Basics of database systems

Project – Database design

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1. Definition

Golf professional database

In project ‘GolfDB’ database is developed to keep track of the top golf professionals in the world, their support personnel including caddies and coaches, sponsors, tour wins, world ranking positions as well as the events they have participated in and points they have gained from those events. This database can be used by active golf fans that want to know the most specific information about the top players.

Since this database is meant for true fans the queries that are going to be implemented are more niche than usually, still making sure that all the tables are utilized somehow. The queries mentioned are going to be the following: (1) List all the golf pros and their tour wins. (2) List all the caddies that have ages that are known. (3) List the players with at least 4 (easily modifiable) sponsors, the sponsors’ names and the caddies of the players. (4) Show players with more than 15 (again modifiable) total wins and their world rank in order. (5) Show averages of the world ranking table statistics.

2 Modeling

2.1 Data model

Figure 1 (next page) shows the data of the database in question. There are six primary entities in the model. Due to the two N:M relationships, there are two interim relations (Coached_by, Sponsored_by). Other relationships between entities are one-to-one (Golf_pros to Caddies, World_ranking and Tour_wins).

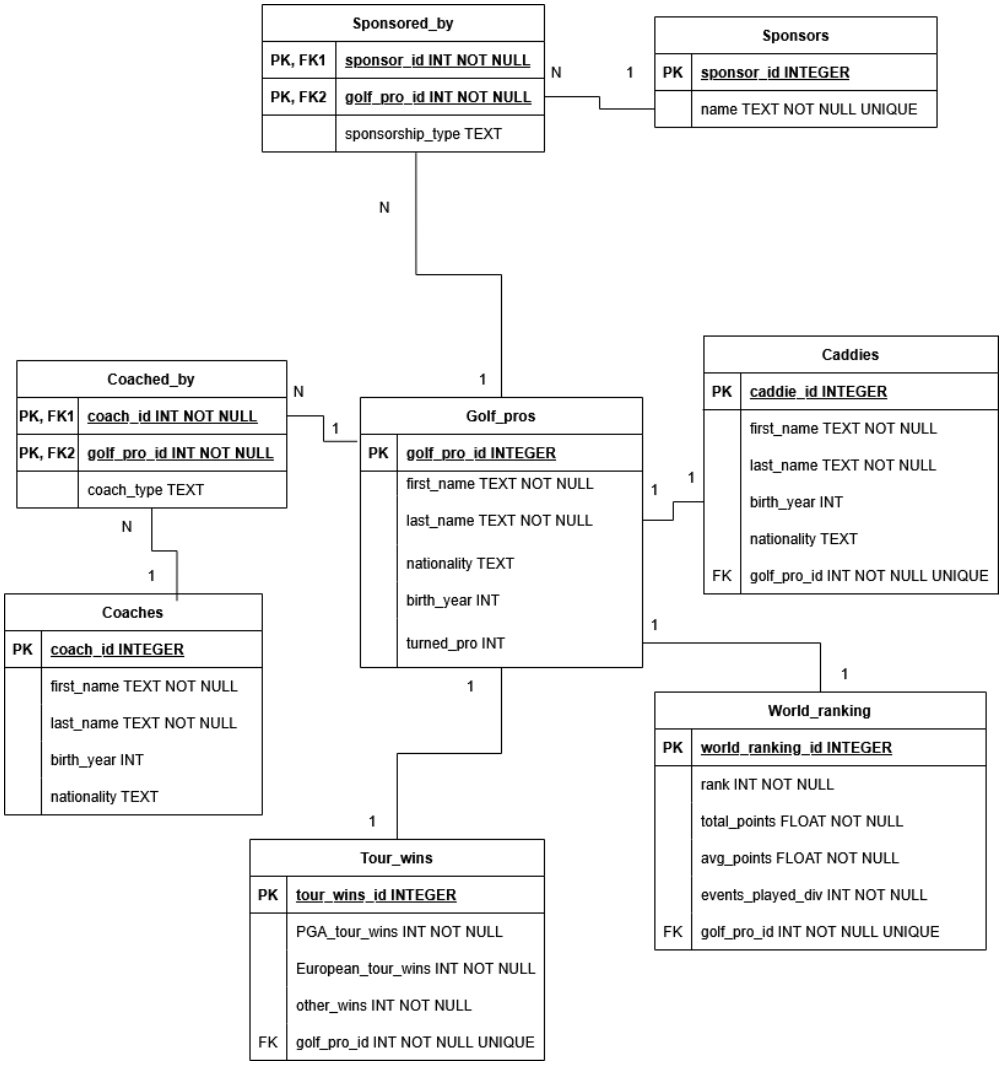

Figure 1: Data model

3. Database implementation

During implementation, following constraints are created for the relationships:

- **Golf_pros**:
  - Attribute first_name cannot be null
  - Attribute last_name cannot be null
- **Caddies**:
  - Foreign key reference to Golf_pros, cannot be null
    - ON DELETE CASCADE
    - UNIQUE
  - Attribute first_name cannot be null
  - Attribute last_name cannot be null
- **Tour_wins**:
  - No attributes can be null
  - Foreign key reference to Golf_pros, cannot be null
    - ON DELETE CASCADE
    - UNIQUE
- **Sponsors**:
  - Name cannot be null and is UNIQUE
- **World_ranking**:
  - Foreign key references to Golf_pros, cannot be null
    - ON DELETE CASCADE
    - UNIQUE
  - No attributes can be null
- **Coaches**:
  - Attribute first_name cannot be null
  - Attribute last_name cannot be null
- **Sponsored_by**:
  - Composite primary key made of two foreign keys (sponsor_id, golf_pro_id)
    - Neither FK cannot be null
    - ON UPDATE CASCADE
    - ON DELETE RESTRICT
- **Coached_by**:

- Composite primary key made of two foreign keys (coach_id, golf_pro_id)
  - Neither FK cannot be null
  - ON UPDATE CASCADE
  - ON DELETE RESTRICT

4. Discussion

This is my first own database project and the process of making it was very educational. I can guarantee that this database is nowhere near the perfect model, but everyone must start somewhere.

One thing that surprised me was how little information is available about caddies' ages, keeping in mind that they caddy for the best players. Most of the data used in this project is data I tried my best to search for while some of it is dummy data, which means it's good for demonstration purposes, but for example it doesn't have all the sponsors for the players used in the inserts.