SAS 9.4 Programming Fundamentals Exam

Use this exam ID to register:
A00-215

SAS9.4 Programming fundamentals eaxm:

- This exam is administered by SAS and Pearson VUE.
- 60-65 multiple choice and short-answer questions.
- 120 minutes to complete exam.
- Must achieve a score of 68% to pass.
- This exam is based on SAS 9.4 M5.

Pricing %

$120 Exam fee in the US and most other countries.

Fundamental SAS Concepts

Recall general rules of DATA and PROC steps.

Recognize general rules of SAS statements including global statements.

Interpret the SAS log.

Distinguish between syntax and logic errors.

- Recall SAS syntax rules.
- Recognize different types of syntax errors and be able to resolve common problems.
- Recall use of the PUTLOG statement to troubleshoot logic errors.

Explore SAS Data Sets

Recall naming conventions used for SAS data sets and variables.

Recognize variable types (character and numeric).

Explain how to create and manipulate SAS date values.

- Explain how SAS stores date values.

- Recall how to use SAS date formats to specify how the values are displayed.

Recognize how SAS stores missing data.

Use the LIBNAME statement to read SAS data sets.

Use PROC CONTENTS to view the descriptor portion of a data set.

Recall how to use Data Set options: DROP=, KEEP=, RENAME=, OBS=.

Using the DATA Step to Access SAS Data Sets

Use the DATA statement to create one or multiple data sets.

Use the SET statement to read a data set.

Explain how to combine data sets.

- Use MERGE and BY statements to combine multiple data sets horizontally.
  Use the IN= option on the MERGE statement to control processing.
  Use the SET statement to combine multiple data sets vertically.

Explain the compilation and execution process of the DATA step.

- Describe how the Program Data Vector PDV is created.
- Explain how the LENGTH statement affects the default behavior of the PDV.
- Describe the process of the data step iteration.

Subset observations and variables.

- Use the WHERE statement to subset observations during input.
- Use the IF statement to subset observations during processing.
- Use DROP/KEEP statements to subset variables at output.
- Use DROP=/KEEP= options to subset variables at input and output.

Using the DATA Step to Manipulate Data

Create or update variables.

- Use the assignment statement to create character and numeric variables.
- Recall how to assign a date constant to a variable.

Recognize SAS Functions.

- Use Character Functions: UPCASE, PROPCASE, SUBSTR, SCAN, FIND, LENGTH, CATX.
- Use Date Functions: MONTH, DAY, YEAR, TODAY, MDY.
- Use Truncation Functions: ROUND, INT.
- Use Descriptive Stats Functions: MEAN, SUM.

Perform conditional processing.

- Use the IF-THEN and ELSE statements.
- Use IF-THEN DO and ELSE DO statements.
- Use the LENGTH statement for assigning byte size of character variables.

Control the output of observations.

- Use the OUTPUT statement to output to a specific data set.
- Use the OUTPUT statement to control output timing.

Create an accumulating variable.

Use the SUM statement.
Use BY group processing with FIRST. and LAST to accumulate in groups.

Explain the function of iterative DO loops.

Assign permanent attributes.

- Use the FORMAT statement to change the display of the variable value.
- Use the LABEL statement to change the display of the variable name.

Generate Reports Using PROC Steps

Use PROC PRINT to generate a detail report.

- Use the LABEL option and NOOBS options to enhance the report.
- Use the VAR statement to control the display of variables.

Use PROC MEANS to generate a summary report.

- Use the MAXDEC= option to control the display of decimal places.
- Use VAR and CLASS statements to control the structure of the report.

Use PROC FREQ to generate a frequency report.

- Use the ORDER=option to control the order of the rows of the report.
- Use the TABLES statement for one-way and two-way tables.
- Use the NOCUM and NOPERCENT options in a one-way table.
- Use the CROSSLIST option to control the layout of two-way tables.

Identify methods to enhance reports.

- Use TITLE statement.
- Use FOOTNOTE statement.
- Use FORMAT statement for temporary attributes.
- Use the LABEL statement for temporary attributes.
- Use the WHERE statement for subsetting observations.

Use Utility Procedures

Use PROC SORT to sort a report based on values of a variable.

- Use the OUT= option to create an output data set that contains the data in sorted order.
  Use the BY statement to specify the variable(s) whose values are used to sort the data.
  Use the DESCENDING option with the BY statement to sort options in descending order.

Use PROC FORMAT to define custom formats.

- Use the VALUE statement to display one or more values.
- Use the keyword OTHER to label missing values.

Import and Export non-SAS files

Use a procedure to transfer a CSV file.

- Use PROC IMPORT to import a CSV file.
- Use the PROC EXPORT to export to a CSV file.

Use the LIBNAME statement to import/export an Excel file with XLSX engine.

Use ODS to direct reports to external files.

- Use the destinations of PDF, RTF, EXCEL.
- Use the options of FILE= and STYLE=.

Note: All 32 main objectives will be tested on every exam. The 84 expanded objectives are provided for additional explanation and define the entire domain that could be tested.

Sample Questions

The following sample questions are not inclusive and do not necessarily represent all of the types of questions that comprise the exams. The questions are not designed to assess an individual's readiness to take a certification exam. Note: Rationales for each question provided at the end of this document. **SAS 9.4 Programming Fundamentals**

Question 1 Which ends a step?

      A.   a RUN statement

      B.   an END statement

      C.   an ENDSTEP statement D. a semicolon

correct answer= "A"

Question 2

Given the SAS log shown below:

```
199     dat students;
        ---
        14

WARNING 14-169: Assuming the symbol DATA was misspelled as dat.
200     set sashelp.class;
201     ratio=height/weight;
202     run;

NOTE: There were 19 observations read from the data set
SASHELP.CLASS.
NOTE: The data set WORK.STUDENTS has 19 observations and 6
variables.

203
204     proc means data=students;
205     class sex;
206     var ratio;
207     run;

NOTE: There were 19 observations read from the data set
WORK.STUDENTS.
```

Which statement is true?
- A.   The PROC MEANS step failed.
- B.   The DATA step failed.
- C.   The DATA step and PROC MEANS step executed.
- D.   The program stopped processing after the DATA step.

correct answer= "C"

Question 3

Which statement is true regarding variable names?

- A.   Variable names are from 1 to 64 characters in length.
- B.   Variable names must be in all lower case.
- C.   Variable names can start with a number.
- D.   Variable names can end with a number.

correct answer= "D"

Question 4

Which statement is true about the code shown below?

```
data revenue;
merge sales(in=sold) stock;
by productID;
if sold;
run;
```

    A.   Only columns from sales are in `revenue`.

    B.   Only rows with information from `sales` are in `revenue`.

    C.   Only columns from `stock` are in `revenue`.

    D.   Only rows with information from `stock` are in `revenue`. correct answer= "B"

Question 5

Which two actions occur during the execution phase? (Choose two.)

    A.   An observation from the input data set is read into the PDV.

    B.   The descriptor portion is created.

    C.   The PDV is initialized.

    D.   The program is checked for syntax errors.

correct answer= "A, C"

Question 6

Which two statements are true regarding the KEEP and DROP statements? (Choose two.)

A. They can be placed anywhere in the DATA step.

B. They affect all data sets that are being created.

C. They can be used in PROC steps.

D. They control the order of the variables in the output data set.

correct answer= "A,B"

Question 7

What is the value of $x2$ in the NUMS data set?

```
data nums;
x=7.56;
x2=int(x);
run;
```

A. 7.5

B. 8

C. 7

D. 7.56

correct answer= "C"

Question 8

Given the program below:

```
data strings;
str="What day is it?";
pos=find(str,'day');
run;
```

What numeric value is assigned to the variable pos when the program executes? __

Enter your numeric answer in the space above.

correct answer= "6"

Question 9

Given the SAS program shown below:

```
title1 "Last Year's Standings";
title2 "Excludes preseason";
proc print data=football;
run;

title1;
title2 "Includes preseason";
proc print data=football2;
run;
```

What title appears on the second PROC PRINT report?

A. `Last Year's Standings Includes`
   `preseason`
B. `Last Year's Standings`
   `Excludes preseason`
C. "This line is blank."
   `Includes preseason`
D. "This line is blank."
   `Excludes preseason`

correct answer= "C"

Question 10

Which statement is true regarding PROC IMPORT?

    A.   By default, PROC IMPORT overwrites an existing SAS data set.

    B.   PROC IMPORT writes SAS data to a CSV file.

    C.   The DBMS= option identifies the type of data to import.

    D.   Dates are imported as character values.

correct answer= "C"