Universidad del Valle de Guatemala Base de Datos 1 Sección 21 Integrantes del Grupo: Carné 22075, Diego Duarte Slowing Carné 22295, Sebastián Huertas Gómez	Catedrático: Ing. Sergio Alonzo Proyecto 1

PROYECTO 1

Github: https://github.com/DiegoDuaS/WriterDataBasePostgreSQL.git

Etapa 1

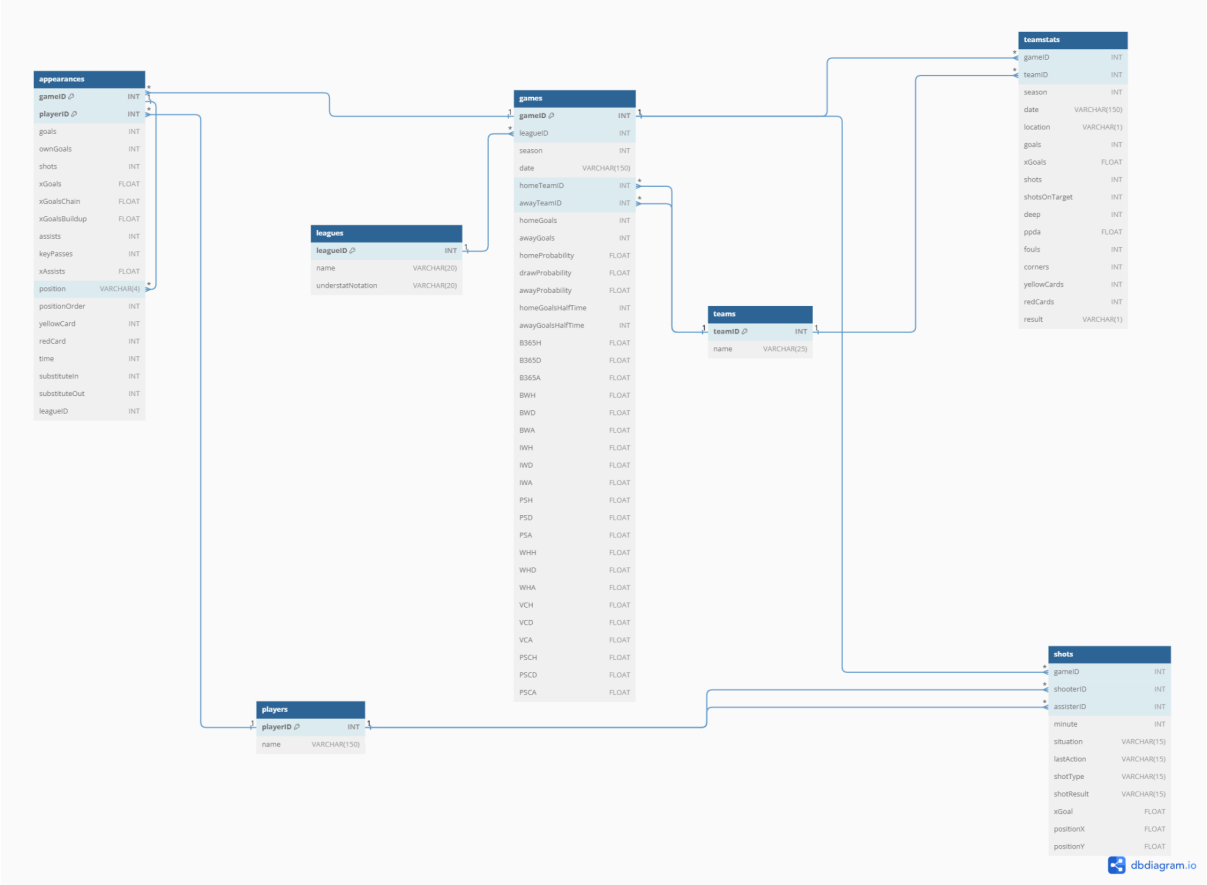
Documentos Adjuntos

```
CREATE TABLE leagues (
    leagueID INT,
    name VARCHAR(20),
    understatNotation VARCHAR(20),
        PRIMARY KEY (leagueID)
);

CREATE TABLE players (
    playerID INT,
    name VARCHAR(150),
        PRIMARY KEY (playerID)
);


CREATE TABLE teams (
    teamID INT PRIMARY KEY,
    name VARCHAR(25)
);

CREATE TABLE games (
    gameID INT,
    leagueID INT,
    season INT,
    date varchar(150),
    homeTeamID INT,
    awayTeamID INT,
    homeGoals INT,
```

```
    awayGoals INT,
    homeProbability FLOAT,
    drawProbability FLOAT,
    awayProbability FLOAT,
    homeGoalsHalfTime INT,
    awayGoalsHalfTime INT,
    B365H FLOAT,
    B365D FLOAT,
    B365A FLOAT,
    BWH FLOAT,
    BWD FLOAT,
    BWA FLOAT,
    IWH FLOAT,
    IWD FLOAT,
    IWA FLOAT,
    PSH FLOAT,
    PSD FLOAT,
    PSA FLOAT,
    WHH FLOAT,
    WHD FLOAT,
    WHA FLOAT,
    VCH FLOAT,
    VCD FLOAT,
    VCA FLOAT,
    PSCH FLOAT,
    PSCD FLOAT,
    PSCA FLOAT,
        PRIMARY KEY (gameID),
    FOREIGN KEY (leagueID) REFERENCES leagues(leagueID),
    FOREIGN KEY (homeTeamID) REFERENCES teams(teamID),
    FOREIGN KEY (awayTeamID) REFERENCES teams(teamID)
);


CREATE TABLE appearances (
    gameID INT,
    playerID INT,
    goals INT,
    ownGoals INT,
    shots INT,
    xGoals FLOAT,
    xGoalsChain FLOAT,
    xGoalsBuildup FLOAT,
    assists INT,
```

```
    keyPasses INT,
    xAssists FLOAT,
    position VARCHAR(4),
    positionOrder INT,
    yellowCard INT,
    redCard INT,
    time INT,
    substituteIn INT,
    substituteOut INT,
    leagueID INT,
    PRIMARY KEY (gameID, playerID),
    FOREIGN KEY (gameID) REFERENCES games(gameID),
    FOREIGN KEY (playerID) REFERENCES players(playerID),
    FOREIGN KEY (leagueID) REFERENCES leagues(leagueID)
);


CREATE TABLE shots (
    gameID INT,
    shooterID INT,
    assisterID INT,
    minute INT,
    situation VARCHAR(15),
    lastAction VARCHAR(15),
    shotType VARCHAR(15),
    shotResult VARCHAR(15),
    xGoal FLOAT,
    positionX FLOAT,
    positionY FLOAT,
    FOREIGN KEY (gameID) REFERENCES games(gameID),
    FOREIGN KEY (shooterID) REFERENCES players(playerID),
    FOREIGN KEY (assisterID) REFERENCES players(playerID)
);


CREATE TABLE teamstats (
    gameID INT,
    teamID INT,
    season INT,
    date varchar(150),
    location VARCHAR(1),
    goals INT,
    xGoals FLOAT,
    shots INT,
```

shotsOnTarget INT,
deep INT,
ppda FLOAT,
fouls INT,
corners INT,
yellowCards INT,
redCards INT,
result VARCHAR(1),
PRIMARY KEY (gameID, teamID),
FOREIGN KEY (gameID) REFERENCES games(gameID),
FOREIGN KEY (teamID) REFERENCES teams(teamID)
);



Etapa 2

Según estadísticas:

1. La cantidad de juegos jugados en cada temporada por cada equipo, de cada liga (tome en cuenta que cada equipo puede jugar como visitante o como anfitrión.

   SELECT a.name AS TeamName, b.name AS LeagueName,c.season as season, count(c.gameid) as Appearance
   FROM teams a
   JOIN games c ON a.teamID = c.homeTeamID OR a.teamID = c.awayTeamID

JOIN leagues b ON c.leagueID = b.leagueID
*where c.leagueid = *id de la liga**
group by a.name, b.name, c.season
order by c.season desc;

	teamname character varying (25)	leaguename character varying (20)	season integer	appearance bigint
1	Chelsea	Premier League	2020	38
2	Manchester City	Premier League	2020	38
3	Liverpool	Premier League	2020	38
4	Burnley	Premier League	2020	38
5	West Bromwich Albion	Premier League	2020	38
6	Newcastle United	Premier League	2020	38
7	Leeds	Premier League	2020	38
8	Sheffield United	Premier League	2020	38
9	Arsenal	Premier League	2020	38
10	Leicester	Premier League	2020	38
11	Aston Villa	Premier League	2020	38
12	Crystal Palace	Premier League	2020	38
13	Tottenham	Premier League	2020	38
14	Southampton	Premier League	2020	38
15	Fulham	Premier League	2020	38
16	Everton	Premier League	2020	38
17	West Ham	Premier League	2020	38
18	Brighton	Premier League	2020	38
19	Wolverhampton Wanderers	Premier League	2020	38
20	Manchester United	Premier League	2020	38
21	Watford	Premier League	2019	38
22	Norwich	Premier League	2019	38
23	Brighton	Premier League	2019	38

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	teamname character varying (25)	leaguename character varying (20)	season integer	appearance bigint
1	Sampdoria	Serie A	2020	38
2	Fiorentina	Serie A	2020	38
3	Atalanta	Serie A	2020	38
4	Parma Calcio 1913	Serie A	2020	38
5	Cagliari	Serie A	2020	38
6	Sassuolo	Serie A	2020	38
7	Udinese	Serie A	2020	38
8	Lazio	Serie A	2020	38
9	AC Milan	Serie A	2020	38
10	Juventus	Serie A	2020	38
11	Verona	Serie A	2020	38
12	Roma	Serie A	2020	38
13	Inter	Serie A	2020	38
14	Crotone	Serie A	2020	38
15	Genoa	Serie A	2020	38
16	Napoli	Serie A	2020	38
17	Torino	Serie A	2020	38
18	Spezia	Serie A	2020	38
19	Benevento	Serie A	2020	38
20	Bologna	Serie A	2020	38
21	Torino	Serie A	2019	38
22	Lazio	Serie A	2019	38
23	Inter	Serie A	2019	38

Total rows: 140 of 140 Query complete 00:00:00.094

	teamname character varying (25)	leaguename character varying (20)	season integer	appearance bigint
1	Werder Bremen	Bundesliga	2020	34
2	RasenBallsport Leipzig	Bundesliga	2020	34
3	Eintracht Frankfurt	Bundesliga	2020	34
4	Arminia Bielefeld	Bundesliga	2020	34
5	FC Cologne	Bundesliga	2020	34
6	Union Berlin	Bundesliga	2020	34
7	Bayern Munich	Bundesliga	2020	34
8	Hertha Berlin	Bundesliga	2020	34
9	Hoffenheim	Bundesliga	2020	34
10	Schalke 04	Bundesliga	2020	34
11	Borussia MGladbach	Bundesliga	2020	34
12	Wolfsburg	Bundesliga	2020	34
13	VfB Stuttgart	Bundesliga	2020	34
14	Borussia Dortmund	Bundesliga	2020	34
15	Augsburg	Bundesliga	2020	34
16	Freiburg	Bundesliga	2020	34
17	Mainz 05	Bundesliga	2020	34
18	Bayer Leverkusen	Bundesliga	2020	34
19	Hoffenheim	Bundesliga	2019	34
20	Mainz 05	Bundesliga	2019	34
21	Augsburg	Bundesliga	2019	34
22	Freiburg	Bundesliga	2019	34
23	Bayern Munich	Bundesliga	2019	34

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	teamname character varying (25)	leaguename character varying (20)	season integer	appearance bigint
1	Real Betis	La Liga	2020	38
2	Villarreal	La Liga	2020	38
3	Osasuna	La Liga	2020	38
4	Getafe	La Liga	2020	38
5	Athletic Club	La Liga	2020	38
6	Real Sociedad	La Liga	2020	38
7	Celta Vigo	La Liga	2020	38
8	Real Madrid	La Liga	2020	38
9	Alaves	La Liga	2020	38
10	Cadiz	La Liga	2020	38
11	Granada	La Liga	2020	38
12	Eibar	La Liga	2020	38
13	Levante	La Liga	2020	38
14	Real Valladolid	La Liga	2020	38
15	Elche	La Liga	2020	38
16	Atletico Madrid	La Liga	2020	38
17	Sevilla	La Liga	2020	38
18	Valencia	La Liga	2020	38
19	Barcelona	La Liga	2020	38
20	SD Huesca	La Liga	2020	38
21	Athletic Club	La Liga	2019	38
22	Real Valladolid	La Liga	2019	38
23	Villarreal	La Liga	2019	38

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	teamname character varying (25)	leaguename character varying (20)	season integer	appearance bigint
1	Paris Saint Germain	Ligue 1	2020	38
2	Nimes	Ligue 1	2020	38
3	Angers	Ligue 1	2020	38
4	Reims	Ligue 1	2020	38
5	Rennes	Ligue 1	2020	38
6	Lens	Ligue 1	2020	38
7	Lille	Ligue 1	2020	38
8	Nantes	Ligue 1	2020	38
9	Lyon	Ligue 1	2020	38
10	Nice	Ligue 1	2020	38
11	Montpellier	Ligue 1	2020	38
12	Strasbourg	Ligue 1	2020	38
13	Marseille	Ligue 1	2020	38
14	Saint-Etienne	Ligue 1	2020	38
15	Monaco	Ligue 1	2020	38
16	Dijon	Ligue 1	2020	38
17	Lorient	Ligue 1	2020	38
18	Metz	Ligue 1	2020	38
19	Bordeaux	Ligue 1	2020	38
20	Brest	Ligue 1	2020	38
21	Angers	Ligue 1	2019	28
22	Paris Saint Germain	Ligue 1	2019	27
23	Reims	Ligue 1	2019	28

Total rows: 140 of 140 Query complete 00:00:00.105

2. ¿Quién es el mejor equipo de todas las ligas y de todas las temporadas según las estadísticas de diferencia de goles? Hint: Obtenga la cantidad de goles a favor, goles en contra y la diferencia entre las dos anteriores, esto por cada temporada y por cada equipo de cada liga. Utilizando este mismo query, obtenga el ranking de los equipos por temporada y por liga, ordenados por ese ranking de manera descendente por diferencia (utilice la función Rank () over patition), para obtener el equipo ganador.

Mejor de cada liga por temporada:

```
WITH TeamStats AS (
    SELECT
        c.leagueID,
        a.name AS TeamName,
```

```
        c.season,
        SUM(CASE WHEN c.homeTeamID = a.teamID THEN c.homeGoals
ELSE c.awayGoals END) AS GoalsFor,
        SUM(CASE WHEN c.homeTeamID = a.teamID THEN c.awayGoals
ELSE c.homeGoals END) AS GoalsAgainst,
        SUM(CASE WHEN c.homeTeamID = a.teamID THEN c.homeGoals
ELSE c.awayGoals END) -
        SUM(CASE WHEN c.homeTeamID = a.teamID THEN c.awayGoals
ELSE c.homeGoals END) AS GoalDifference,
      RANK() OVER (PARTITION BY c.leagueID, c.season ORDER BY
SUM(CASE WHEN c.homeTeamID = a.teamID THEN c.homeGoals ELSE
c.awayGoals END) -
       SUM(CASE WHEN c.homeTeamID = a.teamID THEN c.awayGoals ELSE
c.homeGoals END) DESC) AS Ranking
    FROM teams a
    JOIN games c ON a.teamID = c.homeTeamID OR a.teamID = c.awayTeamID
    GROUP BY c.leagueID, a.name, c.season
)
SELECT
    a.Ranking,
    a.season,
  b.name as League,
  a.TeamName,
  a.GoalDifference
FROM TeamStats a
JOIN leagues b on a.leagueid = b.leagueid
where Ranking= 1
ORDER BY b.name, a.season desc;
```

	ranking bigint	season integer	league character varying (20)	teamname character varying (25)	goaldifference bigint
1	1	2020	Bundesliga	Bayern Munich	55
2	1	2019	Bundesliga	Bayern Munich	68
3	1	2018	Bundesliga	Bayern Munich	56
4	1	2017	Bundesliga	Bayern Munich	64
5	1	2016	Bundesliga	Bayern Munich	67
6	1	2015	Bundesliga	Bayern Munich	63
7	1	2014	Bundesliga	Bayern Munich	62
8	1	2020	La Liga	Barcelona	47
9	1	2019	La Liga	Barcelona	48
10	1	2018	La Liga	Barcelona	54
11	1	2017	La Liga	Barcelona	70
12	1	2016	La Liga	Barcelona	79
13	1	2015	La Liga	Barcelona	83
14	1	2014	La Liga	Barcelona	89
15	1	2020	Ligue 1	Paris Saint Germain	58
16	1	2019	Ligue 1	Paris Saint Germain	51
17	1	2018	Ligue 1	Paris Saint Germain	70
18	1	2017	Ligue 1	Paris Saint Germain	79
19	1	2016	Ligue 1	Monaco	76
20	1	2015	Ligue 1	Paris Saint Germain	83
21	1	2014	Ligue 1	Paris Saint Germain	47
22	1	2020	Premier League	Manchester City	51
23	1	2019	Premier League	Manchester City	67
24	1	2018	Premier League	Manchester City	72
25	1	2017	Premier League	Manchester City	79
26	1	2016	Premier League	Tottenham	60
27	1	2015	Premier League	Tottenham	34
28	1	2014	Premier League	Manchester City	45
29	1	2020	Serie A	Inter	54
30	1	2019	Serie A	Atalanta	50
31	1	2018	Serie A	Juventus	40
32	1	2017	Serie A	Juventus	62
33	1	2016	Serie A	Napoli	55
34	1	2015	Serie A	Juventus	55
35	1	2014	Serie A	Juventus	48

3. ¿Quiénes son los jugadores que han realizado mayor cantidad de goles a través de todas las temporadas?

```
select a.name, sum(b.goals) as Goals
from players a
join appearances b on a.playerid = b.playerid
group by a.name
order by Goals desc
limit 5;
```

	name character varying (150)	goals bigint
1	Lionel Messi	231
2	Cristiano Ronaldo	215
3	Robert Lewandowski	203
4	Luis Suarez	173
5	Harry Kane	163

¿Cuáles son los jugadores con mayor cantidad de pases izquierdos y pases derechos que han hecho goles?

```
select
        b.name,
        a.lastaction,
        sum(case when a.shottype = 'RightFoot' then 1 else 0 end) as RightFoot,
        sum(case when a.shottype = 'LeftFoot' then 1 else 0 end) as LeftFoot,
        a.shotresult
from shots a
join players b on a.assisterid = b.playerid
where
        a.assisterid is not null
        and a.lastaction = 'Pass'
        and a.shotresult = 'Goal'
group by b.name, a.lastaction, a.shotresult
order by RightFoot DESC, LeftFoot DESC;
```

	name character varying (150)	lastaction character varying (15)	rightfoot bigint	leftfoot bigint	shotresult character varying (15)
1	Luis Suarez	Pass	40	50	Goal
2	Lionel Messi	Pass	31	12	Goal
3	Thomas Muller	Pass	30	15	Goal
4	Marcelo	Pass	26	4	Goal
5	Eden Hazard	Pass	24	9	Goal
6	Roberto Firmino	Pass	23	17	Goal
7	Iago Aspas	Pass	23	8	Goal
8	Gonzalo Castro	Pass	22	14	Goal
9	Mohamed Salah	Pass	22	10	Goal
10	David Silva	Pass	22	8	Goal
11	Cristiano Ronaldo	Pass	21	14	Goal
12	Kevin De Bruyne	Pass	20	15	Goal
13	Jadon Sancho	Pass	19	8	Goal
14	Karim Benzema	Pass	18	13	Goal
15	Jordi Alba	Pass	18	10	Goal
16	Dries Mertens	Pass	18	9	Goal
17	Son Heung-Min	Pass	18	8	Goal
18	Karim Bellarabi	Pass	18	4	Goal
19	Raheem Sterling	Pass	17	18	Goal
20	Neymar	Pass	17	13	Goal
21	Kylian Mbappe-Lottin	Pass	17	9	Goal

(Compare contra los resultados del inciso 2 y determine de manera textual si dichos jugadores pertenecen a los equipos del inciso anterior).

Es notable observar que muchos de los jugadores destacados en las categorías de anotadores o asistentes también pertenecen a los equipos que han liderado en términos de diferencia de goles en las últimas temporadas. Este patrón sugiere que estos jugadores han desempeñado un papel crucial al contribuir significativamente al rendimiento excepcional de sus equipos. Su destacada participación tanto en la creación de oportunidades de gol como en la ejecución exitosa demuestra su impacto sustancial en el éxito global de sus respectivos equipos durante este período.

Según apuestas:

4. Realice un comparativo de las probabilidades de todas las casas de apuesta por temporada, liga y equipo, eliminando aquellos equipos que no tienen estadísticas en ninguna casa de apuesta. Tome en cuenta de que en la tabla de GAMES se representan los datos de probabilidades de que se gane el local, que gane el extranjero o que empate, según diferentes casas de apuestas como Bet365 (B365), Bet&Win (BW), Interwetten (IW), Ladbrokes (LB), William Hill (WH), VC Bet (VC), etc. Por tanto, escoja el valor más alto de estas columnas. Luego de obtener las probabilidades

correctas, escoja la que mejor le convenga para determinar qué equipo tiene la mayor probabilidad de ganar en qué liga de que temporada. Tome en cuenta que los valores que aparecen en las columnas (por ejemplo de B365H, B365D y B365A) no son en sí probabilidades porque no se encuentran en el rango entre 0 y 1. Por tanto, para obtener las probabilidades debe de realizar la división de 1 / b365h, por ejemplo. Este es un mecanismo que usan las casas de apuesta para poder confundir al jugador.

```
WITH Probabilities AS (
  SELECT
    gameID,
    leagueID,
    season,
    homeTeamID,
    awayTeamID,
    MAX(GREATEST(
      1 / NULLIF(B365H, 0), 1 / NULLIF(BWH, 0), 1 / NULLIF(IWH, 0),
      1 / NULLIF(PSH, 0), 1 / NULLIF(WHH, 0), 1 / NULLIF(VCH, 0),
      1 / NULLIF(PSCH, 0)
    )) AS MaxHomeWinProb,
    MAX(GREATEST(
      1 / NULLIF(B365D, 0), 1 / NULLIF(BWD, 0), 1 / NULLIF(IWD, 0),
      1 / NULLIF(PSD, 0), 1 / NULLIF(WHD, 0), 1 / NULLIF(VCD, 0),
      1 / NULLIF(PSCD, 0)
    )) AS MaxDrawProb,
    MAX(GREATEST(
      1 / NULLIF(B365A, 0), 1 / NULLIF(BWA, 0), 1 / NULLIF(IWA, 0),
      1 / NULLIF(PSA, 0), 1 / NULLIF(WHA, 0), 1 / NULLIF(VCA, 0),
      1 / NULLIF(PSCA, 0)
    )) AS MaxAwayWinProb
  FROM games
  GROUP BY gameID, leagueID, season, homeTeamID, awayTeamID
),
MaxProbabilities AS (
  SELECT
    p.leagueID,
    p.season,
    p.homeTeamID AS teamID,
    'Home' AS HomeOrAway,
    MAX(p.MaxHomeWinProb) AS MaxWinProb
  FROM Probabilities p
  GROUP BY p.leagueID, p.season, p.homeTeamID
  UNION ALL
  SELECT
    p.leagueID,
```

```
        p.season,
        p.awayTeamID AS teamID,
        'Away' AS HomeOrAway,
        MAX(p.MaxAwayWinProb) AS MaxWinProb
    FROM Probabilities p
    GROUP BY p.leagueID, p.season, p.awayTeamID
)
SELECT
    m.season,
    l.name AS League,
    t.name AS Name,
    m.HomeOrAway as Location,
    MAX(m.MaxWinProb) AS WinProbability
FROM MaxProbabilities m
JOIN leagues l ON m.leagueID = l.leagueID
JOIN teams t ON m.teamID = t.teamID
GROUP BY m.season, l.name, t.name, m.HomeOrAway
ORDER BY m.season, l.name, MAX(m.MaxWinProb) DESC;
```

	season integer	league character varying (20)	name character varying (25)	location text	winprobability double precision
1	2014	Bundesliga	Bayern Munich	Home	0.9259259259259258
2	2014	Bundesliga	Bayern Munich	Away	0.8547008547008548
3	2014	Bundesliga	Borussia Dortmund	Home	0.8264462809917356
4	2014	Bundesliga	Bayer Leverkusen	Home	0.7692307692307692
5	2014	Bundesliga	Wolfsburg	Home	0.7518796992481203
6	2014	Bundesliga	Borussia MGladbach	Home	0.7352941176470588
7	2014	Bundesliga	Borussia Dortmund	Away	0.7142857142857143
8	2014	Bundesliga	Schalke 04	Home	0.625
9	2014	Bundesliga	Wolfsburg	Away	0.625
10	2014	Bundesliga	Hoffenheim	Home	0.625
11	2014	Bundesliga	Bayer Leverkusen	Away	0.6134969325153374
12	2014	Bundesliga	Hamburger SV	Home	0.6060606060606061
13	2014	Bundesliga	Eintracht Frankfurt	Home	0.5882352941176471
14	2014	Bundesliga	Borussia MGladbach	Away	0.5780346820809249
15	2014	Bundesliga	Mainz 05	Home	0.5780346820809249
16	2014	Bundesliga	Augsburg	Home	0.5780346820809249
17	2014	Bundesliga	Hannover 96	Home	0.5747126436781609
18	2014	Bundesliga	VfB Stuttgart	Home	0.5747126436781609
19	2014	Bundesliga	Hertha Berlin	Home	0.5405405405405405
20	2014	Bundesliga	FC Cologne	Home	0.5405405405405405
21	2014	Bundesliga	VfB Stuttgart	Away	0.5263157894736842
22	2014	Bundesliga	Hoffenheim	Away	0.5263157894736842

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5. ¿Cuál es el mejor equipo de todas las ligas y de todas las temporadas según las apuestas? Hint: Apóyese o complemente el query del inciso anterior para obtener este.

```
WITH Probabilities AS (
    SELECT
        gameID,
        leagueID,
        season,
        homeTeamID,
        awayTeamID,
        MAX(GREATEST(
            1 / NULLIF(B365H, 0), 1 / NULLIF(BWH, 0), 1 / NULLIF(IWH, 0),
            1 / NULLIF(PSH, 0), 1 / NULLIF(WHH, 0), 1 / NULLIF(VCH, 0),
            1 / NULLIF(PSCH, 0)
        )) AS MaxHomeWinProb,
        MAX(GREATEST(
            1 / NULLIF(B365D, 0), 1 / NULLIF(BWD, 0), 1 / NULLIF(IWD, 0),
            1 / NULLIF(PSD, 0), 1 / NULLIF(WHD, 0), 1 / NULLIF(VCD, 0),
            1 / NULLIF(PSCD, 0)
        )) AS MaxDrawProb,
        MAX(GREATEST(
            1 / NULLIF(B365A, 0), 1 / NULLIF(BWA, 0), 1 / NULLIF(IWA, 0),
            1 / NULLIF(PSA, 0), 1 / NULLIF(WHA, 0), 1 / NULLIF(VCA, 0),
            1 / NULLIF(PSCA, 0)
        )) AS MaxAwayWinProb
    FROM games
    GROUP BY gameID, leagueID, season, homeTeamID, awayTeamID
),
MaxProbabilities AS (
    SELECT
        p.leagueID,
        p.season,
        p.homeTeamID AS teamID,
        'Home' AS HomeOrAway,
        MAX(p.MaxHomeWinProb) AS MaxWinProb
    FROM Probabilities p
    GROUP BY p.leagueID, p.season, p.homeTeamID
    UNION ALL
    SELECT
        p.leagueID,
        p.season,
        p.awayTeamID AS teamID,
        'Away' AS HomeOrAway,
        MAX(p.MaxAwayWinProb) AS MaxWinProb
    FROM Probabilities p
```

```
    GROUP BY p.leagueID, p.season, p.awayTeamID
),
RankedProbabilities AS (
    SELECT
        m.season,
        l.name AS League,
        t.name AS TeamName,
        m.HomeOrAway,
        MAX(m.MaxWinProb) AS WinProbability,
                RANK() OVER (PARTITION BY m.season, l.name ORDER BY
MAX(m.MaxWinProb) DESC) AS Rank
    FROM MaxProbabilities m
    JOIN leagues l ON m.leagueID = l.leagueID
    JOIN teams t ON m.teamID = t.teamID
    GROUP BY m.season, l.name, t.name, m.HomeOrAway
)
SELECT
    season,
    League,
    TeamName,
    WinProbability,
    Rank
FROM RankedProbabilities
where Rank =1
ORDER BY WinProbability desc;
```

	season integer	league character varying (20)	teamname character varying (25)	winprobability double precision	rank bigint
1	2016	La Liga	Barcelona	0.9803921568627451	1
2	2015	La Liga	Barcelona	0.9803921568627451	1
3	2018	Bundesliga	Bayern Munich	0.9803921568627451	1
4	2014	La Liga	Barcelona	0.970873786407767	1
5	2020	Ligue 1	Paris Saint Germain	0.970873786407767	1
6	2017	Serie A	Juventus	0.970873786407767	1
7	2018	Serie A	Juventus	0.9615384615384615	1
8	2016	Serie A	Roma	0.9615384615384615	1
9	2019	Premier League	Manchester City	0.9615384615384615	1
10	2017	La Liga	Barcelona	0.9615384615384615	1
11	2017	Ligue 1	Paris Saint Germain	0.9615384615384615	1
12	2018	Ligue 1	Paris Saint Germain	0.9523809523809523	1
13	2018	Premier League	Liverpool	0.9523809523809523	1
14	2019	Ligue 1	Paris Saint Germain	0.9523809523809523	1
15	2016	Bundesliga	Bayern Munich	0.9523809523809523	1
16	2019	Bundesliga	Bayern Munich	0.9523809523809523	1
17	2018	La Liga	Barcelona	0.9523809523809523	1
18	2018	Premier League	Manchester City	0.9523809523809523	1
19	2017	Premier League	Manchester City	0.9433962264150942	1
20	2015	Bundesliga	Bayern Munich	0.9433962264150942	1
21	2017	Bundesliga	Bayern Munich	0.9433962264150942	1
22	2015	Ligue 1	Paris Saint Germain	0.9433962264150942	1
23	2020	Bundesliga	Bayern Munich	0.9345794392523364	1
24	2014	Bundesliga	Bayern Munich	0.9259259259259258	1
25	2015	Serie A	Napoli	0.9259259259259258	1
26	2016	Ligue 1	Paris Saint Germain	0.9259259259259258	1
27	2020	Premier League	Manchester City	0.9259259259259258	1
28	2016	Premier League	Arsenal	0.9174311926605504	1
29	2020	La Liga	Barcelona	0.9090909090909091	1
30	2019	Serie A	Lazio	0.9090909090909091	1
31	2019	La Liga	Barcelona	0.9090909090909091	1
32	2014	Serie A	Juventus	0.9009009009009008	1
33	2015	Premier League	Arsenal	0.8928571428571428	1
34	2014	Ligue 1	Paris Saint Germain	0.8928571428571428	1
35	2020	Serie A	Atalanta	0.8849557522123894	1
36	2020	Serie A	Juventus	0.8849557522123894	1
37	2014	Premier League	Manchester City	0.8695652173913044	1

Otros:

6. ¿Quiénes son los jugadores de cada liga y cada temporada que tienen los mejores atributos – características de juego -pases, goles, etc.? ¿De acuerdo a este inciso, y comparándolo con el inciso 2 y 5 anteriores, alguno de los jugadores más valiosos se encuentra dentro del mejor equipo?

```
SELECT leagueID, season, player_name, total_goals, total_assists, total_shots, total_keyPasses, total_all_attributes
FROM (
   SELECT
      a.leagueID,
      g.season,
      p.name AS player_name,
      SUM(a.goals) AS total_goals,
      SUM(a.assists) AS total_assists,
      SUM(a.shots) AS total_shots,
      SUM(a.keyPasses) AS total_keyPasses,
      SUM(a.goals + a.assists + a.shots + a.keyPasses) AS total_all_attributes,
         ROW_NUMBER() OVER(PARTITION BY a.leagueID, g.season ORDER BY SUM(a.goals + a.assists + a.shots + a.keyPasses) DESC) AS row_num
   FROM appearances a
   INNER JOIN players p ON a.playerID = p.playerID
   INNER JOIN games g ON a.gameID = g.gameID
   GROUP BY a.leagueID, g.season, p.name
) AS ranked_players
WHERE
   row_num = 1;
```

	leagueid integer	season integer	player_name character varying (150)	total_goals bigint	total_assists bigint	total_shots bigint	total_keypasses bigint	total_all_attributes bigint
1	1	2014	Alexis Sanchez	16	8	122	82	228
2	1	2015	Christian Eriksen	6	13	100	115	234
3	1	2016	Christian Eriksen	8	15	133	112	268
4	1	2017	Harry Kane	30	2	183	34	249
5	1	2018	Mohamed Salah	22	8	137	68	235
6	1	2019	Kevin De Bruyne	14	20	100	133	267
7	1	2020	Bruno Fernandes	18	12	121	95	246
8	2	2014	Carlos Tevez	20	7	114	61	202
9	2	2015	Gonzalo Higuain	36	2	182	51	271
10	2	2016	Edin Dzeko	29	9	178	44	260
11	2	2017	Lorenzo Insigne	8	11	177	103	299
12	2	2018	Cristiano Ronaldo	21	8	175	48	252
13	2	2019	Cristiano Ronaldo	31	5	208	51	295
14	2	2020	Cristiano Ronaldo	29	3	167	36	235

	leagueid integer	season integer	player_name character varying (150)	total_goals bigint	total_assists bigint	total_shots bigint	total_keypasses bigint	total_all_attributes bigint
15	3	2014	Kevin De Bruyne	10	20	96	112	238
16	3	2015	Robert Lewandowski	30	2	152	22	206
17	3	2016	Robert Lewandowski	30	5	143	30	208
18	3	2017	Robert Lewandowski	29	2	127	22	180
19	3	2018	Robert Lewandowski	22	7	144	47	220
20	3	2019	Robert Lewandowski	34	4	138	36	212
21	3	2020	Robert Lewandowski	41	7	135	32	215
22	4	2014	Cristiano Ronaldo	48	16	225	76	365
23	4	2015	Cristiano Ronaldo	35	11	227	51	324
24	4	2016	Lionel Messi	37	9	179	79	304
25	4	2017	Lionel Messi	34	12	196	87	329
26	4	2018	Lionel Messi	36	13	170	93	312
27	4	2019	Lionel Messi	25	20	159	88	292
28	4	2020	Lionel Messi	30	9	195	77	311
29	5	2014	Dimitri Payet	7	16	67	129	219
30	5	2015	Zlatan Ibrahimovic	38	13	155	46	252
31	5	2016	Edinson Cavani	35	4	143	25	207
32	5	2017	Florian Thauvin	22	11	129	75	237
33	5	2018	Memphis Depay	10	10	110	111	241
34	5	2019	angel Di Maria	8	14	74	77	173
35	5	2020	Memphis Depay	21	12	110	94	237

Se puede observar que por lo general, los mejores jugadores de la liga se encontraban entre los mejores equipos. Uno que se puede observar bien, que fue el mejor jugador de su liga durante varios años es Lionel Messi. El se encontraba jugando para el Barcelona durante esos años.

7. Obtenga el rendimiento de los equipos en promedio, comparando goles metidos contra la expectativa de goles, determinando qué equipo era quien tenía más expectativa de goles contra quien fue en realidad el que acertó más goles (goals vs expected goals, xgoals) en general, pero también es necesario que lo muestre si dichos equipos jugaron como locales o como extranjeros.

```
WITH TeamPerformance AS (
    SELECT gameID, homeTeamID AS teamID, 'home' AS location, homeGoals AS goals, homeProbability AS expected_goals
  FROM games
  UNION ALL
    SELECT gameID, awayTeamID AS teamID, 'away' AS location, awayGoals AS goals, awayProbability AS expected_goals
  FROM games
),
TeamStats AS (
      SELECT t.teamID, t.name AS team_name, tp.location, AVG(tp.goals) AS average_goals, AVG(tp.expected_goals) AS average_expected_goals
  FROM TeamPerformance tp
```

```
    INNER JOIN teams t ON tp.teamID = t.teamID
    GROUP BY t.teamID, t.name, tp.location
)
SELECT team_name, location, AVG(average_goals) AS average_goals,
AVG(average_expected_goals) AS average_expected_goals, AVG(average_goals -
average_expected_goals) AS average_xgoals
FROM TeamStats
GROUP BY team_name, location
ORDER BY average_xgoals DESC;
```

	team_name character varying (25)	location text	average_goals numeric	average_expected_goals double precision	average_xgoals double precision
1	Bayern Munich	home	3.1428571428571429	0.7378487394957984	2.4050084033613444
2	Barcelona	home	2.9699248120300752	0.7301030075187966	2.239821804511279
3	Paris Saint Germain	home	2.9218750000000000	0.7666406250000005	2.1552343749999996
4	Real Madrid	home	2.5714285714285714	0.675051127819549	1.8963774436090226
5	Manchester City	home	2.6015037593984962	0.7207616541353381	1.880742105263158
6	Borussia Dortmund	home	2.4705882352941176	0.6606235294117646	1.8099647058823531
7	Barcelona	away	2.2781954887218045	0.612257142857143	1.6659383458646615
8	Napoli	home	2.2857142857142857	0.6640939849624059	1.6216203007518797
9	Real Madrid	away	2.1503759398496241	0.546381203007519	1.6039947368421053
10	Juventus	home	2.2556390977443609	0.6746338345864664	1.5810052631578946

	team_name character varying (25)	location text	average_goals numeric	average_expected_goals double precision	average_xgoals double precision
281	Troyes	home	0.7894736842105263 1579	0.299871052631579	0.48960263157894734
282	Toulouse	away	0.7363636363636364	0.2549545454545455	0.48140909090909084
283	Huddersfield	away	0.6315789473684210 5263	0.17539210526315796	0.45618684210526306
284	Nuernberg	away	0.5882352941176470 5882	0.14521176470588232	0.44302352941176476
285	Hull	away	0.6052631578947368 4211	0.1711184210526316	0.43414473684210525
286	Huddersfield	home	0.6842105263157894 7368	0.25396842105263157	0.4302421052631579
287	Sheffield United	away	0.6052631578947368 4211	0.19682368421052632	0.4084394736842105
288	Cordoba	away	0.5263157894736842 1053	0.16020526315789477	0.36611052631578944
289	Middlesbrough	away	0.5263157894736842 1053	0.1629105263157895	0.3634052631578947
290	Cordoba	home	0.6315789473684210 5263	0.3056421052631579	0.32593684210526314
291	Norwich	away	0.5263157894736842 1053	0.20536315789473683	0.3209526315789474
292	Nancy	away	0.4210526315789473 6842	0.1573	0.26375263157894735

8. ¿Cuáles son las características/atributos de los equipos que han sido los líderes de sus ligas en las distintas temporadas? ¿Sus comportamientos son similares?

```
WITH Leaders AS (
   SELECT
      c.leagueID,
      a.name AS TeamName,
      a.teamID,
      c.season,
       SUM(CASE WHEN c.homeTeamID = a.teamID THEN c.homeGoals ELSE c.awayGoals
END) AS GoalsFor,
       SUM(CASE WHEN c.homeTeamID = a.teamID THEN c.awayGoals ELSE c.homeGoals
END) AS GoalsAgainst,
       SUM(CASE WHEN c.homeTeamID = a.teamID THEN c.homeGoals ELSE c.awayGoals
END) -
       SUM(CASE WHEN c.homeTeamID = a.teamID THEN c.awayGoals ELSE c.homeGoals
END) AS GoalDifference,
        RANK() OVER (PARTITION BY c.leagueID, c.season ORDER BY SUM(CASE WHEN
c.homeTeamID = a.teamID THEN c.homeGoals ELSE c.awayGoals END) -
       SUM(CASE WHEN c.homeTeamID = a.teamID THEN c.awayGoals ELSE c.homeGoals
END) DESC) AS Ranking
   FROM teams a
   JOIN games c ON a.teamID = c.homeTeamID OR a.teamID = c.awayTeamID
   GROUP BY c.leagueID, a.name, c.season, a.teamID
)
SELECT DISTINCT
   b.name as League,
   a.TeamName,
   AVG(d.goals) as avg_goals,
         AVG(d.shots) as avg_shots,
         AVG(d.fouls) as avg_fouls,
         AVG(d.yellowcards) as avg_yellowcards,
         AVG(d.redcards) as avg_redcards
FROM Leaders a
JOIN leagues b on a.leagueid = b.leagueid
JOIN teamstats d on a.teamid = d.teamid
where a.Ranking= 1
GROUP BY b.name, a.TeamName, a.season
ORDER BY b.name;
```

	league character varying (20)	teamname character varying (25)	avg_goals numeric	avg_shots numeric	avg_fouls numeric	avg_yellowcards numeric	avg_redcards numeric
1	Bundesliga	Bayern Munich	2.6386554621848739	17.9033613445378151	10.1218487394957983	1.3151260504201681	0.04621848739495798319
2	La Liga	Barcelona	2.6240601503759398	15.4022556390977444	10.2819548872180451	1.9285714285714286	0.06390977443609022556
3	Ligue 1	Monaco	1.7890625000000000	12.7187500000000000	13.1757812500000000	1.9335937500000000	0.14843750000000000000
4	Ligue 1	Paris Saint Germain	2.5176470588235294	15.0431372549019608	11.4823529411764706	1.6509803921568627	0.09803921568627450980
5	Premier League	Manchester City	2.3308270676691729	17.3270676691729323	9.9360902255639098	1.5676691729323308	0.05639097744360902256
6	Premier League	Tottenham	1.8157894736842105	14.6578947368421053	11.0751879699248120	1.7030075187969925	0.05263157894736842105
7	Serie A	Atalanta	1.7406015037593985	15.0300751879699248	14.6503759398496241	2.0977443609022556	0.14285714285714285714
8	Serie A	Inter	1.7819548872180451	15.5789473684210526	13.3308270676691729	2.1353383458646617	0.13157894736842105263
9	Serie A	Juventus	2.0037593984962406	15.8646616541353383	12.9812030075187970	2.0338345864661654	0.09398496240601503759
10	Serie A	Napoli	2.0375939849624060	17.4624060150375940	10.9060150375939850	1.8270676691729323	0.08646616541353383459

Se puede observar que en promedio, los equipos líderes tienen comportamientos similares en términos de goles anotados (Más de 1.5 goles) y tiros al arco (Más de 12 tiros por partido jugado). Así mismo para faltas, se puede ver que tenían un tipo de juego similar con 10 faltas, dos tarjetas amarillas y menos de una roja en promedio por partido.

9. ¿Según la casa de apuesta Beat365 (tome la mejor probabilidad de las 3 medidas), cuales deberían de ser los equipos que tenían la mayor probabilidad de ganar en cada una de las temporadas (seasons)?

```
WITH WinningTeams AS (
   SELECT leagueID, season,
      CASE
         WHEN b365h >= b365d AND b365h >= b365a THEN homeTeamID
         WHEN b365d >= b365h AND b365d >= b365a THEN NULL
         ELSE awayTeamID
      END AS WinningTeamID
   FROM games
   WHERE b365d < b365h OR b365d < b365a
)
SELECT RankedTeams.season, l.name AS LeagueName, t.name AS WinningTeamName, RankedTeams.TotalPredictedWins
FROM (
   SELECT season, leagueID, WinningTeamID,
      COUNT(*) AS TotalPredictedWins,
            ROW_NUMBER() OVER(PARTITION BY season, leagueID ORDER BY COUNT(*) DESC) AS RowNumber
   FROM WinningTeams
   WHERE WinningTeamID IS NOT NULL
   GROUP BY season, leagueID, WinningTeamID
) AS RankedTeams
JOIN leagues l ON RankedTeams.leagueID = l.leagueID
JOIN teams t ON RankedTeams.WinningTeamID = t.teamID
WHERE RowNumber = 1
ORDER BY RankedTeams.leagueID DESC, RankedTeams.season ASC;
```

	season integer	leaguename character varying (20)	winningteamname character varying (25)	totalpredictedwins bigint
1	2014	Ligue 1	Lens	28
2	2015	Ligue 1	Troyes	29
3	2016	Ligue 1	Metz	30
4	2017	Ligue 1	Metz	29
5	2018	Ligue 1	Caen	27
6	2019	Ligue 1	Amiens	19
7	2020	Ligue 1	Dijon	32
8	2014	La Liga	Deportivo La Coruna	29
9	2015	La Liga	Levante	26
10	2016	La Liga	Osasuna	29
11	2017	La Liga	Malaga	25
12	2018	La Liga	SD Huesca	27
13	2019	La Liga	Mallorca	27
14	2020	La Liga	Elche	32

	season integer	leaguename character varying (20)	winningteamname character varying (25)	totalpredictedwins bigint
15	2014	Bundesliga	Paderborn	21
16	2015	Bundesliga	Hannover 96	22
17	2016	Bundesliga	Darmstadt	27
18	2017	Bundesliga	FC Cologne	22
19	2018	Bundesliga	Nuernberg	24
20	2019	Bundesliga	Fortuna Duesseldorf	19
21	2020	Bundesliga	Schalke 04	25
22	2014	Serie A	Cesena	30
23	2015	Serie A	Frosinone	30
24	2016	Serie A	Crotone	29
25	2017	Serie A	Verona	34
26	2018	Serie A	Frosinone	33
27	2019	Serie A	Brescia	29
28	2020	Serie A	Crotone	25
29	2014	Premier League	Burnley	26
30	2015	Premier League	Aston Villa	29
31	2016	Premier League	Hull	29
32	2017	Premier League	Huddersfield	28
33	2018	Premier League	Huddersfield	32
34	2019	Premier League	Newcastle United	27
35	2020	Premier League	West Bromwich Albion	29

10. Obtenga el top 10 de estadísticas de los equipos más limpios en jugar (mejor faltas, menos tarjetas amarillas, menos tarjetas rojas) y también el top 10 de los equipos más sucios

    Top 10 Más Limpios

```
WITH TeamStats AS (
    SELECT
        teamID,
        SUM(fouls) AS total_fouls,
        SUM(yellowCards) AS total_yellow_cards,
        SUM(redCards) AS total_red_cards
    FROM
        teamstats
    GROUP BY
        teamID
)
SELECT
    t.name AS team_name,
    ts.total_fouls,
    ts.total_yellow_cards,
    ts.total_red_cards
FROM
    TeamStats ts
INNER JOIN
    teams t ON ts.teamID = t.teamID
ORDER BY
    ts.total_fouls ASC,
    ts.total_yellow_cards ASC,
    ts.total_red_cards ASC
LIMIT 10;
```

	team_name character varying (25)	total_fouls bigint	total_yellow_cards bigint	total_red_cards bigint
1	Nuernberg	376	59	4
2	Cardiff	384	65	1
3	Arminia Bielefeld	391	51	1
4	Leeds	427	61	1
5	Cadiz	435	80	3
6	Queens Park Rangers	447	75	3
7	Lecce	463	99	5
8	Middlesbrough	478	76	1
9	Cordoba	494	93	9
10	Brescia	494	95	6

Top 10 Más Sucios

```
WITH TeamStats AS (
    SELECT
        teamID,
        SUM(fouls) AS total_fouls,
        SUM(yellowCards) AS total_yellow_cards,
        SUM(redCards) AS total_red_cards
    FROM
        teamstats
    GROUP BY
        teamID
)
SELECT
    t.name AS team_name,
    ts.total_fouls,
    ts.total_yellow_cards,
    ts.total_red_cards
FROM
    TeamStats ts
INNER JOIN
    teams t ON ts.teamID = t.teamID
ORDER BY
    ts.total_fouls DESC,
    ts.total_yellow_cards DESC,
    ts.total_red_cards DESC
LIMIT 10;
```

	team_name character varying (25)	total_fouls bigint	total_yellow_cards bigint	total_red_cards bigint
1	Torino	4131	612	29
2	Genoa	4074	640	47
3	Atalanta	3897	558	38
4	Sevilla	3854	710	26
5	Fiorentina	3757	637	33
6	Getafe	3722	714	34
7	Eibar	3717	625	27
8	Lazio	3705	663	40
9	Sassuolo	3664	636	39
10	AC Milan	3643	596	50

Etapa 3

A continuación, debe plantear sus propias preguntas que le permitan justificar la decisión que tomará acerca de en qué equipo invertirá. Todas sus conclusiones deben estar basadas en el resultado de consultas SQL.

- Mejora de los puntos en todas las temporadas: Con este query, se puede saber si los puntos obtenidos por temporadas ha aumentado o disminuido según el avance del tiempo, con ese conocimiento se puede apostar en si el equipo podrá mejorar o empeorara en la siguiente temporada.

```
WITH TeamTotalPoints AS (
   SELECT
      t.teamID,
      t.name AS TeamName,
      g.season,
        SUM(CASE WHEN ts.result = 'W' THEN 3 WHEN ts.result = 'D' THEN 1 ELSE
0 END) AS SeasonPoints
   FROM teams t
   JOIN games g ON t.teamID = g.homeTeamID OR t.teamID = g.awayTeamID
   JOIN teamstats ts ON t.teamID = ts.teamID AND g.gameID = ts.gameID
   GROUP BY t.teamID, TeamName, g.season
)
SELECT
   TeamName,
   MAX(CASE WHEN season = '2014' THEN SeasonPoints END) AS Points_2014,
   MAX(CASE WHEN season = '2015' THEN SeasonPoints END) AS Points_2015,
   MAX(CASE WHEN season = '2016' THEN SeasonPoints END) AS Points_2016,
```

```
    MAX(CASE WHEN season = '2017' THEN SeasonPoints END) AS Points_2017,
    MAX(CASE WHEN season = '2018' THEN SeasonPoints END) AS Points_2018,
    MAX(CASE WHEN season = '2019' THEN SeasonPoints END) AS Points_2019,
    MAX(CASE WHEN season = '2020' THEN SeasonPoints END) AS Points_2020
FROM TeamTotalPoints
GROUP BY TeamName
ORDER BY SUM(SeasonPoints) desc;
```

	teamname character varying (25)	points_2014 bigint	points_2015 bigint	points_2016 bigint	points_2017 bigint	points_2018 bigint	points_2019 bigint	points_2020 bigint
1	Barcelona	94	91	90	93	87	82	79
2	Juventus	87	91	91	95	90	83	78
3	Paris Saint Germain	83	96	87	93	91	68	82
4	Real Madrid	92	90	93	76	68	87	84
5	Manchester City	79	66	78	100	98	81	86
6	Bayern Munich	79	88	82	84	78	82	78
7	Atletico Madrid	78	88	78	79	76	70	86
8	Napoli	63	82	86	91	79	62	77
9	Liverpool	62	60	76	75	97	99	69
10	Roma	70	80	87	77	66	70	63
11	Chelsea	87	50	93	70	72	66	67
12	Inter	55	67	62	72	69	82	91
13	Manchester United	70	66	69	81	66	66	74
14	Tottenham	64	70	86	77	71	59	62
15	Arsenal	75	71	75	63	70	56	61
16	Lyon	75	65	64	78	72	40	76
17	Lazio	69	54	70	72	59	78	68
18	Monaco	71	65	95	80	36	40	78
19	Sevilla	76	52	72	58	59	70	77
20	Borussia Dortmund	46	78	64	55	76	69	64
21	AC Milan	52	57	63	64	68	66	79
22	Atalanta	37	45	72	60	69	78	78

Total rows: 146 of 146 Query complete 00:00:00.066

- Mejora en goles de todas las temporadas: Este query es similar al anterior, busca ver la mejora del equipo o si empeora, conociendo esto, se podrá apostar si el equipo mejorará en términos de goles o empeorará para la siguiente temporada.

```
WITH TeamGoals AS (
    SELECT
        t.teamID,
        t.name AS TeamName,
        g.season,
        COALESCE(SUM(CASE WHEN t.teamID = g.homeTeamID THEN g.homeGoals
ELSE g.awayGoals END), 0) AS GoalsScored
    FROM teams t
    LEFT JOIN games g ON t.teamID = g.homeTeamID OR t.teamID = g.awayTeamID
    GROUP BY t.teamID, TeamName, g.season
)
SELECT
```

```
    TeamName,
    COALESCE(SUM(CASE WHEN season = '2014' THEN GoalsScored END), 0) AS
GoalsScoredin2014,
    COALESCE(SUM(CASE WHEN season = '2015' THEN GoalsScored END), 0) AS
GoalsScoredin2015,
    COALESCE(SUM(CASE WHEN season = '2016' THEN GoalsScored END), 0) AS
GoalsScoredin2016,
    COALESCE(SUM(CASE WHEN season = '2017' THEN GoalsScored END), 0) AS
GoalsScoredin2017,
    COALESCE(SUM(CASE WHEN season = '2018' THEN GoalsScored END), 0) AS
GoalsScoredin2018,
    COALESCE(SUM(CASE WHEN season = '2019' THEN GoalsScored END), 0) AS
GoalsScoredin2019,
    COALESCE(SUM(CASE WHEN season = '2020' THEN GoalsScored END), 0) AS
GoalsScoredin2020,
   COALESCE(SUM(GoalsScored), 0) AS TotalGoals
FROM TeamGoals
GROUP BY TeamName
ORDER BY TotalGoals DESC;
```

	teamname character varying (25)	goalsscoredin2014 numeric	goalsscoredin2015 numeric	goalsscoredin2016 numeric	goalsscoredin2017 numeric	goalsscoredin2018 numeric	goalsscoredin2019 numeric	goalsscoredin2020 numeric	totalgoals numeric
1	Barcelona	110	112	116	99	90	86	85	698
2	Paris Saint Germain	83	102	83	108	105	75	86	642
3	Real Madrid	118	110	106	94	63	70	67	628
4	Bayern Munich	80	80	89	92	88	100	99	628
5	Manchester City	83	71	80	106	95	102	83	620
6	Napoli	70	80	94	77	74	61	86	542
7	Juventus	72	75	77	86	70	76	77	533
8	Liverpool	52	63	78	84	89	85	68	519
9	Borussia Dortmund	47	82	72	64	81	84	75	505
10	Roma	54	83	90	61	66	77	68	499
11	Lyon	72	67	77	87	70	42	81	496
12	Tottenham	58	69	86	74	67	61	68	483
13	Lazio	71	52	74	89	56	79	61	482
14	Inter	59	50	72	66	57	81	89	474
15	Arsenal	71	65	77	74	73	56	55	471
16	Chelsea	73	59	85	62	63	69	58	469
17	Atalanta	38	41	62	57	77	98	90	463
18	Monaco	51	57	107	85	38	44	76	458
19	Manchester United	62	49	54	68	65	66	73	437
20	Atletico Madrid	67	63	70	58	55	51	67	431
21	Marseille	76	48	57	80	60	41	54	416

Total rows: 146 of 146 | Query complete 00:00:00.235 | Ln 216, Col 1

- Mejor rendimiento por equipo dependiendo el lugar de juego (Home o Away): Este query nos ayuda a ver que equipos rinden mejor jugando como local y que equipos rinden mejor jugando como visitante, lo que nos ayudará a apostar al mejor equipo dependiendo en qué situación se encuentra. Para facilidad de lectura, se pusieron los mejores 5 equipos.

```
WITH TeamPerformance AS (
    SELECT
        t.name,
        SUM(CASE WHEN g.homeTeamID = t.teamID THEN g.homeGoals ELSE g.awayGoals END) AS goals_scored,
        SUM(CASE WHEN g.homeTeamID = t.teamID THEN g.awayGoals ELSE g.homeGoals END) AS goals_conceded,
        CASE WHEN g.homeTeamID = t.teamID THEN 'Home' ELSE 'Away' END AS location,
            ROW_NUMBER() OVER(PARTITION BY CASE WHEN g.homeTeamID = t.teamID THEN 'Home' ELSE 'Away' END ORDER BY SUM(CASE WHEN g.homeTeamID = t.teamID THEN g.homeGoals ELSE g.awayGoals END) DESC) AS ranking
    FROM
        teams t
    JOIN
        games g ON t.teamID = g.homeTeamID OR t.teamID = g.awayTeamID
    GROUP BY
        t.name, location
)
SELECT
    location,
    name,
    SUM(goals_scored) AS total_goals_scored,
    SUM(goals_conceded) AS total_goals_conceded,
    SUM(goals_scored) - SUM(goals_conceded) AS goal_difference
FROM
    TeamPerformance
WHERE
    ranking <= 5
GROUP BY
    location, name
ORDER BY
    location, goal_difference DESC
```

	location text	name character varying (25)	total_goals_scored numeric	total_goals_conceded numeric	goal_difference numeric
1	Away	Barcelona	303	122	181
2	Away	Paris Saint Germain	268	115	153
3	Away	Bayern Munich	254	104	150
4	Away	Manchester City	274	127	147
5	Away	Real Madrid	286	146	140
6	Home	Paris Saint Germain	374	83	291
7	Home	Barcelona	395	106	289
8	Home	Bayern Munich	374	89	285
9	Home	Manchester City	346	108	238
10	Home	Real Madrid	342	110	232

- Promedio de Tarjetas por cada Jugador: Este query nos ayuda a ver qué jugadores son los más propensos a cometer faltas en los partidos y que tan probables son de recibir una tarjeta amarilla o roja a lo largo de este. Están los casos donde, por faltas, el equipo rival recibe un penalti, lo que puede aumentar la probabilidad de que un equipo en particular gane. (Para comodidad, solo se tomaron en cuenta los jugadores que tienen más de 50 juegos)

```
SELECT
    p.name AS player_name,
    COUNT(DISTINCT a.gameID) AS total_games_played,
    SUM(a.yellowcard) AS total_yellow,
    SUM(a.redcard) AS total_red,
      (SUM(a.yellowcard) + SUM(a.redcard)) / CAST(COUNT(DISTINCT a.gameID)
AS FLOAT) AS average_cards_per_game
FROM
    appearances a
INNER JOIN
    players p ON a.playerID = p.playerID
GROUP BY
    p.name
HAVING
    COUNT(DISTINCT a.gameID) > 50
ORDER BY
    average_cards_per_game DESC;
```

	player_name character varying (150)	total_games_played bigint	total_yellow bigint	total_red bigint	average_cards_per_game double precision
1	Enzo Perez	61	31	1	0.5245901639344263
2	Raul Baena	52	23	2	0.4807692307692308
3	Mubarak Wakaso	97	43	2	0.4639175257731959
4	Francesco Cassata	61	23	4	0.4426229508196721
5	Recio	163	69	1	0.4294478527607362
6	Jefferson Lerma	122	50	1	0.4180327868852459
7	Peter Niemeyer	63	25	1	0.4126984126984127
8	Pasquale Schiattarella	88	35	1	0.4090909090909091
9	Cristian Romero	88	33	3	0.4090909090909091
10	Victor Sanchez	168	65	3	0.40476190476190477
11	Lillo	70	26	2	0.4
12	Daniel Carvajal	168	66	1	0.39880952380952384
13	Chema Rodriguez	58	21	2	0.39655172413793105
14	Ruben Perez	169	66	1	0.39644970414201186
15	Alexis	96	36	2	0.3958333333333333
16	Cala	77	29	1	0.38961038961038963
17	Lee Cattermole	67	26	0	0.3880597014925373
18	Mauricio Pinilla	62	21	3	0.3870967741935484

En base a todos los querys que se realizaron, y todos los datos que se obtuvieron a lo largo de todo el proyecto. La respuesta a la pregunta: ¿a qué equipo le apostaría usted? sería sin duda al Bayern Munich. Esto en base a querys específicos de la parte 2 y 3 los cuales son los siguientes:

- Jugadores con mejores atributos de cada temporada y liga,donde Lewandowski (Jugador del Bayern Munich) tuvo los mejores atributos para su liga durante temporadas consecutivas.
- El comparativo de las probabilidades de las diferentes casas de apuestas, salió como el Bayern Munich como el equipo con mejores probabilidades para ganar.
- Cual es mejor equipo según todas las apuestas, el Bayern Munich salió como 3er lugar en la comparación de todos los años y todas las ligas, solo por debajo del Barcelona del 2015 y 2016. (Un equipo que en recientes años, está en decadencia, demostrada por los los querys de mejora de puntos y goles por temporada)
- Se posiciona como 3er lugar en rendimiento jugando tanto como local o visitante, demostrando su consistencia al jugar.
- En la mejora de puntos a través de los años, se puede observar que a lo largo del tiempo, el Bayern Munich se mantiene consistente.
- En la mejora de goles a través de los años, se puede observar que el equipo va en mejora, llegando hasta los 100 goles en 2019.

- Al obtener el rendimiento de los equipos en promedio, comparando goles metidos contra la expectativa de goles, el Bayern Munich sale en 1er puesto con la mayor diferencia de goles a favor de ellos.