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CS5200

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Proposal

My project will be centered around tracking professional players in the Counter-Strike 2 video game (CS2), specifically within the top-level esports scene. This will be a relational database that models CS2 tournament statistics and results, matches, teams, and players.

The database will track the following:

Teams

- team_id (PK)
- team_name
- region

Players

- player_id (PK)
- player_name
- country
- team_id (FK -> Teams)

Tournaments

- tournament_id (PK)
- name
- organizer
- prize_pool
- start_date
- end_date
- location

Maps

- map_id (PK)
- map_name

Matches

- match_id (PK)
- tournament_id (FK -> tournaments)
- team1_id (FK -> teams)
- team2_id (FK -> teams)
- winner_team_id (FK -> teams)
- map_id (FK -> maps)
- match_date

Tournament_results

- result_id (PK)
- tournament_id (FK -> tournaments)
- team_id (FK -> teams)
- placement
- earnings

SQL vs NoSQL storage:

I will use a SQL relational database, PostgreSQL. The data I am utilizing fits into a relational model with entities and FK relationships. A relational approach to this project makes data integrity enforcement easier (for example, each tournament is guaranteed to have a match associated with it), and I will be using aggregations and joins across several tables for this. Since the data is highly structured, NoSQL storage will not be required.

Software, Apps, Languages, Libraries and hardware that will be used to develop the

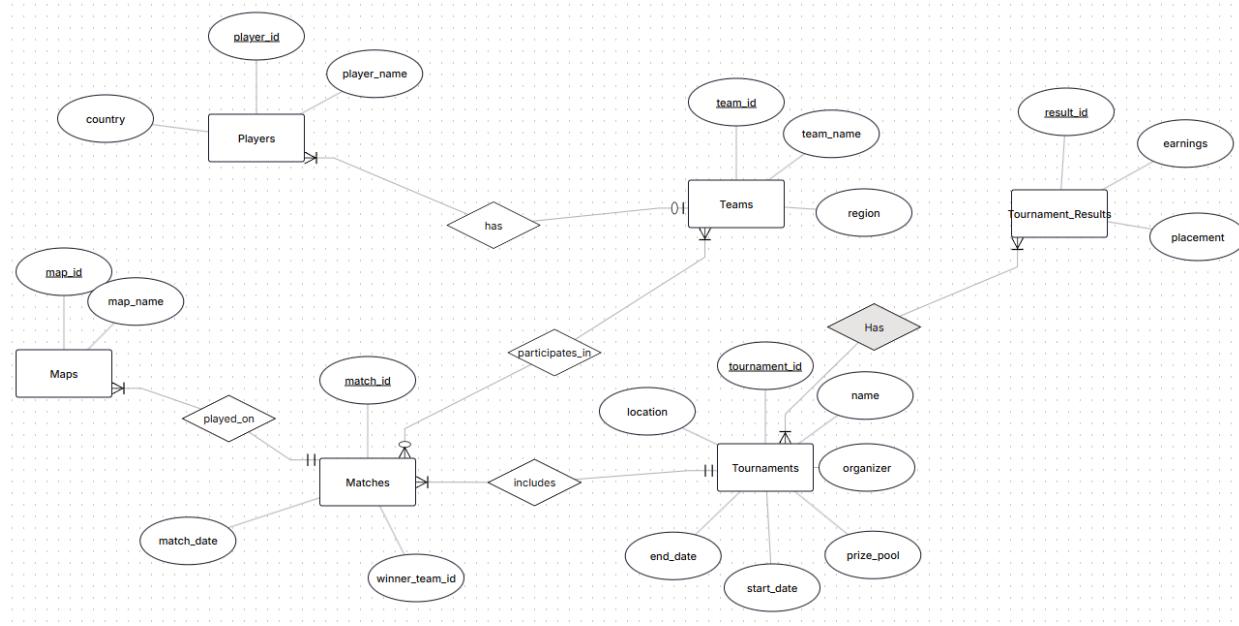
Project:

I will be using PostgreSQL DB on my machine. DBeaver will be used to design SQL schema, run queries, and manage data however needed. I will be using Python for the front end interface acting as a DBMS to interact with the DB itself, and SQL for direct interactions with the database. From my research so far, I know I'll need to use psycopg2 to connect Python with PostgreSQL but other libraries may be required down the line. Hardware-wise, I'll be using my windows 10 desktop to complete this work. My choice of IDE is VSCode, and ERDPlus to create the diagrams. The app will run on both mac and windows as python and dbeaver are cross-platform.

I am interested in this project as I am a long-time player of the counter-strike series, and am very interested in the pro scene. I watch the tournaments for fun and stay up to date on what players

are playing on what teams, and what teams are doing well. I think this database will only extend my understanding of the CS2 professional scene furthermore.

ER Diagram:



Brief step-by-step user interaction of application:

1. User runs UI which connects to the database automatically
2. User can choose any of the following actions:
 - a. View teams (lists teams, regions, and team rosters)
 - b. View players (search by player name and see their team, perhaps some sorting/filter options here)
 - c. View tournaments (browse from the last 10 years of counter-strike tournaments, see tournament organizers, prize pools, locations, etc.)
 - d. View matches (choose a tournament and see the matches played within that tournament, and view teams, winners, maps, etc.)
 - e. View tournament results (see how each team placed in a certain tournament and their earnings for that tournament)
3. On any menu, the user can click a button that takes them back to the main menu
4. Exit button available on top right/left (depending on mac/windows OS)