Milestone #: 4

Date: November 24th 2022

Group Number: 50

Name	Student Number	CS Alias (Userid)	Preferred Email Address
Lucas Amar	37082823	la370828	lucasamar5@gmail.com
Steven Slater	46173688	i217k	s2063615@ed.ac.uk
David Perez	25984360	dperez02	david.perez18@estudiant.upf.edu

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

Repo link

https://github.students.cs.ubc.ca/CPSC304-2022W-T1/project_d0c1y_i2l7k_i4d6p

SQL script

The entire script to create the tables is in the github repo. “Database.sql”

Project Description

Short description of the project

With this project we have made an application that provides information about the world of soccer. The application allows you to perform the following operations on various tables such as teams, players, stadiums, goals, etc.

- Insert - Add a team in our database.
- Delete - Delete a team from our database
- Update - Change the name of the team you want from our database.
- Select - Show all the players of each Nationality
- Project - Project the different attributes of a match
- Join - Show Players by Position
- Aggregate with group by - Show number of goals by each scorer
- Aggregate with having - Show total number of each nationality's goals, but just for those with more than one goal in total.
- Nested aggregation with group by - Show the topscorers of the league you want from our database
- Division

The database records information about teams, leagues, people (players, coaches, management, and maintenance), matches, titles, stadiums, and goals.
The final application has been done with Oracle to manage the database and php to do the backend and UI. We have chosen the respective statement and table for each query thinking on what will the user find more interesting in each case. For instance, instead of doing a simple select from one class, we have made a join between different tables to be able to show the most relevant information of the same player for the user, since person_name and player_nationality were not in the same table.

Also, we chose to implement an extra feature, for aesthetic reasons, the main menu, which is a main page where the user is intended to start, from where he can choose any page he wants and go there by just clicking the button. We found it demanding, but it's practical usefulness made us think that it was worth it, and the final result helps the user to navigate between the pages more comfortably and easily.

Schema Differences

In the final schema, the only difference is that we have:

- Removed the goal_5 table as we realized the information was already in table match_takes_place. Both the create_table and the insert statements are created and commented, but they were redundant and some errors helped us to realize that instead of modifying the classes we could delete them with no information lost.

- Furthermore in tables play_2 and plays_3 we have changed team_id to make home_team_id and visitor_team_id, because the ternary relationship was not being implemented with our original schema. Now we are showing the relationship in which a game has 2 teams (home and visitor) and takes place in a league. Otherwise, we could not state that two different teams were playing the same game, since our normalized table has team_id as a primary key and in this way we can include both teams with no redundant information and with a normalized table too.

Final Schema

team

```
create table Team(
        team_id number(3,0) not null,
        team_name varchar(50) not null,
        primary key (team_id),
        UNIQUE (team_name));
```

```
SQL> select *
  2  from team
  3  ;

   TEAM_ID TEAM_NAME
---------- --------------------------------------------------
         1 FC Barcelona
         2 Real Madrid CF
         3 Club Atletico de Madrid
         4 Sevilla FC
         5 Valencia CF
         6 Manchester City FC
         7 Liverpool FC
         8 Manchester United FC
         9 Chelsea FC
        10 Arsenal FC
        11 FC Bayern Munchen

   TEAM_ID TEAM_NAME
---------- --------------------------------------------------
        12 Borussia Dortmund
        13 Bayer 04 Leverkusen
        14 Eintracht Frankfurt FC
        15 RB Leipzig
        16 Juventus FC
        17 AC Milan
        18 FC Internazionale Milano
        19 AS Roma
        20 SSC Napoli
        21 Paris Saint-Germain FC
        22 Olympique de Lyon

   TEAM_ID TEAM_NAME
---------- --------------------------------------------------
        23 AS Monaco FC
        24 Olympique de Marseille
        25 Lille OSC

25 rows selected.
```

league

```
create table League(
    league_name varchar(50) not null,
    league_id number(2,0) not null,
    league_standing varchar(3000) null,
    primary key (league_id),
    UNIQUE (league_name));
```

Each league standing has been initiated with a value of null

```
LEAGUE_NAME                                        LEAGUE_ID
-------------------------------------------------- ----------
LEAGUE_STANDING
--------------------------------------------------------------------------------
La Liga Santander                                           1


Premier League                                              2


Serie A                                                     3


LEAGUE_NAME                                        LEAGUE_ID
-------------------------------------------------- ----------
LEAGUE_STANDING
--------------------------------------------------------------------------------
Bundesliga                                                  4


Ligue 1                                                     5
```

titles_won_2

```
create table Titles_Won_2(
    title_id number(2,0) not null,
    title_year number(4,0) not null,
    title_name varchar2(50) not null,
    team_id number(3,0) not null,
    primary key (title_id, title_year),
    foreign key (team_id) references Team(team_id)
    ON DELETE CASCADE);
```

```
SQL> select *
  2  from titles_won_2
  3  ;

  TITLE_ID TITLE_YEAR TITLE_NAME
---------- ---------- --------------------------------------------------
   TEAM_ID
----------
         1       2022 Trofeo de La Liga
         2

         1       2021 Trofeo de La Liga
         3

         1       2019 Trofeo de La Liga
         1


  TITLE_ID TITLE_YEAR TITLE_NAME
---------- ---------- --------------------------------------------------
   TEAM_ID
----------
         2       2022 Premier League Trophy
         6

         5       2022 Ligue 1 Trophee
        21

         3       2022 Trofeo di Serie A
        17


6 rows selected.
```

titles_won_3

```
create table Titles_Won_3(
    team_id number(3,0) not null,
    league_id number(2,0) not null,
    primary key (team_id, league_id),
    foreign key (team_id) references Team(team_id)
    ON DELETE CASCADE,
    foreign key (league_id) references League(league_id)
    ON DELETE CASCADE);
```

```
SQL> select *
  2  from titles_won_3
  3  ;

   TEAM_ID  LEAGUE_ID
---------- ----------
         1          1
         2          1
         3          1
         6          2
        11          4
        17          3
        21          5

7 rows selected.
```

person_works_for_2

```
create table Person_Works_For_2(
    person_id number(3,0) not null,
    team_id number(3,0) not null,
    nam varchar2(50) not null,
    UNIQUE (nam),
    PRIMARY KEY (person_id, team_id),
    UNIQUE(person_id),
    foreign key (team_id) references Team(team_id)
    ON DELETE CASCADE,
    foreign key (nam) references Person_Works_For_3(nam)
    ON DELETE CASCADE);
```

```
SQL> select *
  2  from person_works_for_2
  3  ;

 PERSON_ID    TEAM_ID NAM
---------- ---------- --------------------------------------------------
         1         21 Lionel Andres Messi
         2          8 Cristiano Ronaldo
         3         21 Neymar Junior
         4         21 Kylian Mbappe
         5          1 Robert Lewandowski
         6          1 Pedri
         7          1 Ousmane Dembele
         8          1 Marc Andre Ter Stegen
         9          2 Karim Benzema
        10          2 Vinicius Junior
        11          2 Thibaut Courtois

 PERSON_ID    TEAM_ID NAM
---------- ---------- --------------------------------------------------
       700          2 Lucas Amar
       701         21 Steven Slater
       600          1 David Perez Carrasco
       702          1 Arnau Marti
       703         16 Jon Villabona
       704          6 Dwayne Johnson
       601         21 Elon Musk
       602          2 Florentino Perez
       603          3 Enrique Cerezo
       604         25 Pedro Sanchez
       500          1 Xavi Hernandez

 PERSON_ID    TEAM_ID NAM
---------- ---------- --------------------------------------------------
       501          2 Carlo Ancelotti
       502          6 Josep Guardiola
       503          3 Diego Pablo Simeone
       504         13 Xabi Alonso

26 rows selected.
```

person_works_for_3

```sql
create table Person_Works_For_3(
    nam varchar2(50) not null,
    start_date DATE not null,
    end_date DATE null,
    primary key (nam));
```

```
SQL> select *
  2  from person_works_for_3
  3  ;

NAM                                                START_DAT END_DATE
-------------------------------------------------- --------- ---------
Lionel Andres Messi                                08-OCT-21 30-JUN-23
Cristiano Ronaldo                                  28-SEP-21 30-JUN-23
Neymar Junior                                      30-JUL-17 30-JUN-25
Kylian Mbappe                                      07-AUG-17 30-JUN-24
Robert Lewandowski                                 25-AUG-22 30-JUN-25
Pedri                                              01-AUG-20 30-JUN-27
Ousmane Dembele                                    30-AUG-17 30-JUN-24
Marc Andre Ter Stegen                              02-AUG-14 30-JUN-26
Karim Benzema                                      13-AUG-09 30-JUN-26
Vinicius Junior                                    15-AUG-18 30-JUN-26
Thibaut Courtois                                   01-SEP-18 30-JUN-26

NAM                                                START_DAT END_DATE
-------------------------------------------------- --------- ---------
Lucas Amar                                         20-OCT-22 30-NOV-22
Steven Slater                                      20-OCT-22 30-NOV-22
David Perez Carrasco                               20-OCT-22 30-NOV-32
Arnau Marti                                        20-OCT-22 30-NOV-42
Jon Villabona                                      20-OCT-22 30-NOV-25
Dwayne Johnson                                     20-OCT-20 30-NOV-24
Elon Musk                                          15-JUL-19 30-NOV-24
Florentino Perez                                   20-JUL-09 30-NOV-32
Enrique Cerezo                                     20-OCT-12 30-NOV-28
Pedro Sanchez                                      20-OCT-21 30-NOV-25
Xavi Hernandez                                     27-OCT-21 30-NOV-26

NAM                                                START_DAT END_DATE
-------------------------------------------------- --------- ---------
Carlo Ancelotti                                    20-AUG-20 30-NOV-27
Josep Guardiola                                    10-JUL-22 30-NOV-27
Diego Pablo Simeone                                02-AUG-08 30-NOV-27
Xabi Alonso                                        01-AUG-22 30-NOV-27

26 rows selected.
```

maintenance

```
create table Maintenance(
    person_id number(3,0) not null,
    maintenance_type varchar2(30) not null,
    primary key (person_id),
    foreign key (person_id) references Person_Works_For_2(person_id)
    ON DELETE CASCADE);
```

```
 PERSON_ID MAINTENANCE_TYPE
---------- ------------------------------
       700 Cleaning
       701 IT Maintenance
       702 Maintaining Training material
       703 IT Maintenance
       704 Gym Maintaining
```

coach

```
create table Coach(
    person_id number(3,0) not null,
    coach_nationality varchar2(20) not null,
    coach_type  varchar2(30) null,
    primary key (person_id),
    foreign key (person_id) references Person_Works_For_2(person_id)
    ON DELETE CASCADE);
```

```
SQL> select *
  2  from coach
  3  ;

 PERSON_ID COACH_NATIONALITY    COACH_TYPE
---------- -------------------- ------------------------------
       500 Spain                Possession
       501 Italy                Counter-Attack
       502 Spain                Possession
       503 Spain                Defensive
       504 Spain                Long Distance Passes
```

management

```
create table Management(
    person_id number(3,0) not null,
    management_type varchar2(30) not null,
    primary key (person_id),
    foreign key (person_id) references Person_Works_For_2(person_id)
    ON DELETE CASCADE);
```

```
 PERSON_ID MANAGEMENT_TYPE
---------- ------------------------------
       600 President-Manager
       601 CEO
       602 President
       603 President
       604 Manager
```

player_2

```
create table Player_2(
    person_id number(3,0) not null,
    player_nationality varchar2(20) not null,
    position varchar2(3) not null,
    primary key (person_id),
    foreign key (person_id) references Person_Works_For_2(person_id)
    ON DELETE CASCADE,
    foreign key (position) references Player_3(position)
    ON DELETE CASCADE);
```

```
SQL> select *
  2  from player_2
  3  ;

 PERSON_ID PLAYER_NATIONALITY   POS
---------- -------------------- ---
         1 Argentina            RW
         2 Portugal             ST
         3 Brazil               LW
         4 France               ST
         5 Poland               ST
         6 Spain                CAM
         7 France               LW
         8 Germany              GK
         9 France               ST
        10 Brazil               LW
        11 Belgium              GK

11 rows selected.
```

player_3

```
create table Player_3 (
    position varchar2(3) not null,
    num number(2,0) not null,
    primary key (position));
```

```
SQL> select *
  2  from player_3
  3  ;

POS        NUM
--- ----------
GK           1
RB           2
CB           3
LB           4
CDM          5
CM           6
LW          11
CAM          8
ST           9
RW          10

10 rows selected.
```

stadium

```
create table Stadium (
    stadium_id number(3,0) not null,
    address varchar2(200) not null,
    capacity number(5,0) not null,
    primary key (stadium_id));
```

```
SQL> select *
  2  from stadium
  3  ;

STADIUM_ID
----------
ADDRESS
--------------------------------------------------------------------------------
  CAPACITY
----------
         1
C. dAr??stides Maillol, 12, 08028 Barcelona, Spain
     99354

         2
Av. de Concha Espina, 1, 28036 Madrid, Spain
     81044

STADIUM_ID
----------
ADDRESS
--------------------------------------------------------------------------------
  CAPACITY
----------

         3
Sir Matt Busby Way, Old Trafford, Stretford, Manchester M16 0RA, England
     74310

         4
24 Rue du Commandant Guilbaud, 75016 Paris, France

STADIUM_ID
----------
ADDRESS
--------------------------------------------------------------------------------
  CAPACITY
----------
     47929

         5
Piazzale Angelo Moratti, 20151 Milan, Italy
     80018
```

match_takes_place

```sql
create table Match_Takes_Place (
    match_id number(3,0) not null,
    result char(5) not null,
    attendance number(5,0) not null,
    stadium_id number(3,0) not null,
    primary key (match_id),
    foreign key (stadium_id) references Stadium(stadium_id)
    ON DELETE CASCADE);
```

```
SQL> select *
  2  from match_takes_place
  3  ;

  MATCH_ID RESUL ATTENDANCE STADIUM_ID
---------- ----- ---------- ----------
         1 00-04      93472          2
         2 01-04      87472          3
         3 03-01      73431          3
         4 00-00      76431          5
         5 03-00      43431          4
```

plays_2

```
create table Plays_2 (
    team_id_home number(3,0) not null,
    team_id_visitor number(3,0) not null,
    league_id number(2,0) not null,
    primary key (team_id_home, team_id_visitor),
    foreign key (team_id_home) references Team(team_id)
    ON DELETE CASCADE,
    foreign key (team_id_visitor) references Team(team_id)
    ON DELETE CASCADE,
    foreign key (league_id) references League(league_id)
    ON DELETE CASCADE);
```

```
SQL> select *
  2  from plays_2
  3  ;

TEAM_ID_HOME TEAM_ID_VISITOR  LEAGUE_ID
------------ --------------- ----------
           2               1          1
           3               1          1
          10               8          2
          17              18          3
          21              22          5
```

plays_3

```
create table Plays_3 (
    team_id_home number(3,0) not null,
    team_id_visitor number(3,0) not null,
    match_id number(3,0) not null,
    primary key (match_id),
    foreign key (team_id_home) references Team(team_id)
    ON DELETE CASCADE,
    foreign key (team_id_visitor) references Team(team_id)
    ON DELETE CASCADE,
    foreign key (match_id) references Match_Takes_Place(match_id)
    ON DELETE CASCADE);
```

```
SQL> select *
  2  from plays_3
  3  ;

TEAM_ID_HOME TEAM_ID_VISITOR   MATCH_ID
------------ --------------- ----------
           2               1          1
           3               1          2
          10               8          3
          17              18          4
          21              22          5
```

goal_3

```
create table Goal_3(
    goal_id number(4,0) not null,
    person_id number(3,0) not null,
    team_id number(3,0) not null,
    primary key (goal_id, person_id),
    foreign key (person_id) references Person_Works_For_2(person_id)
    ON DELETE CASCADE,
    foreign key (team_id) references Team(team_id)
    ON DELETE CASCADE);
```

```
SQL> select *
  2  from goal_3
  3  ;

   GOAL_ID  PERSON_ID    TEAM_ID
---------- ---------- ----------
         1          1         21
         2          1         21
         3          4         21
         4          5          1
         5          5          1
         6          1         21
         1          7          1

7 rows selected.
```

goal_4

```
create table Goal_4 (
    goal_id number(4,0) not null,
    technique varchar(20) null,
    match_id number(3,0) not null,
    person_id number(3,0) not null,
    primary key (goal_id),
    foreign key (person_id) references Person_Works_For_2(person_id)
    ON DELETE CASCADE,
    foreign key (match_id) references Match_Takes_Place(match_id)
    ON DELETE CASCADE);
```

```
[SQL> select *
[  2  from goal_4
[  3  ;

   GOAL_ID TECHNIQUE             MATCH_ID  PERSON_ID
---------- -------------------- ---------- ----------
         1 Solo Goal                     5          1
         2 Volley                        5          1
         3 Header                        5          4
         4 Header                        1          5
         5 Long Shot                     1          5
         6 Solo Goal                     5          1
         7 Volley                        1          7

7 rows selected.
```

assists

```
create table Assists(
    person_id_assisted number(3,0) not null,
    person_id_assists number(3,0) not null,
    primary key (person_id_assisted, person_id_assists),
    foreign key (person_id_assisted) references Person_Works_For_2(person_id)
    ON DELETE CASCADE,
    foreign key (person_id_assists) references Person_Works_For_2(person_id)
    ON DELETE CASCADE);
```

```
[SQL> select *
[  2  from assists
[  3  ;

PERSON_ID_ASSISTED PERSON_ID_ASSISTS
------------------ -----------------
                 1                 3
                 4                 1
                 5                 6
                 5                 7
                 7                 6
```

Queries

Insert

File: /project/backend/src/insert.php
Query is at lines: 144-159

Before

Insert Values into Team

team_id:

team_name:

Insert

Count the Tuples in Team

Submit

The number of tuples in Team: 25

After

Insert Values into Team

team_id:

team_name:

Insert

Count the Tuples in Team

Submit

The number of tuples in Team: 26

Delete

File: /project/backend/src/delete.php
Query is at lines: 143-157

Before

Delete Row from Team

team_id:

Insert

Count the Tuples in DemoTable

Submit

The number of tuples in Team: 26

After

Delete Row from Team

team_id: 101

Insert

Count the Tuples in DemoTable

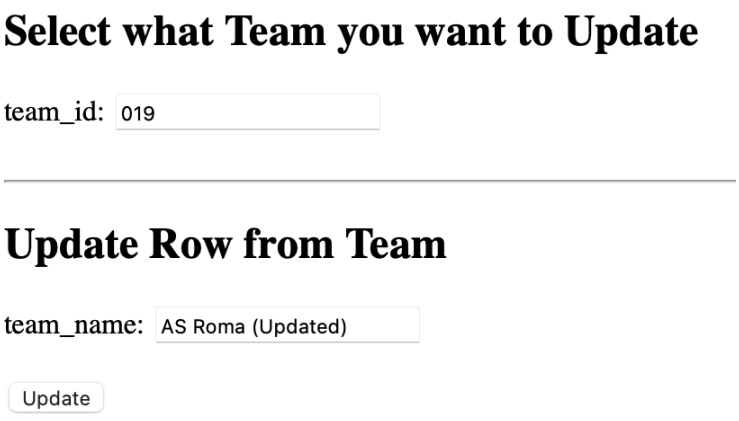
Submit

The number of tuples in Team: 25

Update

File: /project/backend/src/update.php
Query is at lines: 128-152

Interface



Before - Table

```
  TEAM_ID TEAM_NAME
--------- ------------------------------
        2 Real Madrid CF
        3 Club Atletico de Madrid
        4 Sevilla FC
        5 Valencia CF
        6 Manchester City FC
        7 Liverpool FC
        8 Manchester United FC
        9 Chelsea FC
       10 Arsenal FC
       11 FC Bayern Munchen
       12 Borussia Dortmund

  TEAM_ID TEAM_NAME
--------- ------------------------------
       13 Bayer 04 Leverkusen
       14 Eintracht Frankfurt FC
       15 RB Leipzig
       16 Juventus FC
       17 AC Milan
       18 FC Internazionale Milano
       19 AS Roma
       20 SSC Napoli
       21 Paris Saint-Germain FC
       22 Olympique de Lyon
       23 AS Monaco FC

  TEAM_ID TEAM_NAME
--------- ------------------------------
       24 Olympique de Marseille
       25 Lille OSC
```

After - Table

```
  TEAM_ID TEAM_NAME
--------- ------------------------------
        2 Real Madrid CF
        3 Club Atletico de Madrid
        4 Sevilla FC
        5 Valencia CF
        6 Manchester City FC
        7 Liverpool FC
        8 Manchester United FC
        9 Chelsea FC
       10 Arsenal FC
       11 FC Bayern Munchen
       12 Borussia Dortmund

  TEAM_ID TEAM_NAME
--------- ------------------------------
       13 Bayer 04 Leverkusen
       14 Eintracht Frankfurt FC
       15 RB Leipzig
       16 Juventus FC
       17 AC Milan
       18 FC Internazionale Milano
       19 AS Roma (Updated)
       20 SSC Napoli
       21 Paris Saint-Germain FC
       22 Olympique de Lyon
       23 AS Monaco FC

  TEAM_ID TEAM_NAME
--------- ------------------------------
       24 Olympique de Marseille
       25 Lille OSC
```

Select

File: /project/backend/src/select.php
Query is at lines: 149-169

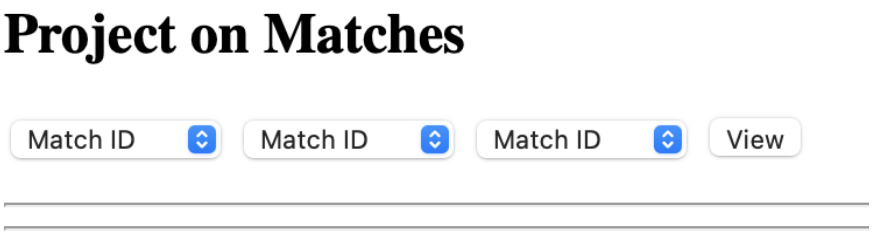
Before

After - Selecting Belgium (Page refreshes after running so filters go back to initial value)

Projection

File: /project/backend/src/projection.php
Query is at lines: 157-182

Before



After

Project on Matches

Match ID | Match ID | Match ID | View

Attendance	Stadium_id	Result
93472	2	00-04
87472	3	01-04
73431	3	03-01
76431	5	00-00
43431	4	03-00

Join

File: /project/backend/src/join.php
Query is at lines: 140-162

Before

View Players by Position (Join)

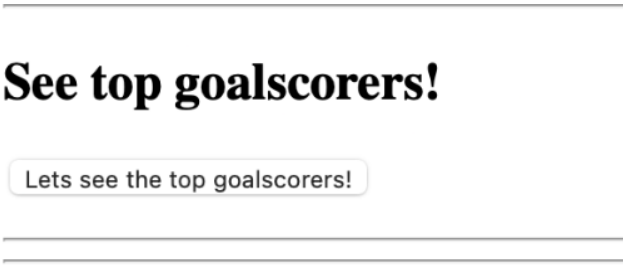
RW | View

After

Aggregation with Group By

File: /project/backend/src/groupByAgg.php
Query is at lines: 137-159

Before



After

See top goalscorers!

Lets see the top goalscorers!

Name	Goals
Kylian Mbappe	1
Robert Lewandowski	2
Lionel Andres Messi	3
Ousmane Dembele	1

Aggregation with Having

File: /project/backend/src/groupByHaving.php
Query is at lines: 137-159

Before

Countries that have scored more than one goal (groupby with having)

View countires who have scored more than one goal!

After

Countries that have scored more than one goal (groupby with having)

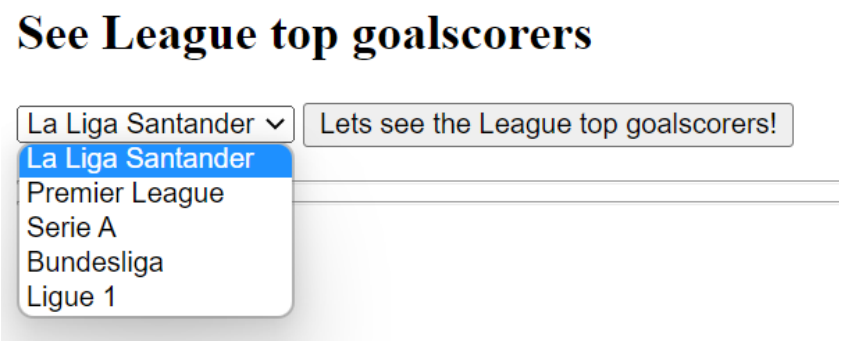
View countires who have scored more than one goal!

Country	Goals
Poland	2
Argentina	3
France	2

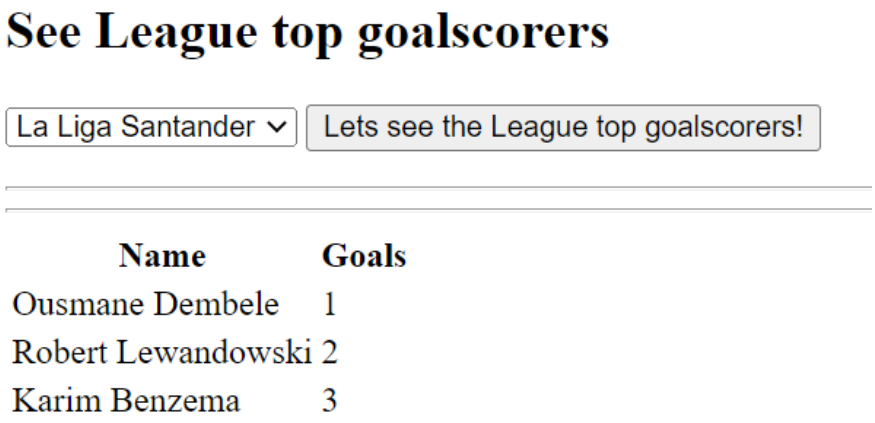
Nested Aggregation Group By

File: /project/backend/src/NestedgroupByAgg.php
Query is at lines: 144-166

Before



After



Division

File: /project/backend/src/Division.php
Query is at lines: 137-159

Before:

See people whose teams have not scored any goal

Lets see the people whose teams have not scored any goal!

After:

See people whose teams have not scored any goal

Lets see the people whose teams have not scored any goal!

Name
Dwayne Johnson
Josep Guardiola
Cristiano Ronaldo
Diego Pablo Simeone
Enrique Cerezo
Xabi Alonso
Pedro Sanchez
Jon Villabona

Menu

Milestone4 Menu Selection

Insert

Delete

Select

Update

Projection

Join

Group By Aggregation

Group By Having

Nested Group By Aggregation

Division