

SAS® Global Certification

A World of Opportunity



SAS® Certified Base Programmer for SAS® 9 Credential powered by citrep EXPANDED

Exam to complete:

SAS® Base Programming for SAS® 9

Audience

Successful candidates should have current programming and data management experience using SAS® 9 to:

- Import and export raw data files.
- Manipulate and transform data.
- Combine SAS data sets.
- Create basic detail and summary reports using SAS procedures.
- Identify and correct data syntax and programming logic errors.

Exam Content

Accessing Data

- Use FORMATTED and LIST input to read raw data files.
- Use INFILE statement options to control processing when reading raw data files.
- Use various components of an INPUT statement to process raw data files, including column and line pointer controls, and trailing @ controls.
- Combine SAS data sets using the DATA step.
- Access an Excel workbook.

Creating Data Structures

- Create temporary and permanent SAS data sets.
- Create and manipulate SAS date values.
- Export data to standard and comma-delimited raw data files.

Managing Data

- Investigate SAS data libraries using Base SAS utility procedures.
- Sort observations in a SAS data set.
- Conditionally execute SAS statements.

- Using the DATA step to modify variable attributes using options and statements, accumulate subtotals and totals, and use assignment statements.
- Use SAS functions to manipulate character data, numeric data and SAS date values.
- Use SAS functions to convert character data to numeric and vice versa.
- Process data using DO loops and SAS arrays.
- Validate and clean data.

Generating Reports

- Generate list reports using the PRINT procedure.
- Generate summary reports and frequency tables using Base SAS procedures.
- Enhance reports through the use of user-defined formats, titles, footnotes and SAS system reporting options.
- Generate HTML reports using ODS statements.

Handling Errors

- Identify and resolve programming logic errors.
- Recognize and correct syntax errors.
- Examine and resolve data errors.

Course Details

SAS® Programming 1: Essentials

Duration: 3 days
Course Fee: S\$1,850

SAS® Programming 2: Data Manipulation Techniques

Duration: 3 days
Course Fee: S\$2,000

Exam Registration

SAS® Base Programming for SAS® 9 Exams are administered by Prometric:
www.prometric.com/sas

For more information on courses and schedule:

Web: www.sas.com/singapore/training
Email: training@sgp.sas.com
Call: 6398 8988

CITREP Expanded supports:

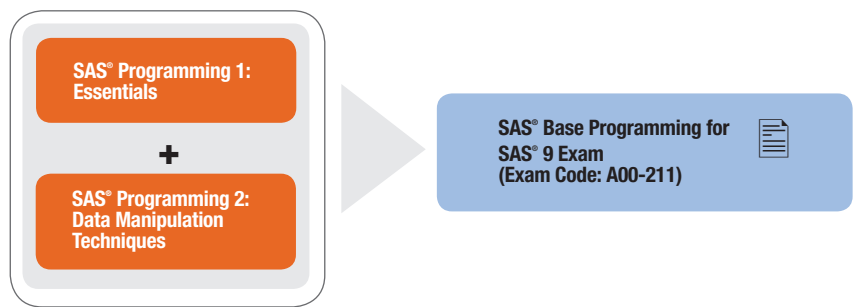
- Critical & Emerging Infocomm Skills @ up to 50% of the course and/or exam fees, capped at \$2500 (course and exam) / \$500 (exam only) per trainee.
- Funding support is eligible for Singapore citizens and permanent residents.
- Valid for courses and examinations commencing on or before 31st March 2013.

Terms and conditions apply. Please visit www.ida.gov.sg/citrep for full details.

MR Ref Code: CITREP1112/MR/11-05/408

Exam Preparation Options

Experience is a critical component to become a SAS Certified Professional. This diagram illustrates training options available to help you prepare.



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SAS® Global Certification

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SAS® Certified Advanced Programmer for SAS®9 Credential powered by citrep EXPANDED

Exam to complete: SAS® Advanced Programming for SAS®9

**Prior to sitting for this Advanced exam, candidates should hold the SAS® Certified Base Programmer for SAS®9 credential.*

Audience

Successful candidates should have current programming and data management experience using SAS®9 to:

- Use advanced DATA step programming statements and efficiency techniques to solve complex problems.
- Write and interpret SAS SQL code.
- Create & use the SAS MARCO Facility

Exam Content

Accessing Data Using SQL

- Generate detail reports by working with a single table, joining tables, or using set operators in the SQL procedure.
- Generate summary reports by working with a single table, joining tables, or using set operators in the SQL procedure.
- Construct subqueries and in-line views within an SQL procedure step.
- Compare solving a problem using the SQL procedure versus using traditional SAS programming techniques.
- Access Dictionary Tables using the SQL procedure.

Macro Processing

- Create and use user-defined and automatic macro variables within the SAS Macro Language.
- Automate programs by defining and calling macros using the SAS Macro Language.
- Understand the use of macro 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.

- Create data-driven programs using SAS Macro Language.

Advanced Programming Techniques

- Demonstrate the use of advanced data look-up techniques such as array processing, hash objects, formats, and combining/merging data.
- Reduce I/O by controlling the space required to store SAS data sets using compression techniques, length statements, or eliminating variables and observations.
- Reduce programming time by developing reusable SAS programs that incorporate DATA step views, DATA steps that write SAS programs, and the FCMP procedure.
- Perform effective benchmarking by using the appropriate SAS System options and interpreting the resulting resource utilization statistics.
- Determine the resources used by the SORT procedure and avoid unnecessary sorts by using appropriate indexes, data set options, BY statement options, and the CLASS statement.
- Identify appropriate applications for using indexes and create them using the DATA step, the DATASETS procedure, or the SQL procedure.

- Compare techniques to eliminate duplicate data using the DATA step, the SORT procedure, and the SQL procedure.

Course Details

SAS® SQL 1: Essentials

Duration: 2 days
Course Fee: S\$1,850

SAS® Programming 3 Advanced Techniques and Efficiencies and SAS® Macro Language 1: Essentials

Duration: 5 days
Course Fee: S\$3,375

Exam Registration

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Exam Preparation Options

Experience is a critical component to become a SAS Certified Professional. This diagram illustrates training options available to help you prepare. Remember, you must hold the Base programmer credential before sitting for the Advanced programmer exam.

