



## **DBMS PROJECT(Final Submission)**

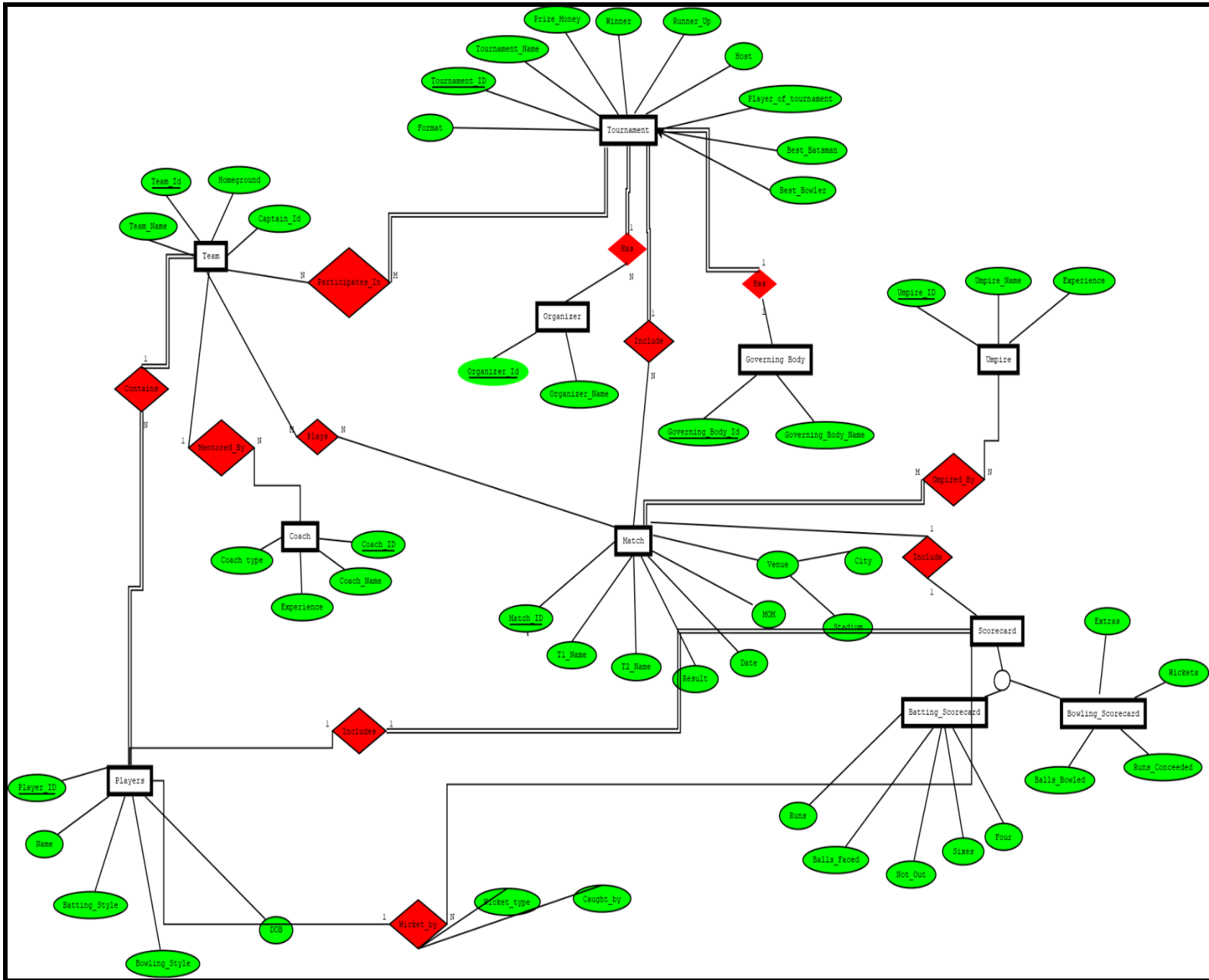
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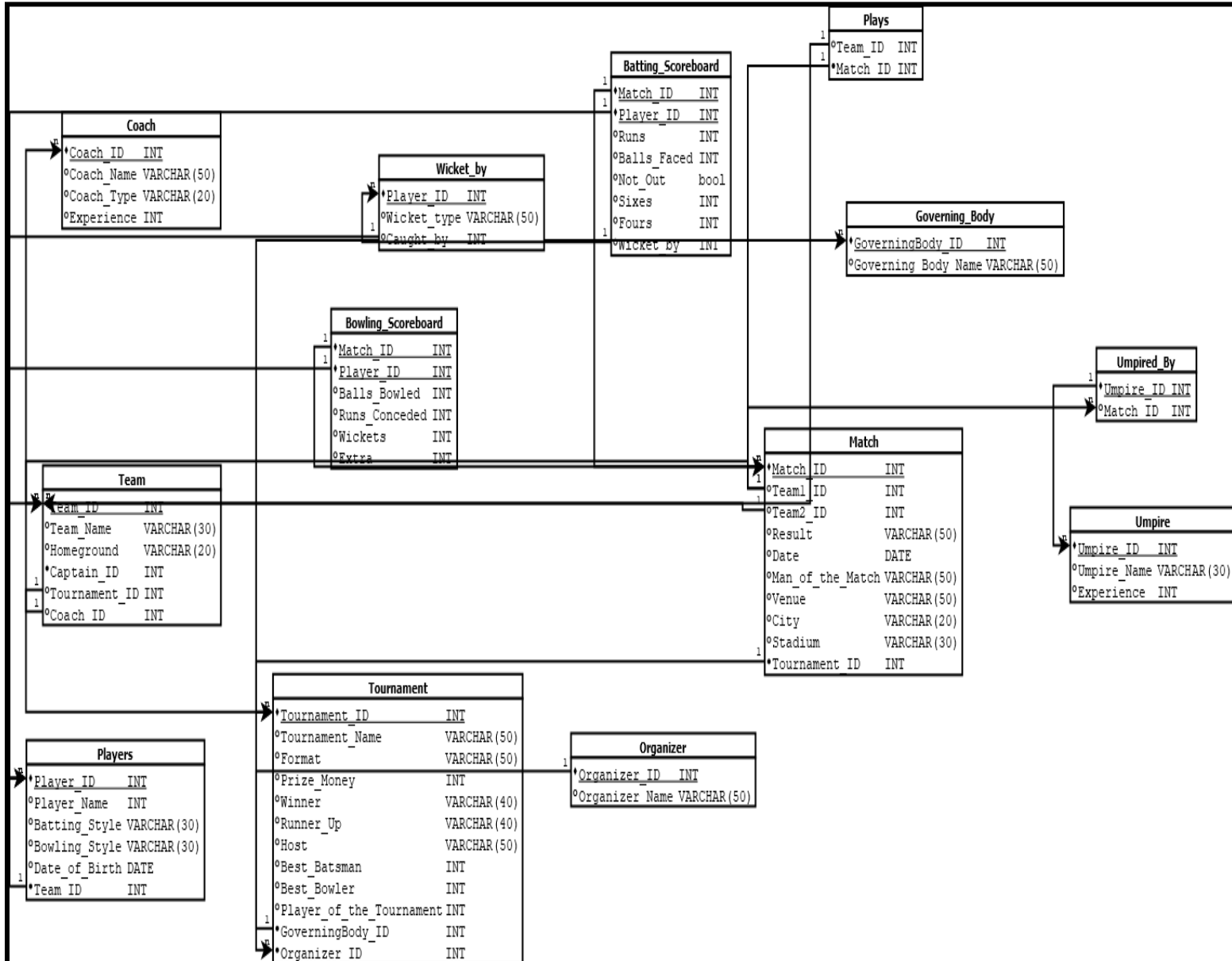
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# Relational Schema



# Minimal Functional Dependencies and BCNF Proof

## 1) Coach

Coach(Coach\_ID, Coach\_Name, Coach\_Type, Experience)

→ Coach\_ID → Coach\_Name, Coach\_Type, Experience

The Coach\_ID is the minimal determinant that uniquely identifies all other attributes in the relation.

**Description:-** Coach is a simple entity. Each coach uniquely mentors a team in a particular tournament

**BCNF Proof :-** Coach\_ID is the primary key and it determines all attributes so it satisfies BCNF.

## 2)Team

Team(Team\_ID, Team\_Name, Homeground, Captain\_ID, Tournament\_ID, Coach\_ID)

→ Team\_ID → Team\_Name, Homeground, Captain\_ID, Tournament\_ID, Coach\_ID

**Description:-** Team is a simple entity in the tournament. An independent team can exist (team without tournament) but the tournament must have teams.

**BCNF Proof :-** Team\_ID is the primary key and it determines all attributes so it satisfies BCNF.

## 3)Players

Players(Player\_ID, Player\_Name, Batting\_Style, Bowling\_Style, Date\_of\_Birth)

→ Player\_ID → Player\_Name, Batting\_Style, Bowling\_Style, Date\_of\_Birth, Team\_ID

**Description:-** Players are a simple entity in the team. Both players and team can not exist without each other independently.

**BCNF Proof :-** Player\_ID is the primary key and it determines all attributes so it satisfies BCNF.

## 4)Tournament

Tournament(Tournament\_ID, Tournament\_Name, Format, Prize\_Money, Winner, Runner\_Up, Host, Best\_Batsman, Best\_Bowler, Player\_of\_the\_Tournament, GoverningBody\_ID, Organizer\_ID)

→ Tournament\_ID → Tournament\_Name, Format, Prize\_Money, Winner, Runner\_Up, Host, Best\_Batsman, Best\_Bowler, Player\_of\_the\_Tournament, GoverningBody\_ID, Organizer\_ID

**Description:-** Tournament is a kind of root entity in the database. It has organizers, matches and governing bodies. It should have all of the three entities. It can't exist if any of these entities is missing.

**BCNF Proof :-** Tournament\_ID is the primary key and it determines all attributes so it satisfies BCNF.

## 5)Organizer

Organizer(Organizer\_ID, Organizer\_Name)

→ Organizer\_ID → Organizer\_Name

**BCNF Proof :-** Organizer\_ID is the primary key and it determines all attributes so it satisfies BCNF.

**Description:-** This is an entity which contains information related to attributes that organizes tournaments. An organizer can decide not to organize a tournament but can organize a match without a tournament.

## 6)Governing\_Body

Governing\_Body(GoverningBody\_ID, GoverningBody\_Name)

→ GoverningBody\_ID → GoverningBody\_Name

**Description:-** A tournament has governing\_body which sees that the tournament is being fairly completed.

**BCNF Proof :-** Governing\_ID is primary key and it determines all attributes so it satisfies BCNF.

## 7)Umpire

Umpire(Umpire\_ID, Umpire\_Name, Experience)

→ Umpire\_ID → Umpire\_Name, Experience

BCNF Proof :-Umpire\_ID is primary key and it determines all attributes so it satisfies BCNF.

## 8)Umpired\_By

Umpired\_By(Umpire\_ID, Match\_ID)

→ No non-trivial FDs (composite primary key)

**Description:-** Every match has umpires. This entity contains information related to umpires. A match should have umpires.

**BCNF Proof :-** No non-trivial FDs other than key-based so BCNF

## 9)Match

Match(Match\_ID, Team1\_ID, Team2\_ID, Result, Date, Man\_of\_the\_Match, Venue, City, Stadium, Tournament\_ID)

→ Match\_ID → Team1\_ID, Team2\_ID, Result, Date, Man\_of\_the\_Match, Venue, City, Stadium, Tournament\_ID

**Description:-** This is an important attribute. It should have umpires. Team plays a match. Team has scoreboard which further includes batting and bowling scoreboard.

**BCNF Proof :-**Match\_ID is the primary key and it determines all attributes so it satisfies BCNF.

## 10)Bowling\_Scoreboard

Bowling\_Scoreboard(Match\_ID, Player\_ID, Balls\_Bowled, Runs\_Conceded, Wickets, Extra)

→ Match\_ID, Player\_ID → Balls\_Bowled, Runs\_Conceded, Wickets, Extra

**Description:-** It is the sub-attribute of scoreboard and contains bowling details of a particular match

**BCNF Proof :-**(Match\_ID,Player\_ID) which is composite key is primary key and it determines all attributes so it satisfies BCNF.

## 11)Batting\_Scoreboard

Batting\_Scoreboard(Match\_ID, Player\_ID, Runs, Balls\_Faced, Not\_Out, Sixes, Fours, Wicket\_by)

→ Match\_ID, Player\_ID → Runs, Balls\_Faced, Not\_Out, Sixes, Fours, Wicket\_by

**Description:-** It is the sub-attribute of scoreboard and contains batting details of a particular match

**BCNF Proof :-**(Match\_ID,Player\_ID) which is composite key is primary key and it determines all attributes so it satisfies BCNF.

## 12)Wicket\_by

Wicket\_by(Player\_ID, Wicket\_type, Caught\_by)

→ Player\_ID → Wicket\_type, Caught\_by

**Description:-** This is a one to one relationship entity between players and batting scorecard and give details about how the player got dismissed.

**BCNF Proof :-**Player\_Id which is the primary key and it determines all attributes so it satisfies BCNF.

## 13)Plays

Plays(Team\_ID, Match\_ID)

→ No non-trivial FDs (composite primary key)

**Description:-** This is a relation that relates entities team and match by a one to one relationship.

**BCNF Proof :-**No functional dependencies except composite key so it is BCNF