

BUDT702_Project_0502_10

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Project Name: WinExpress

Mission objectives:

Our goal is to use the UMD Men's Soccer cumulative statistics to help the UMD Men's Soccer team analyze the team's strengths and weaknesses in order to improve the overall performance of the UMD Men's Soccer team. We plan to use annual statistical data and game-by-game data to create a database, which will include data on shots, penalties, and miscellaneous, to facilitate query and comparison by coaches and players, and as a reference for training and professional independent practice. The ultimate goal is to improve team performance and personal achievement.

- Short-term goal:

We hope that by analyzing the annual data and game-by-game data of the UMD team and the Michigan team in recent years, we can provide the relevant data needed for the UMD team to analyze the game strategy, so as to improve the performance of soccer games on 10/25 7 PM with the Michigan team at Ann Arbor, MI.

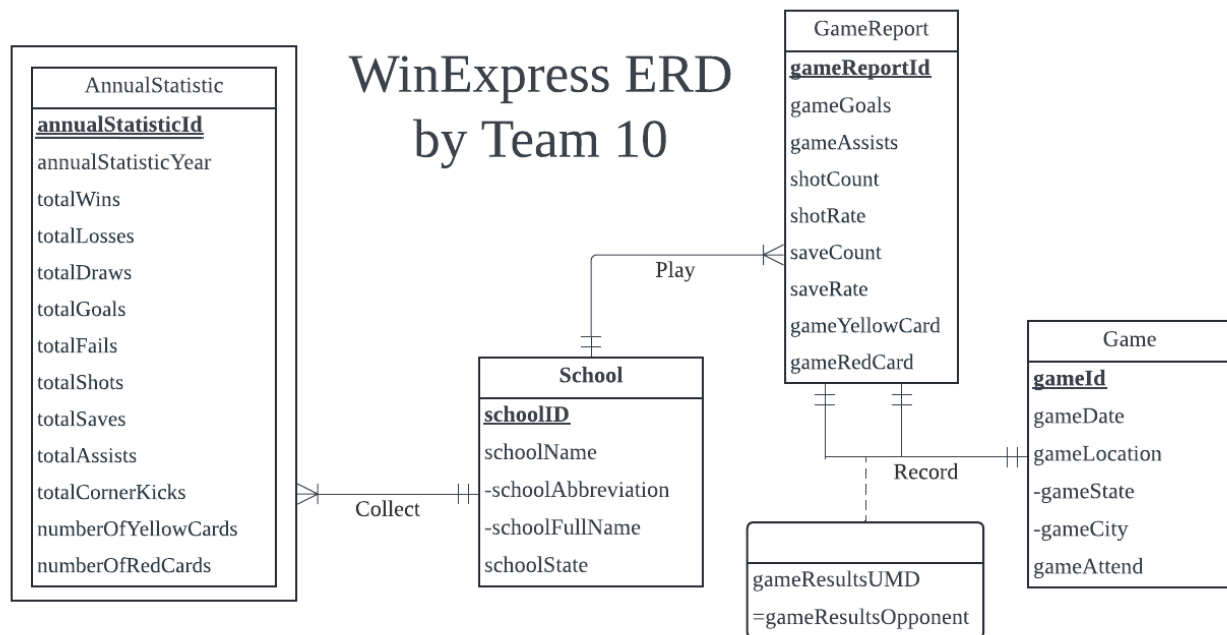
- Midterm goal:

After achieving the short-term goal, it is plausible to insert the data from previous years and each school into the database because the database we designed is expansion-flexible. This database will be a strategic analysis database for UMD to store our data and opponents'.

- Long-term goal:

If the database continues to operate, this system will be able to store annual statistical data and game-by-game data for several years, helping the football team understand changes in opponents' strategies and styles, and adjust the UMD team's training plans and applying strategies accordingly. Moreover, it only needs some small modifications if the UMD team plans to add the player's individual data into this database as a basis for personal skill analysis and improvement.

ERD:



Relational Schema:

School (**schoolId**, schoolAbbreviation, schoolFullName, schoolState)

Game (**gameId**, gameDate, gameState, gameCity, gameAttend)

GameReport (**gameReportId**, gameGoals, gameAssists, shotCount, shotRate, saveCount, saveRate, gameYellowCard, gameRedCard, *schoolId*)

AnnualStatistic (***schoolId***, **annualStatisticId**, annualStatisticYear, totalWins, totalLosses, totalDraws, totalGoals, totalFails, totalShots, totalSaves, totalAssists, totalCornerKicks, numberOfYellowCards, numberOfRedCards)

Record (**gameId**, **gameReportIdUMD**, **gameReportIdOpponent**, gameResultsUMD)

Business Rules:

[R1] When an annual statistic is collected by a school, the school cannot be deleted from the database.

[R2] When information about a school is updated, the relevant school information in the annual statistics should be updated from the database accordingly.

[R3] When a game report is recorded by a school, the school cannot be deleted from the database.

[R4] When information about a school is updated, the relevant school information in the game

report should be updated accordingly.

[R5] When a game is canceled, the corresponding record connecting the game, and the relevant game report should be deleted from the database accordingly.

[R6] When information about a game is updated, the corresponding record connecting the game, and the game report should be updated accordingly.

[R7] When a record connecting a game report and a game is recorded in the database, the game report cannot be deleted from the database.

[R8] When a record connecting a game report and a game is recorded in the database, the game report cannot be changed.

[R9] When a record connecting a game report and a game is recorded in the database, the game report cannot be deleted from the database.

[R10] When a record connecting a game report and a game is recorded in the database, the game report cannot be changed.

Referential Integrity Actions:

Relation	Foreign Key	Base Relation	Primary Key	Business Rule	ON DELETE	Business Rule	ON UPDATE
AnnualStatistic	schoolId	School	schoolId	R1	NO ACTION	R2	CASCADE
GameReport	schoolId	School	schoolId	R3	NO ACTION	R4	CASCADE
Record	gameId	Game	gameId	R5	CASCADE	R6	CASCADE
Record	gameReportIdUMD	GameReport	gameReportId	R7	NO ACTION	R8	NO ACTION
Record	gameReportIdOpponent	GameReport	gameReportId	R9	NO ACTION	R10	NO ACTION

Sample data for every relation:

School ('**S001**', 'UMD', 'University of Maryland', 'MD')

Game ('**G001**', '2023-09-14', 'MD', 'College Park', 2637)

GameReport ('**GR001**', 1, 2, 3, 15, 0.133, 0, 0.000, 3, 1, 'S001')

AnnualStatistic ('**S001**', '**AS001**', '2024', 5, 1, 4, 17, 127, 115, 27, 18, 60, 16, 0)

Record ('**G002**', '**GR002**', '**GR007**', 'W')