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SAS Certified Specialist: Base Programming Using SAS 9.4

Exam Content & Pricing

Candidates who want to be *SAS Certified Specialist* in base SAS programming must read this. For *Training & Certification dumps* you can reach us on contacts mentioned above or visit our website www.greatonlinetraining.com.

❖ This exam is administered by SAS and Pearson VUE.

❖ 40-45 multiple choice and short-answer questions.

❖ Exam Duration is 125 minutes.

❖ Passing score is 725. Uses a score range from 200 to 1,000 points.

❖ Use exam ID A00-231, when registering with Pearson VUE.

❖ Use exam ID A00-233, if you currently hold the SAS Certified Base Programmer for SAS 9 credential. This is a shorter and less expensive delta exam. Its duration is 75 minutes, 18-22 questions, and costs $75 USD.

❖ This exam is based on SAS 9.4

❖ Pricing Information: SAS 9.4 Base Programming Specialist exam fee $190 USD.

Exam Content Guide

Access and Create Data Structures

❖ Create temporary and permanent SAS data sets.
❖ Use a DATA step to create a SAS data set from an existing SAS data set.

Investigate SAS data libraries using base SAS utility procedures.

❖ Use a LIBNAME statement to assign a library reference name to a SAS library.
❖ Investigate a library programmatically using the CONTENTS procedure.

Access data

❖ Access SAS data sets with the SET statement.

- ❖ Use PROC IMPORT to access non-SAS data sources.
  - ✓ Read delimited and Microsoft Excel (.xlsx) files with PROC IMPORT.
  - ✓ Use PROC IMPORT statement options (OUT=, DBMS=, REPLACE)
  - ✓ Use the GUESSINGROWS statement
- ❖ Use the SAS/ACCESS XLSX engine to read a Microsoft Excel workbook.xlsx file.

Combine SAS data sets

- ❖ Concatenate data sets.
- ❖ Merge data sets one-to-one.
- ❖ Merge data sets one-to-many.

Create and manipulate SAS date values

- ❖ Explain how SAS stores date and time values.
- ❖ Use SAS informats to read common date and time expressions.
- ❖ Use SAS date and time formats to specify how the values are displayed.

Control which observations and variables in a SAS data set are processed and output

- ❖ Use the WHERE statement in the DATA step to select observations to be processed.
- ❖ Subset variables to be output by using the DROP and KEEP statements.
- ❖ Use the DROP= and KEEP= data set options to specify columns to be processed and/or output.

Manage Data

Sort observations in a SAS data set

- ❖ Use the SORT Procedure to re-order observations in place or output to a new dataset.
- ❖ Remove duplicate observations with the SORT Procedure.

Conditionally execute SAS statements

- ❖ Use IF-THEN/ELSE statements to process data conditionally.
- ❖ Use DO and END statements to execute multiple statements conditionally.

Use assignment statements in the DATA step

- ❖ Create new variables and assign a value.
- ❖ Assign a new value to an existing variable.
- ❖ Assign the value of an expression to a variable.
- ❖ Assign a constant date value to a variable.

Modify variable attributes using options and statements in the DATA step

- ❖ Change the names of variables by using the RENAME= data set option.
- ❖ Use LABEL and FORMAT statements to modify attributes in a DATA step.

❖ Define the length of a variable using the LENGTH statement.

Accumulate sub-totals and totals using DATA step statements

❖ Use the BY statement to aggregate by subgroups.
❖ User first. and last. processing to identify where groups begin and end.
❖ Use the RETAIN and SUM statements.

Use SAS functions to manipulate character data, numeric data, and SAS date values

❖ Use SAS functions such as SCAN, SUBSTR, TRIM, UPCASE, and LOWCASE to perform tasks such as the tasks shown below.
   ✓ Replace the contents of a character value.
   ✓ Trim trailing blanks from a character value.
   ✓ Search a character value and extract a portion of the value.
   ✓ Convert a character value to upper or lowercase.
   ❖ Use SAS arithmetic, financial, and probability functions to create or modify numeric values by using the INT and ROUND functions.
   ❖ Create SAS date values by using the functions MDY, TODAY, DATE, and TIME.
   ❖ Extract the month, year, and interval from a SAS date value by using the functions
   ❖ YEAR, QTR, MONTH, and DAY.
   ❖ Perform calculations with date and datetime values and time intervals by using the functions INTCK, INTNX, DATDIF and YRDIF.

Use SAS functions to convert character data to numeric and vice versa

❖ Explain the automatic conversion that SAS uses to convert values between data types.
❖ Use the INPUT function to explicitly convert character data values to numeric values.

Process data using DO LOOPS

❖ Explain how iterative DO loops function.
❖ Use DO loops to eliminate redundant code and to perform repetitive calculations.
❖ Use conditional DO loops.
❖ Use nested DO loops.

Restructure SAS data sets with PROC TRANSPOSE

❖ Select variables to transpose with the VAR statement.
❖ Rename transposed variables with the ID statement.
❖ Process data within groups using the BY statement.
❖ Use PROC TRANSPOSE options (OUT=, PREFIX= and NAME=).

Use macro variables to simplify program maintenance

❖ Create macro variables with the %LET statement
❖ Use macro variables within SAS programs.

Error Handling

Identify and resolve programming logic errors.

- ❖ Use the PUTLOG Statement in the Data Step to help identify logic errors.
- ❖ Use PUTLOG to write the value of variable, formatted values, or to write values of all variables.
- ❖ Use PUTLOG with Conditional logic.
- ❖ Use temporary variables N and ERROR to debug a DATA step.

Recognize and correct syntax errors

- ❖ Identify the characteristics of SAS statements.
- ❖ Define SAS syntax rules including the typical types of syntax errors such as misspelled keywords, unmatched quotation marks, missing semicolons, and invalid options.
- ❖ Use the log to help diagnose syntax errors in a given program

Generate Reports and Output

Generate list reports using the PRINT procedure

- ❖ Modify the default behavior of PROC PRINT by adding statements and options such as
    - ❖ Use the VAR statement to select and order variables.
    - ❖ Calculate totals with a SUM statement.
    - ❖ Select observations with a WHERE statement.
    - ❖ Use the ID statement to identify observations.
    - ❖ Use the BY statement to process groups.

Generate summary reports and frequency tables using base SAS procedures

- ❖ Produce one-way and two-way frequency tables with the FREQ procedure.
- ❖ Enhance frequency tables with options (NLEVELS, ORDER=).
- ❖ Use PROC FREQ to validate data in a SAS data set.
- ❖ Calculate summary statistics and multilevel summaries using the MEANS procedure
- ❖ Enhance summary tables with options.
- ❖ Identify extreme and missing values with the UNIVARIATE procedure.

Enhance reports system user-defined formats, titles, footnotes and SAS System reporting options

- ❖ Use PROC FORMAT to define custom formats.
    - ✓ VALUE statement
    - ✓ CNTLIN= option
- ❖ Use the LABEL statement to define descriptive column headings.
- ❖ Control the use of column headings with the LABEL and SPLIT=options in Proc Print output.

Generate reports using ODS statements

- ❖ Identify the Output Delivery System destinations.
- ❖ Create HTML, PDF, RTF, and files with ODS statements.
- ❖ Use the STYLE=option to specify a style template.
- ❖ Create files that can be viewed in Microsoft Excel.

Export data

- ❖ Create a simple raw data file by using the EXPORT procedure as an alternative to the DATA step.
- ❖ Export data to Microsoft Excel using the SAS/ACCESS XLSX engine.

Note: All 23 main objectives will be tested on every exam. The 69 expanded objectives are provided for additional explanation and define the entire domain that could be tested.