



PROPOSAL

Project_0507_04

Abstract

Create an extensive analytics platform and provide key insights by analysing the historical trends of matches for the University of Maryland Softball team.

PRAG Analytics – Complex problems, pragmatic solutions
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Mission Statement –

Provide key insights by analysing the historical trends of matches for the University of Maryland Softball team.

Mission Objective –

- To find the general win/loss statistics for all games played against different opponents.
- To find the general win/loss statistics at different locations
- To calculate the success rate in different years based on wins and losses.
- To identify the top 10 wins by scores to showcase the top victories of the team over the years.
- To identify the top 10 losses by scores to showcase the worst losses of the team over the years to provide actionable feedback for the team.
- To make concrete and justifiable conclusions and recommendations based on the findings of the analysis.

Business Tasks and Processes –

- Collect all the relevant datasets from the UMD website.
- Cleanup data and resolve any inconsistencies.
- Combine data for different years into 1 consolidated dataset using Excel.
- Integrate data into SQL Server into different tables.
- Perform aggregations to calculate certain key metrics.
- Connect the SQL Server to Tableau.
- Utilize the different visuals available in Tableau to create an interactive dashboard.

Entities –

- Opponent (**oppId**, oppName)
- Location (**locId**, locAddress, -locCity, -locState, -locCountry)
- Outcome (**outDesc**)
- Score (**scrId**, scrUMD, scrOpp, scrOutcome)
- Date (**dteId**, dteMatchDate)

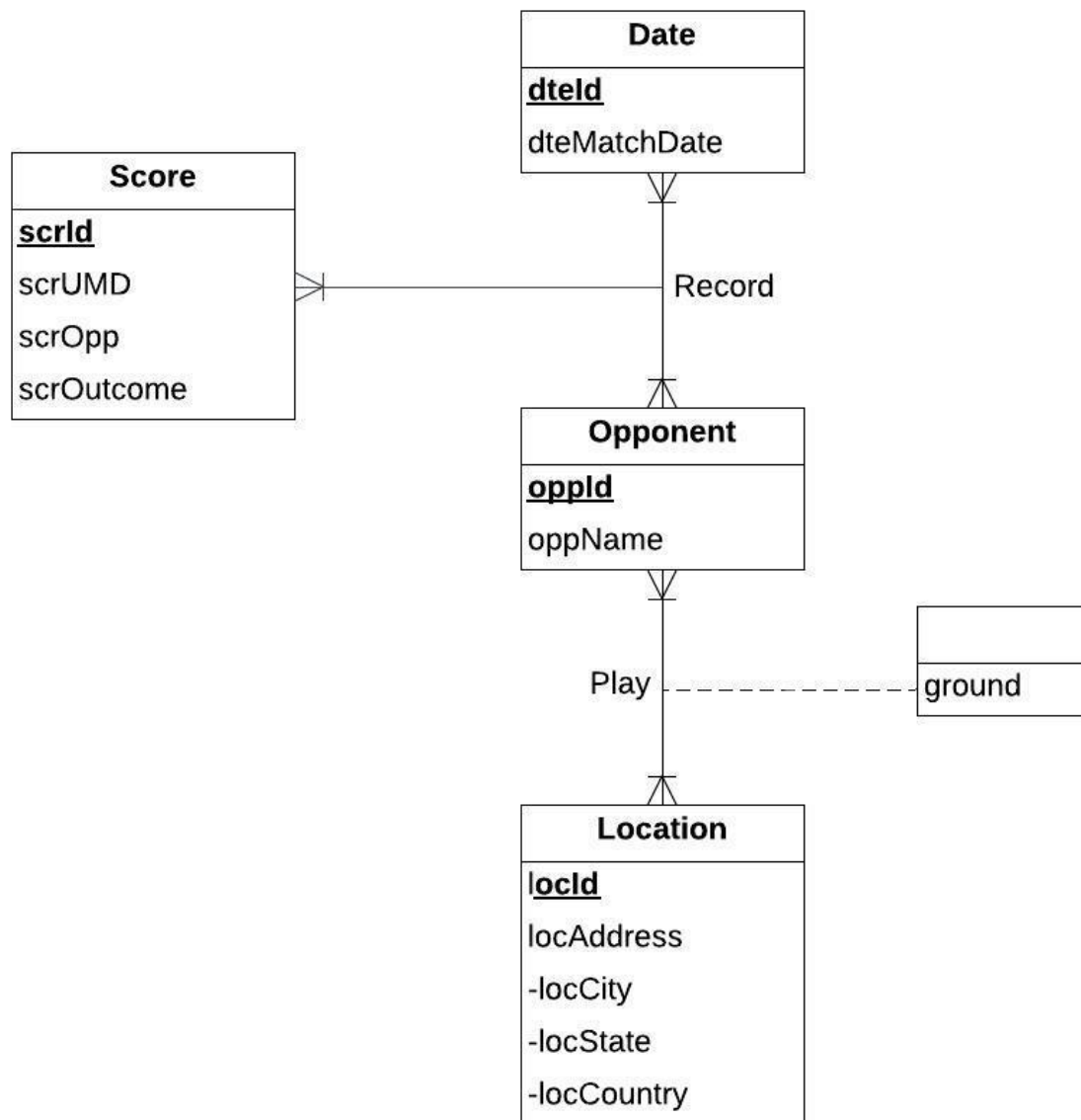
Comments from previous submission:

1. Made dteMatchDate a single attribute
2. Combined the weak entity Outcome with Score

Relationships between the Entities –

- Play (ground) – binary relationship
1 Opponent to 1 or more Locations
1 Location to 1 or more Opponents
- Record – ternary relationship
1 Date and 1 Score to 1 or more Opponents
1 Date and 1 Opponent to 1 or more Scores
1 Opponent and 1 Score to 1 or more Dates

ER Diagram –



Relations –

- Opponent (**opplid**, oppName)
- Date (**dteid**, dteDay, dteMonth, dteYear)
- Location (**locld**, locCity, locState, locCountry)
- Score (**scrld**, scrUMD, scrOpp, scrOutcome)
- Record (**opplid**, **dteid**, **scrld**)
- Play (**playld**, **opplid**, **locld**, ground)

Business Rules –

[R1] When there is 1 score recorded against 1 opponent on a date, the score, the opponent details, or the date record can't be deleted from the database.

[R2] When there is any change in details of opponents, scores or match dates, the appropriate changes must be made to the respective tables.

[R3] If an opponent has played 1 game at a location, the opponent and location details can't be deleted from the database.

[R4] If an opponent's or location's details change, the appropriate changes must be made to the respective tables.

Referential Integrity

Relation	Foreign Key	Base Relation	Primary Key	Business Rule	Constraint: ON DELETE	Business Rule	Constraint: ON UPDATE
Record	oppld	Opponent	oppld	R1	NO ACTION	R2	CASCADE
Record	dteld	Date	dteld	R1	NO ACTION	R2	CASCADE
Record	scrld	Score	scrld	R1	NO ACTION	R2	CASCADE
Play	oppld	Opponent	oppld	R3	NO ACTION	R4	CASCADE
Play	locld	Location	locld	R3	NO ACTION	R4	CASCADE

Relations examples –

- Opponent (**oppld**, oppName)
Opponent(O123, Arizona State)
Opponent(O124, Wisconsin)
- Date (**dteld**, dteDay, dteMonth, dteYear)
(D01, Tuesday, February, 1995)
(D02, Thursday, June, 1996)
(D03, Sunday, August, 1997)
- Location (**locld**, locCity, locState, locCountry)
(L01, Chapel Hill, North Carolina, United States)
(L02, College Park, Maryland, United States)
(L03, Atlanta, Georgia, United States)

- Score (scrld, scrUMD, scrOpp, scrOutcome)
 Score(SC1256, 5, 4, "W")
 Score(SC3567, 6, 1, "W")
 Score(SC3478, 2,3, "L")
- Record (oppld, dteld, scrld)
 Record (O123,D01,SC1256)
 Record (O124,D02,SC3478)
- Play (oppld, locld, ground)
 Play (O123, L01, Neutral)
 Play (O124, L02, Away)

CREATE TABLES:

USE BUDT703_Project_0507_04

DROP TABLE IF EXISTS Opponent;

DROP TABLE IF EXISTS Date;

DROP TABLE IF EXISTS Location;

DROP TABLE IF EXISTS Score;

DROP TABLE IF EXISTS Record;

DROP TABLE IF EXISTS Play

```
CREATE TABLE Opponent (  
  oppId CHAR(5) NOT NULL,  
  oppName VARCHAR(30),  
  CONSTRAINT pk_Opponent_oppId PRIMARY KEY(oppId)  
)
```

```
CREATE TABLE Date (  
  dtId CHAR(5) NOT NULL,  
  dtMatchDate Date,  
  CONSTRAINT pk_Date_dtId PRIMARY KEY(dtId)  
)
```

```
CREATE TABLE Location (  
  locId CHAR(5) NOT NULL,  
  locAddress VARCHAR(20),  
  locCity VARCHAR(20),  
  locState VARCHAR(20),  
  locCountry VARCHAR(20),  
  CONSTRAINT pk_Location_locId PRIMARY KEY(locId)  
)
```

```
CREATE TABLE Score (  
  scrId CHAR(5) NOT NULL,  
  scrUMD INT,  
  scrOpp INT,  
  scrOutcome VARCHAR(20),  
  CONSTRAINT pk_Score_scrId PRIMARY KEY(scrId)  
)
```

```
CREATE TABLE Record (  
    dteld CHAR(5) NOT NULL,  
    scrId VARCHAR(10) NOT NULL,  
    CONSTRAINT pk_Record_dteld_scrId PRIMARY KEY(dteld,scrId),  
    CONSTRAINT fk_Record_dteld FOREIGN KEY(dteld)  
        REFERENCES[Date](dteld)  
        ON DELETE NO ACTION ON UPDATE CASCADE,  
    CONSTRAINT fk_Record_scrId FOREIGN KEY(scrId)  
        REFERENCES [Score] (scrId)  
        ON DELETE NO ACTION ON UPDATE CASCADE,  
)
```

```
CREATE TABLE Play (  
    locId CHAR(5) NOT NULL,  
    ground VARCHAR(20),  
    CONSTRAINT pk_Play_oppld_locId PRIMARY KEY(locId),  
    CONSTRAINT fk_Play_dteld FOREIGN KEY(locId)  
        REFERENCES [Location](locId)  
        ON DELETE NO ACTION ON UPDATE CASCADE  
)
```