CurveBall Consultants

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Mission Statement: *"To elevate the performance of Maryland Softball using Analytics."*
Objectives:

- Procure Maryland Softball game data from 1999 to 2022.
- Build a database for analyzing softball statistics.
- Setting up SQL queries to analyze dataset:
    - To find the top five teams against whom Maryland Softball won the most matches in the given range of years.
    - To find the top five teams against whom Maryland Softball lost the most matches in the given range of years.
    - To find the location that has hosted the most matches in the given range of years.
    - To find the all-time win percentage for each opponent against whom more than 5 matches have been played by Maryland.
    - To find Maryland's win percentage at home across all years.
- Leveraging data visualization in Tableau to provide meaningful insights into team performance.

Business Description and Processes:
Our company specializes in providing comprehensive sports management and event organization services. We take pride in our ability to streamline the process of coordinating teams, matches, and locations while ensuring clear and efficient communication with a focus on results.
Key Features:

- Team Management: We offer a robust system for managing team details, where each opponent team that competes with UMD Softball is assigned a unique Opponent Name. This ensures clarity and easy identification for both players and spectators.
    - Each team has a unique Opponent ID and Opponent Name
- Match Coordination: Our platform excels at coordinating matches, assigning each one a unique Match ID. We also keep track of essential match details, including date, day, time, and location. This information is crucial for UMD Softball and fans to stay updated and engaged.
    - Each match has a Match Date, Match time, and Match result.
    - Retrieving date-day, and time for match details above.
    - Analyzing the result for each match played by the UMD Softball team.
- Location Services: Our database includes an extensive list of locations, each associated with a unique Location ID. We provide details on location types, city names, and states to make sure matches happen at the right place with convenience and accuracy.
    - Each location has a unique Location ID, location type, city name, and state.
    - Sorting location details mentioned above.
- Tournament Tracking: We understand the importance of keeping track of performance in a given tournament.
    - Each tournament has a Tournament ID and Tournament Name.
    - Cleaning and adding missing values for the tournament details mentioned above.

Business Transactions:

- What are the top five teams against whom Maryland Softball won the most matches in the given range of years?
- What are the top five teams against whom Maryland Softball lost the most matches in the given range of years?
- Which location has hosted the most matches in the given range of years?
- What is the all-time win percentage for each opponent against whom more than 5 matches have been played?
- What is Maryland's win percentage at home across all years?

ER Schema:

Entities, Attributes and Primary Keys:

Opponent (**oppId**, oppName)

Tournament (**trnId**, trnName)

Location (**locId**, locName, locState)

Relationships, Attributes, Degrees, Participating Entities and Constraints

Match (mchDate, mchTime, mchType, mchResult, -=winLoss, -runTerps, -runOpponent): quaternary relationship

1 Opponent and 1 Match and 1 Tournament to 1 Location.

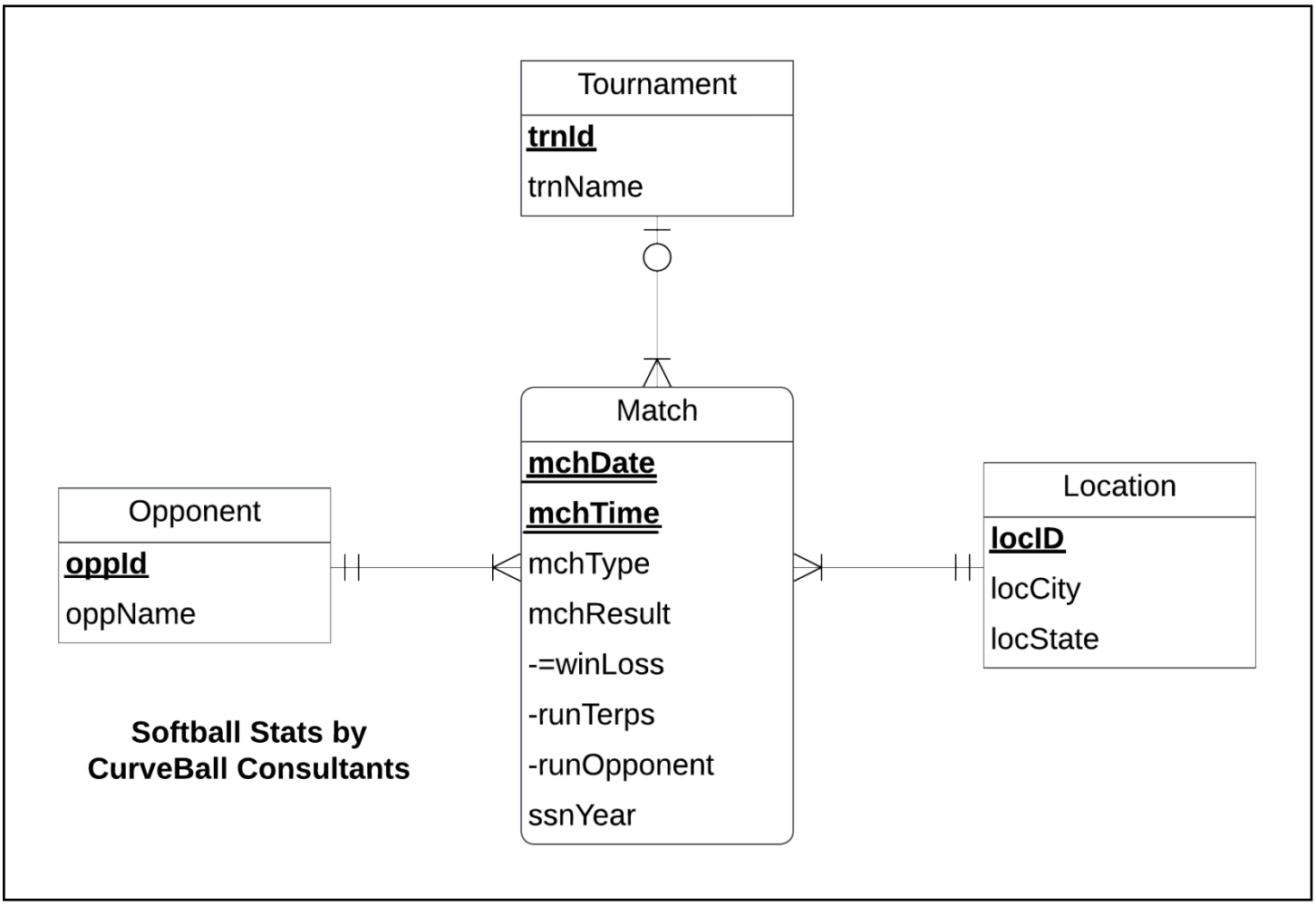
1 Opponent and 1 Match and 1 Season and 1 Location to 0 or 1 Tournament.

1 Match and 1 Tournament and 1 Location to 1 Opponent.

Assumptions:

- Each Opponent plays at least one Match.
- Each Location hosts at least one Match.
- Each Tournament has at least one Match.

ER Diagram:



Relations:
Opponent (**oppId**, oppName)
Tournament (**trnId**, trnName)
Location (**locId**, locCity, locState)
Match (***oppId*, *locId*,** *trnId,* **mchDate**, **mchTime,** mchType, runTerps, runOpponent)

Business rules:

1. When an Opponent, Location, or Tournament is deleted, the corresponding match details cannot be deleted.
2. When an Opponent, Location, or Tournament is updated, the corresponding match details are updated.

Referential integrities:

Relation	Foreign Key	Base Relation	Primary Key	Business Rule	Constraint: ON DELETE	Business Rule	Constraint: ON UPDATE
Match	oppId	Opponent	oppId	R1	NO ACTION	R2	CASCADE

Match	locId	Location	locId	R1	NO ACTION	R2	CASCADE
Match	trnId	Tournament	trnId	R1	NO ACTION	R2	CASCADE

Sample Data:

1. Opponent ('001', 'Penn State Softball'):
    - oppId (Opponent ID) is a unique identifier for each opponent, here ‘001’.
    - oppName is the name of the opponent team, here ‘Penn State Softball’.
2. Match ('001','101', '01', 2019, '7/26/2019', '9:30', 'Away', L, 10, 15):
    - oppId is a foreign key referencing the Opponent relation, here ‘001’.
    - locId is a foreign key referencing the Location relation, here ‘101’.
    - ssnYear is a foreign key referencing the Season relation, here ‘2019’.
    - trnId is a foreign key referencing the Tournament relation, ‘01’.
    - mchDate is the date of the match, here ‘7/26/2019’.
    - mchTime is the time of the match, here ‘9:30’.
    - mchType indicates the type of location, such as 'Home' or 'Away', or 'Neutral', here ‘Away’.
    - mchResult is the final result of the match, composed of:
        i. winLoss is the result of the match, either 'W' for win or 'L' for loss, here L.
        ii. runTerps represents the runs scored by the Terps (home team), here 10.
        iii. runOpponent represents the runs scored by the opponent, here 15.
3. Tournament ('01', 'AAC'):
    - trnId is a unique identifier for each tournament, here ‘01’.
    - trnName is the name of the tournament, here ‘AAC’.
4. Location ('101', 'College Park', 'MD'):
    - locId is a unique identifier for each location, ‘101’.
    - locName is the name of the location, here ‘College Park’.
    - locState represents the state where the location is situated, ‘MD’.