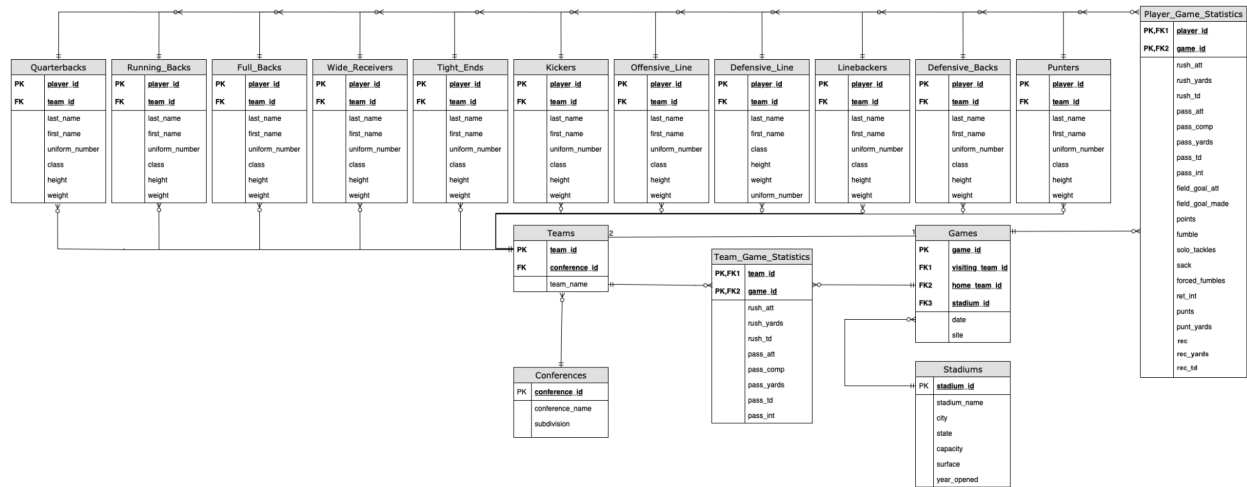


Entity-Relationship Diagram



Schemas

```
CREATE TABLE Conferences(
    conference_id INT PRIMARY KEY NOT NULL,
    conference_name VARCHAR(30) NOT NULL,
    subdivision VARCHAR(3) NOT NULL
);
```

```
CREATE TABLE Teams(
    team_id INT PRIMARY KEY NOT NULL,
    conference_id INT NOT NULL,
    team_name VARCHAR(30) NOT NULL,
    CONSTRAINT team_conference_fk
    FOREIGN KEY(conference_id)
    REFERENCES Conferences(conference_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE
);
```

```
CREATE TABLE Stadiums(
    stadium_id INT PRIMARY KEY NOT NULL,
    stadium_name VARCHAR(50) NOT NULL,
    city VARCHAR(30) NOT NULL,
    state VARCHAR(2) NOT NULL,
    capacity INT NOT NULL,
    surface VARCHAR(50) NOT NULL,
    year_opened INT NOT NULL
);
```

```
CREATE TABLE Games(
    game_id INT PRIMARY KEY NOT NULL,
    visiting_team_id INT NOT NULL,
    home_team_id INT NOT NULL,
```

```

    stadium_id INT NOT NULL,
    date VARCHAR(10) NOT NULL,
    site VARCHAR(7) NOT NULL,
    CONSTRAINT visiting_team_fk
        FOREIGN KEY(visiting_team_id)
        REFERENCES Teams(team_id)
        ON DELETE CASCADE
        ON UPDATE CASCADE,
    CONSTRAINT home_team_fk
        FOREIGN KEY(home_team_id)
        REFERENCES Teams(team_id)
        ON DELETE CASCADE
        ON UPDATE CASCADE,
    CONSTRAINT stadium_fk
        FOREIGN KEY(stadium_id)
        REFERENCES Stadiums(stadium_id)
        ON DELETE CASCADE
        ON UPDATE CASCADE
);

CREATE TABLE Players(
    player_id INT PRIMARY KEY NOT NULL,
    last_name VARCHAR(30) NOT NULL,
    first_name VARCHAR(30) NOT NULL
);

CREATE TABLE Quarterbacks(
    player_id INT PRIMARY KEY NOT NULL,
    team_id INT NOT NULL,
    last_name VARCHAR(30) NOT NULL,
    first_name VARCHAR(30) NOT NULL,
    uniform_number INT NOT NULL,
    class VARCHAR(2) NOT NULL,
    height INT NOT NULL,
    weight INT NOT NULL,
    CONSTRAINT qb_team_fk
        FOREIGN KEY(team_id)
        REFERENCES Teams(team_id)
        ON DELETE CASCADE
        ON UPDATE CASCADE,
    CONSTRAINT qb_players_fk
        FOREIGN KEY(player_id)
        REFERENCES Players(player_id)
        ON DELETE CASCADE
        ON UPDATE CASCADE
);

CREATE TABLE Running_Backs(
    player_id INT PRIMARY KEY NOT NULL,

```

```

team_id INT NOT NULL,
last_name VARCHAR(30) NOT NULL,
first_name VARCHAR(30) NOT NULL,
uniform_number INT NOT NULL,
class VARCHAR(2) NOT NULL,
height INT NOT NULL,
weight INT NOT NULL,
CONSTRAINT rb_team_fk
    FOREIGN KEY(team_id)
    REFERENCES Teams(team_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
CONSTRAINT rb_players_fk
    FOREIGN KEY(player_id)
    REFERENCES Players(player_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE
);

```

```

CREATE TABLE Fullbacks(
player_id INT PRIMARY KEY NOT NULL,
team_id INT NOT NULL,
last_name VARCHAR(30) NOT NULL,
first_name VARCHAR(30) NOT NULL,
uniform_number INT NOT NULL,
class VARCHAR(2) NOT NULL,
height INT NOT NULL,
weight INT NOT NULL,
CONSTRAINT fb_team_fk
    FOREIGN KEY(team_id)
    REFERENCES Teams(team_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
CONSTRAINT fb_players_fk
    FOREIGN KEY(player_id)
    REFERENCES Players(player_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE
);

```

```

CREATE TABLE Wide_Receivers(
player_id INT PRIMARY KEY NOT NULL,
team_id INT NOT NULL,
last_name VARCHAR(30) NOT NULL,
first_name VARCHAR(30) NOT NULL,
uniform_number INT NOT NULL,
class VARCHAR(2) NOT NULL,
height INT NOT NULL,
weight INT NOT NULL,

```

```
CONSTRAINT wr_team_fk
  FOREIGN KEY(team_id)
  REFERENCES Teams(team_id)
  ON DELETE CASCADE
  ON UPDATE CASCADE,
CONSTRAINT wr_players_fk
  FOREIGN KEY(player_id)
  REFERENCES Players(player_id)
  ON DELETE CASCADE
  ON UPDATE CASCADE
);
```

```
CREATE TABLE Tight_Ends(
  player_id INT PRIMARY KEY NOT NULL,
  team_id INT NOT NULL,
  last_name VARCHAR(30) NOT NULL,
  first_name VARCHAR(30) NOT NULL,
  uniform_number INT NOT NULL,
  class VARCHAR(2) NOT NULL,
  height INT NOT NULL,
  weight INT NOT NULL,
  CONSTRAINT te_team_fk
    FOREIGN KEY(team_id)
    REFERENCES Teams(team_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
  CONSTRAINT te_players_fk
    FOREIGN KEY(player_id)
    REFERENCES Players(player_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE
);
```

```
CREATE TABLE Kickers(
  player_id INT PRIMARY KEY NOT NULL,
  team_id INT NOT NULL,
  last_name VARCHAR(30) NOT NULL,
  first_name VARCHAR(30) NOT NULL,
  uniform_number INT NOT NULL,
  class VARCHAR(2) NOT NULL,
  height INT NOT NULL,
  weight INT NOT NULL,
  CONSTRAINT k_team_fk
    FOREIGN KEY(team_id)
    REFERENCES Teams(team_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
  CONSTRAINT k_players_fk
    FOREIGN KEY(player_id)
    REFERENCES Players(player_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE
);
```

```
REFERENCES Players(player_id)
ON DELETE CASCADE
ON UPDATE CASCADE
);
```

```
CREATE TABLE Offensive_Line(
  player_id INT PRIMARY KEY NOT NULL,
  team_id INT NOT NULL,
  last_name VARCHAR(30) NOT NULL,
  first_name VARCHAR(30) NOT NULL,
  uniform_number INT NOT NULL,
  class VARCHAR(2) NOT NULL,
  height INT NOT NULL,
  weight INT NOT NULL,
  CONSTRAINT ol_team_fk
  FOREIGN KEY(team_id)
  REFERENCES Teams(team_id)
  ON DELETE CASCADE
  ON UPDATE CASCADE,
  CONSTRAINT ol_players_fk
  FOREIGN KEY(player_id)
  REFERENCES Players(player_id)
  ON DELETE CASCADE
  ON UPDATE CASCADE
);
```

```
CREATE TABLE Defensive_Line(
  player_id INT PRIMARY KEY NOT NULL,
  team_id INT NOT NULL,
  last_name VARCHAR(30) NOT NULL,
  first_name VARCHAR(30) NOT NULL,
  uniform_number INT NOT NULL,
  class VARCHAR(2) NOT NULL,
  height INT NOT NULL,
  weight INT NOT NULL,
  CONSTRAINT dl_team_fk
  FOREIGN KEY(team_id)
  REFERENCES Teams(team_id)
  ON DELETE CASCADE
  ON UPDATE CASCADE,
  CONSTRAINT dl_players_fk
  FOREIGN KEY(player_id)
  REFERENCES Players(player_id)
  ON DELETE CASCADE
  ON UPDATE CASCADE
);
```

```
CREATE TABLE Linebackers(
  player_id INT PRIMARY KEY NOT NULL,
```

```

team_id INT NOT NULL,
last_name VARCHAR(30) NOT NULL,
first_name VARCHAR(30) NOT NULL,
uniform_number INT NOT NULL,
class VARCHAR(2) NOT NULL,
height INT NOT NULL,
weight INT NOT NULL,
CONSTRAINT lb_team_fk
    FOREIGN KEY(team_id)
    REFERENCES Teams(team_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
CONSTRAINT lb_players_fk
    FOREIGN KEY(player_id)
    REFERENCES Players(player_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE
);

CREATE TABLE Defensive_Backs(
    player_id INT PRIMARY KEY NOT NULL,
    team_id INT NOT NULL,
    last_name VARCHAR(30) NOT NULL,
    first_name VARCHAR(30) NOT NULL,
    uniform_number INT NOT NULL,
    class VARCHAR(2) NOT NULL,
    height INT NOT NULL,
    weight INT NOT NULL,
CONSTRAINT db_team_fk
    FOREIGN KEY(team_id)
    REFERENCES Teams(team_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
CONSTRAINT db_players_fk
    FOREIGN KEY(player_id)
    REFERENCES Players(player_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE
);

CREATE TABLE Punters(
    player_id INT PRIMARY KEY NOT NULL,
    team_id INT NOT NULL,
    last_name VARCHAR(30) NOT NULL,
    first_name VARCHAR(30) NOT NULL,
    uniform_number INT NOT NULL,
    class VARCHAR(2) NOT NULL,
    height INT NOT NULL,
    weight INT NOT NULL,

```

```

CONSTRAINT p_team_fk
  FOREIGN KEY(team_id)
  REFERENCES Teams(team_id)
  ON DELETE CASCADE
  ON UPDATE CASCADE,
CONSTRAINT p_players_fk
  FOREIGN KEY(player_id)
  REFERENCES Players(player_id)
  ON DELETE CASCADE
  ON UPDATE CASCADE
);

CREATE TABLE Team_Game_Statistics(
  teamgame_id INT PRIMARY KEY NOT NULL,
  team_id INT NOT NULL,
  game_id INT NOT NULL,
  rush_att INT NOT NULL,
  rush_yards INT NOT NULL,
  rush_td INT NOT NULL,
  pass_att INT NOT NULL,
  pass_comp INT NOT NULL,
  pass_yards INT NOT NULL,
  pass_td INT NOT NULL,
  pass_int INT NOT NULL,
  CONSTRAINT team_game_fk
    FOREIGN KEY(team_id)
    REFERENCES Teams(team_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
  CONSTRAINT game_game_fk
    FOREIGN KEY(game_id)
    REFERENCES Games(game_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE
);

```

```

CREATE TABLE Player_Game_Statistics(
  playergame_id INT PRIMARY KEY NOT NULL,
  player_id INT NOT NULL,
  game_id INT NOT NULL,
  rush_att INT NOT NULL,
  rush_yards INT NOT NULL,
  rush_td INT NOT NULL,
  pass_att INT NOT NULL,
  pass_comp INT NOT NULL,
  pass_yards INT NOT NULL,
  pass_td INT NOT NULL,
  pass_int INT NOT NULL,
  field_goal_att INT NOT NULL,

```

```

field_goal_made INT NOT NULL,
points INT NOT NULL,
fumble INT NOT NULL,
solo_tackles INT NOT NULL,
sack NUMERIC(2, 1) NOT NULL,
forced_fumbles INT NOT NULL,
ret_int INT NOT NULL,
punts INT NOT NULL,
punt_yards INT NOT NULL,
rec INT NOT NULL,
rec_yards INT NOT NULL,
rec_td INT NOT NULL,
CONSTRAINT player_playergame_fk
    FOREIGN KEY(player_id)
    REFERENCES Players(player_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE,
CONSTRAINT game_playergame_fk
    FOREIGN KEY(game_id)
    REFERENCES Games(game_id)
    ON DELETE CASCADE
    ON UPDATE CASCADE
);

```

Functional Dependencies

Teams: team_id → team_name, conference_id

This is already in 3NF, because team_id is a candidate key.

Conferences: conference_id → conference_name, subdivision

This is already 3NF, because conference_id is a candidate key.

Games: game_id → visiting_team_id, home_team_id, stadium_id, date, site

stadium_id, date → game_id, visiting_team_id, home_team_id, site

The first FD is in 3NF, because game_id is a candidate key.

The second FD is also in 3NF, because stadium_id and date together are also a candidate key.

Stadiums: stadium_id → stadium_name, city, state, capacity, surface, year_opened

This is already in 3NF because stadium_id is a candidate key.

All of the different **Player** tables will have the same set of FDs.

Players: player_id → team_id, last_name, first_name, uniform_number, class, height, weight

team_id, uniform_number → player_id, last_name, first_name, class, height, weight

The first FD is in 3NF, because player_id is a candidate key.

The second FD is also in 3NF, because team_id and uniform_number together are also a candidate key.

Team_Game_Statistics: teamgame_id → team_id, game_id, rush_att, rush_yards, rush_td, pass_att, pass_comp, pass_yards, pass_td, pass_int

team_id, game_id → teamgame_id, rush_att, rush_yards, rush_td, pass_att, pass_comp, pass_yards, pass_td, pass_int

This is already in 3NF because teamgame_id alone, and team_id and game_id together, are both candidate keys.

Player_Game_Statistics: playergame_id → player_id, game_id, rush_att, rush_yards, rush_td, pass_att, pass_comp, pass_yards, pass_td, pass_int, field_goal_att, field_goal_made, points, fumble, solo_tackles, sack, forced_fumbles, ret_int, punts, punt_yards, rec, rec_yards, rec_td

player_id, game_id → playergame_id, rush_att, rush_yards, rush_td, pass_att, pass_comp, pass_yards, pass_td, pass_int, field_goal_att, field_goal_made, points, fumble, solo_tackles, sack, forced_fumbles, ret_int, punts, punt_yards, rec, rec_yards, rec_td

This is already in 3NF because playergame_id alone, and player_id and game_id together, are both candidate keys.