

University Of Maryland

Baseball Analysis

By

MoonShot Pro Consulting

Mission Statement

At MoonShot Pro Consulting, we are dedicated to empowering organizations through comprehensive Business Analytics (BA) solutions. Our mission is to seamlessly integrate data analytics, database design, and application development to unlock actionable insights, fostering informed decision-making and driving sustained business growth.

Mission Objectives

Conduct thorough data analysis to uncover meaningful patterns, trends, and correlations that serve as the foundation for informed decision-making. Design and develop a robust database architecture that ensures data integrity, scalability, and performance, meeting the specific needs and objectives of our client.

Business Tasks & Processes

With our analysis on 16 years of data collected for University Of Maryland's Baseball team, we aim to answer the following:

[B1] What was the year wise win percentage for UMD baseball?

[B2] How many games won by MD were at home away and neutral.

[B3] Which month did UMD win the most games?

[B4] What was the state wise winning percentage in the past sixteen years?

[B5] What was the average number of hits to run ratio per year?

[B6] What was the average number of errors made per year ?

ER Schema

Entities, Attributes and Primary Keys

Game(gameId, gameId, gameStartDate, gameDuration,
gameAttendance, gameWeather)

Location(locId, loc, -locStadium, -locationState)

Score(scoreId, terpScore, terpRuns, terpHits, terpErrors, opponentScore, opponentRuns, opponentHits2,
opponentErrors)

Team(teamId, teamName)

Primary Keys: gameId, locationId, scoreId, teamId

Foreign Keys: *scoreId*, *locationId*, *umdTerpId*, *opponentId*, *gameId*

Relationships, Attributes, Degrees, Participating entities and constraints:

Locate: Binary relation

1 location to 0 or many games

1 game to 1 and only 1 location

Play: Ternary relation

2 teams to 1 game

1 game to 2 teams

Result: Binary relation

1 game to 1 and only 1 score

1 score to 1 and only 1 game

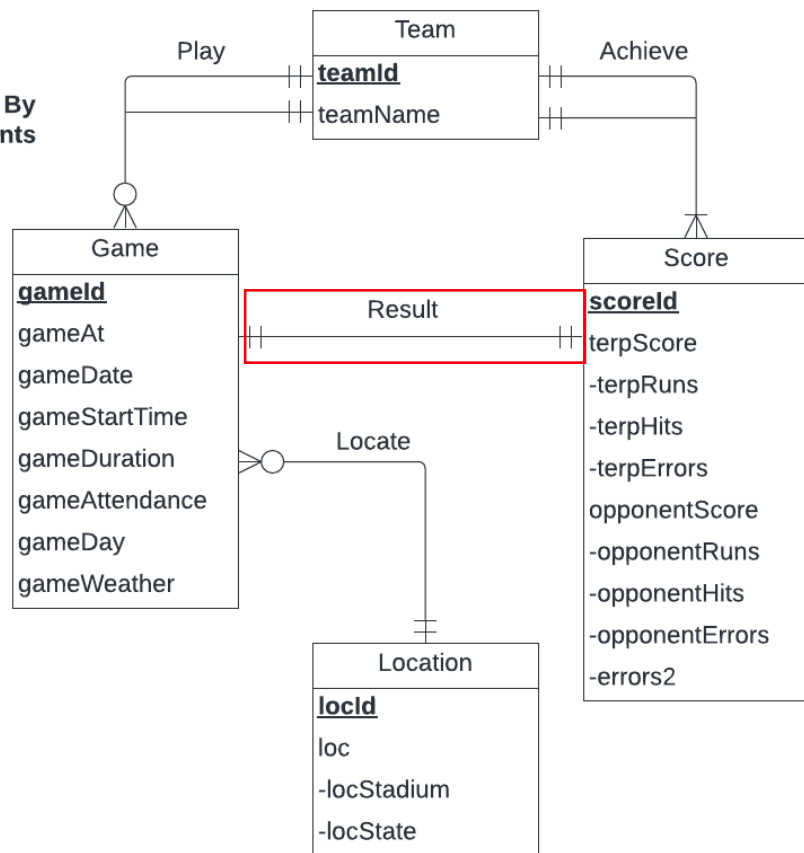
Achieve: Ternary relation

2 team to one or many scores

1 score to 2 teams

ER Diagram

**Terrapin Mens Baseball By
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Relationship Schema

Game(gameId, gameDate, gameDay, gameStartTime, gameDuration,
gameAttendance, gameWeather, *scoreId*, *locId*, *umdTerpsId*, *opponentId*)

Location(locId, locStadium, locState)

Score(scoreId, terpRuns, terpHits, terpErrors,
opponentRuns, opponentHits, opponentErrors, *umdTerpsId*, *opponentId*, *gameId*)

Team(teamId, teamName)

Business Rules

[R1]When game information is deleted from the database, the resulting score should be deleted.

[R2]When the information of the game is changed in the database, the resulting scores should be changed.

[R3]When the scores of a team are deleted from the database, the information of the team that achieved it should not be deleted.

[R4]When the scores of a team are updated in the database, the information of the team that achieved it should not be changed.

[R5]When a team is deleted from the database, the game play information should also be deleted.

[R6]When the information of the team is updated in the database, the game played information should also be updated.

[R7]When a location is deleted from the database, the games played at that location should be deleted.

[R8]When the details of a location are updated, the information on games played at that location should be updated.

[R9] When a team is deleted from the database, the score information should also be deleted.

[R10] When the information of the team is updated in the database, the score information should also be updated.

Referential Integrity

<u>Relation</u>	<u>Foreign Key</u>	<u>Base Relation</u>	<u>Primary Key</u>	<u>Business Rule</u>	<u>Constraint ON DELETE</u>	<u>Business Rule</u>	<u>Constraint ON UPDATE</u>
Score	gameId	Game	gameId	R1	CASCADE	R2	CASCADE
Score	scoreId	Team	scoreId	R3	CASCADE	R4	CASCADE
Team	teamId	Game	teamId	R5	CASCADE	R6	CASCADE
Location	locId	Game	locId	R7	CASCADE	R8	CASCADE
Score	teamId	Team	teamId	R9	CASCADE	R10	CASCADE

Sample Data

Game(000001, '2021-09-01', 18:00, 90, 1008, Rainy,109201, 0910, 456, 288)

Location(0910, Regents Drive, Maryland, College Park)

Score(109201, 000001,12, 4, 0,9, 6, 1,456, 288)

Summary(100982, 2021,12, 4, 6, 2,13, 3, 8, 2,456)

Team(456, Terps, Maryland)

Achieve(109201, 456, 288)