



**Department of Electrical,  
Computer, & Biomedical Engineering**  
Faculty of Engineering & Architectural Science

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| <b>Course Title:</b>             | Fundamentals of Data Engineering |
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| <b>Instructor:</b> | Dr. Faezeh Ensan |
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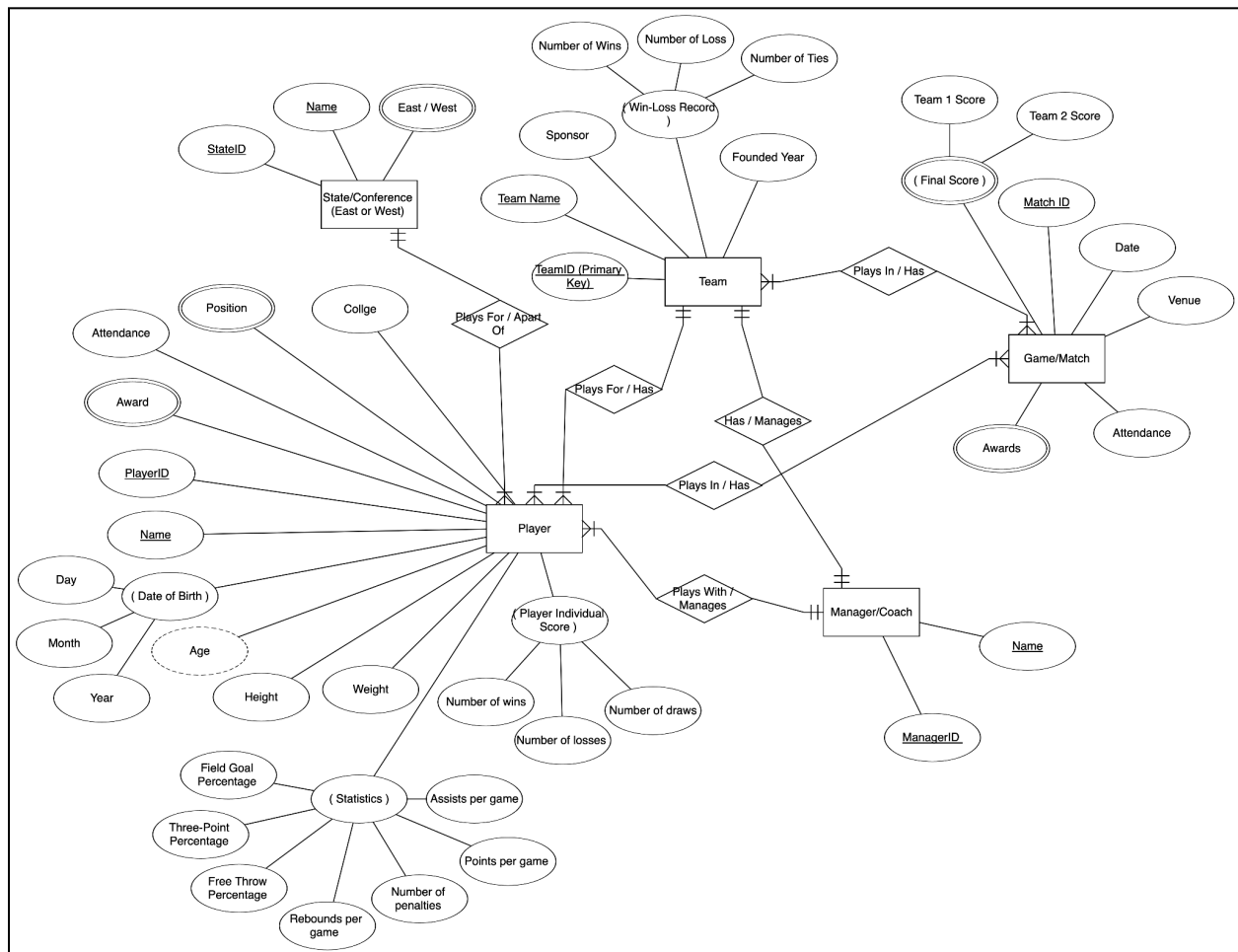
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| <i>Assignment/Lab Number:</i> | Lab 2                          |
| <i>Assignment/Lab Title:</i>  | Entity-Relation Diagram Design |

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| <b>Student<br/>LAST Name</b> | <b>Student<br/>FIRST Name</b> | <b>Student<br/>Number</b> | <b>Section</b> | <b>Signature*</b> |
|------------------------------|-------------------------------|---------------------------|----------------|-------------------|
| Saini                        | Harsanjam                     | 501055402                 | 04             | Harsanjam         |
|                              |                               |                           |                |                   |
|                              |                               |                           |                |                   |

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## Entity Relationship Diagram



## Database Structure:

### Entities:

- **Player** - A single Basketball player's information like name, age, personal stats, etc.
- **Team** - Represents a Basketball team's statistics such as the entire team score, number of Wins, Loss, Ranking, etc.
- **Game/match** - Stores data regarding the current season's games between 2 teams
- **State/conference east or west** - Contains information regarding the name of the State a player can participate in and which conference (East/West) it falls under.
- **Coach/Manager** - Holds information regarding the manager's name that a player plays with or the name of the entire team managed by the coach.

## Attributes:

- **Player:**

- **PlayerID (Primary Key)** - Serves as the primary key, uniquely identifying each player.
- **Name** - Identify the name of the player
- **Age** - How Old is the player
- **BirthDate** - What day, month, and year the player was born
- **Height** - How tall the player is
- **Weight** - How much does the player weight
- **Position** - What position does the player play ()
- **College** - What College did the player previously play for
- **Attendance** - How many matches did the player Participate in
- **Awards** - Total number of awards received by the player
- **Player individual score:**
  - **Number of wins** - Represents the total number of wins achieved by a player.
  - **Number of losses** - Indicates the total number of losses incurred by a player.
  - **Number of draws** - Denotes the total number of draws or tied matches experienced by a player
- **Statistics:**
  - **Field Goal Percentage** - Reflects the proportion of successful field goals made by a player.
  - **Free Throw Percentage** - Represents the ratio of successful free throws made by a player.
  - **Three-Point Percentage** - Indicates the percentage of successful three-point shots made by a player.
  - **Number of penalties** - Represents the total number of penalties incurred by a player or team.
  - **Points per game** - Reflects the average number of points scored by a player per game.
  - **Assists per game** - Indicates the average number of assists made by a player per game.
  - **Rebounds per game** - Denotes the average number of rebounds grabbed by a player per game.

- **Team:**
  - **TeamID (Primary Key)** - Serves as the unique identifier for each team in the database.
  - **Team Name** - Represents the name of a basketball team.
  - **Sponsor** - Primary sponsor of the team (brand or company name)
  - **Founded Year** - Denotes the year in which the team was established or founded.
  - **Win-Loss Record** - Reflects the historical performance of the team, showing the number of wins and losses.
    - **Number of Wins** - How many Matches a team won
    - **Number of Loss** - How many Matches a team lost
    - **Number of Ties** - How many Matches a team draw
- **Game:**
  - **GameID (Primary Key)** - It is the primary key, uniquely identifying each game.
  - **Date** - Represents the date on which the basketball game was held.
  - **Venue** - Indicates the location where the basketball game took place.
  - **Attendance** - Denotes the number of spectators or audience members present at the game.
  - **Final Scores** - Represent the scores achieved by each team participating in the game.
  - **Awards** - Indicates any awards or recognitions conferred during or after the game.
- **Manager/Coach:**
  - **ManagerID** - Serves as the unique identifier for each manager or coach in the database.
  - **Name** - Represents the name of the manager or coach associated with a basketball team.
- **State/Division (east or west conference)**
  - **StateID** - Serves as the unique identifier for each state or division in the database.
  - **Name** - Represents the name of the state or division.
  - **Conference** - Indicates the conference to which the state or division belongs, such as East or West.

## Relationships:

1. Player plays for Team (**Many-to-One**):
  - A player can play for one team, but a team can have many players.
2. Players to match/game (**Many-to-Many**):
  - A player can play multiple games/matches and a single match has many players

3. The game involves Teams (**Many-to-Many**):
  - Multiple teams participate in a game, and a team can play in multiple games. Similarly, a game involves multiple teams.
4. Managers can only one team (**One-to-One**)
  - Manager can only coach a single team during a season and each team will have only one manager.
5. Manager to player is (**Many-to-One**)
  - A manager can coach many players, but a player can only have one coach
6. Player to State/Division is (**Many-to-One**)
  - A player can belong to one state/division but a state can have multiple players