Final Exam Review

Background Information

In Major League Baseball today, there is a great disparity in relative wealth amongst the 30 teams that make up the American and National Leagues. While some teams, such as the New York Yankees and Boston Red Sox, come from large markets and have large revenue streams, others, like the Kansas City Royals, come from small areas and are relatively poor.

Major League Baseball has implemented a revenue sharing plan that is designed to support poorer teams, but there are still substantial differences in how much money each team spends on player salaries. In 2010, the New York Yankees spent $206 million on payroll but the Pittsburgh Pirates only spent $35 million. As a result, the Yankees have a roster stocked with well-known stars while many of the Pirates players are straight out of the farm leagues.

Problem Statement

In this assignment, students will analyze baseball win/loss statistics and championship records to see what impact a team's payroll size has on its on-field performance.

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 365. macOS users can access a ready-to-use version through Windows Virtual Desktop by following the instructions at https://cs101.wvu.edu/wvd.

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. **teams.xml** – Information on each Major League Baseball team [2].

Table: *Teams*		
Field Name	**Type**	**Description**
TeamAbbrv	Short Text	Primary key. Abbreviation for team.
TeamName	Short Text	Name of team.
LeagueAbbrv	Short Text	Abbreviation of league to which this team belongs.
Division	Short Text	Division to which this team belongs.

b. **seasons.xml** – Information on win/loss and championship records [3]–[5].

Table: *Seasons*		
Field Name	**Type**	**Description**
Season	Number	Part of composite key. Baseball season.
TeamAbbrv	Short Text	Part of composite key. Team abbreviation.
Wins	Number	Number of games won by this team in this year.
Losses	Number	Number of games lost by this team in this year.
Championship	Short Text	Championship, if any, won by this team in this year.
MedianPlayerSalary	Currency	Median player salary.
Payroll	Currency	Total of all player salaries.

c. **batter.png** – Image of a baseball for use in PowerPoint.

Microsoft Access Portion

2. Create a new Microsoft Access database named **finalexamreview_bsp_*lastname_firstname*.accdb**.

3. Import the following items into the database:

a. **seasons.xml** file – Import structure and data into a new table.

b. **teams.xml** file – Import structure and data into a new table.

4. We need to create a new table to store information about each Major League Baseball league.

a. Create a table named *Leagues* with the fields below. Use appropriate field types and designate a good primary key.

Table: *Leagues*	
Field Name	**Description**
LeagueAbbrv	Abbreviation of the league.
LeagueName	Full name of the league.

b. Enter records for all leagues below.

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

LeagueAbbrv	LeagueName
AL	American League
NL	National League

5. Create the appropriate relationships for the following tables. Do not enforce referential integrity.

a. *Teams* and *Seasons*

b.   *Teams* and *Leagues*

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 summarize team records. List, for each team name, the average of wins and average of losses.

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

   HINT: This query will show 30 records and 3 fields.

   b.   We wish to calculate statistics for league champions. Create a query listing the season, team name, championship, and payroll. Also, include a field to calculate the win ratio.

   You can calculate the win ratio using the formula:

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

   Only display records for League and World Series champions.

   Format the calculated field as a standard-type number with 3 decimal places.

   HINT: This query will show 20 records and 5 fields.

   c.   Create a query to calculate payroll and records for each league and division. List, for each league name and division, the average of median player salaries, average payroll, average of wins, and average of losses.

   Only display records for the American League.

   Format the average of median player salaries and average of payrolls as currency with no decimal places. Format the average of wins and average of losses as standard-type numbers with 1 decimal place.

   HINT: This query will show 3 records and 6 fields.

d. We want to compare average championship team payrolls for each year. Copy-and-paste this SQL code into a new query:

```
SELECT Seasons.Season, Avg(Seasons.Payroll) AS AveragePayroll
FROM Teams INNER JOIN Seasons ON (Teams.TeamAbbrv =
Seasons.TeamAbbrv) AND (Teams.TeamAbbrv =
Seasons.TeamAbbrv)WHERE (((Seasons.Championship)<>"None"))
GROUP BY Seasons.Season
ORDER BY Seasons.Season;
```

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

HINT: This query will show 10 records and 2 fields.

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

    Name the main form *TeamData* and the subform *TeamDataSubform*.

8. Using the Report Wizard, create a report to show the results of the *Query6B* query. Display all fields from the query.

    View by teams and sort by season in ascending order. Use a stepped layout and portrait page orientation. Name the report *ChampionSummary*.

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

9. Run the Compact and Repair Database utility on your database. Ignore any errors you receive when running the utility.

Microsoft Excel Portion

10. Create a new Microsoft Excel workbook named **finalexamreview_bsp_*lastname_firstname*.xlsx**.

11. We must adjust the sheets in our workbook.

    a. Rename *Sheet1* to *Champion Salaries*.

12. Import the following item into the workbook:

    a. *Query6D* query from the Microsoft Access database – Import as a table starting in cell **A1** of the *Champion Salaries* sheet.

    NOTE: Microsoft Access must be closed before importing the query.

13. We wish to apply formatting to the *Champion Salaries* sheet.

    a. For the table, turn on the **First Column** option.

b.   Format the cells as indicated below:

  i.   **B2** through **B11**: currency with no decimal places

c.   Apply *Red-Yellow-Green* color scale conditional formatting to cells **B2** through **B11**.

14. We would like to create a chart to display information on the salaries for championship teams.

a.   Create a new 2-D line chart based on cells **A1** through **B11** of the *Champion Salaries* sheet. Move the chart to a new sheet named *Champion Salaries Chart*.

Ensure the years are shown as labels for the horizontal (category) axis, not plotted as chart data. Specify appropriate chart and axis titles.

b.   Add a trendline based on the average payroll. Use the trendline type that best fits the data and project the values forward 10 periods (through 2019). Display the **R-squared** value on the chart.

NOTE: You cannot use the *Moving Average* type for your trendline.

15. To better understand our data, we wish to create a PivotTable.

a.   Create a new PivotTable based on the data in cells **A1** through **B11** of the *Champion Salaries* sheet. Place the PivotTable on a new sheet named *Champion Salaries PivotTable*.

b.   On the PivotTable, do the following:

  i.   Add the season as a **Rows** field.

  ii.   Add the average payroll as a **Values** field.

c.   We need to perform formatting on the PivotTable.

  i.   Group the years into sets of 2 starting at 2000.

  ii.   Summarize the average payroll figures by averaging them.

  iii.   Format the cells as indicated below:

    (1) **Average of AveragePayroll** field: currency with no decimal places

Microsoft PowerPoint Portion

16. Create a new Microsoft PowerPoint presentation named **finalexamreview_bsp_*lastname_firstname*.pptx**.

17. In the presentation, create the following slides:

a.   *Title Slide*-type slide listing a title for the presentation, your name, course section, and an automatically updating date.

b. *Title and Content*-type slide titled `Champion Salaries`. Add the chart from the *Champion Salaries* sheet in your Microsoft Excel workbook to the content area of the slide.

c. *Title and Content*-type slide titled `Payroll Prediction`. In the content area of the slide, indicate which trendline type was used on *Champion Salaries Chart* and the projected payroll at the end of the forecasting period.

18. Create *Title and Content*-type slides to answer four of the five analysis questions below. Respond to one question per slide. Title each slide with the name of the question being answered (e.g., "Question A").

   a. Is there a relationship between team salary spending and championships won?

   b. The league division a team is in roughly correlates with its location in the country. Is there a pattern between salary spending by division and where the teams are located? Why might this be?

   c. How does a team's salary spending impact the amount of wins it receives? Is it possible for a team to have good performance but low salaries?

   d. Some teams have high total salary spending, but the median of their player salaries is fairly low. How could this be?

   e. Why might it be difficult for a relatively poor, low-spending team to be able to increase its salary spending?

19. We wish to apply formatting to the presentation. Use your best judgment to create a professional-looking presentation.

   a. Apply one design theme of your choice to all slides.

   b. Apply an animation of your choice to the *Champion Salaries* chart.

   c. Apply slide transitions of your choice to all slides.

   d. Edit the parent (top-most) slide master to add the **batter.png** image to the bottom left corner of the slides. Size the image to be 0.5-inches high by 0.5-inches wide.

      NOTE: Depending on the design theme used, the image may not appear on title slides. This is acceptable as long as the image is correctly added to the slide master.

   e. Add your name, an automatically updating date, and the slide number to the footer of all slides except the title slide.

Final Exam Review
Baseball Salary Problem

Grading Rubric

This is a practice assignment and is worth no points. A comparable Exam would be worth 150 points and graded using this rubric, with partial credit awarded as appropriate:

Step 3	5 points	Step 12	5 points
Steps 4a-b	10 points total	Steps 13a-c	5 points total
Step 5	5 points	Steps 14a-b	15 points total
Steps 6a-d	7.5 points each	Steps 15a-c	15 points total
Step 7	5 points	Steps 17a-c	9 points total
Step 8	5 points	Steps 18a-e (pick 4 of 5)	7.5 points each
Step 11a	3 points	Steps 19a-e	8 points total

The analysis questions in Steps 18a-e can be evaluated using this rubric:

Standard	Meets Requirements (3.75 points)	Does Not Meet Requirements (0 points)
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] "Major League Baseball," *Wikipedia*. Available: *https://en.wikipedia.org/w/index.php?title=Major_League_Baseball&oldid=724237859*.

[2] "Current Major League Baseball franchises," *Wikipedia*. Available: *https://en.wikipedia.org/w/index.php?title=Current_Major_League_Baseball_franchises&oldid=675940837*.

[3] "MLB Regular Season Standings," *ESPN.com*. Available: *http://espn.go.com/mlb/standings*.

[4] "World Series Winners, Stats, and Results and Postseason Series," *Baseball-Reference.com*. Available: *http://www.baseball-reference.com/postseason/*. Accessed: Oct. 03, 2015.

[5] "MLB Salaries," *USA TODAY*. Available: *http://www.usatoday.com/sports/mlb/salaries/*.