CPSC 304 Project Cover Page

Milestone #: 4

Date: April 5, 2023

Group Number: 91

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By typing our names and student numbers in the above table, we certify that the work in the attached assignment was performed solely by those whose names and student IDs are included above. (In the case of Project Milestone 0, the main purpose of this page is for you to let us know your e-mail address, and then let us assign you to a TA for your project supervisor.)

In addition, we indicate that we are fully aware of the rules and consequences of plagiarism, as set forth by the Department of Computer Science and the University of British Columbia.

1. **Repository link:**
   https://github.students.cs.ubc.ca/CPSC304-2022W-T2/project_f6k1b_h8w6k_y8l1w

2. **SQL script:** SoccerLeagueDBS.sql

3. **Project Description:**
   - Our project works as a soccer league management database that can be used by soccer league managers to efficiently manage information about soccer games, different soccer teams and their players/staff. Managers can add games, and update and search for teams' information (such as updating their sponsors, deleting their home stadium, and searching for detailed player information).

4. **Changes in Schema:**
   - After the normalization process, we split Team into two tables (Ranking and Team) and Player into two tables (PlayerInfo and PlayerMember).
   - We have added sponserID as a primary key in Sponsor for simplicity in the UPDATE query.
   - We have changed the primary key (playerName, pnumber, teamID) to primary key (palyerName, pnumber) in PlayerInfo, as having teamID as part of the primary key and it being a foreign key referencing Team on DELETE SET NULL would not work when performing deletion on a tuple in Team.

5. **Schema (screenshots of each relation after running SoccerLeagueDBS.sql):**
   - Game(gameID: int, gameDate: Date, homeScore: int, awayScore: int)

Retrieved data from table Game:

gameID	gameDate	homeScore	awayScore
1	2022-01-01	2	1
2	2022-01-05	0	0
3	2022-01-12	3	2
4	2022-01-20	1	1
5	2022-01-27	2	3

   - Referee(refereeID: int, refName: varchar[30])

Retrieved data from table Referee:

refereeID	refName
1	John Smith
2	Mary Johnson
3	David Lee
4	Emily Wong
5	Michael Chen

- MedicalStaff(mstaffID: int, mstaffName: varchar[20], mstaffRole: varchar[20])

Retrieved data from table MedicalStaff:

mstaffID	mstaffName	mstaffRole
1	Dr. James Lee	Physician
2	Dr. Susan Kim	Physiotherapist
3	Dr. David Park	Chiropractor
4	Dr. Emily Chen	Massage Therapist
5	Dr. Michael Wang	Athletic Trainer

- Ranking(ranking: int, teamName: varchar[30])

Retrieved data from table Ranking:

ranking	teamName
1	Manchester City
2	Manchester United
3	Chelsea
4	Liverpool
8	Arsenal
9	Bayearn

- HomeStadium(stadiumID: int, stadiumName: varchar[30], capacity: int)

Retrieved data from table HomeStadium:

stadiumID	stadiumName	capacity
1	Old Trafford	74879
2	Etihad Stadium	55017
3	Anfield	53394
4	Emirates Stadium	60260
5	Stamford Bridge	40853
6	Michigan Stadium	30291

- Team(teamID: int, **HomeStadium.stadiumID**: int, **Ranking.ranking**: int, city: varchar[30])

Retrieved data from table Team:

teamID	stadiumID	ranking	city
1	1	2	Manchester
2	2	1	Manchester
3	3	4	Liverpool
4	4	8	London
5	5	3	London

- PlayerInfo(playerName: varchar[30], pnumber: int, **Team.teamID**: int, playerSalary: int, position: varchar[20], goalNum: int)

Retrieved data from table PlayerInfo:

Name	Jersey #	Team ID	Salary	Position	# Goals
David Beckham	7	1	1000000	Forward	10
Cristiano Ronaldo	10	1	2000000	Forward	25
Lionel Messi	10	2	2500000	Forward	30
Neymar Jr	10	3	1800000	Forward	20
Kylian Mbappe	7	4	1500000	Forward	15

- PlayerMember(memberID: int, **PlayerInfo.playerName**: varchar[30], **PlayerInfo.pnumber**: int, **PlayerInfo.teamID**: int)

Retrieved data from table PlayerMember:

memberID	playerName	pnumber	teamID
1	David Beckham	7	1
2	Cristiano Ronaldo	10	1
3	Lionel Messi	10	2
4	Neymar Jr	10	3
5	Kylian Mbappe	7	4

- InjuryReport(injID: int, **PlayerMember.memberID**: int, injType: varchar[50], injDate: Date)

Retrieved data from table InjuryReport:

injID	memberID	injType	injDate
1	1	Ankle Sprain	2022-02-10
2	3	Hamstring Strain	2022-02-15
3	5	Knee Injury	2022-02-17
4	2	Concussion	2022-02-20
5	4	Groin Strain	2022-02-25
6	1	Knee Injury	2023-03-27

- Staff(memberID: int, staffName: varchar[30], staffSalary: int, staffRole: varchar[20], **Team.teamID**: int)

Retrieved data from table Staff:

memberID	staffName	staffSalary	staffRole	teamID
6	Tom Lee	50000	Manager	1
7	Grace Kim	40000	Coach	1
8	Emma Liu	35000	Trainer	2
9	Kevin Chen	60000	Manager	3
10	Sophia Wang	45000	Coach	4

- Sponsor(sponsorID: int, sponsorName: varchar[30], fee, **Team.teamID**: int)

Retrieved data from table Sponsor:

SponsorID	SponsorName	Fee	TeamID
1	Coca-Cola	1000000	1
2	Nike	1500000	2
3	Pepsi	800000	3
4	Adidas	1200000	4
5	Samsung	900000	5

- PlaysIn(**Game.gameID**: int, **HomeStadium.stadiumID**: int)

Retrieved data from table PlaysIn:

gameID	stadiumID
1	1
2	2
3	3
4	4
5	5

- Receives(**MedicalStaff.mstaffID**: int, **InjuryReport.memberID**: int, **InjuryReport.injID**: int)

Retrieved data from table Receives:

mstaffID	memberID	injID
1	1	1
2	3	2
3	5	3
4	2	4
5	4	5

- Plays(**Game.gameID**: int, **Team.teamID1**: int, **Team.teamID2**: int)

Retrieved data from table Plays:

gameID	teamID1	teamID2
1	1	2
2	3	4
3	5	1
4	2	3
5	4	5

- Employs(**Game.gameID**: int, **Referee.refereeID**: int)

Retrieved data from table Employs:

gameID	refereeID
1	1
1	3
2	2
2	3
3	3
4	3
4	4
5	3
5	4
5	5

6. QUERIES:

INSERT (line 267 & 282 in Team.php)

INSERT INTO Ranking VALUES (7, 'FC Barcelona');
INSERT INTO Team VALUES (6, 6, 7, 'Barcelona');

Before	After
Insert Soccer Team: Team ID: 6 Team Name: FC Barcelona Home Stadium ID: 6 Ranking: 7 City: Barcelona Insert Team Display Insert happening in two tables at once (after normalization) Retrieved data from table Ranking: **ranking** **teamName** 1 Manchester City 2 Manchester United 3 Chelsea 4 Liverpool 8 Arsenal 9 Bayearn Retrieved data from table Team: **teamID stadiumID ranking city** 1 1 2 Manchester 2 2 1 Manchester 3 3 4 Liverpool 4 4 8 London 5 5 3 London	**Insert Soccer Team:** Team ID: Team Name: Home Stadium ID: Ranking: City: Insert Team Display Successfully inserted into table Ranking! Successfully inserted into table Team! Insert happening in two tables at once (after normalization) Retrieved data from table Ranking: **ranking** **teamName** 1 Manchester City 2 Manchester United 3 Chelsea 4 Liverpool 7 FC Barcelona 8 Arsenal 9 Bayearn Retrieved data from table Team: **teamID stadiumID ranking city** 1 1 2 Manchester 2 2 1 Manchester 3 3 4 Liverpool 4 4 8 London 5 5 3 London 6 6 7 Barcelona

DELETE (line 221 in HomeStadium.php)

DELETE FROM HomeStadium WHERE stadiumID = ‘1’;

<table>
<tr><th>Before</th><th>After</th></tr>
<tr>
<td>
<h2>Delete Stadium:</h2>
Stadium ID: 1

Delete

Display
<hr>
Retrieved data about Stadiums:
<table>
<tr><th>stadiumID</th><th>stadiumName</th><th>capacity</th></tr>
<tr><td>1</td><td>Old Trafford</td><td>74879</td></tr>
<tr><td>2</td><td>Etihad Stadium</td><td>55017</td></tr>
<tr><td>3</td><td>Anfield</td><td>53394</td></tr>
<tr><td>4</td><td>Emirates Stadium</td><td>60260</td></tr>
<tr><td>5</td><td>Stamford Bridge</td><td>40853</td></tr>
</table>
Retrieved data about Team:
<table>
<tr><th>TeamID</th><th>StadiumID</th><th>Ranking</th><th>City</th></tr>
<tr><td>1</td><td>1</td><td>2</td><td>Manchester</td></tr>
<tr><td>2</td><td>2</td><td>1</td><td>Manchester</td></tr>
<tr><td>3</td><td>3</td><td>4</td><td>Liverpool</td></tr>
<tr><td>4</td><td>4</td><td>8</td><td>London</td></tr>
<tr><td>5</td><td>5</td><td>3</td><td>London</td></tr>
</table>
</td>
<td>
<h2>Delete Stadium:</h2>
Stadium ID:

Delete

Display
<hr>
Successfuly deleted StadiumID: 1

Retrieved data about Stadiums:
<table>
<tr><th>stadiumID</th><th>stadiumName</th><th>capacity</th></tr>
<tr><td>2</td><td>Etihad Stadium</td><td>55017</td></tr>
<tr><td>3</td><td>Anfield</td><td>53394</td></tr>
<tr><td>4</td><td>Emirates Stadium</td><td>60260</td></tr>
<tr><td>5</td><td>Stamford Bridge</td><td>40853</td></tr>
</table>
Also deleted corresponding Team ID

Retrieved data about Team:
<table>
<tr><th>TeamID</th><th>StadiumID</th><th>Ranking</th><th>City</th></tr>
<tr><td>2</td><td>2</td><td>1</td><td>Manchester</td></tr>
<tr><td>3</td><td>3</td><td>4</td><td>Liverpool</td></tr>
<tr><td>4</td><td>4</td><td>8</td><td>London</td></tr>
<tr><td>5</td><td>5</td><td>3</td><td>London</td></tr>
</table>
</td>
</tr>
</table>

UPDATE (line 297 in Sponsor.php)

UPDATE Sponsor SET SPONSORNAME=’Nvdia’, FEE='9999'', TEAMID=’1’
WHERE SPONSORID=’1’;

<table>
<tr><th>Before</th><th>After</th></tr>
<tr>
<td>
Update Sponsor:
SponsorID: 1
Sponsor Name: Nvdia
Fee: 9999
Sponsoring Team ID: 3
Update
Display All Values
Show Sponsor Attributes:
Choose an Attribute: sponsorID Show Data
Show Specific Team Attribute from Sponsor:
Choose an Attribute: StadiumID Search:
Show Combined Table
<hr>
Retrieved data from table Sponsor:
<table>
<tr><th>SponsorID</th><th>SponsorName</th><th>Fee</th><th>TeamID</th><th>TeamCity</th></tr>
<tr><td>1</td><td>Coca-Cola</td><td>5000</td><td>3</td><td>Liverpool</td></tr>
<tr><td>2</td><td>Nike</td><td>1500000</td><td>2</td><td>Manchester</td></tr>
<tr><td>3</td><td>Pepsi</td><td>800000</td><td>3</td><td>Liverpool</td></tr>
<tr><td>4</td><td>Adidas</td><td>1200000</td><td>4</td><td>London</td></tr>
<tr><td>5</td><td>Samsung</td><td>900000</td><td>5</td><td>London</td></tr>
</table>
</td>
<td>
Update Sponsor:
SponsorID:
Sponsor Name:
Fee:
Sponsoring Team ID:
Update
Display All Values
Show Sponsor Attributes:
Choose an Attribute: sponsorID Show Data
Show Specific Team Attribute from Sponsor:
Choose an Attribute: StadiumID Search:
Show Combined Table
<hr>
Successfully Updated Sponsor: Nvdia
<table>
<tr><th>SponsorID</th><th>SponsorName</th><th>Fee</th><th>TeamID</th><th>TeamCity</th></tr>
<tr><td>1</td><td>Nvdia</td><td>99999</td><td>3</td><td>Liverpool</td></tr>
<tr><td>2</td><td>Nike</td><td>1500000</td><td>2</td><td>Manchester</td></tr>
<tr><td>3</td><td>Pepsi</td><td>800000</td><td>3</td><td>Liverpool</td></tr>
<tr><td>4</td><td>Adidas</td><td>1200000</td><td>4</td><td>London</td></tr>
<tr><td>5</td><td>Samsung</td><td>900000</td><td>5</td><td>London</td></tr>
</table>
</td>
</tr>
</table>

It is possible to choose which values to update. If let empty, row will keep its previous value. Except for column “Sponsoring TeamID” as it is possible for a sponsor to exist without a sponsoring team. If left empty TeamID in Sponsor table will be NULL.

SELECTION (lines 192-207 in InjuryReport.php)

SELECT *
FROM InjuryReport
WHERE injType = 'Knee Injury';

Before	After
Filter by Injury Type: **NOTE:** The values are case sensitive and white-space sensitive. Injury Type: Knee Injury **Include columns:** Injury ID: ☑ Member ID: ☑ Injury Type: ☑ Injury Date: ☑ Find Reports Retrieved data from table InjuryReport: injID memberID injType injDate 1 1 Ankle Sprain 2022-02-10 2 3 Hamstring Strain 2022-02-15 3 5 Knee Injury 2022-02-17 4 2 Concussion 2022-02-20 5 4 Groin Strain 2022-02-25 6 1 Knee Injury 2023-03-27	**Filter by Injury Type:** **NOTE:** The values are case sensitive and white-space sensitive. Injury Type: **Include columns:** Injury ID: ☐ Member ID: ☐ Injury Type: ☐ Injury Date: ☐ Find Reports Filtering those with injury type = Knee Injury: Retrieved data from table InjuryReport: injID memberID injType injDate 3 5 Knee Injury 2022-02-17 6 1 Knee Injury 2023-03-27

PROJECTION (lines 341-351 in Sponsor.php)

SELECT sponsorName, fee FROM Sponsor;

Before	After
Show Sponsor Attributes: Choose an Attribute: sponsorID, sponsorName, fee, teamID — Show Data **Show Specific Team Attribute from Sponsor:** Choose an Attribute: StadiumID Search: Show Combined Table Retrieved data from table Sponsor: SponsorID SponsorName Fee TeamID TeamCity 1 Coca-Cola 5000 3 Liverpool 2 Nike 1500000 2 Manchester 3 Pepsi 800000 3 Liverpool 4 Adidas 1200000 4 London 5 Samsung 900000 5 London	**Show Sponsor Attributes:** Choose an Attribute: sponsorID, sponsorName, fee, teamID — Show Data **Show Specific Team Attribute from Sponsor:** Choose an Attribute: StadiumID Search: Show Combined Table Retrieved data from table Sponsor, displaying selected column: SPONSORNAME FEE Coca-Cola 5000 Nike 1500000 Pepsi 800000 Adidas 1200000 Samsung 900000

JOIN (line 359 in Sponsor.php)

SELECT Sponsor.sponsorName, Sponsor.fee, Team.stadiumID, Team.ranking, Team.city
FROM Sponsor
JOIN Team
ON Sponsor.teamID = Team.teamID
WHERE Team.city = ‘London’;

Before	After
Show Specific Team Attribute from Sponsor: Choose an Attribute: City Search: London Show Combined Table Retrieved data from table Sponsor: **SponsorID SponsorName Fee TeamID TeamCity** 1 Coca-Cola 5000 3 Liverpool 2 Nike 1500000 2 Manchester 3 Pepsi 800000 3 Liverpool 4 Adidas 1200000 4 London 5 Samsung 900000 5 London	**Show Specific Team Attribute from Sponsor:** Choose an Attribute: StadiumID Search: Show Combined Table Combined Sponsor and Team Data to see comprehensive stats: **SponsorName SponsorFee TeamStadiumID TeamStadiumName TeamRanking TeamCity** Adidas 1200000 4 Emirates Stadium 8 London Samsung 900000 5 Stamford Bridge 3 London

ex) lookup sponsors that sponsor teams in London

AGGREGATION with GROUP BY (line 296 in Team.php)

SELECT COUNT(*), teamID
FROM PlayerInfo
GROUP BY teamID;

Query	Result
Count number of Players per Team: Submit	**Team ID Number of Players** 1 2 2 1 4 1 3 1

AGGREGATION with HAVING (line 303 in Team.php)

```
SELECT teamID, SUM(goalNum)
FROM PlayerInfo
GROUP BY teamID
HAVING SUM(goalNum) >15;
```

Query	Result
Teams that have scored more than 15 goals: Submit	**Team ID # Goals** 1 35 2 30 3 20

NESTED AGGREGATION with GROUP BY (line 310 in Team.php)

```
SELECT teamID, AVG(P1.playerSalary)
FROM PlayerInfo P1
GROUP BY teamID
HAVING AVG(P1.playerSalary) > (SELECT AVG(P2.playerSalary)
                               FROM PlayerInfo P2);
```

Query	Result
Teams with an average salary higher than the average salary of the league: Submit	Average Salary in the League is $1760000 **Team ID Average Salary ($)** 2 2500000 3 1800000

DIVISION (line 180 in Referee.php)

```
SELECT r.refereeID, r.refName
FROM Referee r
WHERE NOT EXISTS (SELECT g.gameID
                  FROM Game g
                  WHERE NOT EXISTS (SELECT e.gameID
                                    FROM Employs e
                                    WHERE e.gameID = g.gameID AND
                                          e.refereeID = r.refereeID));
```

Before	After
Find Referee: Find all referees who are employed in all existing soccer games: Search Retrieved data from table Referee: **refereeID refName** 1 John Smith 2 Mary Johnson 3 David Lee 4 Emily Wong 5 Michael Chen Retrieved data from table Game: **gameID gameDate homeScore awayScore** 1 2022-01-01 2 1 2 2022-01-05 0 0 3 2022-01-12 3 2 4 2022-01-20 1 1 5 2022-01-27 2 3 Retrieved data from table Employs: **gameID refereeID** 1 1 1 3 2 2 2 3 3 3 4 3 4 4 5 3 5 4 5 5	**Find Referee:** Find all referees who are employed in all existing soccer games: Search Retrieved date from table Referee after Search: **refereeID refName** 3 David Lee