Project Phase 4

Soccer Club Database

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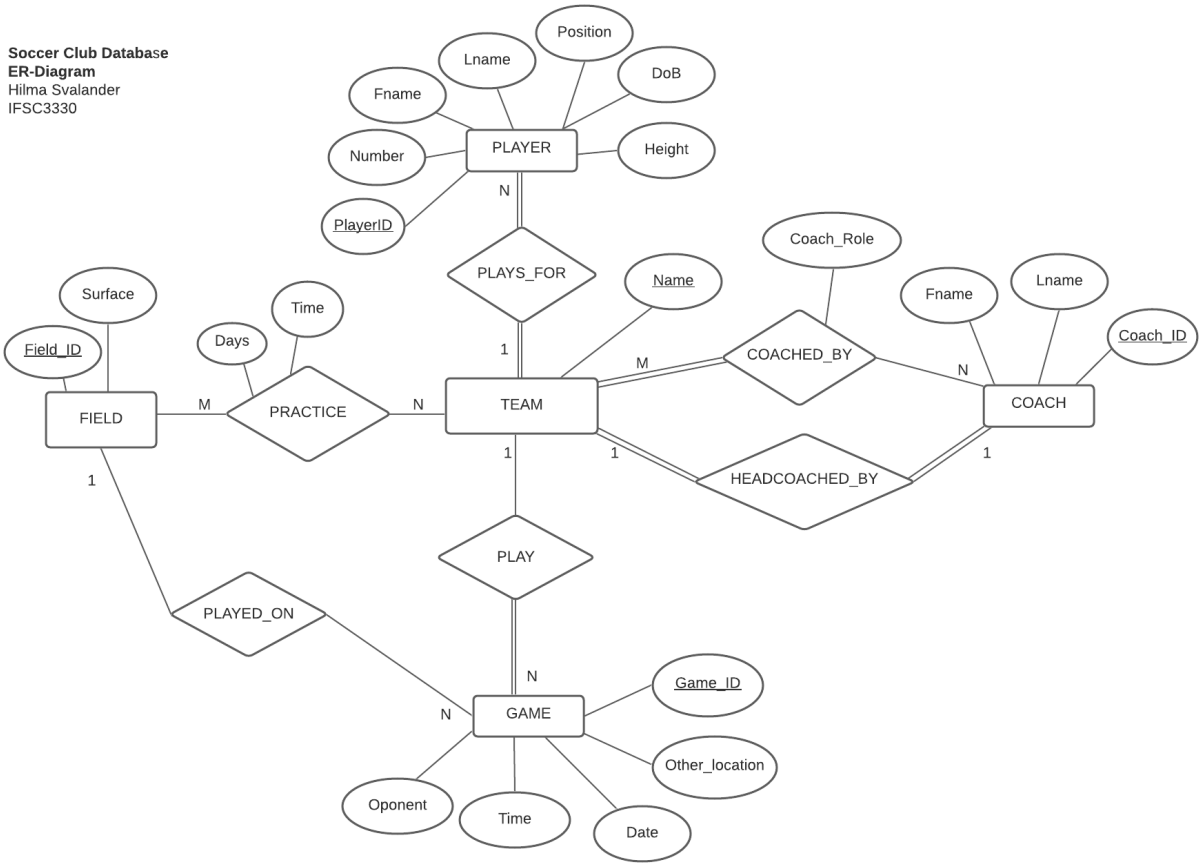
1.0 ER Design

This database covers a Soccer Club. It will be used to keep track of which players play for which teams, which coach coaches which team, which team practices on which field and at what time as well as scheduled game information for the different teams.

Detailed description:

- The soccer club has multiple teams that are identified with a team name.
- Each team has multiple players.
- A player can only play for one team. Each player is assigned a number. Players that play for the same team can not have the same number. Players that play for different teams can have the same number. Players are also identified with their first name, last name, date of birth, position that they play and height.
- Each team must have a head coach. A coach can only be a head coach for one team.
- Each team can have more coaches than just the head coach.
- A coach can coach multiple teams and are identified with their, first name, last name and coaching role (example: assistant coach or goalkeeper coach). Coaches are also assigned a unique coach ID.
- Teams practice on the club's fields' at reoccurring days and times throughout a week.
- The fields are assigned an ID and each field has a different surface.
- Teams can also play multiple games. Games are scheduled against an opponent and with a game ID, date, time and is played on a specific field.
- If the team is not playing their game at the soccer club it's called an away game. Away games have the location of the opposing club's location stored.

FIGURE 1.1 - SOCCER CLUB ER-DIAGRAM



1.1 Entities with attributes (primary keys are underlined):

- Team: Name
- Player: PlayerID, Number, First name, Last name, Position, Date of Birth and Height.
- Coach: CoachID, First name and Last name.
- Field: FieldID and surface.
- Game: GameID, Opponent, Time, Date and Other Location.

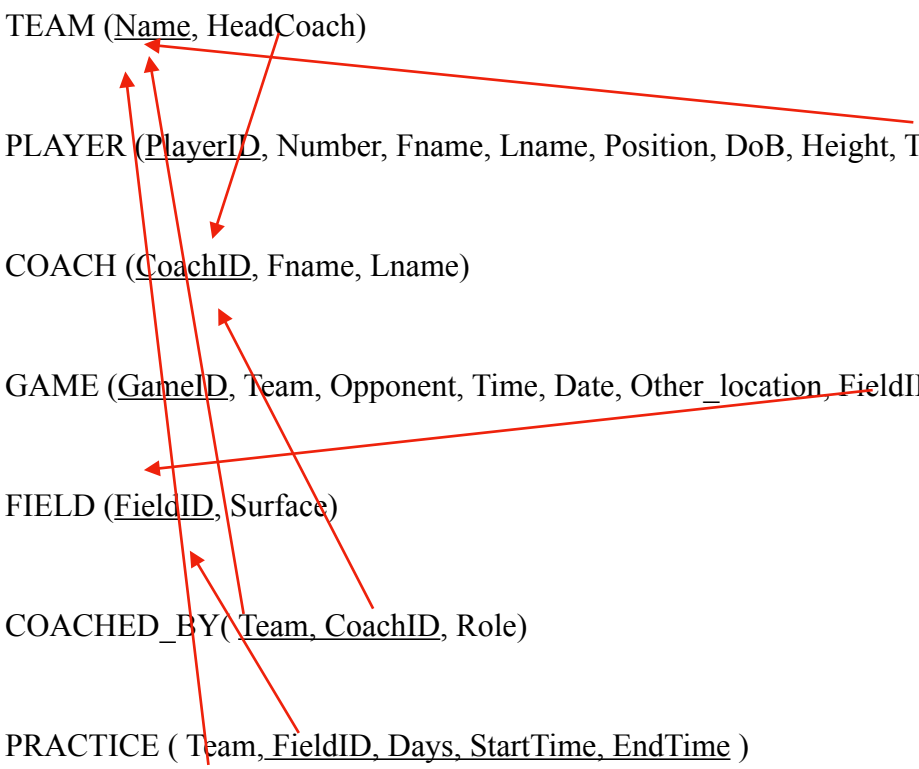
1.2 Relationships:

- Players play for teams. One team can have many players but a player can only play for one team.
- Teams have one head coach. A coach can only be the head coach for one team. A team can only have one head coach.
- Teams can have multiple coaches. Coaches can coach multiple teams.
- Teams play games. Teams can play multiple games but every game can only have one team assigned.
- Teams practice one fields. The practice occur at a set time and day. Teams can have multiple practices and on multiple fields. Two teams can not practice at the same field, the same day and the same time.
- Games are played on fields. A game can only be played at one field. Multiple games can be played at one field but not at the same time and day as another team is playing a game at that field.

1.3 Constraints:

- If a game is scheduled on a field for a specific date and time, no other game or practice can be scheduled on that field at that date and time.
- If a practice is scheduled on a field for a specific date and time, no other practice or game can be scheduled on that field at that day and time.

2.0 Relation Schema



TEAM (Name, HeadCoach)

PLAYER (PlayerID, Number, Fname, Lname, Position, DoB, Height, Team)

COACH (CoachID, Fname, Lname)

GAME (GameID, Team, Opponent, Time, Date, Other_location, FieldID)

FIELD (FieldID, Surface)

COACHED_BY(Team, CoachID, Role)

PRACTICE (Team, FieldID, Days, StartTime, EndTime)

*GAME.Other_location —> denotes a name of an Arena and will therefore be atomic.

2.1 Foreign Keys

TEAM.HeadCoach → COACH.CoachID
PLAYER.Team → TEAM.Name
GAME.FieldID → FIELD.FieldID
COACHED_BY.Team → TEAM.Name
COACHED_BY.CoachID → COACH.CoachID
PRACTICE.Team → TEAM.Name
PRACTICE.FieldID → FIELD.FieldID

2.2 Functional Dependencies

TEAM
Name —> HeadCoach

PLAYER
PlayerID —> Number, Fname, Lname, Position, DoB, Height, Team

COACH
CoachID —> Fname, Lname

GAME
GameID —> Team, Opponent, Time, Date, Other_location, FieldID

FIELD
FieldID —> Surface

COACHED_BY
Team, CoachID —> Role

PRACTICE
Team, FieldID —> Days, Time

Relation Schema is in 3NF. All dependencies are full and attributes are atomic.

3.0 SQL Code

Using Oracle, the following code creates the different tables in the schema and populates them with tuples.

3.1 Script to create and populate tables

```
drop table COACH cascade constraints;
create table COACH (
          CoachID number(2) not Null,
          Fname varchar2(40) not NULL,
          Lname varchar2(40) not NULL,
          primary key (CoachID));

insert into COACH values (01, 'Peter', 'Gerhardson');
insert into COACH values (02, 'Magnus', 'Wikman');
insert into COACH values (03, 'Leif', 'Troedsson');
insert into COACH values (14, 'Jan', 'Andersson');
insert into COACH values (15, 'Peter', 'Wettergren');
insert into COACH values (26, 'Peyton', 'Laughley');
insert into COACH values (28, 'Emma', 'Hayes');
insert into COACH values (29, 'Liesa', 'Stephens');

drop table TEAM cascade constraints;
create table TEAM (
          Name varchar2(40) not NULL,
          HeadCoach number(2) not Null,
          primary key (Name),
          foreign key (HeadCoach) references COACH(CoachID) on
delete cascade);

insert into TEAM values ('Women', 01);
insert into TEAM values ('Men', 14);
insert into TEAM values ('U21-Women', 28);
insert into TEAM values ('U21-Men', 15);
insert into TEAM values ('W12', 26);
insert into TEAM values ('W15', 29);


drop table PLAYER cascade constraints;
create table PLAYER (
          PlayerID varchar2(4) not Null,
          PlayerNo number(2) not Null,
          Fname varchar2(40) not NULL,
          Lname varchar2(40) not NULL,
```

```
          Position char(2),
          DoB date,
          Height number(3),
          Team_name varchar2(40) not NULL,
          primary key (PlayerID),
          foreign key (Team_name) references TEAM(Name) on delete
cascade);


insert into PLAYER values ('W001', 30, 'Hilma', 'Svalander', 'GK',
TO_DATE('1998/05/11', 'YYYY/MM/DD'), 165, 'Women');

insert into PLAYER values ('W002', 13, 'Alex', 'Morgan', 'FW',
TO_DATE('1983/03/24', 'YYYY/MM/DD'), 172, 'Women');

insert into PLAYER values ('M001', 15, 'Alexander', 'Isak', 'FW',
TO_DATE('1999/04/25', 'YYYY/MM/DD'), 184, 'Men');

insert into PLAYER values ('M002', 16, 'Victor', 'Cleasson', 'MF',
TO_DATE('1993/07/11', 'YYYY/MM/DD'), 180, 'Men');

insert into PLAYER values ('W022', 3, 'Sara', 'Smith', 'CB',
TO_DATE('2009/10/14', 'YYYY/MM/DD'), 148, 'W12');

insert into PLAYER values ('W023', 7, 'Julia', 'Svensson', 'FW',
TO_DATE('2006/03/23', 'YYYY/MM/DD'), 167, 'W15');


drop table FIELD cascade constraints;
create table FIELD (
          FieldID char(1) not Null,
          Surface varchar2(20) not Null,
          primary key (FieldID));

insert into FIELD values ('A', 'FG');
insert into FIELD values ('B', 'FG');
insert into FIELD values ('C', 'AG');
insert into FIELD values ('D', 'AG');
insert into FIELD values ('E', 'HG');
insert into FIELD values ('F', 'IN');


drop table GAME cascade constraints;
create table GAME(
          GameID varchar2(10) not Null,
          Team_name varchar2(40) not NULL,
```

```
          Opponent varchar2(40) not Null,
          Kickoff varchar2(5) not NULL,
          GameDate date not NULL,
          FieldID char(1),
          Other_location varchar2(40),
          primary key (GameID),
          foreign key (Team_name) references TEAM(Name) on delete
cascade,
          foreign key (FieldID) references FIELD(FieldID) on delete
cascade);



insert into GAME values ('210428-191', 'Women', 'Tottenham',
'13:00', TO_DATE('2021/04/28', 'YYYY/MM/DD'), 'A', Null);

insert into GAME values ('210429-341', 'Men', 'Juventus', '20:45',
TO_DATE('2021/04/29', 'YYYY/MM/DD'), 'B', Null);

insert into GAME values ('210503-203', 'Women', 'Chelsea Ladies FC',
'19:00', TO_DATE('2021/05/03', 'YYYY/MM/DD'), 'A', Null);

insert into GAME values ('210503-352', 'Men', 'Milan AFC', '19:00',
TO_DATE('2021/05/03', 'YYYY/MM/DD'), 'B', Null);

insert into GAME values ('210508-224', 'Women', 'Bristol', '15:00',
TO_DATE('2021/05/08', 'YYYY/MM/DD'), Null, 'Wolves Complex');

insert into GAME values ('210508-009', 'W12', 'Academy Rangers',
'12:00', TO_DATE('2021/05/13', 'YYYY/MM/DD'), null, 'Rangers
Field');



drop table COACHED_BY cascade constraints;
create table COACHED_BY (
          Team_name varchar2(40) not NULL,
          CoachID number(2) not Null,
          Role varchar2(20),
          primary key (Team_name, CoachID),
          foreign key (Team_name) references TEAM(Name) on delete
cascade,
          foreign key (coachID) references COACH(CoachID) on delete
cascade);
```

```
insert into COACHED_BY values ('Women', 02, 'Assistant');
insert into COACHED_BY values ('Women', 03, 'Goalkeepers');
insert into COACHED_BY values ('Men', 15, 'Assistant');
insert into COACHED_BY values ('U21-Women', 29 , 'Assistant');
insert into COACHED_BY values ('U21-Women', 03 , 'Goalkeepers');
insert into COACHED_BY values ('W15', 26 , 'Assistant');


drop table PRACTICE cascade constraints;
create table PRACTICE (
          Team_name varchar2(40) not NULL,
          FieldID char(1) not Null,
          Days varchar2(7),
          StartTime varchar2(5),
          EndTime varchar2(5),
          primary key (FieldID, Days, StartTime, EndTime),
          foreign key (Team_name) references TEAM(Name) on delete
cascade,
          foreign key (FieldID) references FIELD(FieldID) on delete
cascade);


insert into PRACTICE values ('Women', 'A', 'MWF', '10:00', '11:30');

insert into PRACTICE values ('Women', 'A', 'TR', '14:00', '15:30');

insert into PRACTICE values ('Men', 'B', 'TR', '14:00', '15:30');

insert into PRACTICE values ('Men', 'A', 'MWF', '11:30', '13:00');

insert into PRACTICE values ('U21-Women', 'B', 'MWF', '17:30',
'19:00');

insert into PRACTICE values ('W12', 'C', 'TR', '17:30', '19:00');
```

3.2 Script for queries, triggers and procedures.

```
/* handles constraints regarding PRACTICE table */
CREATE OR REPLACE TRIGGER insert_practice
BEFORE insert OR update ON practice
FOR EACH ROW
DECLARE
      same_teamTimeDay_violation EXCEPTION;
BEGIN
if (:new.team_name == :old.team_name) and (:new.days == o:old.days)
      and (:new.starttime == :old.starttime)
      raise same_teamTimeDay_violation EXCEPTION;
end if;
EXCEPTION
   when same_teamTimeDay_violation then
       DBMS_OUTPUT.PUT_LINE('This team already has a practice at this
      time');
END;


/* shows all players of a specified team */
CREATE OR REPLACE PROCEDURE SelectAllPlayers ( tname IN
player.team_name%type)
AS tname player.team_name%type
BEGIN
SELECT *
FROM Player
WHERE tname = team_name;
END;

BEGIN
SelectAllPlayers('Women');
END;



/* queries */

SELECT t.name as TeamName, c.fname as HeadCoachFname, c.lname as
HeadCoachLname
FROM TEAM t, COACH c
WHERE c.coachid = t.HeadCoach;
```

```
SELECT team_name, role, fname, lname
FROM coach c, coached_by cd
WHERE c.coachid = cd.coachid;


SELECT p.fname, p.lname, g.team_name, g.opponent
FROM player p, game g
WHERE p.team_name = g.team_name;

UPDATE TABLE PLAYER
SET playerNO = 1
WHERE playerID = 'W001';

RENAME player TO player info;

DELETE FROM coach where coachID = '15';


/* return number of games a specific player will play in*/
CREATE OR REPLACE function numberofgames_player (p_id IN
player.playerid%type)
RETURN number AS game_count number;
BEGIN
SELECT count(distinct gameid)
INTO game_count
FROM game g, player p
WHERE p.playerid=p_id and p.team_name=g.team_name;
RETURN(game_count);
END;

/* run above function*/
SELECT distinct numberofgames_player('W001')
FROM game g, player p;
```