Team Shell Stats

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Mission Statement:

To design a database for the UMD Softball team containing information on a game, season and player level. To help users access and analyze statistics on past seasons for players and games.

Users: Players, Coaches, Team Managers and Match Attendees.

Mission Objectives:

❖ To find the average runs per batting category.
❖ To find percentage of wins in each state
❖ To analyze the percentage of wins against top 10 tough teams.
❖ To analyze the number of wins and losses in each season.
❖ To compare maximum win and loss margin per season.

ShellStats:

ShellStats is a consultant group with 4 employees, commissioned by the UMD Softball team to create a database to keep track of the team's progress over the seasons. We are tasked with monitoring games, opponents, locations, and players across all seasons. Every player has a unique identifier assigned by ShellStats that distinguishes the player based on the year they played and their number. Players are required to store their full name (in two fields - first name and last name). Players will have their season statistics stored for each respective year (H, R, RBI, AVG). Each game has a unique identifier assigned by ShellStats distinguished by year and game number (2021-01, 2021-02, etc..). The game database will store the date, result and score of each game. Every year has one game season in which multiple games are played. The season database will contain a unique identifier for the season (using season year), a season record containing total wins and losses at home, away and neutral locations. Each game is played against one opponent at one location. An opponent can be played at multiple locations across the season. Each opponent will have the team name stored along with a unique identifier assigned to them. ShellStats will also store a unique identifier for each location along with the location name containing the city and state name where the games are played at.

ER Schema:

Entities, Attributes and Primary Keys

Player (**plyId**, plyFullName, -plyFirstName, -plyLastName, plyAVG, plyR, plyH, plyRBI)

Season (**ssnId**, ssnHomeRecord, -ssnHomeWins, -ssnHomeLosses, ssnAwayRecord, -ssnAwayWins, -ssnAwayLosses, ssnNeutralRecord, -ssnNeutralWins, - ssnNeutralLosses)

Game(**gamId**, gamDate, gamResult, gamScore)

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

Opponent (**oppId**, oppName)

Relationships, Attributes, Degrees, Participating Entities and Constraints

Play: Binary Relationship

       1 Player to 1 or more Seasons

       1 Season to 1 or more Players

Include: Binary Relationship

       1 Game to 1 Season

       1 Season to 1 or more Games
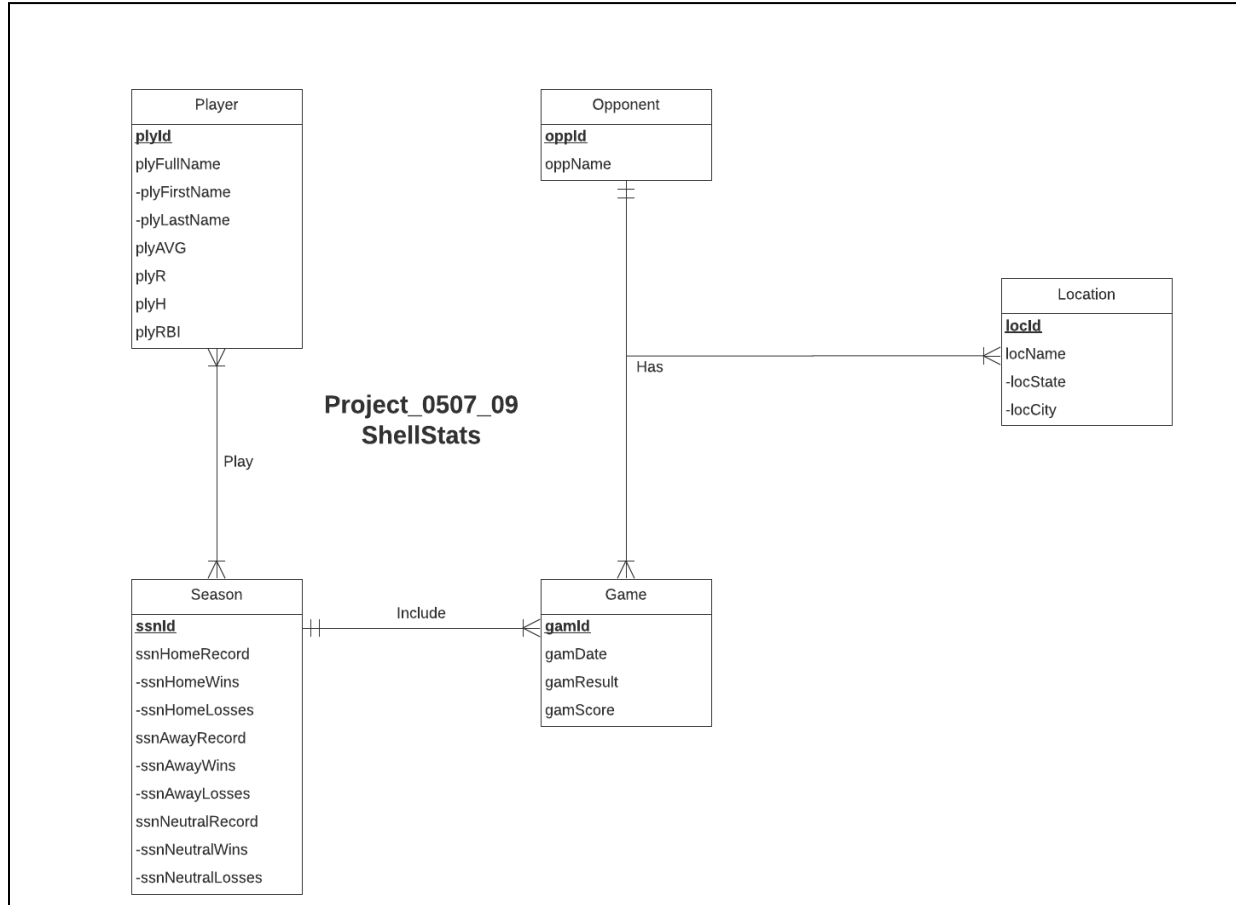
Has: Ternary Relationship

       1 Game and 1 Opponent to 1 or more Location

       1 Game and 1 Location to 1 Opponent

       1 Location and 1 Opponent to 1 or more Games

ERD Diagram:

Player
plyId
plyFullName
-plyFirstName
-plyLastName
plyAVG
plyR
plyH
plyRBI

Opponent
oppId
oppName

Location
locId
locName
-locState
-locCity

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ShellStats**

Has

Play

Season
ssnId
ssnHomeRecord
-ssnHomeWins
-ssnHomeLosses
ssnAwayRecord
-ssnAwayWins
-ssnAwayLosses
ssnNeutralRecord
-ssnNeutralWins
-ssnNeutralLosses

Include

Game
gamId
gamDate
gamResult
gamScore

Relations:

Season (**ssnId**, ssnRecord, ssnHomeRecord, ssnAwayRecord,ssnNeutralRecord)

Player (**plyId**, plyFirstName, plyLastName, plyAVG, plyR, plyH, plyRBI)

Game (**gamId**, gamDate, gamResult, gamScore, *ssnId*)

Location (**locId,** locState, locCity)

Opponent (**oppId**, oppName)

Has (***oppId, gamId***, ***locId***)

Play (***plyId, ssnId***)

Business rules for relational integrity:

[R1] When a season is deleted from the database, the corresponding game information is deleted from the database.

[R2] When a season is updated in the database, the corresponding game information should be updated in the database as well

[R3] When a game is deleted from the database, the corresponding opponent and location information should not be deleted from the database.

[R4] When a game is updated in the database, the corresponding opponent and location information should be updated as well.

[R5] When an opponent is deleted from the database, the corresponding location and game information should not be deleted from the database.

[R6] When an opponent is updated in the database, the corresponding location and game information should be updated in the database.

[R7] When a location is deleted in the database, the corresponding game and opponent information should not be deleted in the database.

[R8] When a location is updated in the database, the corresponding game and opponent information should be updated in the database.

[R9] When a player's data is deleted, the season data should not be deleted.

[R10] When a player's data is updated the corresponding season data should also be updated

Relation	Foreign Key	Base Relation	Primary Key	Business Rule	Constraint: ON DELETE	Business Rule	Constraint: ON UPDATE
Has	gamId	Game	gamId	R3	NO ACTION	R4	CASCADE
Has	oppId	Opponent	oppId	R5	NO ACTION	R6	CASCADE
Has	locId	Location	locId	R7	NO ACTION	R8	CASCADE
Include	ssnId	Game	ssnId	R1	CASCADE	R2	CASCADE
Play	ssnId	Season	ssnId	R9	NO ACTION	R10	CASCADE

Relation	Foreign Key	Base Relation	Primary Key	Business Rule	Constraint: ON DELETE	Business Rule	Constraint: ON UPDATE
Has	gamId	Game	gamId	R3	NO ACTION	R4	CASCADE
Has	oppId	Opponent	oppId	R5	NO ACTION	R6	CASCADE
Has	locId	Location	locId	R7	NO ACTION	R8	CASCADE
Include	ssnId	Game	ssnId	R1	CASCADE	R2	CASCADE
Play	plyId	Player	plyId	R9	NO ACTION	R10	CASCADE

Sample Table Data View:

Season

ssnId	ssnHomeWins	ssnHomeLosses	ssnAwayWins	ssnAwayLosses	ssnNeutralWins	ssnNeutralLosses
2015	8	11	8	9	11	7

Player

plyId	plyFirstName	plyLastName	plyAVG	plyR	plyH	plyRBI
201501	Haley	Clements	0.5	0	1	0

Game

gamId	gamDate	gamResult	gamScore	ssnId
2015-04	2/8/15	W	3 to 1	2015

Location

locId	locState	locCity
MD01	Maryland	College Park

Opponent

oppId	oppName
CC	Coastal Carolina

Has

gamId	oppId	locId
2015-04	CC	MD01

Play

ssnId	plyId
2015	201501