University of British Columbia, Vancouver
Department of Computer Science

CPSC 304 Project Cover Page

Milestone #: 4
Date: 5 April 2023

Group Number: 4

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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

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Project Description

Our project relates to international sport competition logistics. Sport competitions at the international level require careful planning and management with regards to venues, athletes, coaches, and specific sporting events. Our project consolidated all of these parts into a single database management system by allowing the user to view sport competition entities and perform operations, such as updating athletes, inserting new teams, and deleting athletes and coaches.

How the Final Schema Differed

We removed the TeamName -> SportName functional dependency and therefore also removed the TeamSport table. Based on real world context, we decided against it.
We added competitionName and competitionYear to the primary key of the SportingEvent relation (formerly Event), so that we can differentiate between the same event (e.g. 50m swimming) in different competitions. We changed the table names that were a combination of table names, such as TeamPlaysCompetes_For to Team to make it easier to read. We also added ON DELETE CASCADE to Athlete and Coach as we realized those were necessary when we deleted a Person. We updated our INSERT INTO statements to make sure integrity constraints are held, such as by inserting a foreign key that already exists. We then removed some of the relations that were not in BCNF (Athlete_Old, Person_Old, VenueIs_In).

Link to Repository

https://github.students.cs.ubc.ca/CPSC304-2022W-T2/project_a5i7g_j3t0d_y2s1d

SQL Script

https://raw.github.students.cs.ubc.ca/CPSC304-2022W-T2/project_a5i7g_j3t0d_y2s1d/main/script.sql?token=GHSAT0AAAAAAAAAERGCRS5OI5JMTTFPLYOUZBOJYXQ

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Schema

Foreign Key: bolded
Primary Key: underlined

AgeCategory(age: integer, ageCategory: char(25))

Athlete(**participantID**: integer, height: integer, mass: integer)

City(latitude: decimal, longitude: decimal, cityName: char(100), **countryName**: char(100))

Coach(**participantID**: integer, experience: integer)

Coaches(**athleteID**: integer, **coachID**: integer, startDate: date)

Competes_In(**participantID**: integer, eventName: char(60), **sportName**: char(60), ranking: integer, **competitionName**: char(100), **competitionYear**: integer)

Competition(competitionName: string, yearVal: integer, budget: integer, **latitude**: decimal, **longitude**: decimal)

CompetitionSport(**competitionName**: string, **yearVal:** integer, **sportName**: string)
Country(countryName: string)

Mascot(mascotName: string, mascotType: string)

Member_Of(**participantID:** integer, **teamID:** string, startDate: date)

Person(participantID: integer, firstName: string, lastName: string, age: integer)

PostalCodeCity(postalCode: string, **latitude**: decimal, **longitude**: decimal, **countryName**: string)

Represents(**mascotName**: string, **competitionName:** string, **yearVal:** integer)

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Sport(sportName: string)

SportingEvent(**sportName**: string, eventName: string, startDate: date, endDate: date, **venueName**: string, **competitionName**: string, **competitionYear**: integer)

Team(teamID: string, capacity: integer, teamName: string, established: integer, **sportName**: string, **countryName**: string)

Venue(venueName: string, capacity: integer, postalCode: string)

WeightClass(mass: integer, weightClass: string)

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Screenshots of what data is present in each relation after the SQL initialization script is run

AgeCategory

AGE	AGECATEGORY
14	U16
15	U16
17	U20
18	U20
20	U20
100	Senior
200	Senior
150	Senior

Athlete

PARTICIPANTID	HEIGHT	MASS
1		
2	100	91
3		57
4		67
5	200	73

City

LATITUDE	LONGITUDE	CITYNAME	COUNTRYNAME
52	0	London	United Kingdom
41	74	New York City	United States
36	140	Tokyo	Japan
49	2	Paris	France
38	122	San Francisco	Morocco
25	134	Sydney	Australia

6 rows selected.

Coach

PARTICIPANTID	EXPERIENCE
123	10
12345	5
6	20
99	0
99999	33

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Coaches

ATHLETEID	COACHID	STARTDATE
1	123	05-FEB-22
2	12345	12-JAN-23
3	6	26-MAY-21
4	99	12-JAN-23
5	99999	01-JAN-20

Competes_In

PARTICIPANTID	EVENTNAME	SPORTNAME	RANKING	COMPETITIONNAME	COMPETITIONYEAR
1	Women's Doubles	Tennis	10	Summer Olympics	2012
2	Women's Single	Tennis	1	Summer Olympics	2012
3	Men's Double	Tennis		Summer Olympics	2016
4	Slalom	Skiing	1	Winter Youth Olympics	2010
4	Singles Skating	Figure Skating	2	Winter Youth Olympics	2010
5	Singles Skating	Figure Skating	2	Winter Youth Olympics	2020
5	Slalom	Skiing	1	Winter Youth Olympics	2020

7 rows selected.

Competition

COMPETITIONNAME	YEARVAL	BUDGET	LATITUDE	LONGITUDE
FIFA World Cup Qatar 2022	2022	1	36	140
Australian Open 2023	2023		25	134
Tour de France 2022	2022		49	2
Super Bowl LVI	2022		41	74
Winter Youth Olympics	2020		52	0
Winter Youth Olympics	2010		52	0
Winter Olympics	2010		38	122
Winter Olympics	2020		38	122
Summer Olympics	2012	300	41	74
Summer Olympics	2016	300	41	74

10 rows selected.

CompetitionSport

```
SQL> select * from competitionsport
  2  ;

COMPETITIONNAME                                                                                  YEARVAL SPORTNAME
------------------------------------------------------------------------------------------------ ------- ------------------------------------------------------------
Australian Open 2023                                                                                2023 Tennis
FIFA World Cup Qatar 2022                                                                           2022 Football
Summer Olympics                                                                                     2012 Tennis
Summer Olympics                                                                                     2016 Tennis
Super Bowl LVI                                                                                      2022 American Football
Tour de France 2022                                                                                 2022 Cycling
Winter Olympics                                                                                     2010 Skiing
Winter Youth Olympics                                                                               2010 Skiing
Winter Youth Olympics                                                                               2020 Figure Skating
Winter Youth Olympics                                                                               2020 Skiing

10 rows selected.
```

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Country

```
SQL> select * from country;

COUNTRYNAME
--------------------------------------------------------------------------------
Australia
Canada
France
India
Japan
Morocco
New Zealand
Spain
United Kingdom
United States

10 rows selected.
```

Mascot

```
SQL> select * from mascot
  2  ;

MASCOTNAME                                         MASCOTTYPE
-------------------------------------------------- --------------------------------------------------
Thunder                                            Thunderbird
Quatchi                                            sasquatch
Miga                                               killer whale
Sumi                                               Thunderbird
Thundy                                             Thunderbird
Vinicius                                           Brazilian hybrid animal
Wenlock                                            Brazilian plant

7 rows selected.
```

Member_Of

```
SQL> select * from member_of
  2  ;

PARTICIPANTID TEAMID     STARTDATE
------------- ---------- ---------
            1 MUFC001    05-FEB-10
          123 LAL001     05-FEB-10
            1 LAL001     05-FEB-10
            2 MUFC001    05-FEB-10
            3 MUFC001    05-FEB-10
            1 NZAB001    05-FEB-12

6 rows selected.
```

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Person

PARTICIPANTID	FIRSTNAME	LASTNAME	AGE
1	Ryan	Gao	19
2	Edward	Chong	20
3	Julia	You	20
4	Jessica	Wong	100
5	Jason	Hall	15
123	Greg	Patel	65
12345	Brad	Nguyen	42
6	Jed	Garcia	45
99	Chris	Martin	31
99999	Ryan	Lee	60

10 rows selected.

PostalCodeCity

```
SQL> select * from postalcodecity;

POSTALCODE                                 LATITUDE  LONGITUDE COUNTRYNAME
------------------------------------------ --------- --------- ------------------------------------------------------------------------------------------------------------------------
HA90WS                                           52         0 United Kingdom
NY 10121                                         41        74 United States
VIC 3002                                         36       140 Australia
04480                                            49         2 India
CA 90015                                         38       122 United States
```

Represents

MASCOTNAME	COMPETITIONNAME	YEARVAL
Miga	Winter Youth Olympics	2020
Quatchi	Winter Olympics	2010
Sumi	Winter Olympics	2010
Vinicius	Summer Olympics	2016
Wenlock	Summer Olympics	2012

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Sport

```
SQL> select * from Sport;

SPORTNAME
------------------------------------------------------------
American Football
Basketball
Cricket
Cycling
Figure Skating
Football
Ice hockey
Rugby
Skiing
Soccer
Tennis
```

SportingEvent

```
SPORTNAME           EVENTNAME       STARTDATE ENDDATE   VENUENAME                                          COMPETITIONNAME           COMPETITIONYEAR
------------------- --------------- --------- --------- -------------------------------------------------- ------------------------- ---------------
Tennis              Women's Doubles 26-JUN-12 09-JUL-12 All England Lawn Tennis and Croquet Club           Summer Olympics                      2012
Tennis              Women's Single  26-JUN-12 09-JUL-12 All England Lawn Tennis and Croquet Club           Summer Olympics                      2012
Figure Skating      Singles Skating 15-JAN-20 16-JAN-20 Gangneung Ice Arena                                 Winter Youth Olympics                2020
Tennis              Men's Double    26-JUN-12 09-JUL-12 All England Lawn Tennis and Croquet Club           Summer Olympics                      2016
Figure Skating      Ice Dance       15-JAN-20 16-JAN-20 Gangneung Ice Arena                                 Winter Olympics                      2020
Figure Skating      Singles Skating 15-FEB-20 26-FEB-20 Gangneung Ice Arena                                 Winter Olympics                      2020
Skiing              Slalom          19-FEB-10 19-FEB-10 Yongpyong Alpine Centre                            Winter Youth Olympics                2010
Skiing              Slalom          19-FEB-20 19-FEB-20 Yongpyong Alpine Centre                            Winter Youth Olympics                2020
Figure Skating      Singles Skating 15-FEB-10 26-FEB-10 Gangneung Ice Arena                                 Winter Youth Olympics                2010

9 rows selected.
```

Team

```
SQL> select * from Team;

TEAMID       CAPACITY TEAMNAME                                          ESTABLISHED SPORTNAME                                                  COUNTRYNAME
---------- ---------- -------------------------------------------------- ----------- -------------------------------------------------------------- ---------------
------------------------------------------------------------
MUFC001         74140 Manchester United Football Club                          1878 Football                                                       United Kingdom
LAL001          18997 Los Angeles Lakers                                       1947 Basketball                                                     United States
NZAB001         50000 New Zealand National Rugby Union Team                    1884 Rugby                                                          New Zealand
RMD001          81044 Real Madrid Club de Futbol                               1902 Football                                                       Spain
MI001           33108 Mumbai Indians                                           2008 Cricket                                                        India
```

Venue

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```
SQL> select * from Venue;

VENUENAME                                          CAPACITY POSTALCODE
-------------------------------------------------- ---------- ----------
Wembley Stadium                                       90000 HA90WS
Madison Square Garden                                 20789 NY 10121
Melbourne Cricket Ground                             100024 VIC 3002
Estadio Azteca                                        87523 04480
Staples Center                                              CA 90015
All England Lawn Tennis and Croquet Club               1111 CA 90015
Gangneung Ice Arena                                    1111 CA 90015
Yongpyong Alpine Centre                               10000 CA 90015
```

WeightClass

```
SQL> select * from WeightClass;

      MASS WEIGHTCLASS
---------- ----------------------
        51 flyweight
        52 flyweight
        57 featherweight
        67 welterweight
        68 welterweight
        73 middleweight
        91 cruiserweight
```

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Queries

Insert Operation

Inserting a team

SQL

INSERT INTO Team(teamID, capacity, teamName, established, sportName, countryName) VALUES ('$teamID', $capacity, '$teamName', $established, '$sportName', '$countryName');

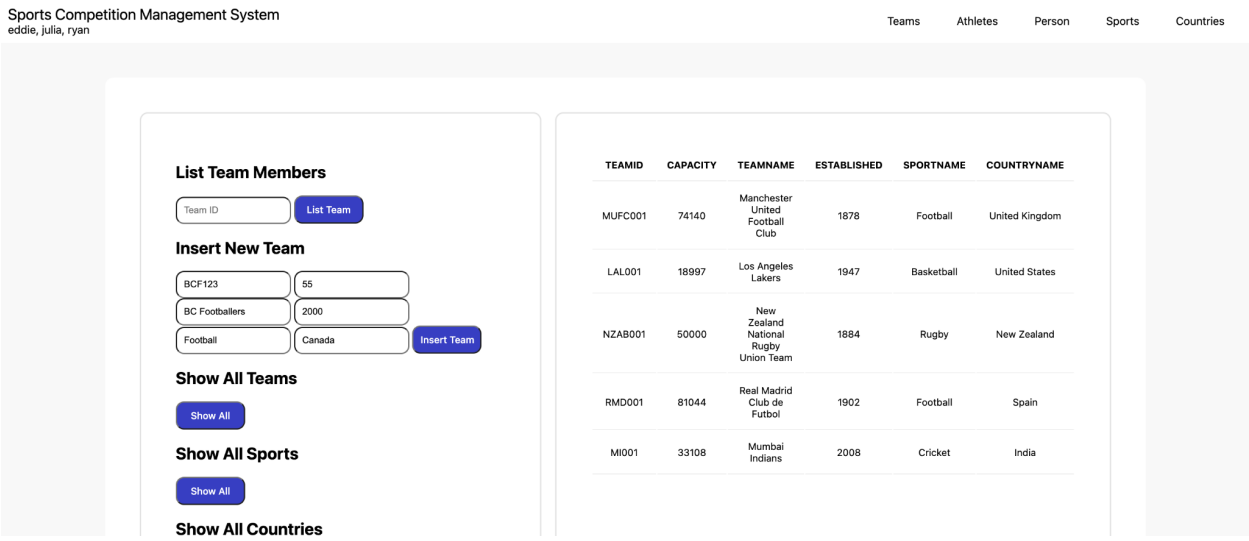
In the example below, $teamID = BCF123, $capacity = 55, $teamName = BC Footballers, $established = 2000, $sportName = Football, $countryName = Canada

About

The query can be found at /teams.php, at line 91, in the handleInsertTeamRequest() function. The “Team” table has sportName as a foreign key referencing the Sport table and countryName referencing the Country table, so it will insert into those tables if those values don’t exist.

Screenshots

Before



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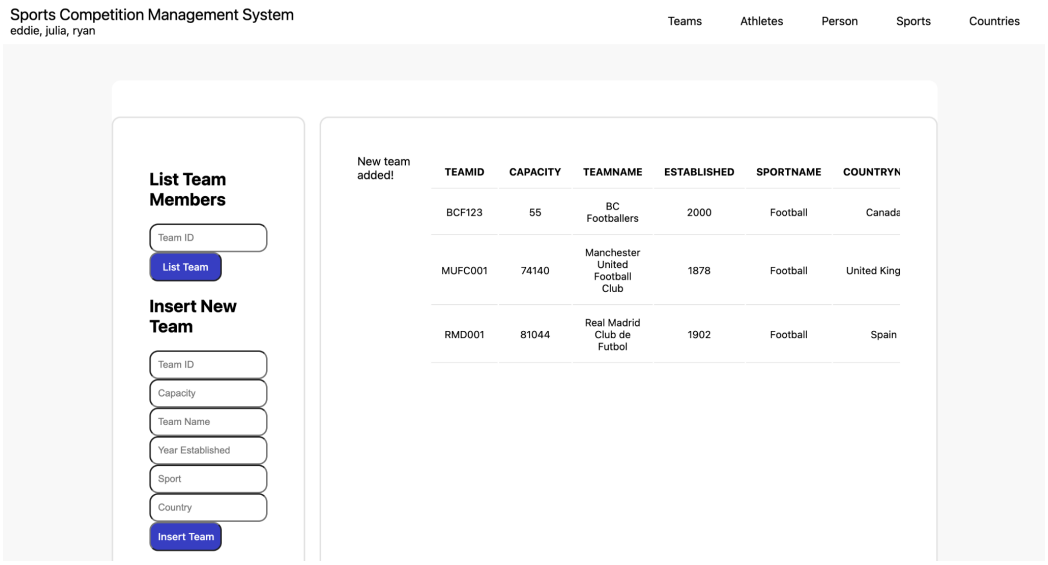
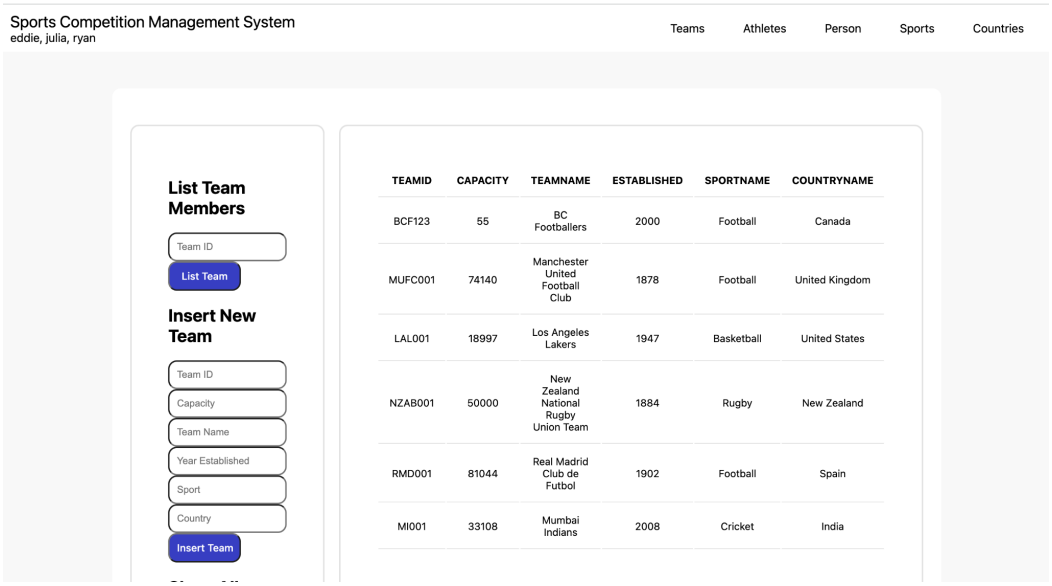
Immediately After



Show All Teams



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Delete Operation

Deleting a person

SQL Query

DELETE FROM Person WHERE participantID = $IDToDelete
In the example below, $IDToDelete = 99999

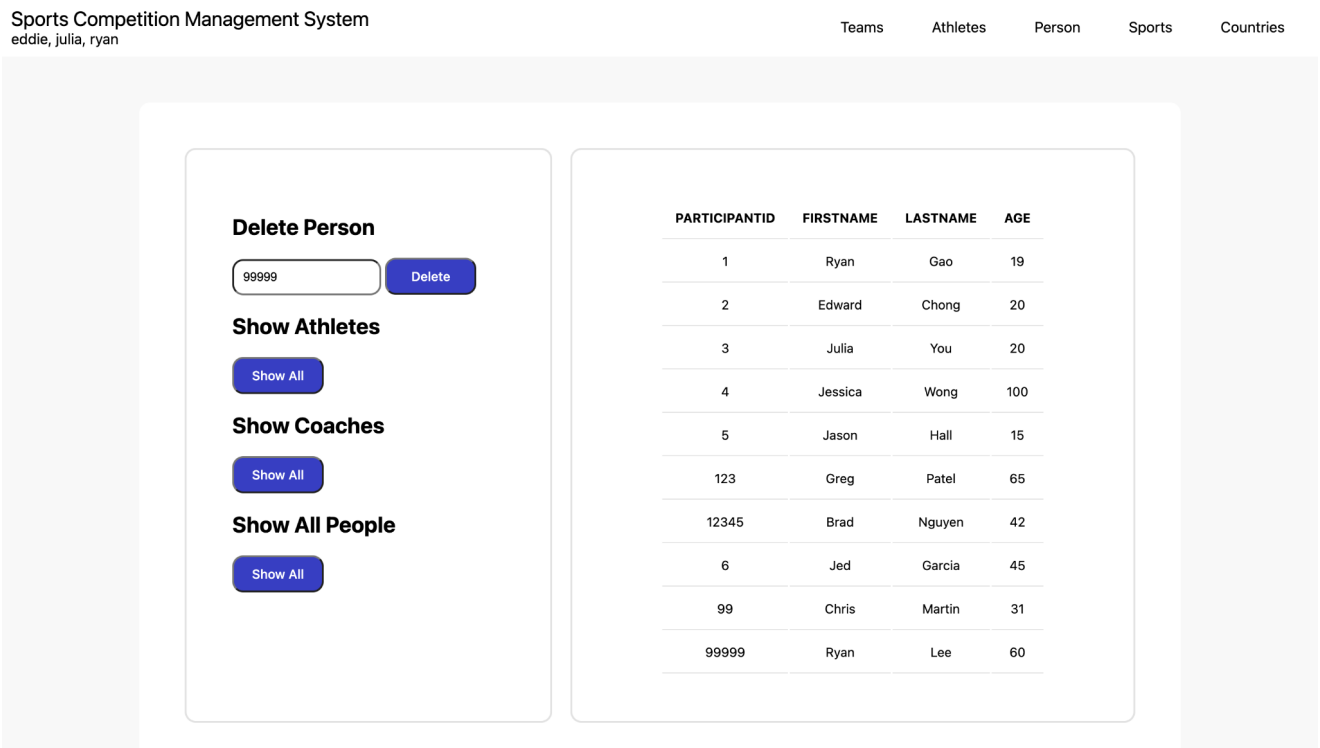
About

The query can be found in /person.php, on line 67 under the handleDeletePersonRequest() function.

here is an ON DELETE CASCADE in both the Coach and Athlete tables, so deleting the participantID from Person will delete the corresponding tuples in those tables as well.

Screenshots

Before



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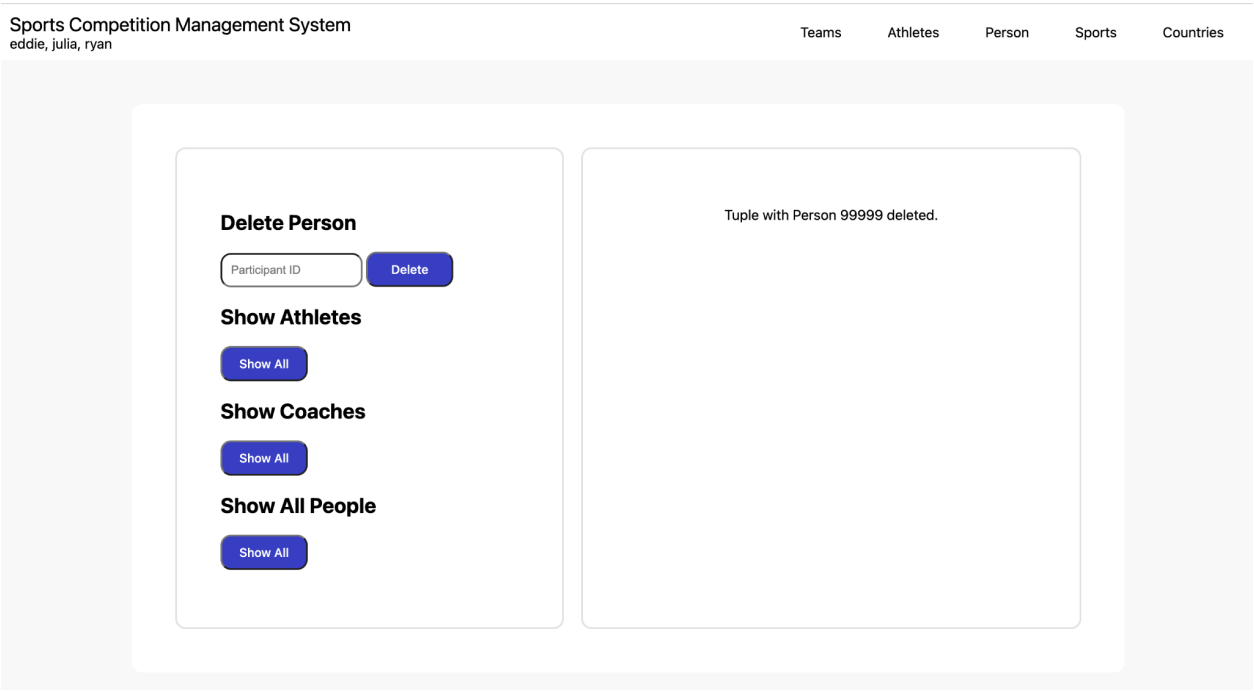
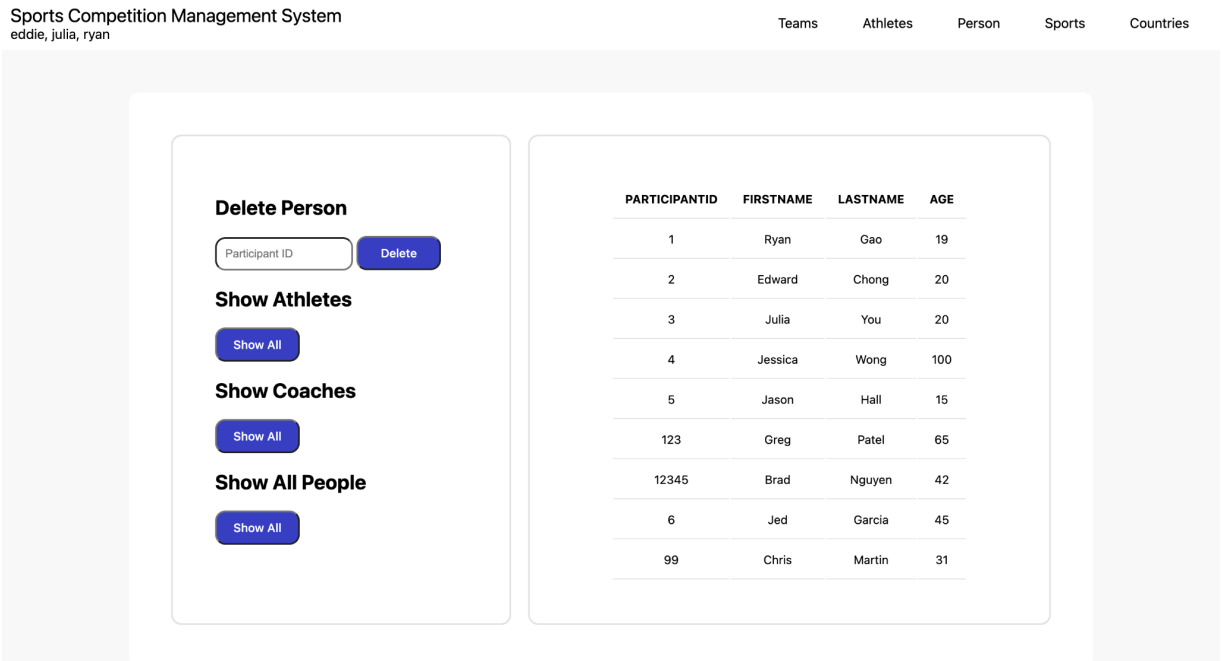
After



Show All People



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Update Operation

Update an athlete's attributes

SQL

UPDATE Athlete SET height = $height, mass = $weight WHERE participantID = $participantID

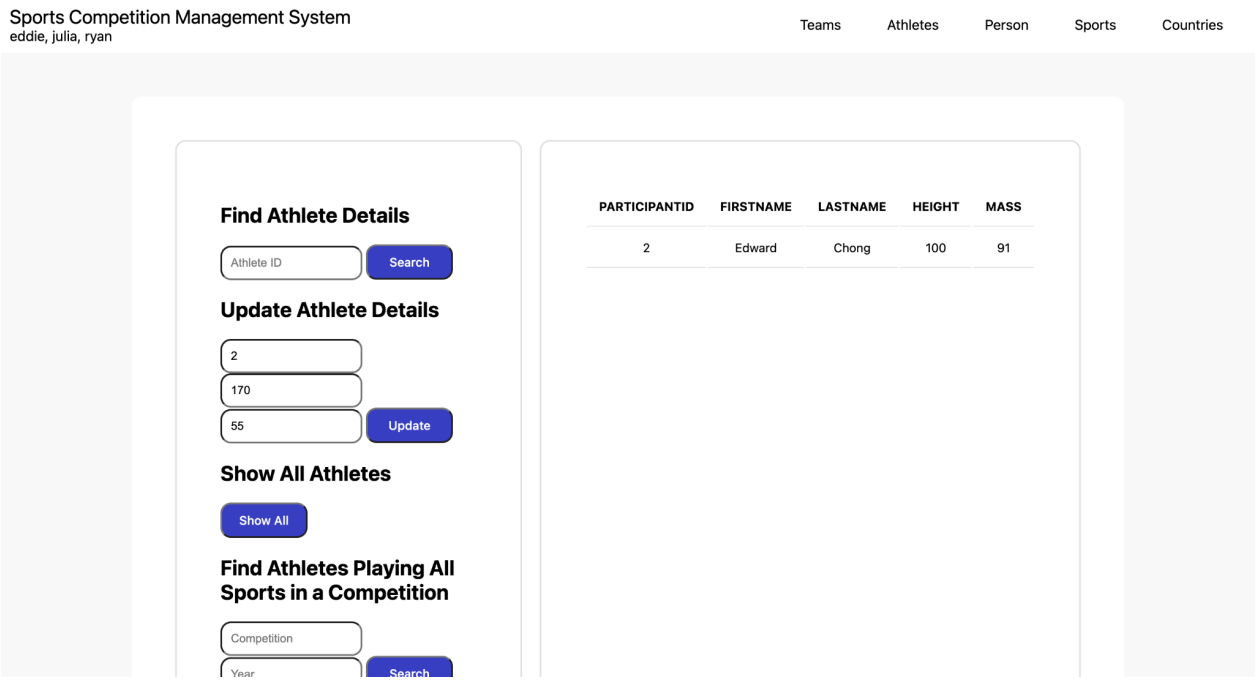
In the example below: $participantID = 2, $height = 175, $mass = 55

About

The query can be found in /athletes.php on line 123 in the handleUpdateAthleteRequest() function.

Screenshots

Before



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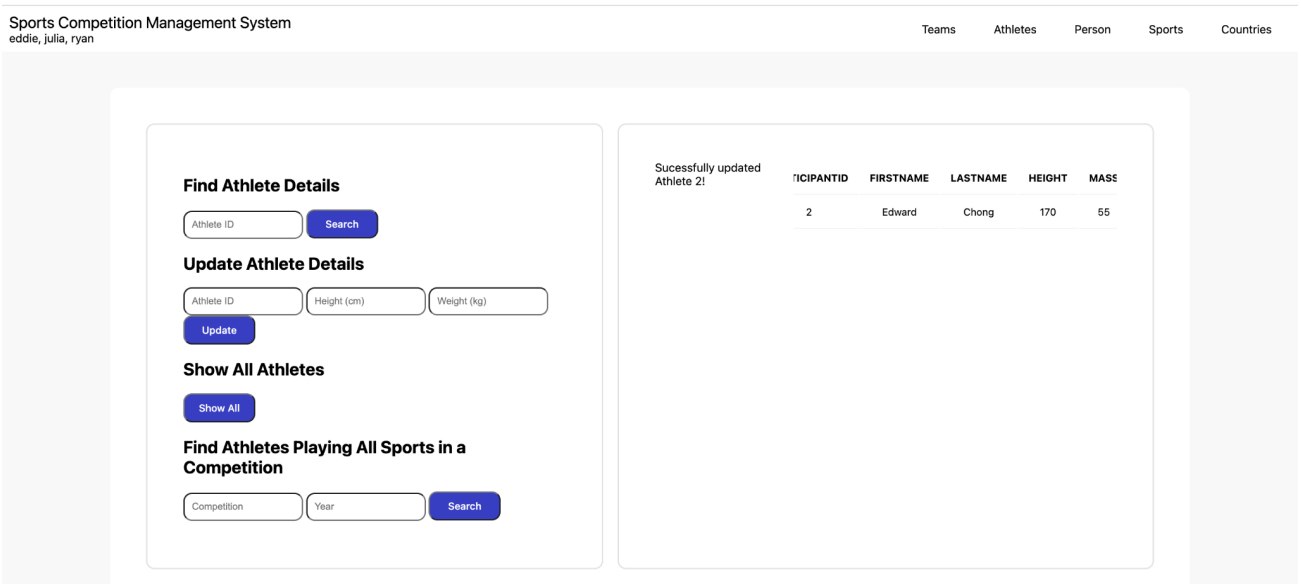
After



Selection

Selecting sportNames from Sport based on user input

SQL

SELECT sportName FROM Sport WHERE LOWER(sportName) LIKE '%($sportName)%'

In the example below $sportName = Foot. There is a strtolower() operator on the sportName in the PHP code to make it case insensitive that is not included in the above query.

About

The query can be found at /sport.php on line 42 in the handleFindSportRequest() function

Screenshots

Before

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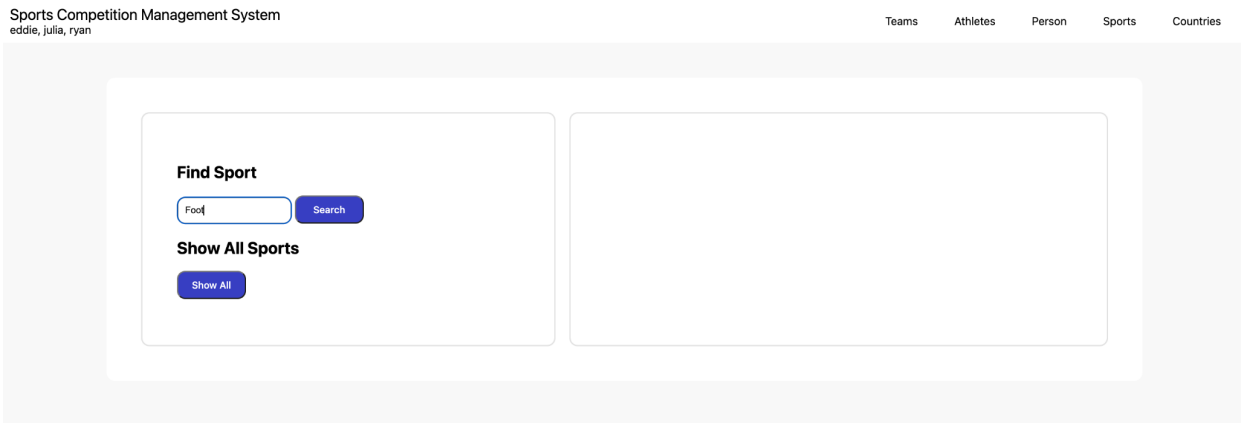
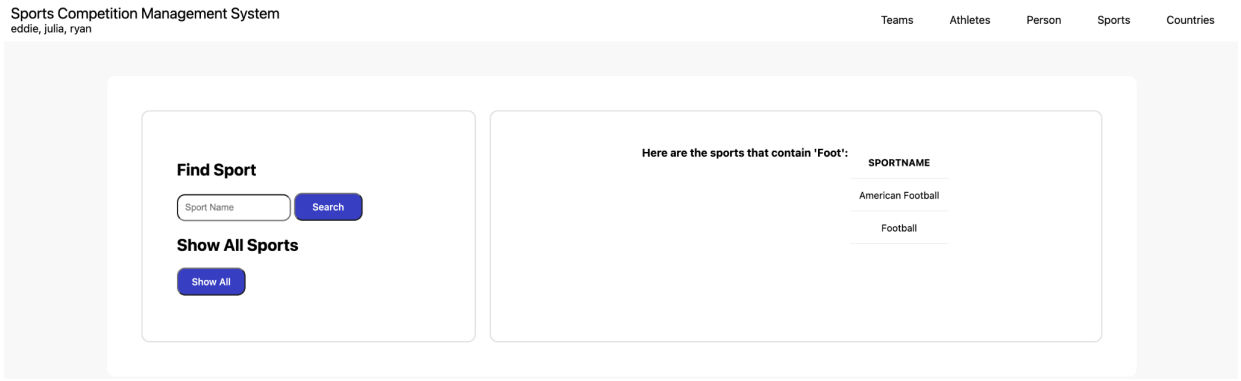


After



<u>Projection</u>

Selecting columns from tables

SQL

Selecting all table names

SELECT table_name FROM user_tables ORDER BY table_name

Selecting all table columns from a table

SELECT column_name FROM USER_TAB_COLUMNS WHERE table_name='$selected_table'

Selecting all checked columns from the table

SELECT $selected_columns FROM $selected_table

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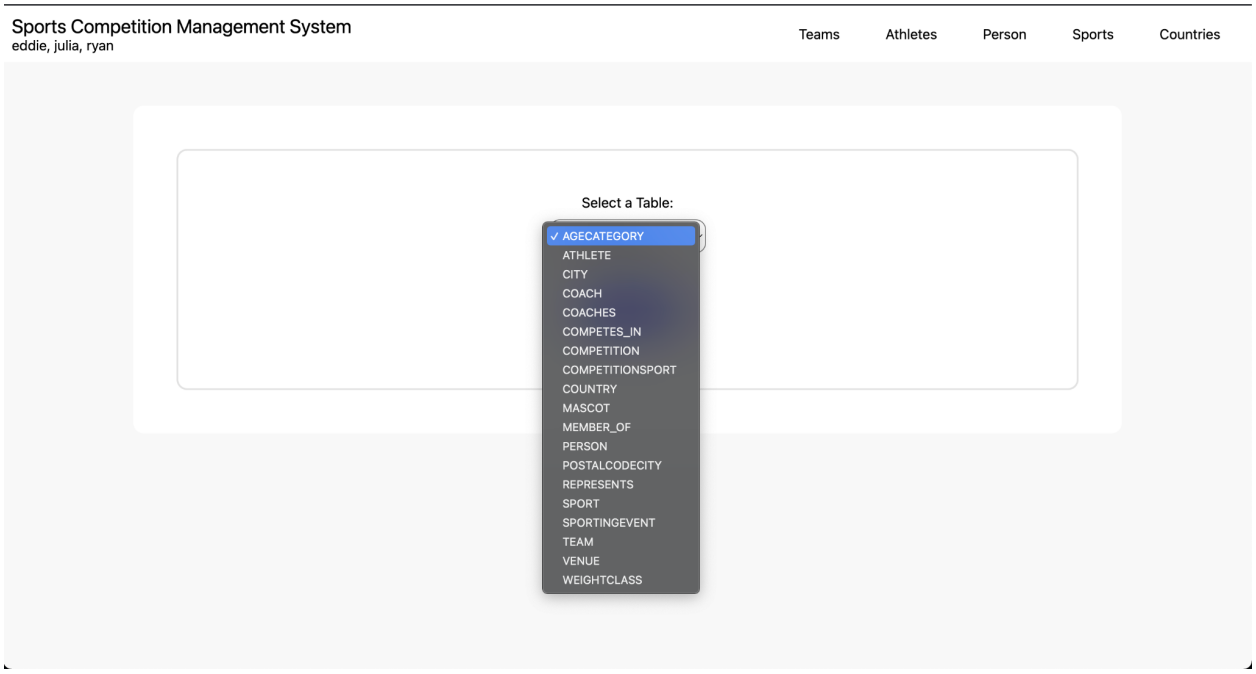
About

The relevant queries can be found at /index.php (lines 15 - 84)

Screenshots

Selecting tables



Before

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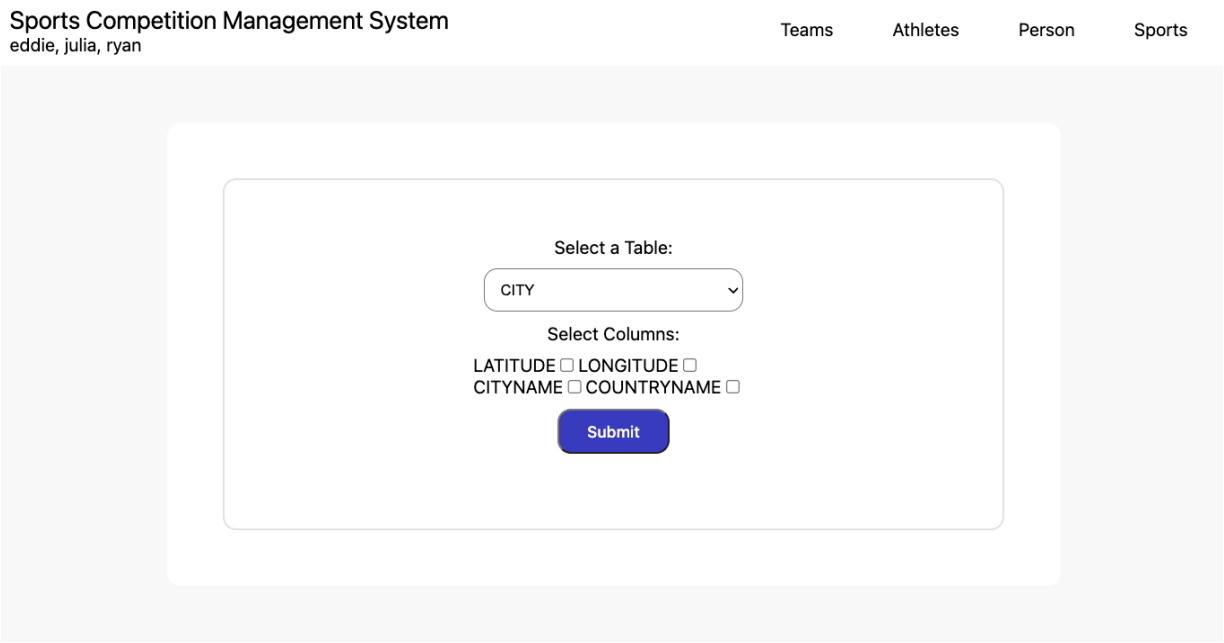
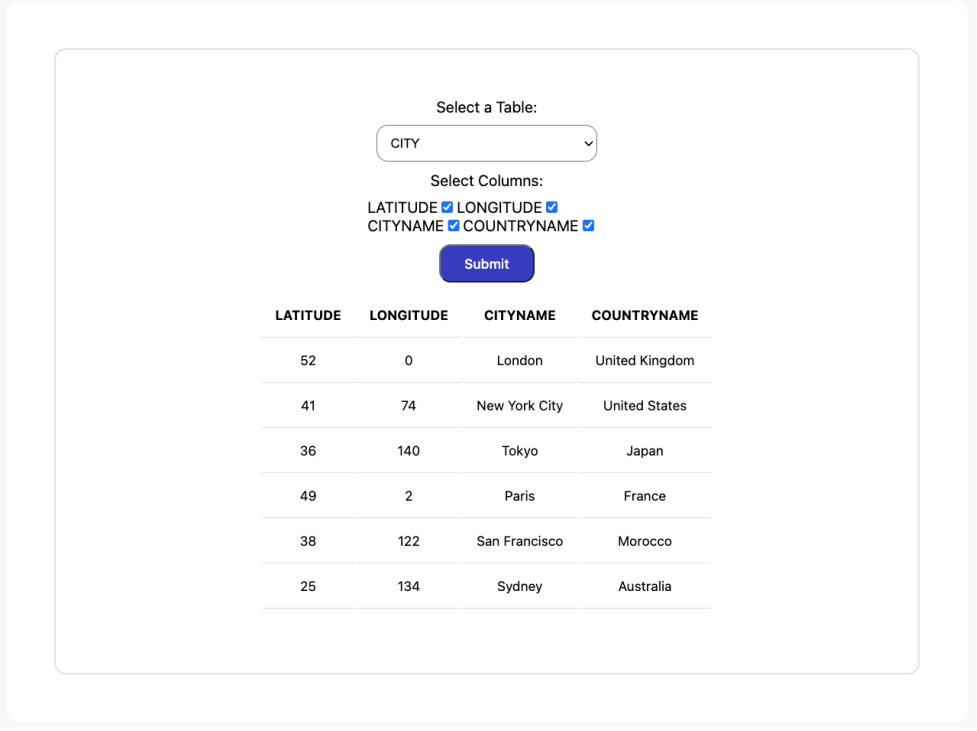


After(checking all columns)



(checking some columns)

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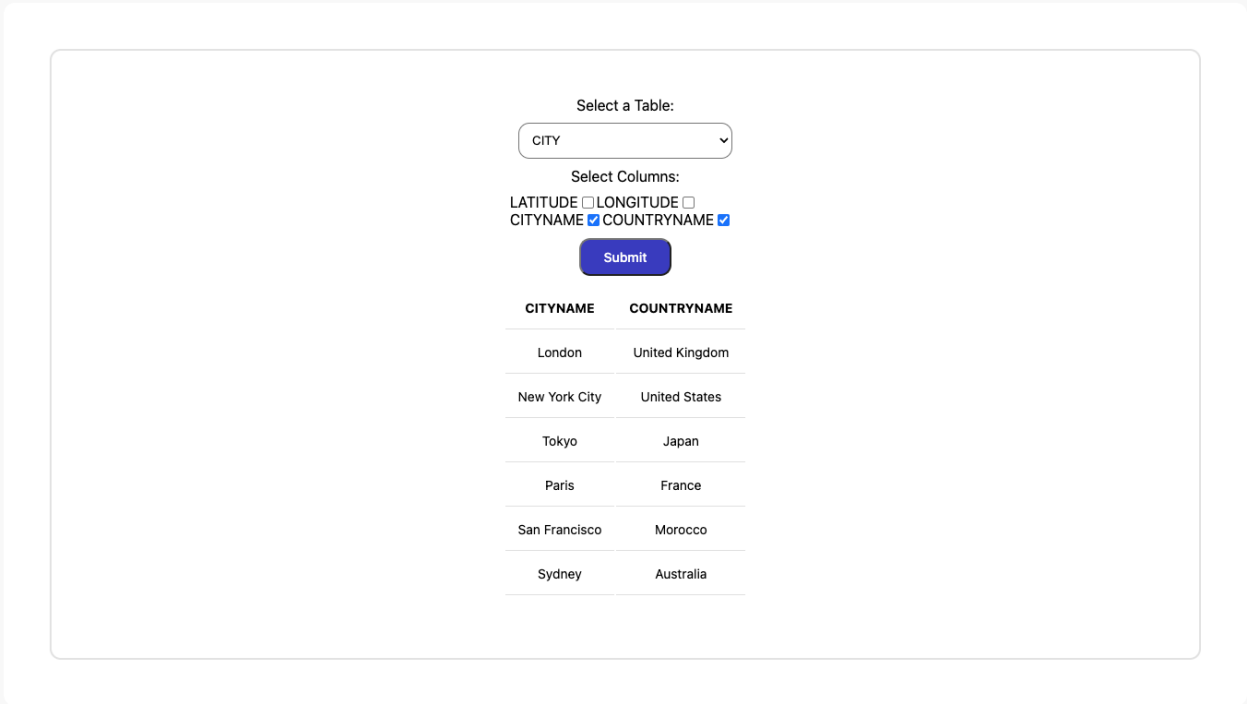

Join

List all the names of members of a given team

SQL

```
SELECT P.participantID, P.firstName, P.lastName, P.age
                FROM Person P, Team T, Member_Of M
                WHERE P.participantID = M.participantID AND
                M.teamID = T.teamID AND
                 T.teamID = [user inputted teamID]
```

In the example below, the user inputted teamID is ‘MUFC001’

About

The query can be found in teams.php at line 82, in the handleInsertTeamRequest() function.

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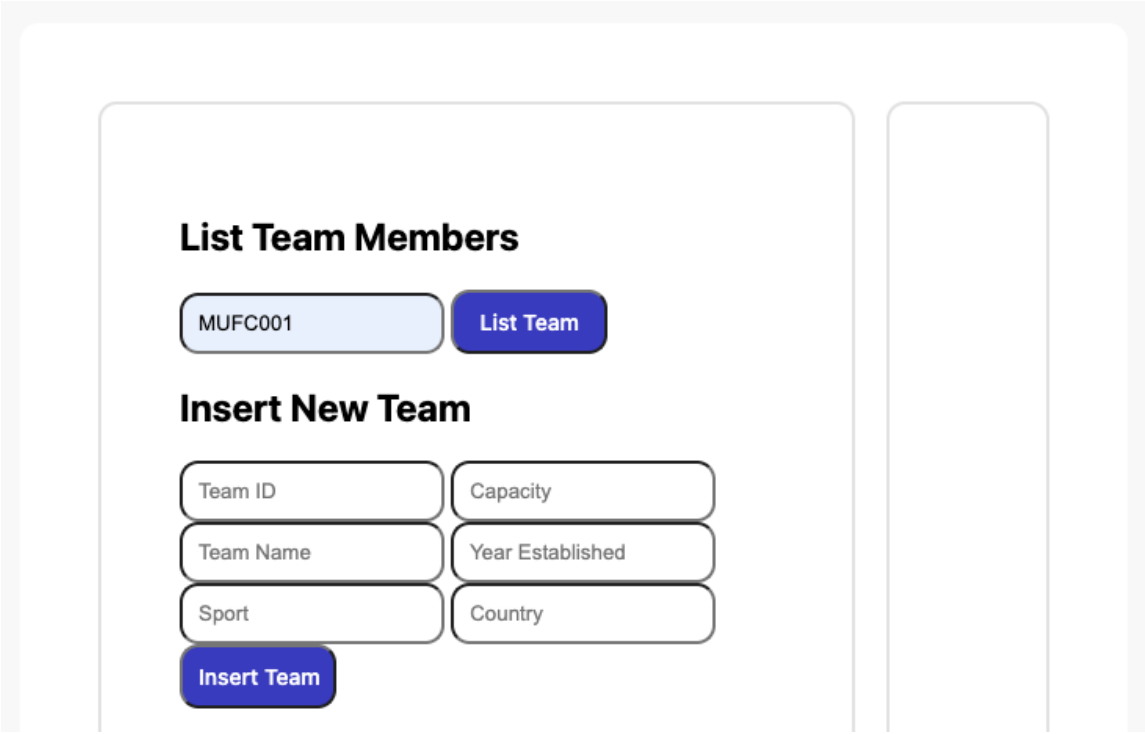
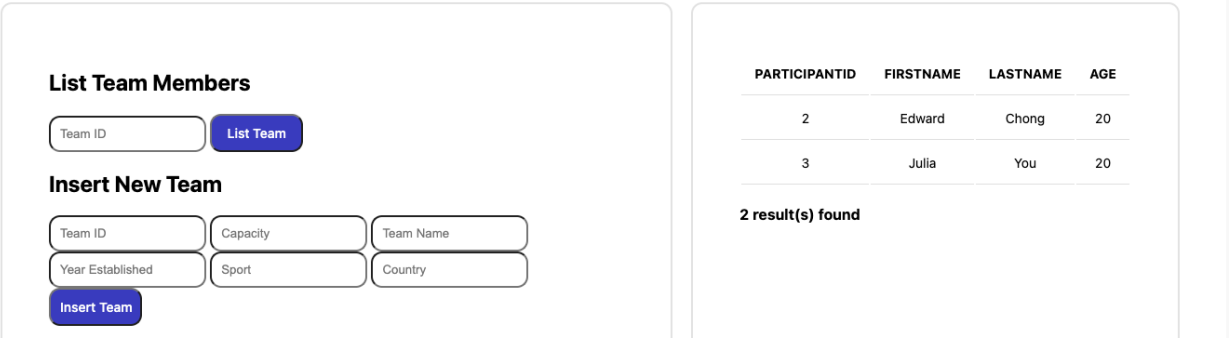
Screenshots

Before



After



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Aggregation with GROUP BY

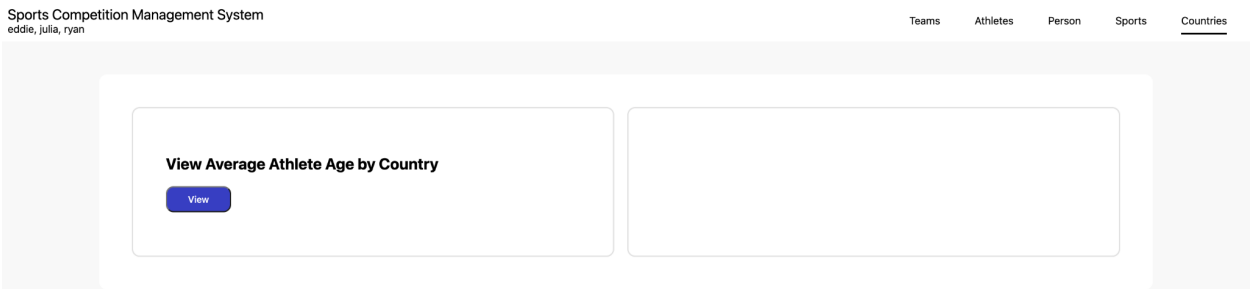
SQL

```
SELECT T.countryName, AVG(P.age)
        FROM Person P, Team T, Member_Of M, Athlete A
        WHERE P.participantID = M.participantID
        AND T.teamID = M.teamID
        AND P.participantID = A.participantID
        GROUP BY T.countryName
```

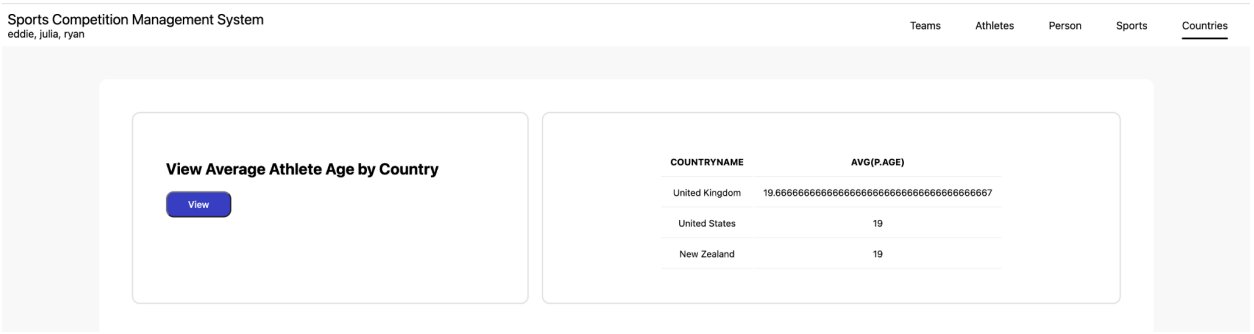
About

Can be found at /countries.php:36, handleCountryAverageRequest()

Before



After



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Aggregation with HAVING

Find all teams with at least X team members (x is specified by the user)

SQL

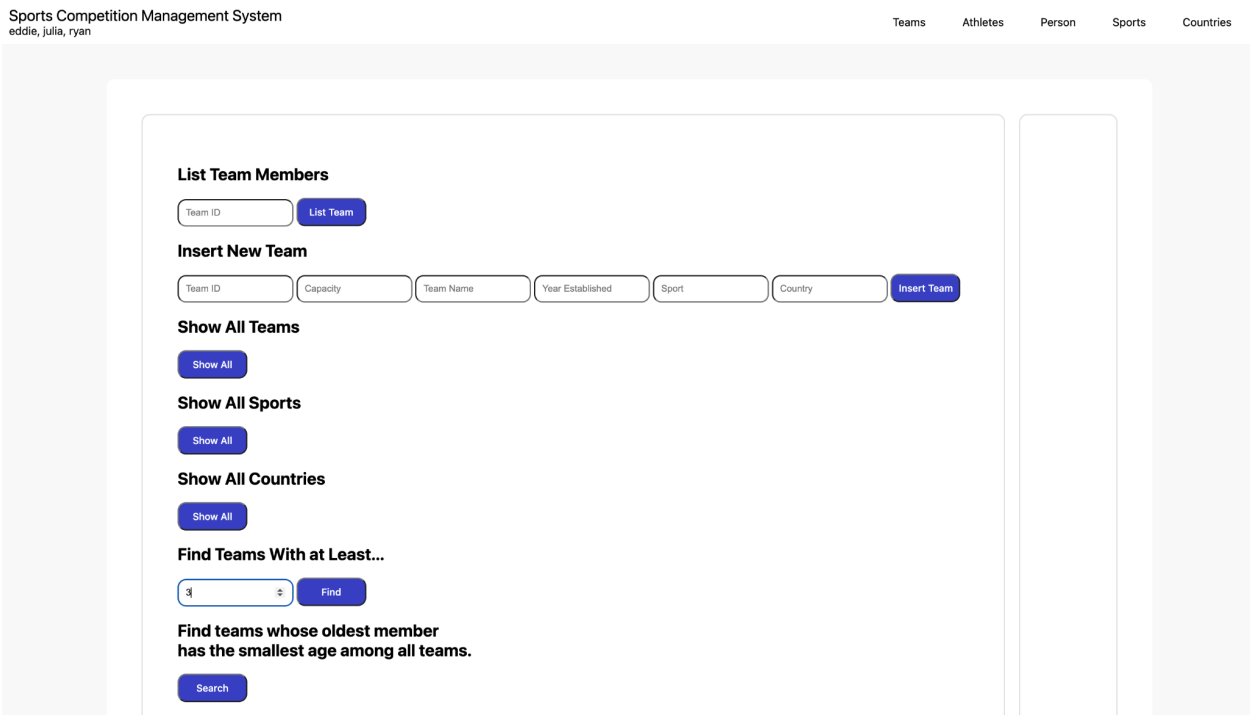
```
SELECT T.teamID, T.teamName, COUNT(*) as Members
FROM Team T, Member_Of M
WHERE M.teamID = T.teamID
GROUP BY T.teamID, T.teamName
HAVING  $x <= COUNT(*);
```

About

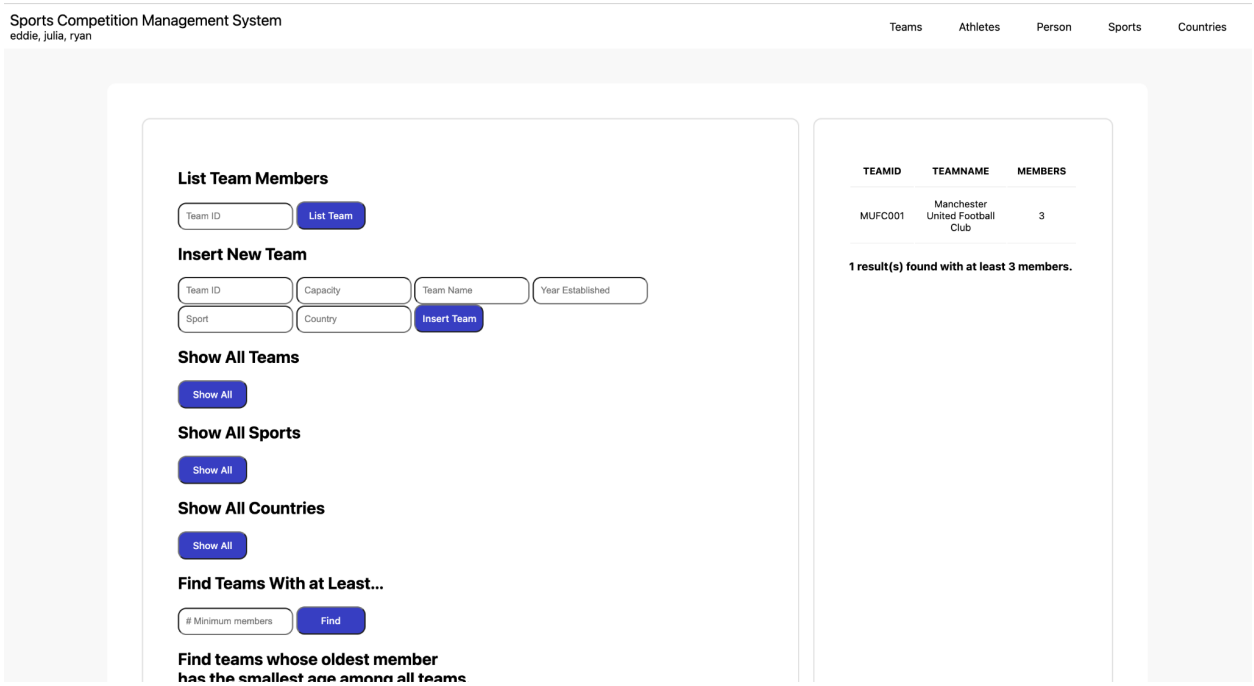
Can be found at teams.php:63, handleFindLargeTeamsRequest()

Screenshots

Before



After


Sports Competition Management System
eddie, julia, ryan
Teams
Athletes
Person
Sports
Countries
List Team Members
Team ID
List Team
Insert New Team
Team ID
Capacity
Team Name
Year Established
Sport
Country
Insert Team
Show All Teams
Show All
Show All Sports
Show All
Show All Countries
Show All
Find Teams With at Least...
Minimum members
Find
Find teams whose oldest member
has the smallest age among all teams
TEAMID
TEAMNAME
MEMBERS
MUFC001
Manchester United Football Club
3
1 result(s) found with at least 3 members.

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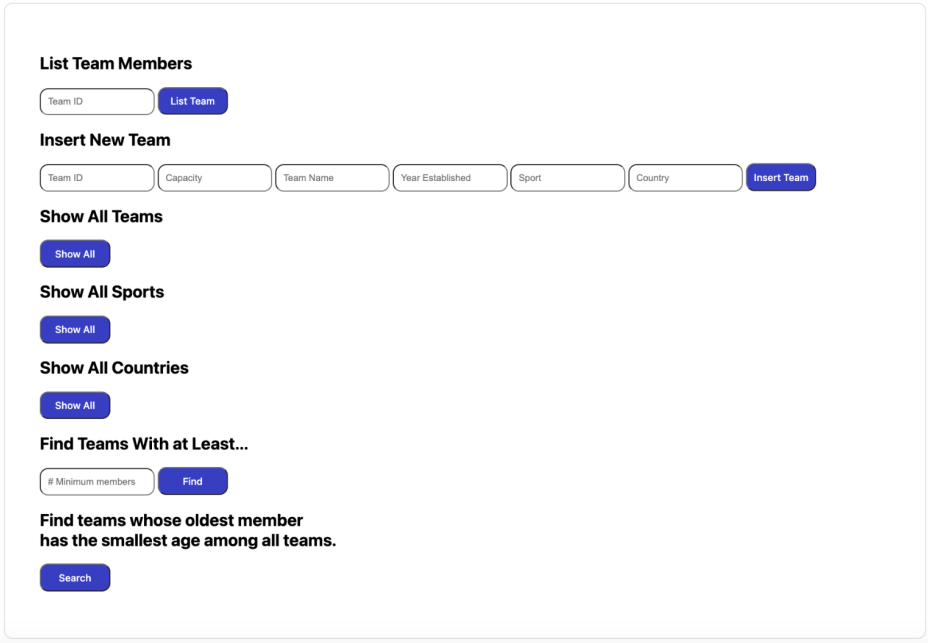
Nested Aggregation with GROUP BY

About

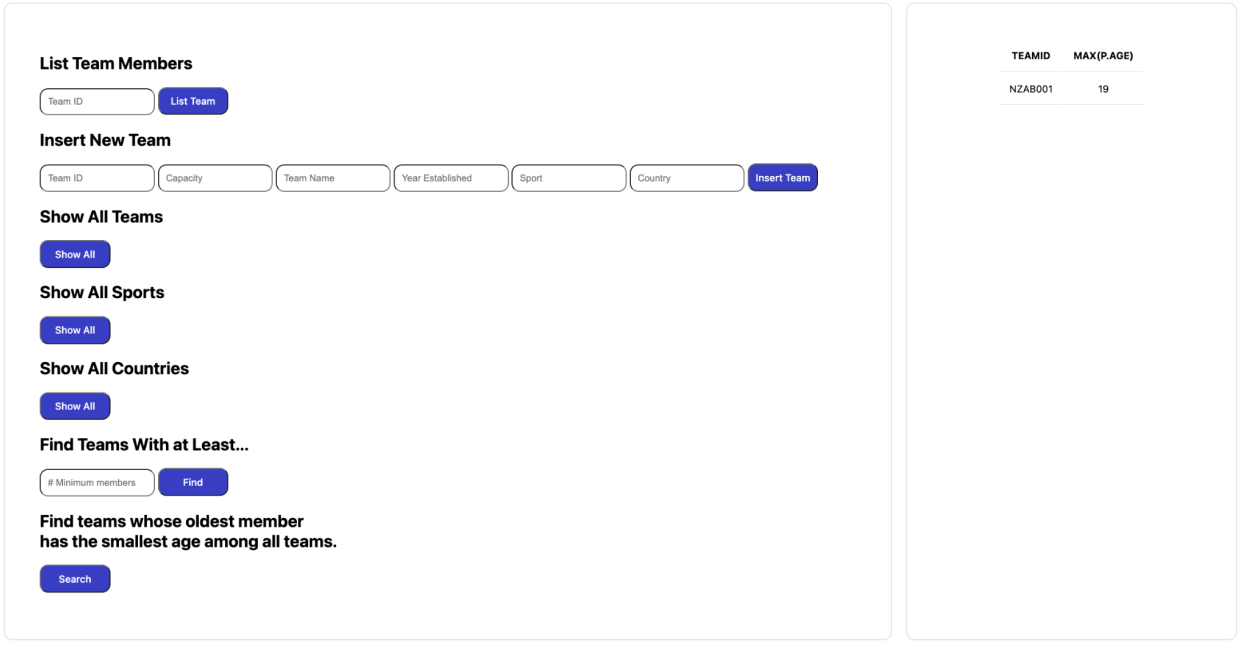
Can be found at teams.php:205

Screenshots

Before



After



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Division

Find all athletes who play every sport in a given competition in a given year

SQL

```
SELECT a.participantID FROM Athlete a
WHERE NOT EXISTS
(SELECT s.sportName FROM Sport s, Competition comp, CompetitionSport cs
WHERE comp.competitionName = '" . $competitionName . "'
AND comp.yearVal = '" . $yearVal . "'
AND comp.competitionName = cs.competitionName
AND comp.yearVal = cs.yearVal
AND s.sportName = cs.sportName
AND NOT EXISTS (SELECT c.participantID FROM Competes_In c
WHERE c.participantID = a.participantID
AND c.sportName = s.sportName
AND c.competitionYear = comp.yearVal
AND c.competitionName = comp.competitionName ) )
```

In the example below, $competitionName is ‘Winter Youth Olympics’, and $yearVal is 2020.

About

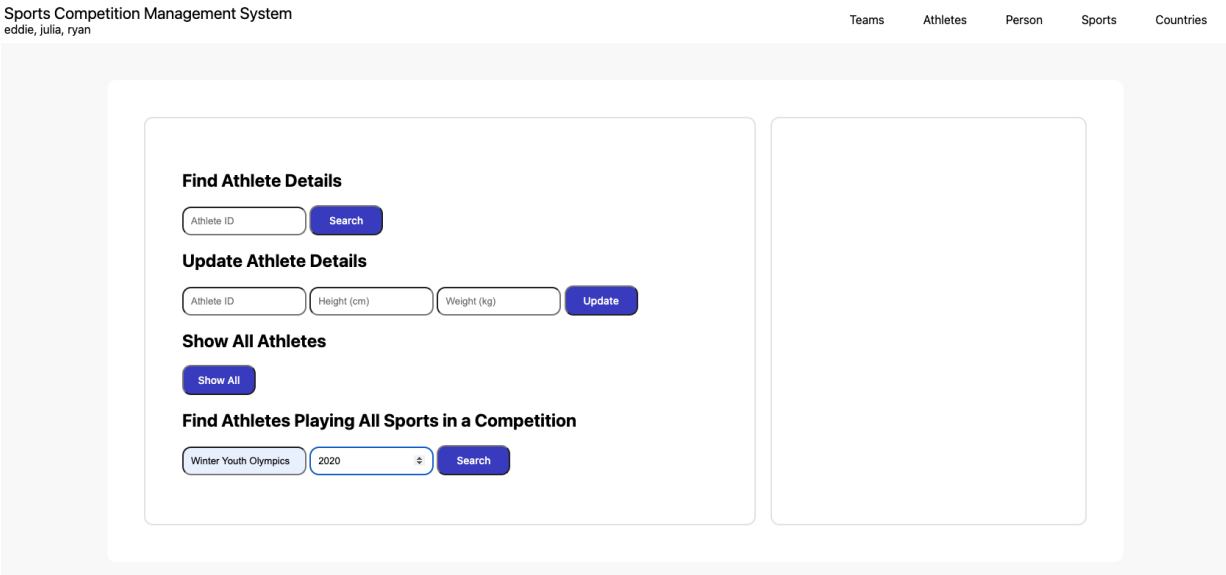
The query can be found in /athletes.php:109, in the handleFindAthleteInAllSportsRequest() function.

University of British Columbia, Vancouver

Department of Computer Science

Screenshots

Before



After