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Our business domain is Football Player Performance Analytics, focusing on analyzing the performance metrics of footballers. This domain is crucial for a variety of stakeholders, including football clubs, scouts, analysts and fans.

Our assumptions are that we are focusing on the top 10 players in the 2022/2023 season in the Ballon d'or plebiscite.

Graph database is designed to model and analyze the relationships between football players, competitions (leagues and cups), and awards (e.g., the Ballon d'Or) for the 2022/2023 season.

In ours create statements we include

Detailed statistics of top 10 players in season 2022/2023:

| Player | Club | Nationality | Number of goals | Number of assists | Date of birth | Official weight | Official height |
|-----------------|---------------------|-------------|-----------------|-------------------|-------------------|-----------------|-----------------|
| Lionel Messi | Inter Miami | Argentina | 42 | 26 | June 24, 1987 | 67kg | 1.70m |
| Erling Haaland | Manchester City | Norway | 56 | 9 | July 21, 2000 | 88kg | 1.94m |
| Kylian Mbappé | Paris Saint-Germain | France | 55 | 14 | December 20, 1998 | 73kg | 1.78m |
| Kevin De Bruyne | Manchester City | Belgium | 10 | 32 | June 28, 1991 | 70kg | 1.81m |
| Rodri | Manchester City | Spain | 4 | 7 | June 22, 1996 | 82kg | 1.91m |
| Vinícius Júnior | Real Madrid | Brazil | 25 | 26 | July 12, 2000 | 73kg | 1.76m |

| | | | | | | | |
|----------------|-----------------|-----------|----|---|-------------------|------|-------|
| Julián Álvarez | Manchester City | Argentina | 23 | 6 | January 31, 2000 | 71kg | 1.70m |
| Victor Osimhen | SSC Napoli | Nigeria | 33 | 5 | December 29, 1998 | 78kg | 1.86m |
| Bernardo Silva | Manchester City | Portugal | 10 | 8 | August 10, 1994 | 64kg | 1.73m |
| Luka Modric | Real Madrid | Croatia | 6 | 6 | September 9, 1985 | 66kg | 1.72m |

Also, we insert competitions modeled as Independent Nodes

Each competition, such as a League, National Cup, Champions League, and World Cup, is represented as a node with attributes like name and scope.

League victory

National cup victory

World cup victory

Champions League victory

Ballon d'or

Relationships:

The graph uses relationships between nodes to capture the connections between players and competitions, specifically to indicate the number of goals, assists.

Winning the league:

Lionel Messi (France league, 16 goals and 16 assists)

Erling Haaland (England league, 36 goals and 8 assists)

Kylian Mbappe (France league, 29 goals and 6 assists)

Kevin De Bruyne (England league, 7 goals and 18 assists)

Rodri (England league, 2 goals and 6 assists)

Julian Alvarez (England league, 9 goals and 1 assists)

Victor Osimhen (Italy league, 26 goals and 5 assists)

Bernardo Silva (England league, 4 goals and 6 assists)

Winning the national cup:

Erling Haaland (England cup, 3 goals and 0 assists)

Kevin De Bruyne (England cup, 1 goal and 4 assists)

Rodri (England cup, 0 goals and 0 assists)

Vinicius Jr (Spain cup, 3 goals and 4 assists)

Julian Alvarez (England cup, 3 goals and 2 assists)

Bernardo Silva (England cup, 0 goals and 1 assists)

Luka Modric (Spain cup, 0 goals and 2 assists)

Winning the Champions league:

Erling Haaland (12 goals and 1 assist)

Kevin De Bruyne (2 goals and 7 assists)

Rodri (2 goals and 0 assists)

Bernardo Silva (3 goals and 1 assists)

Julian Alvarez (3 goals and 2 assist)

Winning the World Cup:

Lionel Messi (7 goals and 3 assists)

Julian Alvarez (4 goals and 0 assists)

Ranked in the ballon d'or:

Lionel Messi (1st place, 452 points)

Erling Haaland (2nd place, 357 points)

Kylian Mbappe (3rd place, 270 points)

Kevin De Bruyne (4th place, 100 points)

Rodri (5th place, 57 points)

Vinicius junior (6th place, 49 points)

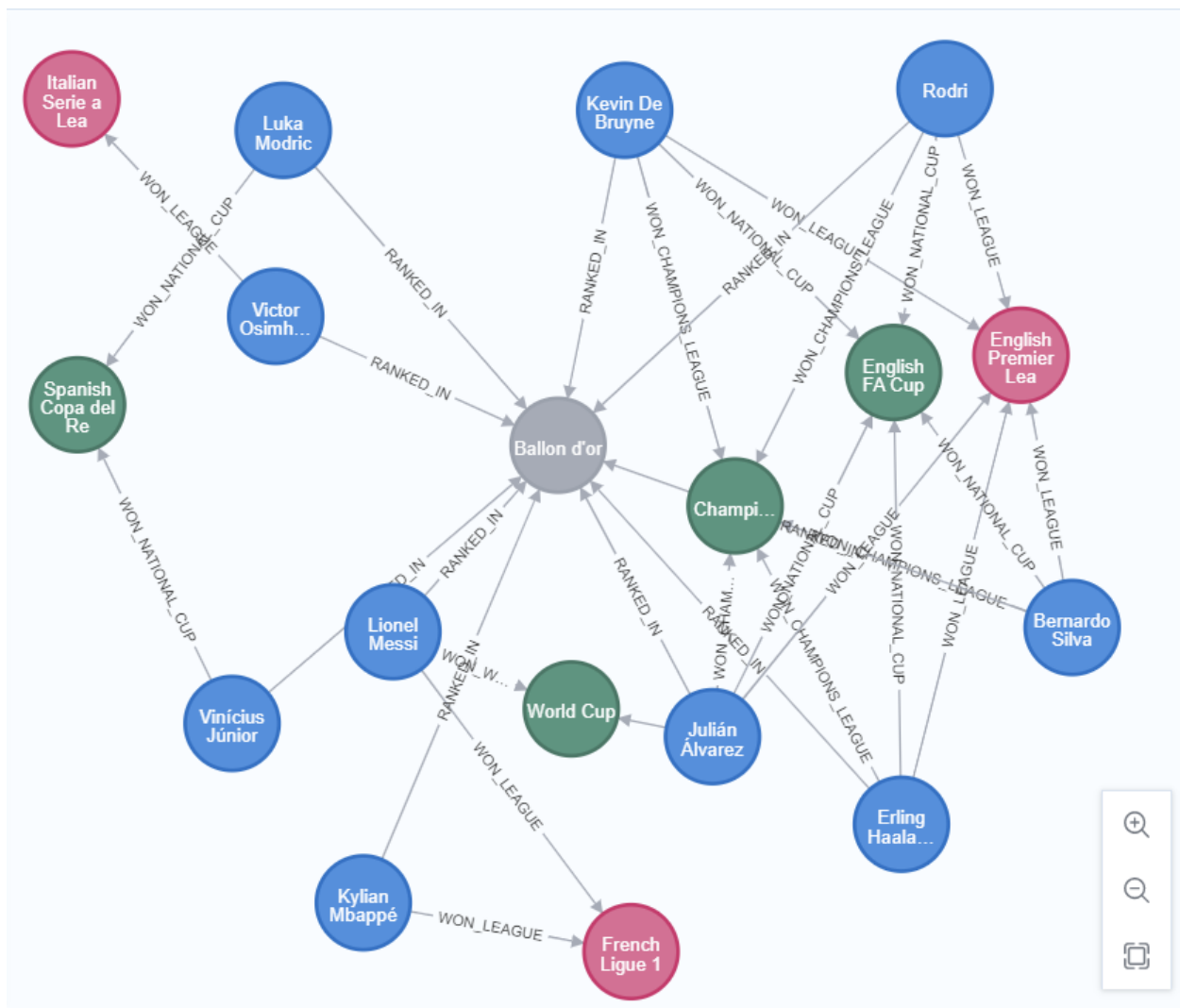
Julian Alvarez (7th place, 28 points)

Victor Osimhen (8th place, 24 points)

Bernardo Silva (9th place, 20 points)

Luka Modric (10th place, 19 points)

Final version of a graph:



Queries

1. Top 5 Players with the Most Goals in the Season

MATCH (n:player)

RETURN n.fullname AS player_with_the_most_goals, n.goals AS goals

ORDER BY n.goals DESC

LIMIT 1;

This query returns the player who scored the most goals across all competitions in the 2022/2023 season.

2. Average Goals Scored in the Season

MATCH (n:player)

RETURN avg(n.goals) AS average_number_of_goals_in_the_whole_season;

This query calculates the average number of goals scored by all players in the 2022/2023 season.

3. Top Scorer in the World Cup

```
MATCH (p:player)-[r:WON_WORLD_CUP]->(c:cup { name: 'World Cup' })
RETURN p.fullname AS name, r.number_of_goals AS goals
ORDER BY r.number_of_goals DESC
LIMIT 1;
```

This query identifies the player who scored the most goals in the last World Cup.

4. Three Oldest Players

```
MATCH (n:player)
RETURN n.fullname AS fullname, duration.between(n.date_of_birth, date()).years AS age
ORDER BY age DESC
LIMIT 3;
```

This query lists the three oldest players in the database, calculating their age based on their date of birth.

5. Average Player Height

```
MATCH (n:player)
RETURN avg(n.official_height) AS average_height_of_the_players;
```

This query calculates the average height of all players in the database.

6. Average Assists in Champions League

```
MATCH (p:player)-[r:WON_CHAMPIONS_LEAGUE]->(c:cup { name: 'Champions League' })
RETURN avg(r.number_of_assists) AS avg_assists;
```

This query determines the average number of assists made by players who won the Champions League.

7. Top 3 Players by Combined Goals and Assists

```
MATCH (p:player)
OPTIONAL MATCH (p)-[r]->(c)
WHERE type(r) IN ['WON_LEAGUE', 'WON_NATIONAL_CUP', 'WON_CHAMPIONS_LEAGUE',
'WON_WORLD_CUP']
WITH p,
    sum(r.number_of_goals) + sum(r.number_of_assists) AS total_contributions,
    sum(r.number_of_goals) AS total_goals,
    sum(r.number_of_assists) AS total_assists
RETURN p.fullname, total_contributions, total_goals, total_assists
ORDER BY total_contributions DESC
LIMIT 3
```

This query finds the top 3 players with the highest combined number of goals and assists across all competitions (league, national cup, Champions League, and World Cup).