

Macro and SQL Assignment

For this assignment, you must submit the SAS code you used to conduct your analysis (saved as a .sas file), the SAS dataset file (saved as a .sas7bdat file), your report, save as a .docx file, and your PowerPoint file. I should be able upload the .sas file and the .sas7bdat file and execute the code. You should test that you can do this before submitting these files.

Scenario: During a job interview for a SAS-related position, you are likely to encounter a question similar to "Tell me about a challenging project you completed that required the use of PROC SQL and SAS Macros." You are to develop an eight-to-ten-minute presentation that answers that question and a MS Word document to accompany the presentation.

Important: If a Google search results in the answer to your driving question(s), your "insights" are not insightful. You will lose points for this type of project.

Report (50 Points)

The written analysis should be no more than **10 pages single-spaced** (not including a title page and table of contents), have one-inch margins and use Verdana 10-point font.

Introduction

Introduce the reader to the subject by provide the background information necessary to lay the groundwork for the analysis.

Data

Describe your data set(s), the source, why the data were collected, by whom and under what circumstances. Include a brief description of the data set characteristics (e.g., number of rows, number of columns, range of values for major variables, etc.). You cannot use one of the SAS-provided datasets.

Analysis and Results

Provide a high-level description of the SQL and Macro processes and the results of your analysis.

Conclusion

Provide a recap of the introduction, data source(s), analysis process and insights. You do not need to recap the data preparation or analysis process.

Appendix

The appendix sections should contain all the code and references to the data sources. Comment your code to indicate where you completed each of the required operations (see below).

Check the report for formatting, grammatical and usage errors. You must submit the report as an MS Word document. Other file formats are not acceptable.

Note: Your appendix must include the SAS code you used to create the graphics for your presentation. You cannot use Tableau, Power BI or Excel to produce the graphics for your presentation.

Presentation (50 Points)

You must deliver a 5-to-10-minute presentation.

Note: You cannot use Tableau, Power BI or Excel to produce the graphics for your presentation.

The presentation must follow the Assertion Evidence Format (<http://www.robertyale.com/powerpoint-presentation-design> and <https://www.assertion-evidence.com>).

Presentations slides should not contain any code. It should focus on insights gained because of the exploratory analysis. Identify a few interesting insights you gained through your analysis that might warrant further analysis. The title and final slides do not have to conform to the Assertion-Evidence format.

Note 1: You must submit all your files to the assignment Dropbox before the start of class. I will download the PowerPoint files for you to use during your presentation. You may not use PowerPoint files other than the ones you uploaded.

Presentation Rubric	Points
Presentation completed within the prescribed time.	/10
Slides, except title and conclusion, have a clear declarative sentence/assertion.	/20
Each slide contains one and only one assertion in the title.	/15
Slides, except title and conclusion, contain clear <u>visual</u> evidence (not tables) supporting the assertion.	/15
Blocks of text contain no more than two lines.	/15
Total	/75

All (100%), Most (75%), Few (50%), None (0%)

Assessment Guide for SQL Section (40 Points)

Note: You can use procedures not specified below. These are minimum requirements.

The report is properly formatted (see above).

Few or no grammatical and/or spelling mistakes

Appendix with full code

Presentation follows logical flow and addresses major parts of assignment (question, data sources, high-level description of SQL procedures, results and potential extensions).

Your SQL code should demonstrate each of these items (use comments to note which numbered skill below you are demonstrating.)

Generate detail reports by working with a single table, joining tables, or using set operators in the SQL procedure

1. Use the SELECT statement
2. Select columns in a table
3. Create new columns
4. Sort data
5. Retrieve rows that satisfy a condition
6. Validate a query
7. Join tables (ex: inner joins, full joins, right joins, or left joins)

8. Combine tables using set operators - (ex: union, outer join, except, or intercept)

Generate summary reports by working with a single table, joining tables, or using set operators in the SQL procedure.

9. Summarize data
10. Group data
11. Filter grouped data

Construct sub-queries and in-line views within an SQL procedure step

12. Subset data by using non-correlated subqueries (HAVING clause)
13. Subset data by using correlated subqueries
14. Reference an in-line view with other views or tables (multiple tables)

Compare solving a problem using the SQL procedure versus using traditional SAS programming techniques.

15. Insert rows into tables
16. Update data values in a table
17. Delete rows
18. Alter Columns attributes
19. Create an index
20. Delete a table

Access Dictionary Tables using the SQL procedure.

21. Use the DESCRIBE TABLE statement

Assessment Guide for Macros Section (40 Points)

In addition to items addressed in the SQL section above, in the appendix with full code (use comments to note which numbered skill below you are demonstrating.)

Note: You can use procedures not specified below. These are minimum requirements.

Your documented code should demonstrate each of the skills listed below. Use comments to note where in your code you demonstrate each of these skills. Ex: <#1> would be sufficient to note where you demonstrate the use of skills number one.

Macro Processing

22. Create and use user-defined and automatic macro variables within the SAS Macro Language.
23. Define Macro variables.
24. Use %GLOBAL statement.
25. Use INTO clause of the SELECT statement in SQL.
26. Use %LOCAL statement.
27. Use the SYMGET function to return the value of a macro variable to the DATA step during DATA step execution.

Automate programs by defining and calling macros using the SAS Macro Language.

28. Define a macro.
29. Use the %MACRO statement.
30. Insert comments into macros.
31. Pass Information into a macro using parameters.

32. Generate SAS Code conditionally by using the %IF-%THEN-%ELSE macro statements or iterative %DO statements.

Understand the use of macro functions.

33. Use macro character functions.
34. Use macro quoting functions.
35. Use macro evaluation Functions.

Use various system options that are available for macro debugging and displaying values of user-defined and automatic macro variables in the SAS log.

36. Trace the flow of execution with MLOGIC.
37. Examine the generated SAS statements with MPRINT.
38. Examine macro variable resolution with SYMBOLGEN.
39. Use the %PUT statement to track problems.

Create data-driven programs using SAS Macro Language.

40. Create macro variables with a list of values.
41. Use indirect reference to macro variables.
42. Generate repetitive macro calls using the %DO loop and macro variable.

**** Do not forget to comment your code to indicate where you completed each of these required operations. You will lose points if you do not comment your code.**

All Required Files Submitted (20 Points)

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.sas file
.sas7bdat file
.docx file
.pptx file