

University of Asia Pacific

Department of Computer Science and Engineering

Course Title: CSE212

Course Title: Database Systems Lab

Project Title: UAP Football League Management System

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UAP Football League Management System

The objective of the UAP Football League Management System is to develop a comprehensive relational database management system (DBMS) that efficiently handles and organizes a wide range of data related to the football league at the University of Asia Pacific (UAP). The system leverages a robust database management framework to securely store and manage detailed information about participating teams, players, matches, and other league operations, ensuring seamless data transactions and smooth operational workflows. Designed with user-friendliness in mind, the system simplifies the process for players, coaches, and league organizers by providing easy access to key information and streamlining administrative tasks. Additionally, it offers valuable insights and analytics to support informed decision-making by league managers and organizers. By integrating these features, the UAP Football League Management System aims to establish a new standard in football league management, promoting efficiency, transparency, and a higher level of performance across all aspects of the league.

Tables

1. Table: Team

Description: Stores information about the teams participating, coach and captain of the team.

Attributes:

team_id (primary key), name, coach_name, captain_id, captain_name, dept

team_id	name	coach_name	captain_id	captain_name	dept
1001	PHARM BOTS	ATIK AHMED	101	NAYEER	PHARMACY
1002	BBA GIANTS	MR. HARPOON	102	OCTO	BBA
1003	ENGLISH KNIGHTS	SHAHNEWAZ	103	MANSIB	ENGLISH
1004	EE-THUNDERBOLTS	JAMAL AHMED	104	MATIN	EEE
1005	CE WARRIORS	TOWHID HASAN	105	MEHEDI	CE
1006	CSE STARS	ALIF RUSLAN	106	SANI	CSE

2. Table: Player

Description: Stores information about the players id, name position, team they are playin for.

Attributes:

player_id (primary key), player_name, position, age, team_id(foreign key)

player_id	player_name	position	age	team_id
2001	MIFTAH	LW	22	1001
2002	FAHIM	RB	23	1001
2003	ANONDO	CM	24	1001
2004	UMAM	RW	25	1001
2005	NAFIUR	CB	25	1001
2006	SALMAN	CB	24	1001
2007	NADID	LW	20	1001
2008	REDWAN	CM	23	1001
2009	ABDULLAH	CF	19	1001
2010	RUDDRO	GK	21	1001
2011	NAYEER	CM	22	1001
2012	SOURAV	GK	20	1002
2013	SADAT	CB	21	1002
2014	ANIK	CB	21	1002
2015	YASIF	RB	23	1002
2016	RAKIB	LB	22	1002
2017	NIPUN	CM	23	1002
2018	ZAKER	CF	21	1002
2019	OPU	CM	24	1002
2020	ARGHO	ST	25	1002
2021	ARNOB	RB	25	1002
2022	OCTO	LW	25	1002
2023	ZAKI	LB	22	1003
2024	SHAMS	LW	23	1003
2025	SHOJIB	RB	24	1003
2026	MITHUN	CM	25	1003
2027	SHIBLY	CM	20	1003
2028	AFNAN	CB	21	1003
2029	MAHDI	CB	22	1003
2030	ISHAM	RW	23	1003
2031	IFTI	GK	24	1003
2032	TAHMID	CM	25	1003
2033	MANSIB	ST	26	1003

2034	PARVEZ	RW	20	1004
2035	SUMON	CB	26	1004
2036	NIROB	LB	22	1004
2037	ALAM	RB	25	1004
2038	RAZZAK	GK	24	1004
2039	KABIR	ST	25	1004
2040	KAMRUL	CM	26	1004
2041	ALAMIN	LW	25	1004
2042	ABDUL	CM	24	1004
2043	KUMAR	CB	23	1004
2044	MATIN	CAM	22	1004
2045	JIM	RW	20	1005
2046	AKIF	CB	22	1005
2047	ANIM	LB	24	1005
2048	IRFAN	RB	22	1005
2049	SUDIPTO	GK	21	1005
2050	NAZMUL	ST	22	1005
2051	USAYED	CM	24	1005
2052	YAMIN	LW	25	1005
2053	RAIYAN	CM	25	1005
2054	NIAS	CB	25	1005
2055	MEHEDI	CM	25	1005
2056	SAYAD	RW	21	1006
2057	JOY	CB	22	1006
2058	RAHAT	LB	25	1006
2059	LEON	RB	23	1006
2060	JIBON	GK	24	1006
2061	MAHIR	ST	25	1006
2062	RAJON	CM	22	1006
2063	NOMAN	LW	24	1006
2064	SANI	CM	22	1006
2065	MINHAZ	CB	23	1006
2066	WASI	CAM	25	1006

3. Table: Matches

Description: Stores information about the number of matches on which date they are played and the teams participating.

Attributes:

match_id (primary key), team_1_id(foreign key), team_2_id(foreign key), match_date

match_id	team_1_id	team_2_id	match_date
1	1001	1002	2024-11-01
2	1001	1003	2024-11-02
3	1001	1004	2024-11-03
4	1001	1005	2024-11-04
5	1001	1006	2024-11-05
6	1002	1003	2024-11-06
7	1002	1004	2024-11-07
8	1002	1005	2024-11-08
9	1002	1006	2024-11-09
10	1003	1004	2024-11-10
11	1003	1005	2024-11-11
12	1003	1006	2024-11-12
13	1004	1005	2024-11-13
14	1004	1006	2024-11-14
15	1005	1006	2024-11-15
16	1001	1005	2024-11-20
17	1006	1002	2024-11-21
18	1006	1005	2024-11-25

4. Table: Player_Statistics

Description: Stores information about the players goals assists disciplinary.

Attributes:

statistics_id (primary key), player_id(foreign key), goals, assists, yellow_card, red_card

statistics_id	player_id	goals	assists	yellow_card	red_card
1	2061	10	3	1	0
2	2050	8	2	2	0
3	2009	7	1	3	0
4	2064	5	6	2	0
5	2056	5	4	1	0
6	2018	4	2	1	0
7	2063	3	8	3	0
8	2011	3	6	2	0
9	2022	3	5	2	1
10	2008	3	4	1	0
11	2055	4	3	3	0
12	2033	3	1	0	0
13	2020	2	6	1	0
14	2007	2	5	2	0
15	2057	0	0	4	1
16	2054	1	1	5	1
17	2036	0	0	4	0
18	2028	1	1	3	0
19	2059	0	2	1	0
20	2013	1	1	2	0
21	2035	0	2	1	0
22	2005	0	0	5	1
23	2032	2	4	2	0
24	2041	3	3	1	0
25	2044	2	1	2	0
26	2027	1	4	1	0
27	2017	0	6	2	0
28	2052	1	3	2	0
29	2060	0	1	0	0
30	2031	0	0	1	0

5. Table: League_Standings

Description: Stores information about the stats of the team and their position on the leadrboard.

Attributes:

standing_id (primary key), team_id(foreign key), played, won, drawn, lost, points, goals_scored, goals_conceded

standing_id	team_id	played	won	drawn	lost	points	goals_scored	goals_conceded
1	1006	6	4	1	1	13	16	9
2	1001	6	3	1	2	10	15	10
3	1002	6	3	1	2	10	14	8
4	1003	6	2	2	2	8	12	10
5	1004	6	2	1	3	7	11	13
6	1005	6	1	1	4	4	8	15

Relationship

➤ **Team to Player: One-to-Many**

A team has players who are part of that team

➤ **Team to League_Standings: One-to-One**

Each team is represented by its league performance data

➤ **Team to Matches: Many-to-Many**

A team plays matches against other teams

➤ **Player to Player_Statistics: One-to-One**

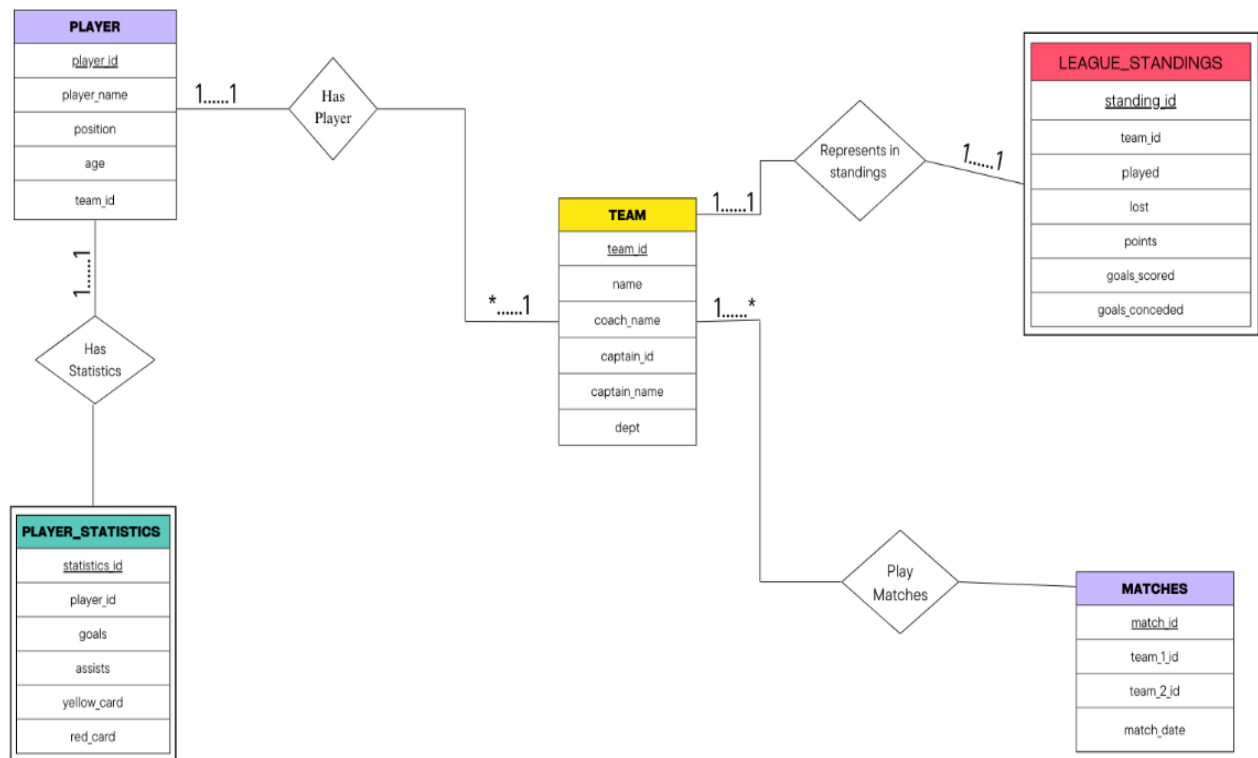
A player has their own statistics

➤ **Matches to Players: Many-to-One**

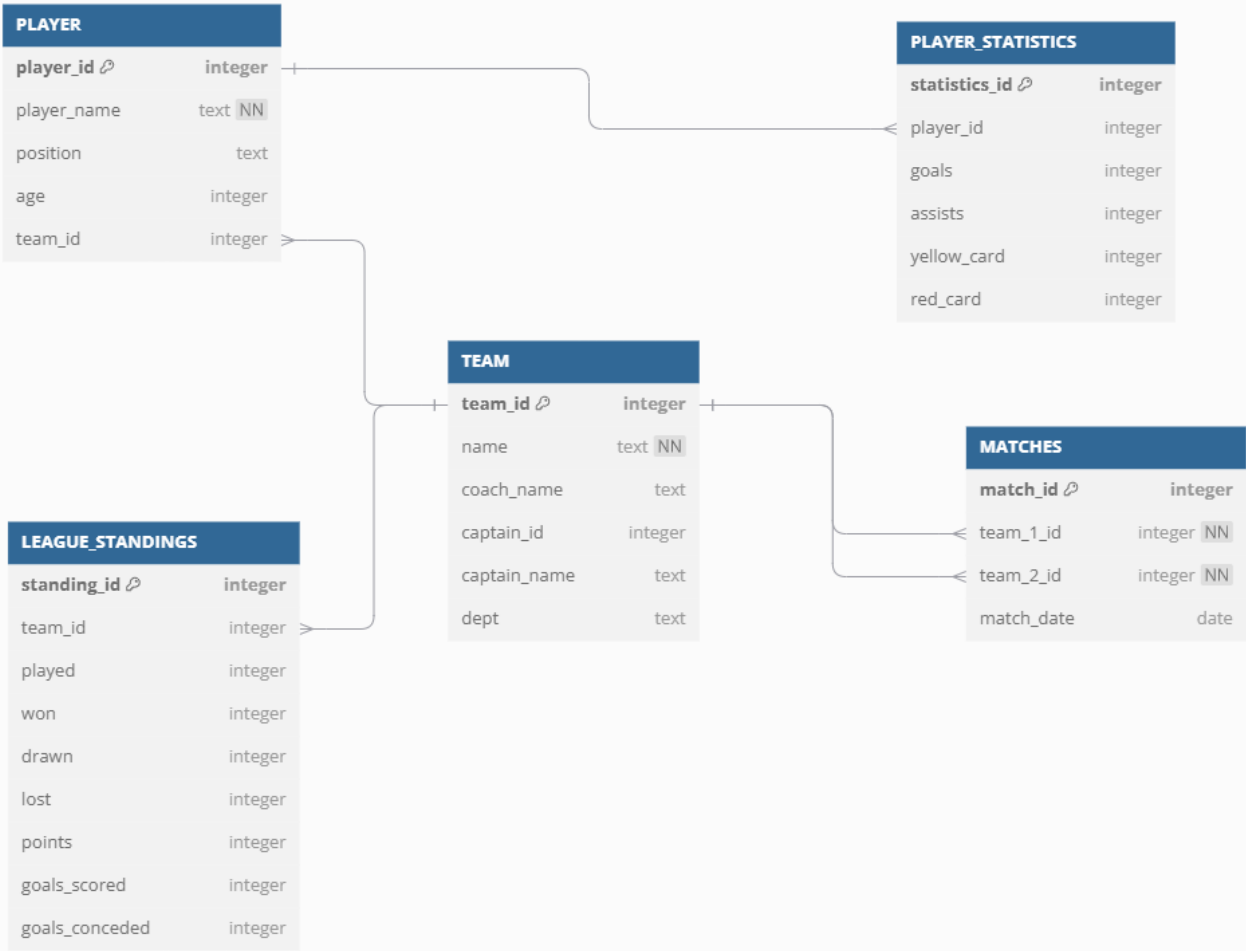
Connects player statistics to the matches in which they participate

Entity Relationship Diagram

An Entity Relationship (ER) Diagram is a type of flowchart that illustrates how "entities" such as people, objects or concepts relate to each other within a system.



Schema Diagram



Queries

- SHOW TEAM DETAILS BY TEAM team_id

team_id	name	coach_name	captain_id	captain_name	dept
1001	PHARM BOTS	ATIK AHMED	101	NAYEER	PHARMACY

- SHOW PLAYERS IN A SPECIFIC TEAM

player_name	position	age
MIFTAH	LW	22
FAHIM	RB	23
ANONDO	CM	24
UMAM	RW	25
NAFIUR	CB	25
SALMAN	CB	24
NADID	LW	20
REDWAN	CM	23
ABDULLAH	CF	19
RUDDRO	GK	21
NAYEER	CM	22

- SHOW PLAYERS WITH goals THAN A SPECIFIC VALUE

statistics_id	player_id	goals	assists	yellow_card	red_card
1	2061	10	3	1	0
2	2050	8	2	2	0
3	2009	7	1	3	0

- SHOW TOP SCORER

statistics_id	player_id	goals	assists	yellow_card	red_card
1	2061	10	3	1	0
2	2050	8	2	2	0
3	2009	7	1	3	0
4	2064	5	6	2	0
5	2056	5	4	1	0

- GET ALL MATCHES FOR A SPECIFIC TEAM

match_id	team_1_id	team_2_id	match_date
1	1001	1002	2024-11-01
2	1001	1003	2024-11-02
3	1001	1004	2024-11-03
4	1001	1005	2024-11-04
5	1001	1006	2024-11-05
16	1001	1005	2024-11-20

- GET MATCH DETAILS BY MATCH ID

match_id	team_1_id	team_2_id	match_date
5	1001	1006	2024-11-05

- GET MATCHES PLAYED BY A SPECIFIC PLAYER

match_id	team_1_id	team_2_id	match_date
4	1001	1005	2024-11-04
8	1002	1005	2024-11-08
11	1003	1005	2024-11-11
13	1004	1005	2024-11-13
15	1005	1006	2024-11-15
16	1001	1005	2024-11-20
18	1006	1005	2024-11-25

- GET THE LEAGUE_STANDINGS SORTED BY points

name	points	goals_scored	goals_conceded
CSE STARS	13	16	9
PHARM BOTS	10	15	10
BBA GIANTS	10	14	8
ENGLISH KNIGHTS	8	12	10
EE-THUNDERBOLTS	7	11	13
CE WARRIORS	4	8	15

- GET THE TOP 3 TEAMS BY points

name	points	goals_scored
CSE STARS	13	16
PHARM BOTS	10	15
BBA GIANTS	10	14

- GET PLAYERS WITH MOST goals AND assists

goals	assists
10	3
8	2
7	1
5	6
5	4

- Get Results of Matches Between Two Teams

match_date	team_1	team_2
2024-11-01	PHARM BOTS	BBA GIANTS

GET PLAYERS WITH RED CARD

player_id	red_card
2054	1
2057	1
2005	1
2022	1
2028	0
2031	0
2059	0
2013	0
2035	0
2032	0
2041	0
2044	0
2027	0
2017	0
2052	0
2060	0
2061	0
2036	0
2007	0
2020	0
2033	0
2055	0
2008	0
2011	0
2063	0
2018	0
2056	0
2064	0
2009	0
2050	0

- GOT ALL SEMI FINAL MATCHES

match_id	team_1_id	team_2_id	match_date
16	1001	1005	2024-11-20
17	1006	1002	2024-11-21

- GET FINAL MATCH RESULT

match_date	team_1	team_2
2024-11-25	CSE STARS	CE WARRIORS

- GET THE TOTAL GOALS SCORED BY A TEAM

name	total_goals
PHARM BOTS	15
BBA GIANTS	10
ENGLISH KNIGHTS	7
EE-THUNDERBOLTS	5
CE WARRIORS	14
CSE STARS	23

- GET THE AVERAGE AGE OF PEOPLE IN A SPECIFIC TEAM

name	average_age
PHARM BOTS	22.5455

- GET THE TOTAL points EARNED BY A TEAM

name	points
PHARM BOTS	10

CEP Mapping

❖ *Here's how the Knowledge Profile (Ks) attributes are addressed through our project.*

K's	Attribute	Break down each of these knowledge areas
K3	Engineering Fundamentals	This process entails a comprehensive understanding of database design principles, including the creation of tables, the definition of primary and foreign keys and the utilization of SQL, for querying data. Specifically, it focuses on the design on the design of relational tables such as TEAM, PLAYER and MATCHES while prioritizing data integrity through the implementation of constraints.
K4	Specialist Knowledge	Knowledge specific to sports league management includes maintaining player statistics, tracking team standings, organizing match schedules and ensuring accurate data representation for a football league system.
K5	Engineering Design	This document encompasses the development of Entity-Relationship diagrams and their subsequent translation into schemas, specifically PLAYER_STATISTICS and LEAGUE_STANDINGS. The design process prioritizes principles of normalization, maintains referential integrity and ensures efficient querying.
K6	Engineering Practice	Implementing the database system practically involves defining relationships between tables, using joins to generate reports such as team standings and top scorers as well as managing edge causes like invalid foreign key entries.
K7	Comprehension	Involves understanding the system requirements such as tracking match outcomes, player performance and team rankings and translating these into suitable database queries and structures.

❖ *Here's how the Engineering Problems (Ps) attributes are addressed through our project.*

P's	Attributes	Breakdown each of these P's indicators	COs	POs
P1	Depth of knowledge required	The system necessitates expertise across databases, relational algebra, and sports league knowledge to develop features as standings, statistics and fixtures.	CO1 CO2 CO3	PO1 PO2 PO4
P3	Depth of Analysis Required	Analysis involves evaluating player performance through the goals and assists, assessing team standings by calculating points and reviewing match results. This process utilizes aggregate functions and advanced SQL queries.	CO4 CO5	PO2 PO4 PO5
P6	Extent of Stakeholders	Stakeholders include team managers, players, match organizers and viewers. The system meets their needs by providing accurate information about matches, standings and individual statistics.	CO3 CO6	PO6 PO7 PO8
P7	Interdependence	Emphasizes the integration of various modules as MATCHES, PLAYER_STATISTICS and LEGUE_STANIDINGS to provide holistic functionality. For Example: match results impact both league standings and player statistics.	CO4 CO7	PO3 PO8 PO12

❖ *Here's how the Complex Engineering Activities (As) attributes are addressed through our project.*

A's	Attribute	Break down each of these A's indicators	COs	POs
A1	Range of Resources	<ul style="list-style-type: none"> • Data: This includes details about players, match schedules, statistics and standings. • Hardware: These are servers used for hosting the database • Software: This consists of database management systems like MySQL. 	CO1 CO2	PO1 PO3 PO11
A4	Consequences for Society and Environment	The system enhances transparency and engagement in sports leagues while also offering opportunities for sustainability tracking such as: reducing environment impact through, optimized tournament logistics.	CO6 CO7	PO6 PO7 PO12
A5	Familiarity	The database structure is user-friendly with clear relationships between tables. Queries such as top scorers or team standings are simple and accessible for league managers.	CO3 CO5 CO6	PO2 PO7 PO8