



## Background Information

Perhaps one of the roughest American pasttimes, and certainly one of the largest of organized sports, the National Football League entertains millions of fans all of the world. Teams compete once a week over a regular 16-week period late each year with a 4-week playoff series to determine the Super Bowl champion.



## Problem Statement

In this assignment, students will explore statistical data of NFL teams from 2006 through 2010. Given a thorough investigation, the student will make claims and view trends regarding team and quarterback statistics.

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## Instructions

**IMPORTANT:** This is not the actual Exam for your section. You will not receive any credit for completing this project.

**IMPORTANT:** This assignment requires the Windows version of Microsoft Office.

**IMPORTANT:** Complete the steps below in the order they are given. Completing the steps out of order may complicate the assignment or result in an incorrect result.

1. Download and extract the provided Data Files ZIP file. It contains the following files for use in this assignment:
  - a. **seasons.xml** – Team statistics for the 2011 through 2015 National Football League seasons [3]–[7].

<b>Table: Seasons</b>		
<b>Field Name</b>	<b>Type</b>	<b>Description</b>
<b>Season</b>	Number	Part of composite key. Beginning year for season.
<b>TeamAbbrev</b>	Short Text	Part of composite Key. Abbreviation of team.
<b>Wins</b>	Number	Games won.
<b>Losses</b>	Number	Games lost.
<b>Ties</b>	Number	Games that ended in a tie.
<b>PointsScored</b>	Number	Number of points this team scored against opponents.
<b>PointsAllowed</b>	Number	Number of points opponents scored against this team.
<b>DivisionChamp</b>	Yes/No	Indicates if this team was a division champion.
<b>Wildcard</b>	Yes/No	Indicates if this team was a wildcard selection for the playoffs.



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- b. **teams.xml** – List of teams for each conference and division of the National Football League [1], [2].

<b>Table: Teams</b>		
<b>Field Name</b>	<b>Type</b>	<b>Description</b>
<b>TeamAbbrev</b>	Short Text	Primary key. Abbreviation of this team.
<b>TeamName</b>	Short Text	Name of the team.
<b>ConferenceAbbrev</b>	Short Text	Abbreviation of conference to which this team belongs.
<b>Division</b>	Short Text	Division to which this team belongs.
<b>Established</b>	Number	Year the team entered major league play.
<b>Valuation</b>	Currency	2016 financial valuation of the team.

2. Begin by creating a new Microsoft Access database named **lastname\_firstname\_fsp.accdb**.
3. Import the following items into the database:
- teams.xml** file – Import structure and data into a new table.
  - seasons.xml** file – Import structure and data into a new table.
4. We need to create a new table to store information about the league conferences.
- Create a table named *Conferences* with the fields below. Use appropriate field types and designate a good primary key.

<b>Table: Conferences</b>	
<b>Field Name</b>	<b>Description</b>
<b>ConferenceAbbrev</b>	Abbreviation of the conference.
<b>ConferenceName</b>	Full name of the conference.

- b. Enter records for all conferences below.

**HINT:** The *Conferences* table will contain 2 records.

<b>ConferenceAbbrev</b>	<b>ConferenceName</b>
AFC	American Football Conference
NFC	National Football Conference

5. Create the appropriate relationships for the following tables. Enforce referential integrity, but do not enable cascade updates or cascade deletes.
- Conferences* and *Teams*
  - Teams* and *Seasons*



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6. Create separate queries to provide the information requested below. Name each query after the step in which it appears (e.g., name the query in Step 6a as *Query6A*).

**HINT:** Run your queries to test them. Make sure that they display all and only the records that you would expect to appear.

- a. Create a query to compare team offenses and defenses. List the season, team name, points scored, and points allowed. Also, include a field to calculate the ratio of points scored to points allowed.

You can calculate the ratio of points scored to points allowed using the formula:

$$\frac{[Seasons.PointsScored]}{[Seasons.PointsAllowed]}$$

Format the calculated field as a standard-type number with 2 decimal places. Sort by the ratio in descending order.

**HINT:** This query will show 160 records and 5 fields.

- b. We wish to calculate the win percentage for each team. Create a query listing the team name, wins, losses, and ties. Also, include a field to calculate the win percentage.

You can calculate the win percentage using the following formula:

$$\frac{[Seasons.Wins]}{([Seasons.Wins] + [Seasons.Losses] + [Seasons.Ties])}$$

Only display records for the 2015 season. Do not show the season in the results.

Format the calculated field as a fixed-type number with 3 decimal places. Sort by win percentage in descending order.

**HINT:** This query will show 32 records and 4 fields.

- c. Create a query to summarize team records. List, for each team name, the sum of wins, sum of losses, and sum of ties.

Format the sums as standard-type numbers with no decimal places. Sort by team name in ascending order.

**HINT:** This query will show 32 records and 4 fields.



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- d. We wish to calculate statistics on division champions. Create a query listing, for each season, if the teams are division champions, the average of wins, average of losses, and average of ties.

Only display records for division champions.

Format the averages as standard-type numbers with 1 decimal place.

**HINT:** This query will show 5 records and 5 fields.

- e. We want to compare records for each conference division. Copy-and-paste this SQL code into a new query:

```
SELECT Conferences.ConferenceName, Teams.Division,
Avg(Teams.Valuation) AS AvgOfValuation,
Round(Avg(Seasons.Wins),1) AS AvgOfWins,
Round(Avg(Seasons.Losses),1) AS AvgOfLosses,
Round(Avg(Seasons.Ties),1) AS AvgOfTies,
Round(Avg(Seasons.PointsScored),1) AS AvgOfPointsFor,
Round(Avg(Seasons.PointsAllowed),1) AS AvgOfPointsAgainst
FROM (Conferences INNER JOIN Teams ON
Conferences.ConferenceAbbrv = Teams.ConferenceAbbrv) INNER
JOIN Seasons ON Teams.TeamAbbrv = Seasons.TeamAbbrv
GROUP BY Conferences.ConferenceName, Teams.Division
ORDER BY Conferences.ConferenceName, Teams.Division;
```

**IMPORTANT:** Do not make any modifications to the query other than entering the above SQL code.

**HINT:** This query will show 8 records and 8 fields.

7. Using the Form Wizard, create a form with a subform. The main form should display the conference name. The subform must display a datasheet with all *Teams* table fields.

Name the main form *ConferenceData* and the subform *ConferenceDataSubform*.

8. Using the Report Wizard, create a report to show the results of the *Query6E* query. Display all fields from the query.

Group by conference name and sort by division in ascending order. Use a stepped layout and landscape page orientation. Name the report *DivisionSummary*.

Ensure the full widths of all columns are visible on the report.



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9. We need to create a new table to store analysis questions responses.
- Create a table named *AnalysisQuestions* with the fields below. Use appropriate field types and designate a good primary key.

<b>Table: AnalysisQuestions</b>	
<b>Field Name</b>	<b>Description</b>
<b>QuestionNumber</b>	Question being answered.
<b>Response</b>	Response to the analysis question prompt.

10. In the *AnalysisQuestions* table, answer four of the five analysis questions below. Respond to one question per record.
- The relationship between a team's valuation and its winning percentage is very small. What other factors might influence a team's valuation?
  - Currently, 12 teams (8 division champions plus the 4 remaining most-winning "wildcard" teams) play in the NFL postseason. There have been proposals to eliminate the wildcards and instead have 16 teams (8 division champions plus 8 division runners-up) play instead. Would this method be fairer? Why?
  - Each team has a salary cap in place to limit the amount of money a team pays their players. Do you think such a salary cap is necessary? Why?
  - Currently, the NFL has 32 teams organized into eight divisions of four teams each. Each team plays 16 games currently. How might adding a 33rd team affect NFL schedules?
  - Teams on the AFC West won more games on average than they lost, but on average, their opponents scored more points than they did. How is this possible?
11. Run the Compact and Repair Database utility on your database. Ignore any errors you receive when running the utility.

## Grading Rubric

This is a practice assignment and is worth no points. A comparable Exam would be worth 100 points and graded using this rubric, with partial credit awarded as appropriate:

Step 3	7.5 points	Step 7	7.5 points
Steps 4a-b	10 points total	Step 8	7.5 points
Step 5	7.5 points	Step 9a	2.5 points
Steps 6a-e	7.5 points each	Steps 10a-e (pick 4 of 5)	5 points each



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The analysis questions in Steps 10a-e can be evaluated using this rubric:

<b>Standard</b>	<b>Meets Requirements (2.5 points)</b>	<b>Does Not Meet Requirements (0 points)</b>
Answer is reasonable.	Answer addresses the question prompt and is factually correct or a reasonable interpretation of available data.	Answer does not address the question prompt, is factually incorrect, or is an unreasonable interpretation of available data.
Answer is supported.	Logical rationale is provided to support the given answer.	Logical rationale is not provided to support the given answer.

## References

- [1] M. Ozanian, "2016 NFL Valuations," *Forbes.com*, Sep. 14, 2016. Available: <http://www.forbes.com/sites/mikeozanian/2016/09/14/the-nfls-most-valuable-teams-2016/#409c983e373b>.
- [2] "National Football League," *Wikipedia*. Available: [https://en.wikipedia.org/w/index.php?title=National\\_Football\\_League&oldid=683826945](https://en.wikipedia.org/w/index.php?title=National_Football_League&oldid=683826945).
- [3] "2011 NFL season," *Wikipedia*, 2016. Available: [https://en.wikipedia.org/wiki/2011\\_NFL\\_season](https://en.wikipedia.org/wiki/2011_NFL_season).
- [4] "2012 NFL season," *Wikipedia*, 2016. Available: [https://en.wikipedia.org/wiki/2012\\_NFL\\_season](https://en.wikipedia.org/wiki/2012_NFL_season).
- [5] "2013 NFL season," *Wikipedia*, 2016. Available: [https://en.wikipedia.org/wiki/2013\\_NFL\\_season](https://en.wikipedia.org/wiki/2013_NFL_season).
- [6] "2014 NFL season," *Wikipedia*, 2016. Available: [https://en.wikipedia.org/wiki/2014\\_NFL\\_season](https://en.wikipedia.org/wiki/2014_NFL_season).
- [7] "2015 NFL season," *Wikipedia*, 2016. Available: [https://en.wikipedia.org/wiki/2015\\_NFL\\_season](https://en.wikipedia.org/wiki/2015_NFL_season).