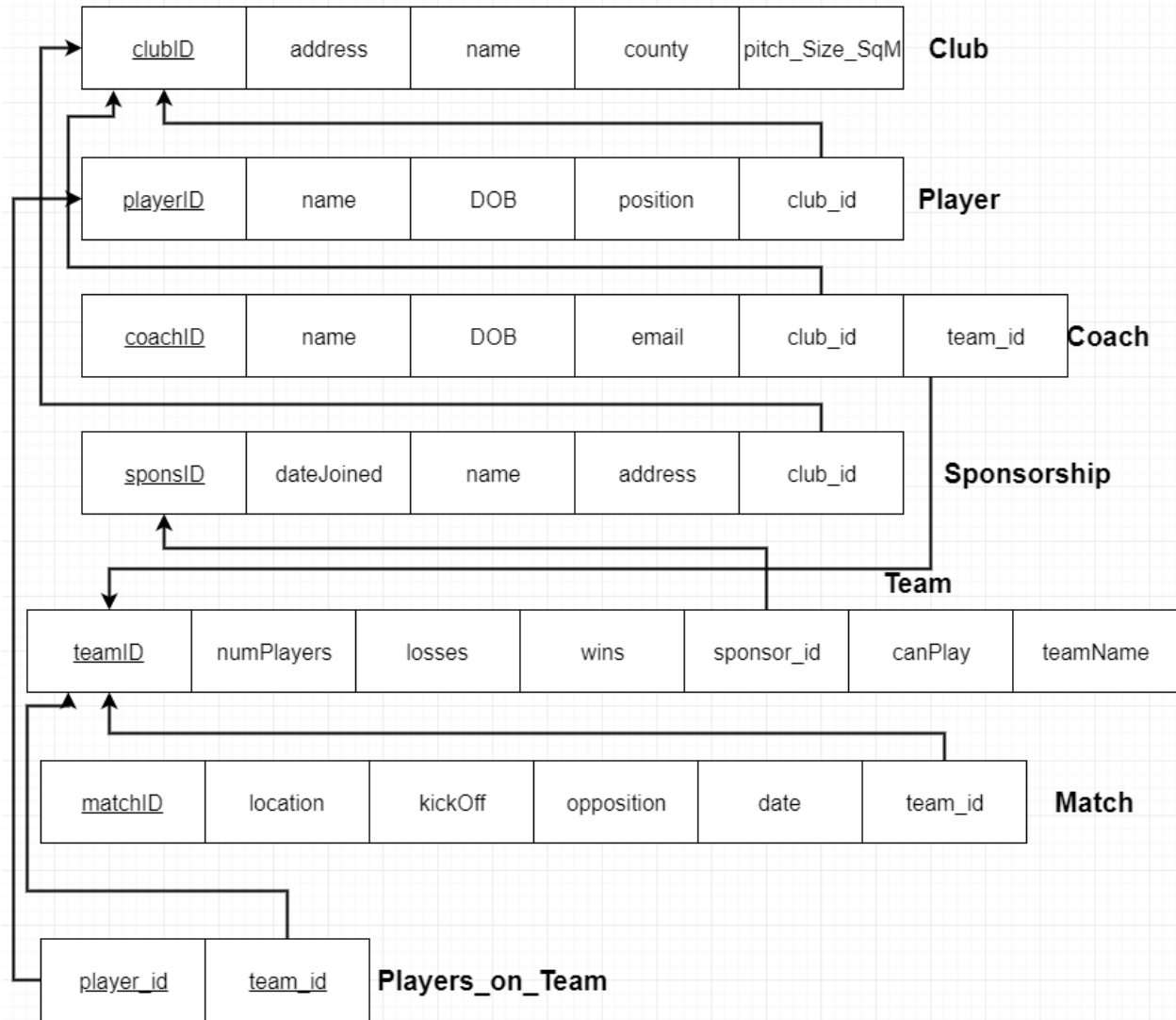
<u>matchID</u>	Location	KickOff	Opposition	Date	team_id
----------------	----------	---------	------------	------	---------

```
graph LR; matchID --> Location; matchID --> KickOff; matchID --> Opposition; matchID --> Date; matchID --> team_id;
```

---

\*Underlined attributes are primary keys and attributes in bold are foreign keys.

## Relational Schema



\*Underlined attributes are primary keys

## Constraints

Most attributes have been given a NOT NULL constraint. Those which do not contain a not null constraint are deemed not important when updating information in the database. For example, a player's jersey number does not have to be decided as soon as they join the club.

There are implicit constraints of both primary keys and foreign keys within many of the tables.

A semantic constraint was created for player position so that it has to be one of the 15 positions that are played in GAA

```
CHECK (position IN('Goalkeeper', 'Right Back', 'Full Back', 'Left Back', 'Right Half Back', 'Centre Back', 'Left Half Back', 'Midfielder', 'Left Half Forward', 'Half Forward', 'Right Half Forward', 'Left Corner Forward', 'Centre Forward', 'Right Corner Forward')),
```

So this INSERT will **not** go into the table:

```
INSERT INTO Player VALUES(145, 'Jack Lane', '2008-06-13', 'hello', 14, 1);
```

Another constraint created was with the canPlay attribute in the Team table. This number is a TINYINT which is supposed to represent a boolean of whether they can play or not (0 or 1). However a TINYINT can be anywhere from 0-9 so a constraint was made to make sure that canPlay can only be a 0 or 1.

```
CHECK(canPlay = 0 OR canPlay = 1),
```

## **Trigger**

When a team number goes below 15, they do not have enough people to play so I created two triggers which will set the canPlay attribute to 0 if they cannot play or 1 if they can play

```
DELIMITER //
```

```
CREATE TRIGGER player_check_below BEFORE UPDATE ON team
```

```
FOR EACH ROW
```

```
BEGIN
```

```
    IF new.numPlayers < 15 THEN
```

```
        SET new.canPlay = 0;
```

```
    END IF;
```

```
END ;
```

```
DELIMITER;
```

```
DELIMITER //
```

```
CREATE TRIGGER player_check_above BEFORE UPDATE ON team
```

```
FOR EACH ROW
```

```
BEGIN
```

```
    IF new.numPlayers > 14 THEN
```

```
        SET new.canPlay = 1;
```

```
    END IF;
```

```
END ;
```

```
DELIMITER;
```

## Security

I have created a view which allows people to see the different sponsors that are worn by different teams. If a sponsor doesn't have a team that wears them then it will not be seen in the view.

```
CREATE VIEW Team_Sponsors
```

```
AS SELECT sponsorName, address, teamName
```

```
FROM sponsorship, Team WHERE sponsorship.sponsID = team.spons_id;
```

Another view was created where players and coaches can see the names of players, their position, the team in which they play on and the coach which manages the team but cannot see any personal details about anyone.

```
Create View Teams
```

```
AS Select playerName,position, teamName
```

```
FROM player, players_on_team, team WHERE playerID =
```

```
players_on_team.player_id AND teamID = players_on_team.team_id;
```

## Appendix

```
CREATE TABLE Club (  
    clubID int NOT NULL,  
    address VARCHAR(255) NOT NULL,  
    name VARCHAR(30) NOT NULL,  
    pitch_Size_sqM int NOT NULL,  
    county varchar(255) NOT NULL,  
    PRIMARY KEY (clubID)  
);
```

```
CREATE TABLE Player (  
    playerID INTEGER NOT NULL,  
    playerName VARCHAR(255) NOT NULL,  
    DOB DATE NOT NULL,  
    position VARCHAR(255) NOT NULL CHECK (position IN('Goalkeeper', 'Right Back',  
'Full Back', 'Left Back', 'Right Half Back', 'Centre Back', 'Left Half Back',  
    'Midfielder', 'Left Half Forward', 'Half Forward', 'Right Half  
Forward', 'Left Corner Forward', 'Centre Forward', 'Right Corner Forward')),  
    jerseyNum INTEGER,
```

```

club_id INTEGER NOT NULL,
PRIMARY KEY (playerID),
FOREIGN KEY (club_id) REFERENCES Club (clubID)
);

CREATE TABLE Sponsorship (
sponsID INTEGER NOT NULL,
dateJoined DATE NOT NULL,
sponsorName VARCHAR(255) NOT NULL,
address VARCHAR(255) NOT NULL,
club_id INTEGER NOT NULL,
PRIMARY KEY (sponsID),
FOREIGN KEY (club_id) REFERENCES Club (clubID)
);

CREATE TABLE Team (
teamID INTEGER NOT NULL,
numPlayers INTEGER NOT NULL,
canPlay TINYINT NOT NULL CHECK(canPlay = 0 OR canPlay = 1),
wins INTEGER NOT NULL,
losses INTEGER NOT NULL,
teamName VARCHAR(255) NOT NULL,
spons_id INTEGER NOT NULL,
PRIMARY KEY (teamID),
FOREIGN KEY (spons_id) REFERENCES Sponsorship (sponsID)
);

CREATE TABLE Coach (
coachID INTEGER NOT NULL,
coachName VARCHAR(255) NOT NULL,
DOB DATE NOT NULL,
email VARCHAR(255) NOT NULL,
club_id INTEGER NOT NULL,
team_id INT NOT NULL,
PRIMARY KEY (coachID),
FOREIGN KEY (club_id) REFERENCES Club (clubID),
FOREIGN KEY (team_id) REFERENCES Team (TeamID)
);

CREATE TABLE Matches (
matchID INTEGER NOT NULL,
locations VARCHAR(255) NOT NULL,
kickOff TIME NOT NULL,
opposition VARCHAR(255) NOT NULL,
dateMatch DATE NOT NULL,
team_id INT NOT NULL,
PRIMARY KEY (matchID),
FOREIGN KEY (team_id) REFERENCES Team (teamID)
);

CREATE TABLE Players_on_Team (
player_id INTEGER NOT NULL,
team_id INTEGER NOT NULL,
PRIMARY KEY (player_id, team_id),
FOREIGN KEY (player_id) REFERENCES Player (playerID),
FOREIGN KEY (team_id) REFERENCES Team (teamID)
);

```



```

INSERT INTO Club VALUES(1, '21 Beach St, Skerries', 'Celtic Harps', 10400, 'Dublin' );

INSERT INTO Player VALUES(100, 'Thomas OBrien', '2008-10-27', 'Goalkeeper', 1, 1);
INSERT INTO Player VALUES(101, 'Jake Cook', '2008-09-10', 'Right Back' , 2, 1);
INSERT INTO Player VALUES(102, 'Lee Carr', '2008-06-11', 'Full Back', 3, 1);
INSERT INTO Player VALUES(103, 'Karl Patton', '2008-07-27', 'Left Back', 4, 1);
INSERT INTO Player VALUES(104, 'Stacey Robinson', '2008-01-04', 'Right Half Back', 5, 1);
INSERT INTO Player VALUES(105, 'Milton Stevenson', '2008-01-16', 'Centre Back', 6, 1);
INSERT INTO Player VALUES(106, 'Vicki Brock', '2008-06-16', 'Left Half Back', 7, 1);
INSERT INTO Player VALUES(107, 'Erik Hudson', '2008-07-30', 'Centre Forward', 14, 1);
INSERT INTO Player VALUES(108, 'Darryl Sherman', '2008-11-28', 'Left Corner Forward', 15, 1);
INSERT INTO Player VALUES(109, 'Penny Tyler', '2008-02-02', 'Right Corner Forward', 13, 1);
INSERT INTO Player VALUES(110, 'Harry Torres', '2008-07-14', 'Right Half Forward', 10, 1);
INSERT INTO Player VALUES(111, 'Darrell Wise', '2008-08-24', 'Half Forward', 11, 1);
INSERT INTO Player VALUES(112, 'Erick Holt', '2008-10-27', 'Left Half Forward', 12, 1);
INSERT INTO Player VALUES(113, 'Amy Rivera', '2008-04-08', 'Midfielder', 8, 1);
INSERT INTO Player VALUES(114, 'Darrell Wise', '2008-04-13', 'Midfielder', 9, 1);

INSERT INTO Player VALUES(115, 'Brent Frazier', '1998-01-27', 'Goalkeeper', 1, 1);
INSERT INTO Player VALUES(116, 'Gordon Ramsey', '1998-10-27', 'Right Back', 2, 1);
INSERT INTO Player VALUES(117, 'Perry Graves', '1998-08-27', 'Full Back', 3, 1);
INSERT INTO Player VALUES(118, 'Darrell Mccoy', '1999-07-27', 'Left Back', 4, 1);
INSERT INTO Player VALUES(119, 'Roland Perkins', '1999-07-27', 'Right Half Back', 5, 1);
INSERT INTO Player VALUES(120, 'Ed Neal', '1999-02-27', 'Centre Back', 6, 1);
INSERT INTO Player VALUES(121, 'Gerard Pope', '1999-05-27', 'Left Half Back', 7, 1);
INSERT INTO Player VALUES(122, 'Wallace Griffin', '1999-05-27', 'Midfielder', 8, 1);
INSERT INTO Player VALUES(123, 'Noel Klein', '1999-10-16', 'Right Half Forward', 10, 1);
INSERT INTO Player VALUES(124, 'Chris Parsons', '1998-11-27', 'Midfielder', 9, 1);
INSERT INTO Player VALUES(125, 'Michael Copeland', '1999-12-25', 'Left Half Forward', 12, 1);
INSERT INTO Player VALUES(126, 'Joseph Banks', '1998-12-01', 'Right Corner Forward', 13, 1);
INSERT INTO Player VALUES(127, 'Dominick Tucker', '1998-06-20', 'Half Forward', 11, 1);
INSERT INTO Player VALUES(128, 'Fred Cohen', '1999-03-02', 'Centre Forward', 14, 1);
INSERT INTO Player VALUES(129, 'Percy Rios', '1999-07-20', 'Left Corner Forward', 15, 1);
INSERT INTO Player VALUES(130, 'Casey Santos', '1999-06-12', 'Goalkeeper', 16, 1);
INSERT INTO Player VALUES(131, 'Timmy Daniel', '1998-05-05', 'Right Back', 17, 1);
INSERT INTO Player VALUES(132, 'Kristopher Houston', '1999-10-27', 'Full Back', 18, 1);

INSERT INTO Player VALUES(133, 'Ron Brewer', '2008-06-13', 'Goalkeeper', 1, 1);
INSERT INTO Player VALUES(134, 'Cedric Brown', '2008-02-08', 'Midfielder', 8, 1);
INSERT INTO Player VALUES(135, 'Joel Lawrence', '2008-11-01', 'Right Half Back', 5, 1);
INSERT INTO Player VALUES(136, 'Randy Rose', '2008-07-15', 'Left Half Back', 7, 1);
INSERT INTO Player VALUES(137, 'Chris Alvarez', '2008-04-13', 'Right Corner Forward', 13, 1);
INSERT INTO Player VALUES(138, 'Alvin Quinn', '2008-08-08', 'Midfielder', 9, 1);
INSERT INTO Player VALUES(139, 'Kyle Lane', '2008-05-13', 'Centre Forward', 14, 1);

INSERT INTO Sponsorship VALUES(1, '2015-05-18', 'DIY Hardware', '71 Rock St, Dublin', 1);
INSERT INTO Sponsorship VALUES(2, '2012-01-04', 'Easy Groceries', '8 Keady Road, Dublin', 1);
INSERT INTO Sponsorship VALUES(3, '2015-05-18', 'Joes Pub', '23 Bach Rd, Dublin', 1);
INSERT INTO Sponsorship VALUES(4, '2015-05-18', 'News Agent', '42 Earlsford, Dublin', 1);

INSERT INTO Team VALUES(10, 15, true, 14, 5, 'U12s Gaelic', 3);

```

```

INSERT INTO Team VALUES(11, 15, true, 8, 8, 'U12s Hurling', 2);
INSERT INTO Team VALUES(12, 18, true, 10, 1, '20s Gaelic', 1);

INSERT INTO Coach VALUES(20, 'Karl Evans', '1973-06-13', 'evansKarl@gmail.com', 1, 10);
INSERT INTO Coach VALUES(21, 'George Frank', '1989-01-24', 'george1234@gmail.com', 1,
11);
INSERT INTO Coach VALUES(22, 'Geoffrey Jennings', '1981-12-01', 'Jennings1@gmail.com', 1,
12);

INSERT INTO Matches VALUES(40, 'Balbriggan', '10:00:00', 'Islanders', '2019-11-30', 12);
INSERT INTO Matches VALUES(41, 'Skerries', '11:30:00', 'Celtic Tigers', '2019-12-03',
10);
INSERT INTO Matches VALUES(42, 'Swords', '12:00:00', 'Celtic Tigers', '2019-12-10', 10);
INSERT INTO Matches VALUES(43, 'Skerries', '14:30:00', 'Fingal Runners', '2019-12-11',
11);
INSERT INTO Matches VALUES(44, 'Balbriggan', '09:00:00', 'Islanders', '2019-12-18', 11);

INSERT INTO Players_on_Team VALUES(100, 10);
INSERT INTO Players_on_Team VALUES(101, 10);
INSERT INTO Players_on_Team VALUES(102, 10);
INSERT INTO Players_on_Team VALUES(103, 10);
INSERT INTO Players_on_Team VALUES(104, 10);
INSERT INTO Players_on_Team VALUES(105, 10);
INSERT INTO Players_on_Team VALUES(106, 10);
INSERT INTO Players_on_Team VALUES(107, 10);
INSERT INTO Players_on_Team VALUES(108, 10);
INSERT INTO Players_on_Team VALUES(109, 10);
INSERT INTO Players_on_Team VALUES(110, 10);
INSERT INTO Players_on_Team VALUES(111, 10);
INSERT INTO Players_on_Team VALUES(112, 10);
INSERT INTO Players_on_Team VALUES(113, 10);
INSERT INTO Players_on_Team VALUES(114, 10);

INSERT INTO Players_on_Team VALUES(133, 11);
INSERT INTO Players_on_Team VALUES(134, 11);
INSERT INTO Players_on_Team VALUES(135, 11);
INSERT INTO Players_on_Team VALUES(136, 11);
INSERT INTO Players_on_Team VALUES(137, 11);
INSERT INTO Players_on_Team VALUES(138, 11);
INSERT INTO Players_on_Team VALUES(139, 11);
INSERT INTO Players_on_Team VALUES(101, 11);
INSERT INTO Players_on_Team VALUES(102, 11);
INSERT INTO Players_on_Team VALUES(103, 11);
INSERT INTO Players_on_Team VALUES(105, 11);
INSERT INTO Players_on_Team VALUES(110, 11);
INSERT INTO Players_on_Team VALUES(111, 11);
INSERT INTO Players_on_Team VALUES(112, 11);
INSERT INTO Players_on_Team VALUES(108, 11);

INSERT INTO Players_on_Team VALUES(115, 12);
INSERT INTO Players_on_Team VALUES(116, 12);
INSERT INTO Players_on_Team VALUES(117, 12);
INSERT INTO Players_on_Team VALUES(118, 12);
INSERT INTO Players_on_Team VALUES(119, 12);
INSERT INTO Players_on_Team VALUES(120, 12);
INSERT INTO Players_on_Team VALUES(121, 12);
INSERT INTO Players_on_Team VALUES(122, 12);
INSERT INTO Players_on_Team VALUES(123, 12);

```

```
INSERT INTO Players_on_Team VALUES(124, 12);
INSERT INTO Players_on_Team VALUES(125, 12);
INSERT INTO Players_on_Team VALUES(126, 12);
INSERT INTO Players_on_Team VALUES(127, 12);
INSERT INTO Players_on_Team VALUES(128, 12);
INSERT INTO Players_on_Team VALUES(129, 12);
INSERT INTO Players_on_Team VALUES(130, 12);
INSERT INTO Players_on_Team VALUES(131, 12);
INSERT INTO Players_on_Team VALUES(132, 12);
```

```
CREATE VIEW Team_Sponsors
AS SELECT sponsorName, address, teamName
FROM sponsorship, Team WHERE sponsorship.sponsID = team.spons_id;
```

```
CREATE VIEW Teams
AS Select playerName,position, teamName, coachName
FROM player, players_on_team, team, coach WHERE playerID = players_on_team.player_id AND
teamID = players_on_team.team_id AND coach.team_id = teamID;
```

```
DELIMITER //
CREATE TRIGGER player_check_below BEFORE UPDATE ON team
FOR EACH ROW
BEGIN
    IF new.numPlayers < 15 THEN
        SET new.canPlay = 0;
    END IF;
END ;
```

```
DELIMITER;
```

```
DELIMITER //
CREATE TRIGGER player_check_above BEFORE UPDATE ON team
FOR EACH ROW
BEGIN
    IF new.numPlayers > 14 THEN
        SET new.canPlay = 1;
    END IF;
END ;
```

```
DELIMITER;
```