1. BCNF: Conference(confName)
    - Since this relation only contains 1 attribute (namely, confName which is the primary key), there are no functional dependencies to consider. Hence, we are in BCNF

2. BCNF: Division(divName, confName) FK confName REF Conference(confName)
    - Functional Dependencies:
        - DivName -> confName
    - Since we only have one functional dependency, where the non-key attribute (confName) is determined by the primary key (divName), we have no partial dependencies, no transitivity is present, and no loops in dependencies exist. All determinants are superkeys. Hence, we are in BCNF.

3. BCNF: Coach(coachID, coachName)
    - Functional Dependencies:
        - CoachId -> coachName
    - Since we only have one functional dependency, where the non-key attribute (coachName) is determined by the primary key (CoachID), we have no partial dependencies, no transitivity is present, and no loops in dependencies exist. All determinants are superkeys. Hence, we are in BCNF.

4. 3NF: Team(teamName, yearFounded, divName, stadiumName) FK divName REF Division(divName), FK stadiumName REF Stadium(stadiumName),
    - Functional Dependencies:
        - TeamName, stadiumName -> yearFounded, divName
    - All non-key attributes from the table above depends FULLY and DIRECTLY on teamName, hence we are in 3NF. However, they also depend fully and directly on stadiumName. Therefore, stadiumName must also be a superkey.

    BCNF: Team(teamName, stadiumName, yearFounded, divName)

5. 1NF: Player(playerID, playerName, height, weight, B, draftYear, round, pick, teamDrafted, birthLocation) FK teamDrafted REF Team(teamName), FK birthLocation REF Location(locationID), where B represents the set of other attributes
    - Functional Dependencies:
        - playerID -> playerName, height, weight, B, birthLocation, draftYear, round, pick
        - draftYear, round, pick -> playerID, teamDrafted
    - 2NF: Here, team drafted can be determined by yearDrafted, round, and pick. Hence a partial dependency is present.

- Player(playerID, playerName, height, weight, B, birthLocation)
- DraftInfo(draftYear, round, pick, playerID, teamDrafted)

3NF:

6. 1NF: Stadium(stadiumName, capacity, locationID) FK locationID REF Location(locationID)
   - Functional Dependencies:
     - stadiumName -> capacity, locationID

   2NF: capacity, locationID are fully dependent on the entire primary key and since all candidate keys are singletons we are in 2NF

   3NF: To achieve 3NF we need to get rid of transitivity and since we have no transitivity, we are automatically in 3NF. We cannot get stadiumName from capacity, locationID.

   BCNF: Since all determinants are super keys, we are in BCNF.

7. 1NF: Location(locationID, city, country)
   - Functional Dependencies:
     - locationID -> city, country

   2NF: We have no partial dependencies, so we are in 2NF

   3NF: We have no transitivity, so we are in 3NF

   BCNF: All determinants are super keys, so we are in BCNF.

8. 1NF: RegularGame(gameID, date, seasonYear, stadiumName) FK seasonYear REF Season(seasonYear), FK stadiumName REF Stadium(stadiumName)
   - Functional Dependencies:
     - gameId -> date, seasonYear, stadiumName
     - date, seasonYear, stadiumName -> gameId

   2NF: We have no partial dependencies

   3NF: No transitive dependencies because this is a direct dependency

   BCNF: All determinants are super keys which we have.

   - RegularGame(gameID, date, seasonYear, stadiumName)

9. PlayoffGame(gameID, date, round, seasonYear, stadiumName) FK seasonYear REF Season(seasonYear), FK stadiumName REF Stadium(stadiumName)
   - Functional Dependencies:
     - gameId -> date, round, year, stadiumName
     - date, seasonYear, stadiumName -> gameId

   2NF: We have no partial dependencies

   3NF: No transitive dependencies because this is a direct dependency

   BCNF: All determinants are super keys which we have.

   - PlayoffGame(gameID, date, round, seasonYear, stadiumName)

10. 1NF: Season(seasonYear, champion) FK champion REF Team(teamName)
    - Functional Dependencies:
      - SeasonYear -> champion

    2NF: All candidate keys are singletons

    3NF: Only one attribute isn't part of the key

    BCNF: All determinants are super keys, so we are in BCNF

    - Season(seasonYear, champion)

11. 1NF: Officials(officialID, name, jersey number)
    - Assumptions:
      - It may seem that name and jersey number can determine officialID, that is not the case in our DB. In our DB, there are officials with the same name and jersey number but different officialID.
    - Functional Dependencies:
      - officialID —> name, jersey number
    - 2NF: Since there are no partial key dependencies, we cannot decompose the table further. So, we are in 2NF already.
    - 3NF: Since there are no transitive dependencies, we are already in 3NF.
    - BCNF: Since the determinant(s) in our decomposed table are super keys. We are in BCNF.

12. BCNF: Manage(coachID, teamName, seasonYear) FK coachID REF Coach(coachID), FK teamName REF Team(teamName), FK seasonYear REF Season(seasonYear)
    - Functional Dependencies:
      - N/A

2NF: All candidate keys are singletons

3NF: Only one attribute isn't part of the key

BCNF: All determinants are super keys, so we are in BCNF

- Manage(coachID, teamName, seasonYear)

13. 1NF: Teach(coachID, playerID) FK coachID REF Coach(coachID), FK playerID REF Player(playerID)
    - Functional Dependencies:
        - N/A

    2NF: All candidate keys are singletons

    3NF: Only one attribute isn't part of the key

    BCNF: All determinants are super keys, so we are in BCNF

    - Teach(coachID, playerID)
14. 1NF: PlayerStat(playerID, gameID, C, homeTeam, awayTeam, winner) FK playerID REF Player(playerID), FK gameID REF Game(gameID), (C is the set containing all other relevant stats such as points, rebounds etc)
    - Functional Dependencies:
        - PlayerID, gameID —> C (where C is the set containing all other relevant stats such as points, rebounds etc)
        - GameID —> homeTeam, awayTeam, winner
    - 2NF: Since homeTeam, awayTeam and winner depend on part of the PK (gameID), they must get their own table.
        - GameTeamInfo(gameID, homeTeam, awayTeam, winner)
        - GamePlayerStats(playerID, gameID, C) (where C is the set containing all other relevant stats)
    - 3NF: No transitive (indirect) dependencies exist so we are in 3NF.
        - GameTeamInfo(gameID, homeTeam, awayTeam, winner)
        - GamePlayerStats(playerID, gameID, C) (where C is the set containing all other relevant stats)
    - BCNF: We are in BCNF already because all the PKs in our 3NF tables are also the PKs in the original non-normalised table (i.e. all determinants are superkeys).
        - GameTeamInfo(gameID, homeTeam, awayTeam, winner)
        - GamePlayerStats(playerID, gameID, C) (where C is the set containing all other relevant stats)

15. 1NF: TeamStat(teamName, gameID, D, homeTeam, awayTeam, winner) FK teamName REF Team(teamName), FK gameID REF Game(gameID), (where D is the set containing all other relevant stats)
    - Functional Dependencies:
        - TeamName, gameID —> D (where D is the set containing all other relevant stats such as points, rebounds etc)
        - GameID —> homeTeam, awayTeam, winner
    - 2NF: Since homeTeam, awayTeam and winner depend on part of the PK (gameID), they must get their own table.
        - GameTeamInfo(gameID, homeTeam, awayTeam, winner)
        - GameTeamStats(teamName, gameID, D) (where D is the set containing all other relevant stats)
    - 3NF: No transitive (indirect) dependencies exist so we are in 3NF.
        - GameTeamInfo(gameID, homeTeam, awayTeam, winner)
        - GameTeamStats(teamName, gameID, D) (where D is the set containing all other relevant stats)
    - BCNF: We are in BCNF already because all the PKs in our 3NF tables are also the PKs in the original non-normalised table i.e. all determinants are superkeys).
        - GameTeamInfo(gameID, homeTeam, awayTeam, winner)
        - GameTeamStats(teamName, gameID, D) (where D is the set containing all other relevant stats)

16. 1NF: Play(SeasonID, playerID, teamName, jersey) FK seasonID REF season(seasonID), FK playerID REF Player(playerID), FK teamName REF Team(teamName )
    - Functional Dependencies:
        - SeasonID, PlayerID —> teamName, jersey
        - TeamName, jersey, SeasonID -> PlayerID

    2NF: teamName and jersey depend on part of the primary key (seasonID, playerID). These will be moved to their own table.

    - Play(SeasonID, PlayerID, teamName, jersey)

    3NF: To reach 3NF, we need to get rid transitivity (indirect dependencies). No indirect dependencies exist so we are already in 3NF.

    - Play(SeasonID, PlayerID, teamName, jersey)
    - BCNF: In order for us to be in BCNF, the non key attributes must not appear on the left in the functional dependencies (i.e. all determinants are

superkeys). Since teamName and jersey by themselves cannot determine either playerID and/or seasonID (since SeasonID appears on the left in all our FDs), we cannot break this table down further. Thus, it would be okay for us to stay in 3NF.

17. 1NF: Officiate(GameID, OfficialID) FK GameID REF Game(GameID), FK OfficialID REF Officials(OfficialID)
    - Functional Dependencies:
        - N/A

    2NF: All candidate keys are singletons

    3NF: Only one attribute isn't part of the key

    BCNF: All determinants are super keys, so we are in BCNF

    - Officiate(GameID, OfficialID)

**Housekeeping Notes**