

**University of British Columbia, Vancouver**

Department of Computer Science

# **CPSC 304 Project Cover Page**

Milestone #: 4

Date: Dec 1st, 2023

Group Number: 142

Repository Link:

[https://github.students.cs.ubc.ca/CPSC304-2023W-T1/project\\_b2b6c\\_b9c1c\\_c5l9t](https://github.students.cs.ubc.ca/CPSC304-2023W-T1/project_b2b6c_b9c1c_c5l9t)

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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

**Project Description:**

Our CPSC 304 project will be modeling and storing a database in the domain of professional and fantasy sports, encompassing: the sport being played, individuals involved in sports (i.e.

athletes), teams, games, leagues, seasons, sponsors, stadiums and broadcasting networks. The database will model information relevant to fans of professional sports such as statistics of games and players, or the usage of a stadium.

Some of the tasks that our program accomplishes include the following: Users will be able to store information in the database through the GUI by becoming a sponsor for their favourite leagues. They enter name, choose league, and enter amount. Users will be able to perform specific queries on the database through the GUI such as finding players that have played all sports in the database, or finding games with minimum total score. Stored information will persist across different instances of the application, with the user being able to access previously stored information upon relaunching the application.

NOTE: Our program took heavy inspiration from the provided CPSC 304 Java demo project:  
[https://github.students.cs.ubc.ca/CPSC304/CPSC304\\_Java\\_Project](https://github.students.cs.ubc.ca/CPSC304/CPSC304_Java_Project) .

#### **Application Platform:**

Our application will be developed using Java and Oracle, with JDBC and JavaFX used for API calls and GUI development respectively.

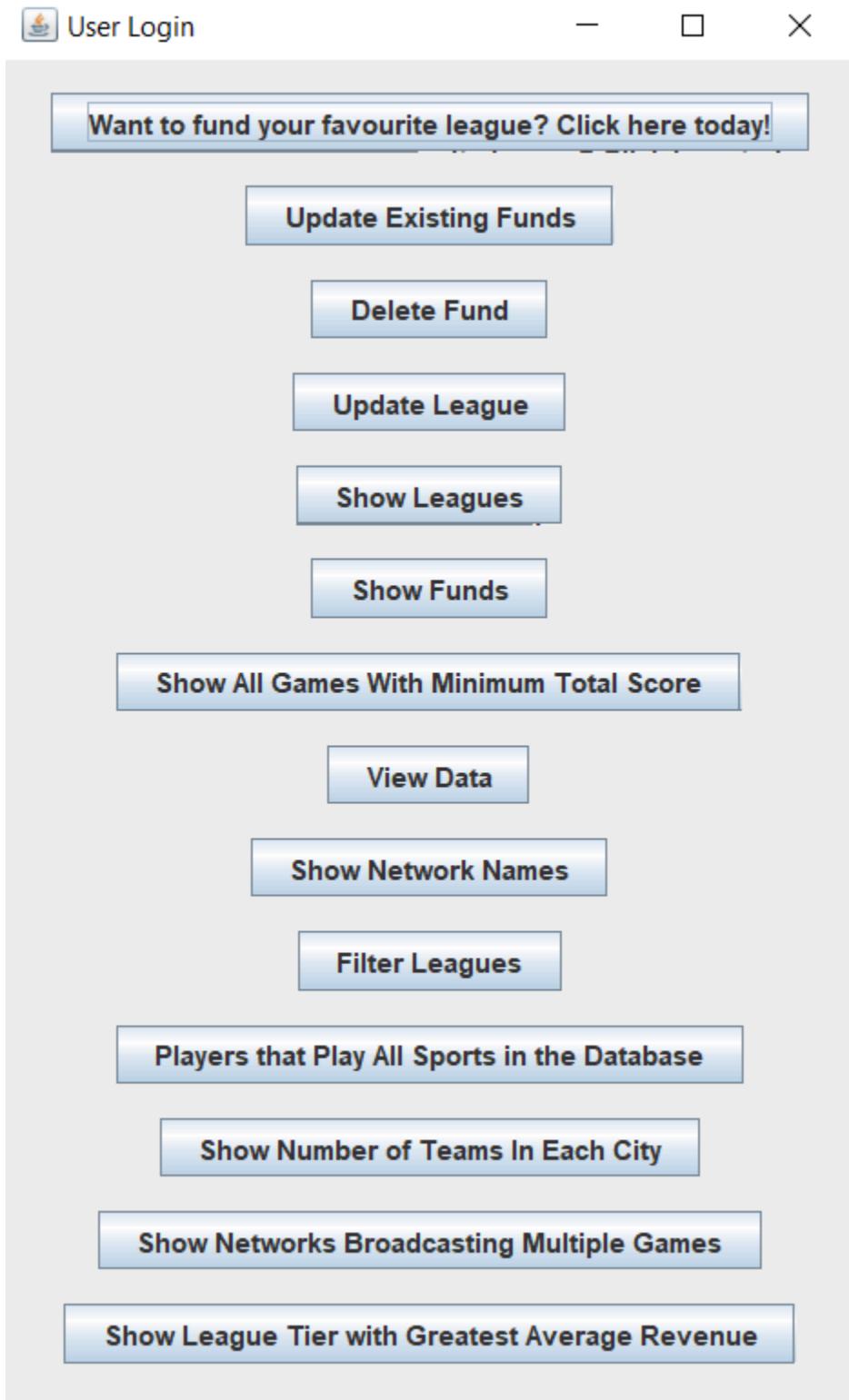
#### **All SQL Queries in the project code**

All queries are in the DatabaseConnectionHandler.java file (filepath: src/project/database/DatabaseConnectionHandler.java).

Query	Line Number
INSERT	166
DELETE	680
UPDATE	143
SELECTION	225
PROJECTION	595
JOIN	281
AGGREGATION (GROUP BY)	385
AGGREGATION (HAVING)	415
NESTED AGGREGATION	443
DIVISION	339

## GUI Functionality screenshots

Initial



Want to fund your favourite league? Click here today!

INSERT: Want to fund your favorite league? Click here today!

Funds

Want to fund your favourite league? Click here today!

Update Existing Funds  
Delete Fund  
Update League  
Show Leagues  
Show Funds

Show All Games With Minimum Total Score  
View Data

Enter Sponsor  
Reebok  
OK Cancel

Show Number of Teams In Each City  
Show Networks Broadcasting Multiple Games  
Show League Tier with Greatest Average Revenue

Sponsor	League	Funds
Adidas	Premier League	1500000.0
Scotiabank	NHL	1.2E7
Tesla	MLB	0.0
Nike	NBA	1.5E7
Ford Motor Company	NHL	0.0

Funds

Want to fund your favourite league? Click here today!

Update Existing Funds

Delete Fund

Update League

Show Leagues

Show Funds

Show All Games With Minimum Total Score

Select League

?

Select League

MLB

OK Cancel

Show Number of Teams In Each City

Show Networks Broadcasting Multiple Games

Show League Tier with Greatest Average Revenue

Sponsor	League	Funds
Adidas	Premier League	1500000.0
Scotiabank	NHL	1.2E7
Tesla	MLB	0.0
Nike	NBA	1.5E7
Ford Motor Company	NHL	0.0

Funds

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

[Show Funds](#)

[Show All Games With Minimum Total Score](#)

[View Data](#)

Enter Amount

Enter Amount to add to current funding  
350000

OK Cancel

Show Number of Teams In Each City

Show Networks Broadcasting Multiple Games

Show League Tier with Greatest Average Revenue

Sponsor	League	Funds
Adidas	Premier League	1500000.0
Scotiabank	NHL	1.2E7
Tesla	MLB	0.0
Nike	NBA	1.5E7
Ford Motor Company	NHL	0.0

Funds

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

[Show Funds](#)

[Show All Games With Minimum Total Score](#)

[View Data](#)

[Show Network Names](#)

[Filter Leagues](#)

[Players that Play All Sports in the Database](#)

[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

Sponsor	League	Funds
Adidas	Premier League	1500000.0
Scotiabank	NHL	1.2E7
Tesla	MLB	0.0
Nike	NBA	1.5E7
Ford Motor Company	NHL	0.0
Reebok	MLB	350000.0

**DELETE:**

Delete Network.

Initially, when clicked show network names

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

[Show Funds](#)

[Show All Games With Minimum Total Score](#)

[View Data](#)

[Show Network Names](#)

[Filter Leagues](#)

[Players that Play All Sports in the Database](#)

[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

[Delete Network](#)

NetWork

BBC  
CBC Sports  
ESPN  
FOX Sports 1  
Sportsnet ONE



User Login



Want to fund your favourite league? Click here today!

**Update Existing Funds**

**Delete Fund**

**Update League**

**Show Leagues**

Select Network



Select Network you want to Delete

BBC



**OK**

**Cancel**

**Show Network Names**

**Filter Leagues**

**Players that Play All Sports in the Database**

**Show Number of Teams In Each City**

**Show Networks Broadcasting Multiple Games**

**Show League Tier with Greatest Average Revenue**

**Delete Network**



User Login



Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

Success



BBC successfully removed!

[OK](#)

[Show Network Names](#)

[Filter Leagues](#)

[Players that Play All Sports in the Database](#)

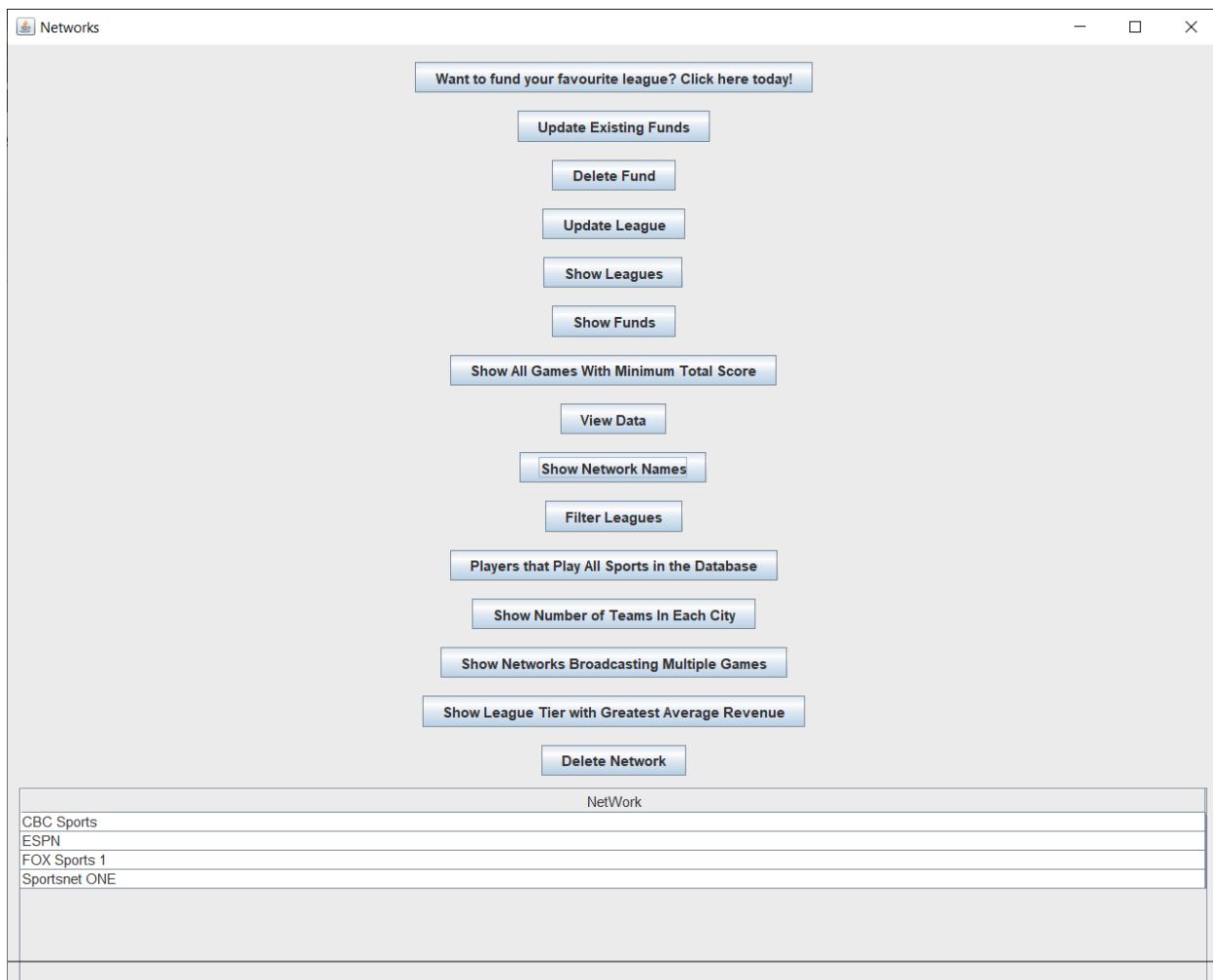
[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

[Delete Network](#)

Click on Show Network Names.



UPDATE: Update League

Leagues

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

[Show Funds](#)

[Show All Games With Minimum Total Score](#)

Select League

?

Select League

U Sports

OK Cancel

Show Number of Teams In Each City

Show Networks Broadcasting Multiple Games

Show League Tier with Greatest Average Revenue

League Name	Sport	Tier	Revenue (million \$)
NHL	Ice Hockey	1	111.11
Premier League	Soccer	1	222.22
U Sports	American Football	3	334.0
NBA	Basketball	1	444.44
MLB	Baseball	1	555.55

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

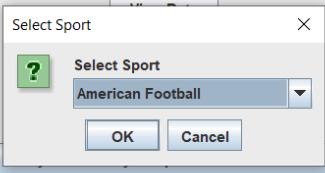
[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

[Show Funds](#)

[Show All Games With Minimum Total Score](#)



[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

League Name	Sport	Tier	Revenue (million \$)
NHL	Ice Hockey	1	111.11
Premier League	Soccer	1	222.22
U Sports	American Football	3	334.0
NBA	Basketball	1	444.44
MLB	Baseball	1	555.55

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

[Show Funds](#)

[Show All Games With Minimum Total Score](#)

[View Data](#)

Enter Tier

Enter tier you want to update to

[OK](#) [Cancel](#)

[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

League Name	Sport	Tier	Revenue (million \$)
NHL	Ice Hockey	1	111.11
Premier League	Soccer	1	222.22
U Sports	American Football	3	334.0
NBA	Basketball	1	444.44
MLB	Baseball	1	555.55

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

[Show Funds](#)

[Show All Games With Minimum Total Score](#)

[View Data](#)

Enter Amount

Enter revenue for the league

333.33

OK Cancel

[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

League Name	Sport	Tier	Revenue (million \$)
NHL	Ice Hockey	1	111.11
Premier League	Soccer	1	222.22
U Sports	American Football	3	334.0
NBA	Basketball	1	444.44
MLB	Baseball	1	555.55

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

[Show Funds](#)

[Show All Games With Minimum Total Score](#)

[View Data](#)

[Show Network Names](#)

[Filter Leagues](#)

[Players that Play All Sports in the Database](#)

[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

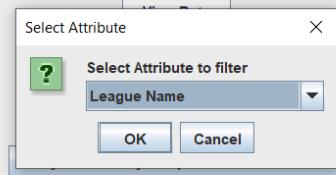
League Name	Sport	Tier	Revenue (million \$)
NHL	Ice Hockey	1	111.11
Premier League	Soccer	1	222.22
U Sports	American Football	2	333.33
NBA	Basketball	1	444.44
MLB	Baseball	1	555.55

SELECTION: Filter Leagues

 Leagues

- □ ×

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)[Delete Fund](#)[Update League](#)[Show Leagues](#)[Show Funds](#)[Show All Games With Minimum Total Score](#)[Show Number of Teams In Each City](#)[Show Networks Broadcasting Multiple Games](#)[Show League Tier with Greatest Average Revenue](#)

League Name	Sport	Tier	Revenue (million \$)
NHL	Ice Hockey	1	111.11
Premier League	Soccer	1	222.22
U Sports	American Football	2	333.33
NBA	Basketball	1	444.44
MLB	Baseball	1	555.55

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

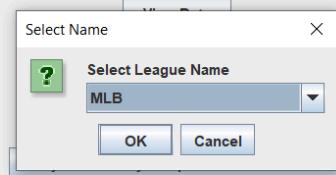
[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

[Show Funds](#)

[Show All Games With Minimum Total Score](#)



[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

League Name	Sport	Tier	Revenue (million \$)
NHL	Ice Hockey	1	111.11
Premier League	Soccer	1	222.22
U Sports	American Football	2	333.33
NBA	Basketball	1	444.44
MLB	Baseball	1	555.55

Leagues

Want to fund your favourite league? Click here today!

Update Existing Funds  
Delete Fund  
Update League  
Show Leagues  
Show Funds  
Show All Games With Minimum Total Score  
View Data

Confirm

Would you like add more attributes to the filter?

Yes No

Show Number of Teams In Each City  
Show Networks Broadcasting Multiple Games  
Show League Tier with Greatest Average Revenue

League Name	Sport	Tier	Revenue (million \$)
NHL	Ice Hockey	1	111.11
Premier League	Soccer	1	222.22
U Sports	American Football	2	333.33
NBA	Basketball	1	444.44
MLB	Baseball	1	555.55

Clicked Yes

Leagues

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

[Show Funds](#)

[Show All Games With Minimum Total Score](#)

[View Data](#)

Select Attribute X

?

Select Attribute to filter ▼

Sport

Player

[OK](#) [Cancel](#)

[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

League Name	Sport	Tier	Revenue (million \$)
NHL	Ice Hockey	1	111.11
Premier League	Soccer	1	222.22
U Sports	American Football	2	333.33
NBA	Basketball	1	444.44
MLB	Baseball	1	555.55

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

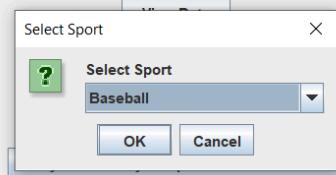
[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

[Show Funds](#)

[Show All Games With Minimum Total Score](#)



[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

League Name	Sport	Tier	Revenue (million \$)
NHL	Ice Hockey	1	111.11
Premier League	Soccer	1	222.22
U Sports	American Football	2	333.33
NBA	Basketball	1	444.44
MLB	Baseball	1	555.55

Leagues

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

[Show Funds](#)

[Show All Games With Minimum Total Score](#)

[View Data](#)

Confirm

Would you like add more attributes to the filter?

[Yes](#) [No](#)

Players that Play All Sports in the Database

[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

League Name	Sport	Tier	Revenue (million \$)
NHL	Ice Hockey	1	111.11
Premier League	Soccer	1	222.22
U Sports	American Football	2	333.33
NBA	Basketball	1	444.44
MLB	Baseball	1	555.55

Clicked No.

LeaguesFiltered

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

[Show Funds](#)

[Show All Games With Minimum Total Score](#)

[View Data](#)

[Show Network Names](#)

[Filter Leagues](#)

[Players that Play All Sports in the Database](#)

[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

League Name	Sport	Tier	Revenue (million \$)
MLB	Baseball	1	555.55

PROJECTION: View Data



User Login



Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

Select Table X

? Select table

- TEAMHOMESTADIUM
- LEAGUEORGANISES
- PLAYSFOR
- STARTENDDAYSRUN
- SEASONCHAMPION
- GAMEHOSTSINSEASON
- NETWORK
- BROADCASTS
- SPONSOR
- FUNDS

OK Cancel

[Players that Play All Sports in the Database](#)

[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

User Login

Want to fund your favourite league? Click here today!

**Update Existing Funds**

**Delete Fund**

**Update League**

**Show Leagues**

Select Column X

?

Select column

TNAME

OK Cancel

**Show Network Names**

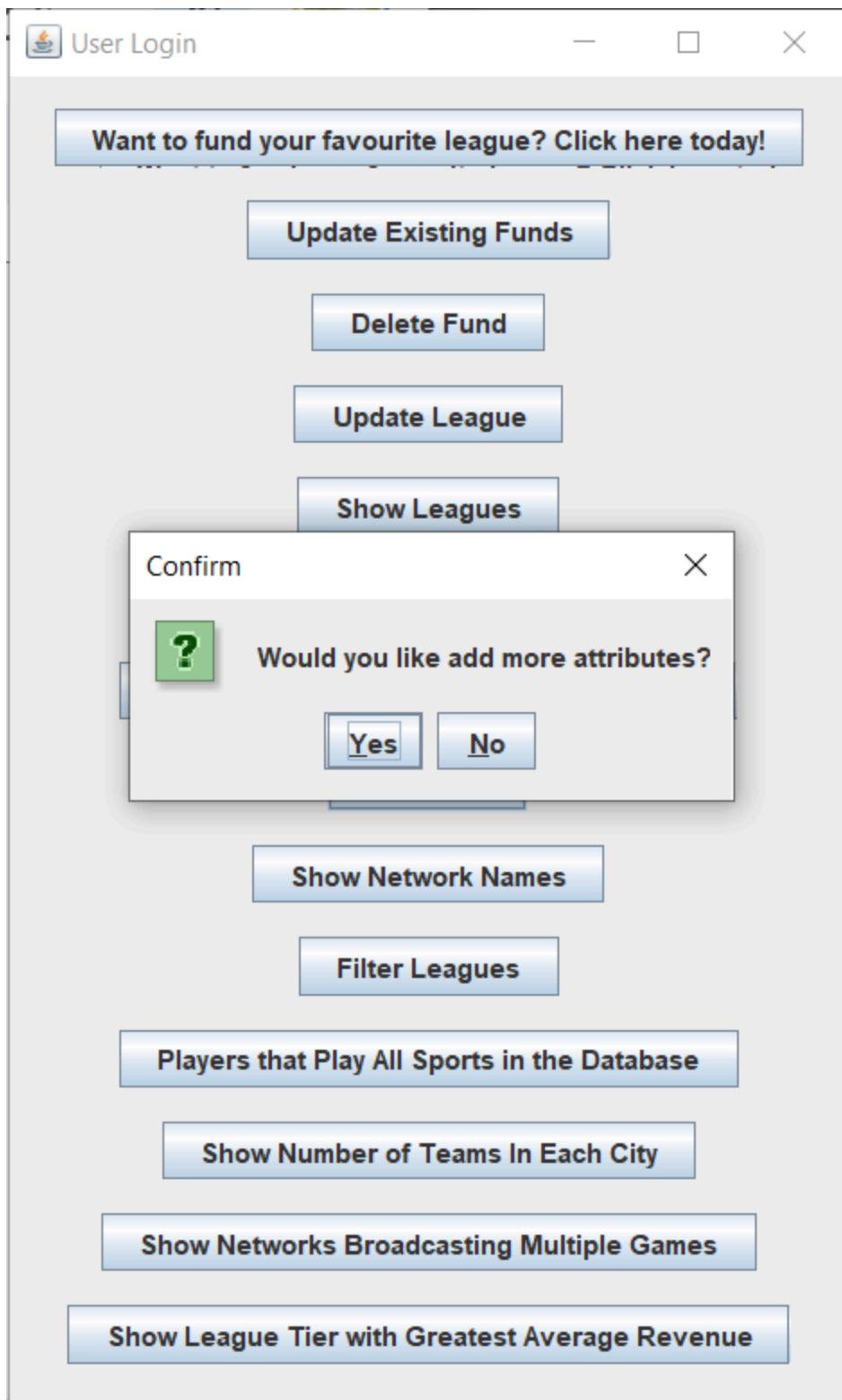
**Filter Leagues**

**Players that Play All Sports in the Database**

**Show Number of Teams In Each City**

**Show Networks Broadcasting Multiple Games**

**Show League Tier with Greatest Average Revenue**



Clicked yes



User Login



Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

Select Column

X



Select column

ADDRESS

OK

Cancel

[Show Network Names](#)

[Filter Leagues](#)

[Players that Play All Sports in the Database](#)

[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)



User Login



Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

Confirm



Would you like add more attributes?

[Yes](#)

[No](#)

[Show Network Names](#)

[Filter Leagues](#)

[Players that Play All Sports in the Database](#)

[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

Clicked No.

Projection

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

[Show Funds](#)

[Show All Games With Minimum Total Score](#)

[View Data](#)

[Show Network Names](#)

[Filter Leagues](#)

[Players that Play All Sports in the Database](#)

[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

TNAME	ADDRESS
Canucks	800 Griffiths Way, Vancouver, BC V6B 6G1, Canada
Oilers	10220 104 Ave NW, Edmonton, AB T5J 0H6, Canada
Manchester United F.C.	Sir Matt Busby Way, Old Trafford, Stretford, Manchester M16 0RA, UK
Manchester City F.C.	Ethihad Stadium, Ashton New Rd, Manchester M11 3FF, UK
UBC Thunderbirds	6288 Stadium Rd, Vancouver, BC V6T 1Z3, Canada
Kraken	334 1st Ave N, Seattle, WA 98109, USA
Lakers	1111 S Figueroa St, Los Angeles, CA 90015, USA
Blue Jays	1 Blue Jays Way, Toronto, Ontario, Canada

JOIN: Show All Games With Minimum Total Score

All Games

- □ ×

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

[Show Funds](#)

[Show All Games With Minimum Total Score](#)

[View Data](#)

Enter Min Score

Enter minimum total score

5

OK Cancel

[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

League Name	Date	Home Team	Away Team	Score
NHL	2022-10-22	Seattle Kraken	Vancouver Canucks	7 - 2
NHL	2022-10-12	Vancouver Canucks	Edmonton Oilers	4 - 3
NHL	1999-03-12	Edmonton Oilers	Vancouver Canucks	0 - 5
Premier League	2018-03-22	Manchester United F.C.	Manchester City F.C.	1 - 0
Premier League	2018-02-04	Manchester United F.C.	Manchester City F.C.	1 - 1

All Games Min Score

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

[Show Funds](#)

[Show All Games With Minimum Total Score](#)

[View Data](#)

[Show Network Names](#)

[Filter Leagues](#)

[Players that Play All Sports in the Database](#)

[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

League Name	Date	Home Team	Away Team	Score
NHL	2022-10-22	Seattle Kraken	Vancouver Canucks	7 - 2
NHL	2022-10-12	Vancouver Canucks	Edmonton Oilers	4 - 3
NHL	1999-03-12	Edmonton Oilers	Vancouver Canucks	0 - 5

AGGREGATION (GROUP BY): Show Number of Teams in Each City

NumTeamsInCity

Want to fund your favourite league? Click here today!

Update Existing Funds  
Delete Fund  
Update League  
Show Leagues  
Show Funds  
Show All Games With Minimum Total Score  
View Data  
Show Network Names  
Filter Leagues  
Players that Play All Sports in the Database  
Show Number of Teams In Each City  
Show Networks Broadcasting Multiple Games  
Show League Tier with Greatest Average Revenue

City	Number of Teams
Manchester	2
Toronto	1
Los Angeles	1
Vancouver	2
Seattle	1
Edmonton	1

AGGREGATION (HAVING): Show Networks Broadcasting Multiple Games

MultipleBroadcasts

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

[Show Funds](#)

[Show All Games With Minimum Total Score](#)

[View Data](#)

[Show Network Names](#)

[Filter Leagues](#)

[Players that Play All Sports in the Database](#)

[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

Network	Number of Broadcasts
BBC	2

NESTED AGGREGATION: Show League Tier with Greatest Average Revenue

HighestTierRevenue

Want to fund your favourite league? Click here today!

[Update Existing Funds](#)

[Delete Fund](#)

[Update League](#)

[Show Leagues](#)

[Show Funds](#)

[Show All Games With Minimum Total Score](#)

[View Data](#)

[Show Network Names](#)

[Filter Leagues](#)

[Players that Play All Sports in the Database](#)

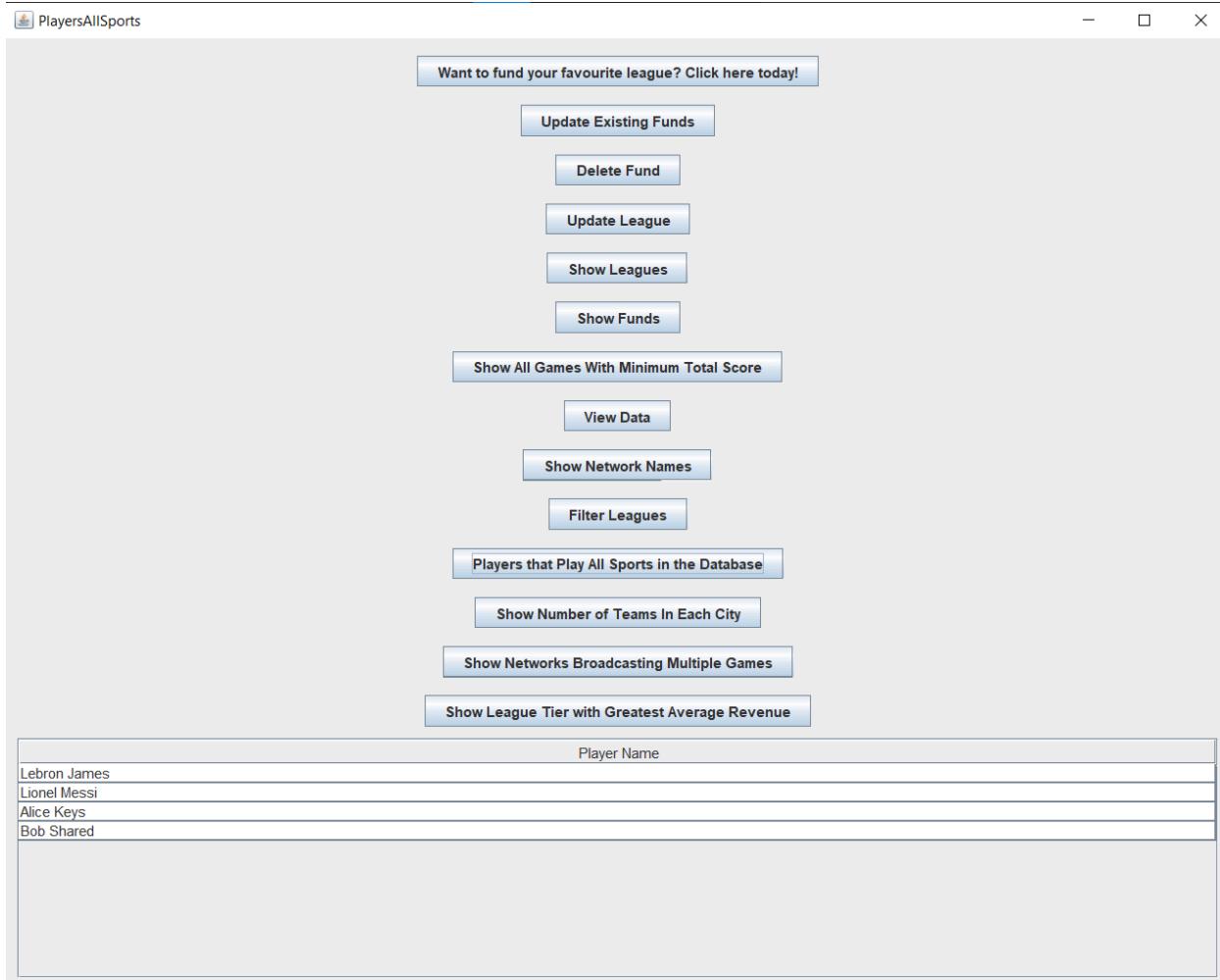
[Show Number of Teams In Each City](#)

[Show Networks Broadcasting Multiple Games](#)

[Show League Tier with Greatest Average Revenue](#)

Tier	Revenue (\$ million)
2	333.33

DIVISION: Players that Play All Sports in the Database



### Database Schema differences:

- GameHostsInSeason: several changes were necessary for this to compile in the sql script. Primarily, we ran into issues where we had tables that were referencing only part of the primary key of another entity, so the fill key had to be added to the schema. Also decided to normalise to BCNF instead of 3NF to have fewer tables overall.
  - FORMAT: [Old schema] → [New schema]
  - [GameHostsInSeason(tNameA, Date, IName)] → [GameHostsInSeason(tNameA, cityA, gameDate)]. Get error when not using full key for TeamHostStadium foreign key reference, so switched to one of the other min keys that included full key. Also renamed “Date” to “gameDate” since Date is an SQL keyword.
  - [GameDateYear(Date, yearL)] → [GameDateYear(tNameA, cityA, gameDate, yearL)]. Get error when not using full key for GameHostsInSeason foreign key reference to gameDate, so added full key to schema.

- [GameAddressDate(address, Date, weather)] → [GameAddressDate(address, tNameA, cityA, gameDate, weather)]. Get error when not using full key for GameHostsInSeason foreign key reference, so added full key to schema.
  - [GameTeamBScore(tNameB, cityB, gameDate, scoreB)] → [GameTeamBScore(tNameA, cityA, gameDate, scoreB)]. Changed FD for consistency throughout tables.
  - [GameAddress(tNameB, cityB, Date, address)] → [GameAddress(tNameA, cityA, Date, address)]. Changed FD for consistency throughout tables.
  - LeagueTeamB(IName, tNameB, cityB) → Deleted (combined with below schema)
  - [GameTeamAOpponent(tNameA, cityA, Date, tNameB)] → [GameTeamAOpponent(tNameA, cityA, gameDate, tNameB, cityB)]. Get error when only using part of key for TeamHomeStadium for teamB, so combined schema into one with full key reference.
  - [LeagueTeamA(IName, tNameA, cityA)] → [LeagueTeamA(tNameA, cityA, IName)]. Since I needed to change the key for GameHostsInSeason, I had to change the FD used for this step of the normalisation, producing a slightly different table.
- We have changed the name of a table as well, the table was previously called 'sportsPersonPlayingSport' has been changed to 'sportsPersonName'. Except for the name there is no other change in this table.
- In response to Oracle's data type limitations, the schema for the `sportsPersonDOB` table and the 'sportsPerson' table has been updated. The previous definition used `BIGINT` for the `phoneNumber` column, which is not supported by Oracle. Consequently, the data type has been modified to `NUMBER(10,0)` to align with Oracle's requirements.
- Previously sportsPerson schema used to be

```
sportsPersonDOB(phoneNumber BIGINT,
                 birthDate DATE NOT NULL,
                 PRIMARY KEY(phoneNumber),
                 FOREIGN KEY (phoneNumber) REFERENCES sportsPerson(phoneNumber)
                 ON DELETE CASCADE ON UPDATE CASCADE);
```
- The new schema:
  - sportsPersonDOB(
 $\begin{aligned} &\text{phoneNumber NUMBER(10,0),} \\ &\text{birthDate DATE NOT NULL,} \\ &\text{PRIMARY KEY(phoneNumber),} \\ &\text{FOREIGN KEY (phoneNumber) REFERENCES} \\ &\text{sportsPerson(phoneNumber) ON DELETE CASCADE} \\ & \end{aligned}$ 
);
- Previously sportsPerson schema used to be

```
sportsPerson (spID INTEGER,
```

```

    phoneNumber BIGINT UNIQUE,
    PRIMARY KEY(splID)
);
• The new schema:
    ○ sportsPerson (
        splID INTEGER,
        phoneNumber NUMBER(10,0) UNIQUE,
        PRIMARY KEY(splID)
    );

```

### Database Schema and Screenshots of the database.

#### ATHLETE

Athlete(splId, weight, height, jerseyID, numberOfMVPs)

	SPID	WEIGHT	HEIGHT	JERSEYID	NUMBEROFMVPs
1	100012	80	167	21	2
2	10221	100	200	20	0
3	223422	139	180	1	1
4	233134	75	170	122	1
5	758230	80	169	99	0

#### BROADCASTS

Broadcasts(nName,tNameA,cityA,gameDate,liveStartTime)

	NNNAME	TNAMEA	CITYA	GAMEDATE	LIVESTARTTIME
1	Sportsnet ONE	Canucks	Vancouver	2022-10-12	19:00
2	ESPN	Kraken	Seattle	2022-10-22	19:00
3	BBC	Manchester United F.C.	Manchester	2018-03-22	18:30
4	BBC	Manchester City F.C.	Manchester	2018-02-04	17:30
5	CBC Sports	Oilers	Edmonton	1999-03-12	<null>

#### COACH

Coach(splId,yearsCoaching,numberOfChampionships)

	SPID	YEARS COACHING	NUMBER OF CHAMPIONSHIPS
1	12231	10	2
2	22	2	2
3	22324	30	4
4	45321	20	1
5	5231	10	5

#### FUNDS

Funds(sponName,IName,monetaryContribution)

	SPONNAME	LNAME	MONETARYCONTRIBUTION
1	Adidas	Premier League	1500000
2	Scotiabank	NHL	12000000
3	Tesla	MLB	<null>
4	Nike	NBA	15000000
5	Ford Motor Company	NHL	<null>

## GAMEADDRESS

GameAddress(tNameA,cityA,gameDate,address)

	TNAMEA	CITYA	GAMEDATE	ADDRESS
1	Canucks	Vancouver	2022-10-12	800 Griffiths Way, Vancouver, BC V6B 6G1, Canada
2	Kraken	Seattle	2022-10-22	334 1st Ave N, Seattle, WA 98109, USA
3	Manchester United F.C.	Manchester	2018-03-22	Sir Matt Busby Way, Old Trafford, Stretford, Manchester M16 ...
4	Manchester City F.C.	Manchester	2018-02-04	Etihad Stadium, Ashton New Rd, Manchester M11 3FF, UK
5	Oilers	Edmonton	1999-03-12	10220 104 Ave NW, Edmonton, AB T5J 0H6, Canada

## GAMEADDRESSDATE

GameAddressDate(tNameA,cityA,gameDate,address,weather)

	TNAMEA	CITYA	GAMEDATE	ADDRESS	WEATHER
1	Canucks	Vancouver	2022-10-12	800 Griffiths Way, Vancouver, BC V6B 6G1, Can...	Rain
2	Kraken	Seattle	2022-10-22	334 1st Ave N, Seattle, WA 98109, USA	Rain
3	Manchester United F.C.	Manchester	2018-03-22	Sir Matt Busby Way, Old Trafford, Stretford, ...	Rain
4	Manchester City F.C.	Manchester	2018-02-04	Etihad Stadium, Ashton New Rd, Manchester M11...	Clear
5	Oilers	Edmonton	1999-03-12	10220 104 Ave NW, Edmonton, AB T5J 0H6, Canada	Snow

## GAMEDATEYEAR

GameDateYear(tNameA,cityA,gameDate,yearL)

	TNAMEA	CITYA	GAMEDATE	YEARL
1	Canucks	Vancouver	2022-10-12	2022
2	Kraken	Seattle	2022-10-22	2022
3	Manchester United F.C.	Manchester	2018-03-22	2018
4	Manchester City F.C.	Manchester	2018-02-04	2018
5	Oilers	Edmonton	1999-03-12	2018

## GAMEHOSTSINSEASON

GameHostsInSeason(tNameA,cityA,gameDate)

	TNAMEA	CITYA	GAMEDATE
1	Canucks	Vancouver	2022-10-12
2	Kraken	Seattle	2022-10-22
3	Manchester City F.C.	Manchester	2018-02-04
4	Manchester United F.C.	Manchester	2018-03-22
5	Oilers	Edmonton	1999-03-12

## GAMETEAMAOPPONENT

GameTeamAOpponent(tNameA,cityA,gameDate,tNameB,cityB)

	TNAMEA	CITYA	GAMEDATE	TNAMEB	CITYB
1	Canucks	Vancouver	2022-10-12	Oilers	Edmonton
2	Kraken	Seattle	2022-10-22	Canucks	Vancouver
3	Manchester United F.C.	Manchester	2018-03-22	Manchester City F.C.	Manchester
4	Manchester City F.C.	Manchester	2018-02-04	Manchester United F.C.	Manchester
5	Oilers	Edmonton	1999-03-12	Canucks	Vancouver

GAMETEAMASCORE

GameTeamAScore(tNameA,cityA,gameDate,scoreA)

	TNAMEA	CITYA	GAMEDATE	SCOREA
1	Canucks	Vancouver	2022-10-12	4
2	Kraken	Seattle	2022-10-22	7
3	Manchester United F.C.	Manchester	2018-03-22	1
4	Manchester City F.C.	Manchester	2018-02-04	1
5	Oilers	Edmonton	1999-03-12	0

GAMETEAMBSCORE

GameTeamBScore(tNameA,cityA,gameDate,scoreB)

	TNAMEA	CITYA	GAMEDATE	SCOREB
1	Canucks	Vancouver	2022-10-12	3
2	Kraken	Seattle	2022-10-22	2
3	Manchester United F.C.	Manchester	2018-03-22	0
4	Manchester City F.C.	Manchester	2018-02-04	1
5	Oilers	Edmonton	1999-03-12	5

INR

InR(spID,tName,city)

	SPID	TNAME	CITY
1	3233	Blue Jays	Toronto
2	3233	Canucks	Vancouver
3	3233	Lakers	Los Angeles
4	3233	Manchester United F.C.	Manchester
5	3233	UBC Thunderbirds	Vancouver
6	5345	Blue Jays	Toronto
7	5345	Canucks	Vancouver
8	5345	Lakers	Los Angeles
9	5345	Manchester United F.C.	Manchester
10	10221	Blue Jays	Toronto
11	10221	Canucks	Vancouver
12	10221	Lakers	Los Angeles
13	10221	Manchester United F.C.	Manchester
14	10221	UBC Thunderbirds	Vancouver
15	14325	Blue Jays	Toronto
16	14325	Canucks	Vancouver
17	14325	Lakers	Los Angeles
18	14325	Manchester United F.C.	Manchester
19	14325	UBC Thunderbirds	Vancouver
20	55555	UBC Thunderbirds	Vancouver
21	100012	Blue Jays	Toronto
22	100012	Canucks	Vancouver
23	100012	Lakers	Los Angeles
24	100012	Manchester United F.C.	Manchester
25	100012	UBC Thunderbirds	Vancouver
26	111111	Canucks	Vancouver
27	222222	Canucks	Vancouver
28	333333	Oilers	Edmonton
29	444444	Oilers	Edmonton

## LEAGUEORGANISES

LeagueOrganises(IName,tier,revenue,sportName)

	LNAME	TIER	REVENUE	SPORTNAME
1	NHL	1	111.11	Ice Hockey
2	Premier League	1	222.22	Soccer
3	U Sports	2	333.33	American Football
4	NBA	1	444.44	Basketball
5	MLB	1	555.55	Baseball

## LEAGUETEAMA

LeagueTeamA(tNameA,cityA,IName)

	TNAMEA	CITYA	LNAME
1	Canucks	Vancouver	NHL
2	Kraken	Seattle	NHL
3	Manchester United F.C.	Manchester	Premier League
4	Manchester City F.C.	Manchester	Premier League
5	Oilers	Edmonton	NHL

## NETWORK

Network(nName,channel)

	NNAME	CHANNEL
1	ESPN	<null>
2	Sportsnet ONE	418
3	BBC	<null>
4	CBC Sports	<null>
5	FOX Sports 1	<null>

## OWNER

Owner(spID,netWorth)

	SPID	NETWORTH
1	346473	773465863
2	234	23333
3	5345	787823
4	3233	900
5	14325	283283898

## PLAYSFOR

PlaysFor(tName,city,lName)

	TNAME	CITY	LNAME
1	Blue Jays	Toronto	MLB
2	Canucks	Vancouver	NHL
3	Kraken	Seattle	NHL
4	Lakers	Los Angeles	NBA
5	Manchester United F.C.	Manchester	Premier League
6	Oilers	Edmonton	NHL
7	UBC Thunderbirds	Vancouver	U Sports

## SEASONCHAMPION

SeasonChampion(lName,year,startDate,endDate,tName,city)

LNAME	YEAR	STARTDATE	ENDDATE	TNAME	CITY
NHL	2012	2012-01-01	2012-12-31	Canucks	Vancouver
NHL	2013	2013-01-01	2013-12-31	Canucks	Vancouver
NHL	2014	2014-01-01	2014-12-31	Canucks	Vancouver
NHL	2015	2015-01-01	2015-12-31	Canucks	Vancouver
NHL	2016	2016-01-01	2016-12-31	Canucks	Vancouver

## SPONSOR

Sponsor(sponName,networth)

SPONNAME	NETWORTH
Tesla	808000000000
Ford Motor Company	54000000000
Nike	157000000000
Adidas	36000000000
Scotiabank	51000000000

## SPORT

Sport(sportName,rules)

	SPORTNAME	RULES
1	Ice Hockey	Puck into net
2	Soccer	Ball into net
3	Baseball	Bat hit ball
4	American Football	Run into each other
5	Basketball	Ball through net

#### SPORTSPERSON

sportsPerson(spID,phoneNumber)

	SPID	PHONENUMBER
1	100012	9982991031
2	10221	2232112313
3	223422	4533513411
4	233134	4224121445
5	758230	2908394142
6	111111	1234567890
7	222222	1234567891
8	333333	1234567892
9	444444	1234567893
10	55555	1234567894
11	12231	1234567895
12	22	1234567896
13	22324	1234567897
14	45321	1234567898
15	5231	1234567899
16	346473	1234567880
17	234	1234567881
18	5345	1234567882
19	3233	1234567883
20	14325	1234567884

SPORTSPERSONAGE  
sportsPersonAge(spID,age)

	🔑 SPID	AGE
1	100012	23
2	10221	22
3	223422	24
4	233134	33
5	758230	23
6	111111	33
7	222222	33
8	333333	33
9	444444	33
10	55555	33
11	12231	33
12	22	33
13	22324	33
14	45321	33
15	5231	33
16	346473	33
17	234	33
18	5345	33
19	3233	33
20	14325	33

SPORTSPERSONDEATHDATE

sportsPersonDeathDate(**spID**,deathDate)

	🔑 SPID	DEATHDATE
1	100012	<null>
2	10221	<null>
3	223422	2013-11-20
4	233134	<null>
5	758230	<null>

## SPORTSPERSONDOB

sportsPersonDOB(phoneNumber,birthDate)

	PHONE NUMBER	BIRTH DATE
1	9982991031	2000-10-12
2	2232112313	2000-02-01
3	4533513411	1980-10-11
4	4224121445	1999-05-19
5	2908394142	2001-04-01
6	1234567890	1989-10-12
7	1234567891	1989-10-12
8	1234567892	1999-10-12
9	1234567893	1978-10-12
10	1234567894	1989-10-12
11	1234567895	1987-10-12
12	1234567896	1983-10-12
13	1234567897	1989-10-12
14	1234567898	1981-10-12
15	1234567899	1989-10-12
16	1234567880	1980-10-12
17	1234567881	1989-10-12
18	1234567882	1984-10-12
19	1234567883	1977-10-12
20	1234567884	1982-10-12

## SPORTSPERSONNATIONALITY

sportsPersonNationality(spID,nationality)

	SPID	NATIONALITY
1	100012	China
2	223422	Russia
3	10221	Germany
4	233134	Canada
5	758230	Brazil

#### SPORTSPERSONNAME

sportsPersonName(spID,spName)

	SPID	SPNAME
1	100012	Lebron James
2	10221	Lionel Messi
3	223422	Luka Doncic
4	233134	James Harden
5	758230	Aaron Rodgers
6	5345	Frank DeMan
7	3233	Alice Keys
8	14325	Bob Shared

#### SPORTSPERSOONSALARY

sportsPersonSalary(spID,salary)

	SPID	SALARY
1	100012	23333332.24
2	223422	332424
3	758230	4758392
4	10221	245353242.2
5	233134	2242

#### STADIUM

Stadium(address,sName,seatCount)

ADDRESS	SNAME	SEATCOUNT
1 800 Griffiths Way, Vancouver, BC V6B 6G1, Canada	Rogers Arena	19700
2 10220 104 Ave NW, Edmonton, AB T5J 0H6, Canada	Rogers Place	18347
3 Sir Matt Busby Way, Old Trafford, Stretford, Manchester M16 0RA, UK	Old Trafford	74310
4 Etihad Stadium, Ashton New Rd, Manchester M11 3FF, UK	Etihad Stadium	54400
5 6288 Stadium Rd, Vancouver, BC V6T 1Z3, Canada	Thunderbird Stadium	5054
6 334 1st Ave N, Seattle, WA 98109, USA	Climate Pledge Arena	18300
7 1111 S Figueroa St, Los Angeles, CA 90015, USA	Crypto Arena	20000
8 1 Blue Jays Way, Toronto, Ontario, Canada	Rogers Centre	49286

## STARTENDDAYSRUN

StartEndDaysRun(startDate,endDate,daysRun)

	STARTDATE	ENDDATE	DAYSRUN
1	2012-01-01	2012-12-31	366
2	2012-01-01	2012-01-01	1
3	2012-01-01	2012-01-02	2
4	2012-01-01	2012-01-03	3
5	2012-01-01	2012-01-04	4
6	2013-01-01	2013-12-31	365
7	2014-01-01	2014-12-31	365
8	2015-01-01	2015-12-31	365
9	2016-01-01	2016-12-31	365

## TEAMHOMESTADIUM

TeamHomeStadium(tName,city,address,sportName,mascot)

TNAME	CITY	ADDRESS	SPORTNAME	MASCOT
1 Canucks	Vancouver	800 Griffiths Way, Vancouver, BC V6B 6G1, Can...	Ice Hockey	Fin the Whale
2 Oilers	Edmonton	10220 104 Ave NW, Edmonton, AB T5J 0H6, Canada	Ice Hockey	Hunter the Lynx
3 Manchester United F.C.	Manchester	Sir Matt Busby Way, Old Trafford, Stretford, ...	Soccer	<null>
4 Manchester City F.C.	Manchester	Etihad Stadium, Ashton New Rd, Manchester M11...	Soccer	<null>
5 UBC Thunderbirds	Vancouver	6288 Stadium Rd, Vancouver, BC V6T 1Z3, Canada	American Football	Thunderbird
6 Kraken	Seattle	334 1st Ave N, Seattle, WA 98109, USA	Ice Hockey	Buoy
7 Lakers	Los Angeles	1111 S Figueroa St, Los Angeles, CA 90015, USA	Basketball	<null>
8 Blue Jays	Toronto	1 Blue Jays Way, Toronto, Ontario, Canada	Baseball	<null>