

PESU Sports Database

1. Introduction

The purpose of this database is to manage and organize tournaments, matches, teams, players, and venues for an engineering university's sports events. The database tracks information about participating teams and players, matches conducted, venues where they are held, and the outcome of each match. The design includes several entities with relationships, defined by cardinalities, to ensure data integrity and efficient management.

2. Entities and Attributes

TOURNAMENT: This entity stores information about the tournaments held, including their ID, name, date range, and the venue where they take place.

Attributes:

tournament_id (Primary Key)
tournament_name
start_date
end_date
venue_id (Foreign Key)
participating_university_teams
participating_outside_teams

TEAM: This entity stores details of teams participating in the tournaments, including their ID, location, name, and coach details.

Attributes:

team_id (Primary Key)
team_location
team_name
coach_name
university_department

PLAYER: The PLAYER entity holds information about the players, including which team they belong to and details like their position, age, and student ID.

Attributes:

player_id (Primary Key)
team_id (Foreign Key)
player_name
student_id
player_position
player_age (Derived attribute from player_dob)

player_year
player_dob

VENUE: This entity keeps track of the venues where tournaments and matches are held.

Attributes:

venue_id (Primary Key)
venue_name
location

MATCH: This entity captures information about individual matches, including the university team playing, the opponent, the venue, and the result.

Attributes:

match_id (Primary Key)
university_team_id (Foreign Key)
opposing_team_name
match_date
venue_id (Foreign Key)
match_result

3. Relationships and Cardinality

TOURNAMENT includes MATCH (1:N)

A single tournament includes multiple matches, but each match belongs to only one tournament.

TOURNAMENT includes TEAM (M:N)

A tournament can have many teams participating, and the same team can participate in multiple tournaments.

TOURNAMENT held at VENUE (N:1)

Many tournaments can be held at the same venue, but each tournament is associated with only one venue.

TEAM has PLAYER (1:N)

A team consists of multiple players, but each player belongs to only one team.

TEAM participates in MATCH (1:N)

A team can participate in multiple matches, but a match involves only one university team (the opposing team is treated as an outside entity).

MATCH played at VENUE (1:N)

Each match is played at a single venue, but a venue can host multiple matches.

4. Total Participation

TEAM – MATCH:

Every team participates in at least one match, which is why this is a mandatory participation relationship.

MATCH – VENUE:

Every match is played at a venue, which means all instances of a match must have a venue.

TOURNAMENT – VENUE:

Every tournament must have a venue where it is held, so this relationship also demonstrates total participation.

5. Derived Attributes

player_age: The `player_age` attribute is a derived attribute calculated from `player_dob`. It is not stored directly in the database but can be calculated when needed.

Example:

`player_age = CURRENT_DATE - player_dob`

6. ER Diagram Explanation

The ER diagram consists of five main entities: Tournament, Team, Player, Venue, and Match, each represented by rectangles. Attributes, such as `tournament_name`, `team_name`, and `player_dob`, are displayed as ovals connected to their respective entities. Relationships between entities, such as "includes," "has," and "played at," are illustrated using diamonds, with lines connecting the relevant entities. These relationships specify cardinality, indicating whether they are one-to-many (1:N) or many-to-many (M:N). Primary keys within the entities are typically underlined to denote their unique identification role within the database. The diagram highlights the connections between these entities, such as how a tournament can have multiple matches and teams, and how matches are played at specific venues. The relationships are labeled to indicate whether they are one-to-many (1:N) or many-to-many (M:N).

7. Conclusion

This sports database design ensures proper management of tournament and match data, tracking of players and teams, and clear association of each match with a venue. The ER diagram and relationships ensure efficient organization and retrieval of data, supporting future expansion and analysis of sports events.

Steps to convert ER diagram into a relational schema

- Mapping of strong entity sets
- Mapping of weak entity sets
- Mapping of strong entity sets with complex attributes
- Compound attributes
- Derived attributes
- Multivalued attributes
- Mapping of relational sets
- 1:1 or one-to-one
- 1:N or one-to-many or many-to-one
- M:N or many-to-many
- N-ary relations

TEAM NO -17

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Relational Schema for Sports DataBase

Team_tbl

<u>team_id</u>	team_name	coach_name	university_dept	team_location	match_id
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Player_tbl

<u>player_id</u>	team_id	player_name	student_id	player_position	player_year	player_age	player_DOB
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Match_tbl

<u>match_id</u>	university_team_id	opposing_team_name	match_date	venue_id	match_result
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Tournment_tbl

<u>tournment_id</u>	university_teams	outside_teams	tournment_name	start_date	end_date	venue_id	match_id
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Venue_id

<u>venue_id</u>	venue_name	venue_location
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PESU SPORTS DATABASE – RELATIONAL SCHEMA

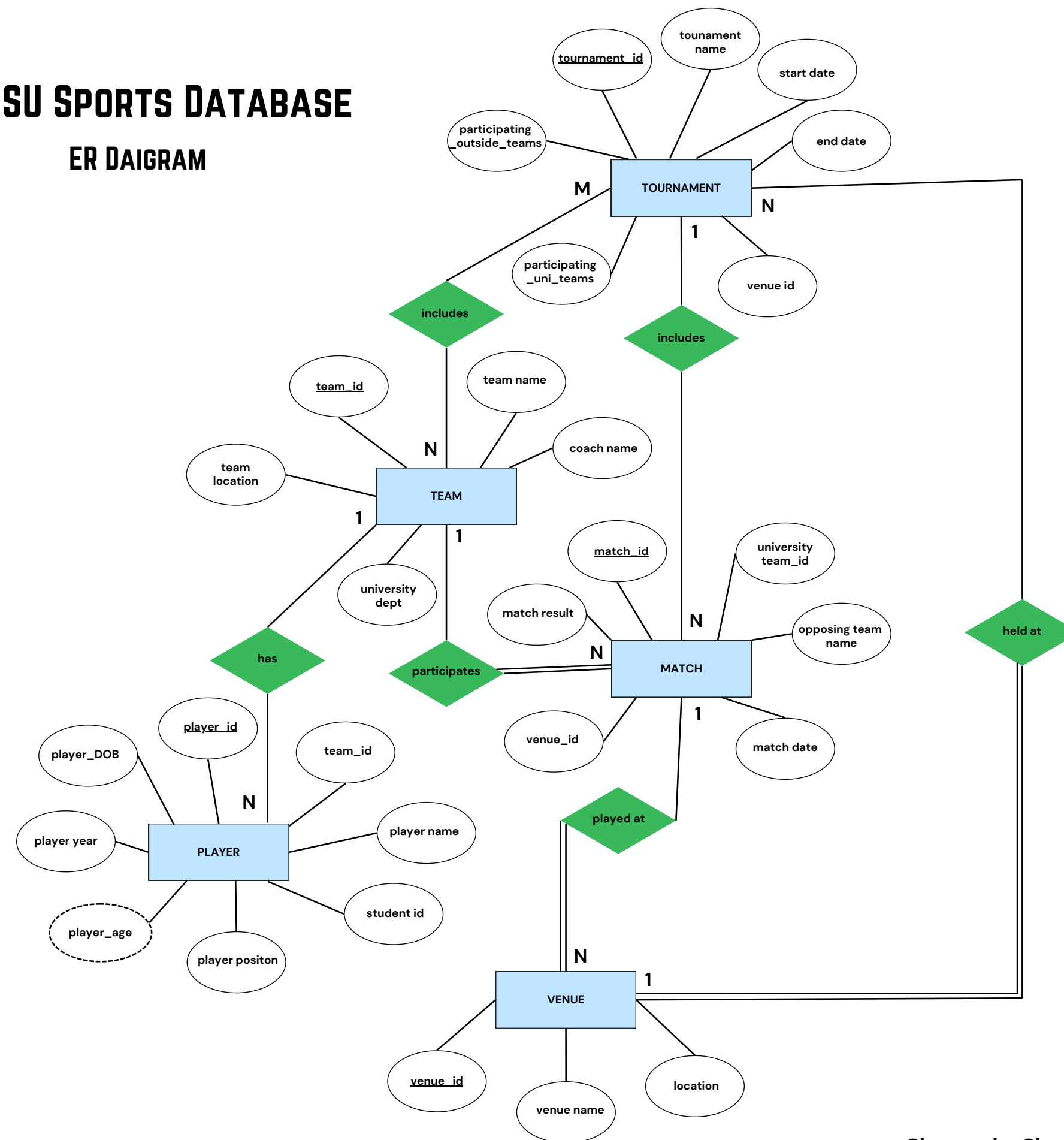
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PESU SPORTS DATABASE

ER DAIGRAM



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