MSBA 5223 – Database Foundations
Assignment 5

The purpose of this assignment is to help you practice the following skills that are essential to your success in this course and in your professional life beyond school if you have the opportunity to work with databases.

- Apply knowledge that you have acquired from your readings or in class
- Code SELECT statements that require any of the language elements presented in these chapters or previous chapters.
- Code INSERT, DELETE, and UPDATE statements that require any of the language elements presented in these chapters or previous chapters.

Another purpose of this assignment is for you to possibly struggle and feel confused while you apply what you have learned in a slightly different context than what was provided in examples. This will allow you to internalize the use of the various techniques and develop your own approach for addressing problems. The purpose is NOT to make you struggle overmuch and hit your head against a brick wall. Work with your study group! If you don't know why something isn't working, ask me! If you are not sure why something is doing something other than you expected, ask me. I am here to help you learn although I do expect you to think about it and try before asking!

Notes about submitting your assignment:

More detailed information was in Assignment 2.

Be sure to save your document periodically. When you have finished the assignment, save the document as a PDF.

Submit the PDF to the assignment.

Each answer is worth 6.65 points except where marked otherwise.

Execute Queries to Retrieve Information from the MurachCollege Database

1. Write a SELECT statement that returns the same result set as this SELECT statement, but don't use a join. Instead, use a subquery in a WHERE clause that uses the IN keyword.

```
SELECT  DISTINCT LastName, FirstName
FROM    Instructors i
        JOIN Courses c
            ON i.InstructorID = c.InstructorID
ORDER BY LastName, FirstName
```

Paste your entire query into Word. Use the Snipping Tool to capture the results area of your query. Paste it into your Word document as Answer #1.

2. Write a SELECT statement that answers this question: Which instructors have an annual salary that's greater than the average annual salary for all instructors?

   Use a Subquery.

   Return the LastName, FirstName, and AnnualSalary columns for each Instructor.

   Sort the result set by the AnnualSalary column in descending sequence.

Paste your entire query into Word. Use the Snipping Tool to capture the results area of your query. Paste it into your Word document as Answer #2.

3. Write a SELECT statement that returns the LastName and FirstName columns from the Instructors table.

   Return one row for each instructor that doesn't have any courses in the Courses table. To do that, use a subquery introduced with the NOT EXISTS operator.

   Sort the result set by LastName and then by FirstName.

Paste your entire query into Word. Use the Snipping Tool to capture the results area of your query. Paste it into your Word document as Answer #3.

4. Write a SELECT statement that returns the LastName and FirstName columns from the Students table, along with a count of the number of courses each student is taking from the StudentCourses table.

   Return one row for each student that is taking more than one class. To do that, use a subquery with the IN clause that groups the student course by StudentID.

   Group and sort the result set by the LastName and then by the FirstName.

Paste your entire final query into Word. Use the Snipping Tool to capture the results area of your query. Paste it into your Word document as Answer #4.

5. Write a SELECT statement that returns the LastName, FirstName, and AnnualSalary columns of each instructor that has a unique annual salary. In other words, don't include instructors that have the same annual salary as another instructor.
   Use a subquery.
   Sort the results by LastName and then by FirstName.

Paste your entire query into Word. Use the Snipping Tool to capture the results area of your query. Paste it into your Word document as Answer #5.

To test whether a table has been modified correctly as you do these exercises, you can write and run an appropriate SELECT statement. But do NOT include the SELECT query or results in your submission. I want to see the results from the original query.

6. Write an INSERT statement that adds this row to the Departments table:

   DepartmentName: History

   Code the INSERT statement so SQL Server automatically generates the value for the DepartmentID column.

Paste your entire query into Word. Use the Snipping Tool to capture the Results area of your query. Paste it into your Word document as Answer #6.

7. Write a **single** INSERT statement that adds these rows to the Instructors table:
   Write this statement without using a column list. Do NOT hardcode the date.

InstructorID:	The next automatically generated ID
LastName:	Benedict
FirstName:	Susan
Status:	P
DepartmentChairman:	0
HireDate:	Today's date
AnnualSalary:	34000.00
DepartmentID:	9

InstructorID:	The next automatically generated ID
LastName:	Adams
FirstName:	null
Status:	F
DepartmentChairman:	1
HireDate:	Today's date
AnnualSalary:	66000.00
DepartmentID:	9

Paste your entire query into Word. Use the Snipping Tool to capture the complete Results area of your query. Paste it into your Word document as Answer #7.

8. Write an UPDATE statement that modifies the first instructor you added in exercise 7. This statement should change the AnnualSalary column from 34,000 to 35,0000, and it should use the InstructorID column to identify the row.

Paste your entire query into Word. Use the Snipping Tool to capture the complete Results area of your query. Paste it into your Word document as Answer #8.

9. Write a DELETE statement that deletes the second instructor you added in exercise 7. This statement should use the InstructorID column to identify the row.

> Paste your entire query into Word.
> Use the Snipping Tool to capture the complete Results area of your query. Paste it into your Word document as Answer #9.

10. Write a DELETE statement that deletes the row in the Departments table that has an ID of 9. When you execute this statement, it will produce an error since the department has related rows in the Instructors table. To fix that, precede the DELETE statement with another DELETE statement that deletes all instructors in this department. Execute both queries at the same time.

> Paste both queries (in the proper order) into Word.
> Use the Snipping Tool to capture the complete Results area of your query. Paste it into your Word document as Answer #10.

11. Write an UPDATE statement that increases the annual salary for all instructors in the Education department by 5%. To do that, join the Departments and Instructors tables and then filter the rows by the department name.

> Paste your entire query into Word.
> Use the Snipping Tool to capture the complete Results area of your query. Paste it into your Word document as Answer #11.

12. Write a DELETE statement that deletes instructors that aren't teaching any courses. To do that, use a subquery in the WHERE clause.

> Paste your entire query into Word.
> Use the Snipping Tool to capture the complete Results area of your query. Paste it into your Word document as Answer #12.

13. Write an INSERT statement that creates the GradStudents table and inserts rows from the Students table into GradStudents at the same time. Include only the rows for students that have graduated, and don't use a column list. The columns in GradStudents should be the same as those in Students.

> Paste your entire query into Word.
> Use the Snipping Tool to capture the complete Results area of your query. Paste it into your Word document as Answer #13.

Restore the MurachCollege database from the same backup file you originally used to obtain the database. This MUST be done before continuing.

14. Write a SELECT statement that returns these columns from the Instructors table:
    The monthly salary (the AnnualSalary column divided by 12)
    A column that uses the CAST function to return the monthly salary with 1 digit to the right of the decimal point
    A column that uses the CONVERT function to return the monthly salary as an integer
    A column that uses the CAST function to return the monthly salary as an integer

    Paste your entire query into Word.
    Use the Snipping Tool to capture the complete Results area of your query. Paste it into your Word document as Answer #14.

15. Write a SELECT statement that returns these columns from the Students table:
    The EnrollmentDate column
    A column that uses the CAST function to return the EnrollmentDate column with its date only (year, month, and day)
    A column that uses the CAST function to return the EnrollmentDate column with its full time only (hour, minutes, seconds, and milliseconds)
    A column that uses the CAST function to return the EnrollmentDate column with just the year and month

    Paste your entire query into Word.
    Use the Snipping Tool to capture the complete Results area of your query. Paste it into your Word document as Answer #15.

16. Write a SELECT statement that returns these colums from the Students table:
    A column that uses the CONVERT function to return the EnrollmentDate column in this format: MM/DD/YYYY. In other words, use 2-digit months and days and a 4-digit year, and separate each date component with slashes.
    A column that uses the CONVERT function to return the EnrollmentDate column with the date, and the hours and minutes on a 12-hour clock with an am/pm indicator.
    A column that uses the CONVERT function to return the EnrollmentDate column with just the time in a 24-hour format, including the milliseconds.
    A column that uses the CONVERT function to return the EnrollmentDate column with just the month and day.

    Paste your entire query into Word.
    Use the Snipping Tool to capture the complete Results area of your query. Paste it into your Word document as Answer #16.

17. Make sure your name is on your document. Submit the one document **as a PDF** to Assignment 5.