

Sas Macro Programming Made Easy

New and updated for SAS Enterprise Guide 4.2, this pragmatic, example-driven book demonstrates how programmers can use SAS code to enhance the capabilities of SAS Enterprise Guide. Hash objects, an efficient look-up tool in the SAS DATA step, are object-oriented programming structures that function differently from traditional SAS language statements. Michele Burlew's SAS Hash Object Programming Made Easy shows readers how to use these powerful features, which they can program to quickly look up and manage data and to conserve computing resources. SAS provides various look-up techniques, and hash objects are among the newest, so therefore many users may not have yet used them. Because the examples presented vary in complexity, SAS Hash Object Programming Made Easy is useful to SAS users of all experience levels, from novice programmer to advanced programmer. Novice programmers can adapt some of the simpler hash programming techniques as they develop their SAS programming skills. This book helps more experienced programmers learn how to take advantage of hash object programming by comparing traditional processing techniques to those that use hash objects. Additionally, users from diverse fields with different requirements can adapt the examples in SAS Hash Object Programming Made Easy to fit their unique situations. SAS Products and Releases: Base SAS: 9.3_M2, 9.3_M1, 9.3, 9.21_M3, 9.21_M2, 9.21_M1, 9.21, 9.2, 9.1.3, 9.1.2, 9.1, 9.0 In PROC SQL by Example: Using SQL within SAS, author Howard Schreier illustrates the use of PROC SQL in the context of the SAS DATA step and other SAS procedures (such as SORT, FREQ, MEANS, SUMMARY, APPEND, DATASETS, and TRANSPOSE) whose functionality overlaps and complements that of SQL. Using a side-by-side approach, this concise reference guide includes many extensively explained examples showing equivalent DATA step and SQL code, enabling SAS users to take advantage of existing SAS skills and knowledge while learning about SQL. Discussions cover the differences between SQL and the DATA step as well as situations where SQL and the DATA step are used together to benefit from the strengths of each. Topics addressed include working with joins and merges; using subqueries; understanding set operators; using the Macro Facility with PROC SQL; maintaining tables; working with views; using PROC SQL as a report generator; and more. This text is ideal for SAS programmers seeking to add PROC SQL to their SAS toolkits as well as SQL programmers striving to better integrate the SAS DATA step and SQL. This book is part of the SAS Press program.

Reduce the cost and time of cleaning, managing, and preparing research data while also improving data quality! Have you ever wished there was an easy way to reduce your workload and improve the quality of your data? The Data Detective's Toolkit: Cutting-Edge Techniques and SAS Macros to Clean, Prepare, and Manage Data will help you automate many of the labor-intensive tasks needed to turn raw data into high-quality, analysis-ready data. You will find the right tools and techniques in this book to reduce the amount of time needed to clean, edit, validate, and document your data. These tools include SAS macros as well as ingenious ways of using SAS procedures and functions. The innovative logic built into the book's macro programs enables you to monitor the quality of your data using information from the formats and labels created for the variables in your data set. The book explains how to harmonize data sets that need to be combined and automate data cleaning tasks to detect errors in data including out-of-range values, inconsistent flow through skip paths, missing data, no variation in values for a variable, and duplicates. By the end of this book, you will be able to automatically produce codebooks, crosswalks, and data catalogs.

Get up and running with SAS using Ron Cody's easy-to-follow, step-by-step guide. Aimed at beginners, Getting Started with SAS Programming: Using SAS Studio in the Cloud uses short examples to teach SAS programming from the basics to more advanced topics in the point-and-click interactive environment of SAS Studio. To begin, you will learn how to register for SAS OnDemand for Academics, an online delivery platform for teaching and learning statistical analysis that provides free access to SAS software via the cloud. The first part of the book shows you how to use SAS Studio built-in tasks to produce a report, summarize data, and create charts and graphs. It also describes how you can perform basic statistical tests using the interactive point-and-click environment. The second part of the book uses easy-to-follow examples to show you how to write your own SAS programs and how to use SAS procedures to perform a variety of tasks. This part of the book also explains how to read data from a variety of sources: text files, Excel workbooks, and CSV files. In order to get familiar with the SAS Studio environment, this book also shows you how to access dozens of interesting data sets that are included with the SAS OnDemand for Academics platform.

"The macro facility is a popular part of SAS. Macro programming is a required skill for many SAS programming jobs, and the SAS Advanced Programming Certification Exam tests macro processing concepts. Whether you're looking to become certified, land a job, or increase your skills, you'll benefit from SAS Macro Programming Made Easy, Third Edition. By following Michele Burlew's examples and step-by-step instructions, you'll be able to rapidly perform repetitive programming tasks, to pass information between programming steps more easily, and to make your programming easier to read. Updated for SAS 9.4, this book teaches you the elements of the macro facility (macro variables, macro programs, macro language), how to write a macro program, techniques for macro programming, tips on using the macro facility, how the macro facility fits into SAS, and about the interfaces between the macro facility and other components of SAS. Beginning macro programmers will learn to write SAS macro programs quickly and efficiently. More experienced programmers will find this book useful to refresh their conceptual knowledge and expand on their macro programming skills. Ultimately, any user interested in automating their programs including analysts, programmers, and report writers' will find Michele Burlew's book an excellent tutorial." --

How to Become a Top SAS Programmer is designed to help SAS programmers maximize their value to an organization. Users will gain a better understanding of the SAS resources available to them so that they can enhance their SAS skills and knowledge, thereby becoming better SAS programmers.

Sanjay Matange and Dan Heath's Statistical Graphics Procedures by Example: Effective Graphs Using SAS shows the innumerable capabilities of SAS Statistical Graphics (SG) procedures. The authors begin with a general discussion of the principles of effective graphics, ODS Graphics, and the SG procedures. They then move on to show examples of the procedures' many features. The book is designed so that you can easily flip through it, find the graph you need, and view the code right next to the example. Among the topics included are how to combine plot statements to create custom graphs; customizing graph axes, legends, and insets; advanced features, such as annotation and attribute maps; tips and tricks for creating the optimal graph for the intended usage; real-world examples from the health and life sciences domain; and ODS styles. The procedures in Statistical Graphics Procedures by Example are specifically designed

for the creation of analytical graphs. That makes this book a must-read for analysts and statisticians in the health care, clinical trials, financial, and insurance industries. However, you will find that the examples here apply to all fields. This book is part of the SAS Press program.

To write an accomplished program in the DATA step of SAS®, programmers must understand programming logic and know how to implement and even create their own programming algorithm. Handbook of SAS® DATA Step Programming shows readers how best to manage and manipulate data by using the DATA step. The book helps novices avoid common mistakes resulting from a lack of understanding fundamental and unique SAS programming concepts. It explains that learning syntax does not solve all problems; rather, a thorough comprehension of SAS processing is needed for successful programming. The author also guides readers through a programming task. In most of the examples, the author first presents strategies and steps for solving the problem, then offers a solution, and finally gives a more detailed explanation of the solution. Understanding the DATA steps, particularly the program data vector (PDV), is critical to proper data manipulation and management in SAS. This book helps SAS programmers thoroughly grasp the concept of DATA step processing and write accurate programs in the DATA step. Numerous supporting materials, including data sets and programs used in the text, are available on the book's CRC Press web page.

The most useful SAS programming techniques, organized by subject and illustrated with more than 1,000 short examples. Covers data handling, options, procedures, sorting, Internet and desktop file formats, table lookup, and much more. This edition is updated with new features of SAS 9.3.

Using a wealth of easy-to-follow examples, this timesaving book demonstrates the many different styles of reports that are available and the SAS tools used to generate them. Examples enable more experienced programmers to quickly grasp new techniques, while margin notes and additional discussions provide novice users with the details they need for effective learning. The fun and easy way to learn to use this leading business intelligence tool Written by an author team who is directly involved with SAS, this easy-to-follow guide is fully updated for the latest release of SAS and covers just what you need to put this popular software to work in your business. SAS allows any business or enterprise to improve data delivery, analysis, reporting, movement across a company, data mining, forecasting, statistical analysis, and more. SAS For Dummies, 2nd Edition gives you the necessary background on what SAS can do for you and explains how to use the Enterprise Guide. SAS provides statistical and data analysis tools to help you deal with all kinds of data: operational, financial, performance, and more Places special emphasis on Enterprise Guide and other analytical tools, covering all commonly used features Covers all commonly used features and shows you the practical applications you can put to work in your business Explores how to get various types of data into the software and how to work with databases Covers producing reports and Web reporting tools, analytics, macros, and working with your data In the easy-to-follow, no-nonsense For Dummies format, SAS For Dummies gives you the knowledge and the confidence to get SAS working for your organization. Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

This book provides beginners with a thorough foundation in SAS macro programming. The macro facility is a popular part of SAS. Macro programming is a required skill for many SAS programming jobs, and the SAS Advanced Programming Certification Exam tests macro processing concepts. Whether you're looking to become certified, land a job, or increase your skills, you'll benefit from SAS Macro Programming Made Easy, Third Edition. By following Michele Burlew's examples and step-by-step instructions, you'll be able to rapidly perform repetitive programming tasks, to pass information between programming steps more easily, and to make your programming easier to read. Updated for SAS 9.4, this book teaches you the elements of the macro facility (macro variables, macro programs, macro language), how to write a macro program, techniques for macro programming, tips on using the macro facility, how the macro facility fits into SAS, and about the interfaces between the macro facility and other components of SAS. Beginning macro programmers will learn to write SAS macro programs quickly and efficiently. More experienced programmers will find this book useful to refresh their conceptual knowledge and expand on their macro programming skills. Ultimately, any user interested in automating their programs—including analysts, programmers, and report writers—will find Michele Burlew's book an excellent tutorial. This book is part of the SAS Press program.

Enhance your SAS data-wrangling skills with high-precision and parallel data manipulation using the DS2 programming language. Now in its second edition, this book addresses the DS2 programming language from SAS, which combines the precise procedural power and control of the Base SAS DATA step language with the simplicity and flexibility of SQL. DS2 provides simple, safe syntax for performing complex data transformations in parallel and enables manipulation of native database data types at full precision. It also covers PROC FEDSQL, a modernized SQL language that blends perfectly with DS2. You will learn to harness the power of parallel processing to speed up CPU-intensive computing processes in Base SAS and how to achieve even more speed by processing DS2 programs on massively parallel database systems. Techniques for leveraging internet APIs to acquire data, avoiding large data movements when working with data from disparate sources, and leveraging DS2's new data types for full-precision numeric calculations are presented, with examples of why these techniques are essential for the modern data wrangler. Here's what's new in this edition: how to significantly improve performance by using the new SAS Viya architecture with its SAS Cloud Analytic Services (CAS) how to declare private variables and methods in a package the new PROC DSTODS2 the PCRXFIN and PCRXREPLACE packages While working though the code samples provided with this book, you will build a library of custom, reusable, and easily shareable DS2 program modules, execute parallelized DATA step programs to speed up a CPU-intensive process, and conduct advanced data transformations using hash objects and matrix math operations. This book is part of the SAS Press Series.

In an instructive and conversational tone, Cody clearly explains how to program SAS, illustrating with one or more real-life examples and giving a detailed description of how the program works.

This comprehensive resource provides on-the-job training for statistical programmers who use SAS in the pharmaceutical industry This one-stop resource offers a complete review of what entry- to intermediate-level statistical programmers need to know in order to help with the analysis and reporting of clinical trial data in the pharmaceutical industry. SAS Programming in the Pharmaceutical Industry, Second Edition begins with an introduction to the pharmaceutical industry and the work environment of a statistical programmer. Then it gives a chronological explanation of what you need to know to do the job. It includes information on importing and massaging data into analysis data sets, producing clinical trial output, and exporting data. This edition has been updated for SAS 9.4, and it features new graphics as well as all new examples using CDISC SDTM or ADaM model data structures. Whether you're a novice seeking an

introduction to SAS programming in the pharmaceutical industry or a junior-level programmer exploring new approaches to problem solving, this real-world reference guide offers a wealth of practical suggestions to help you sharpen your skills. This book is part of the SAS Press program.

Incorporating broad coverage of the best ODS features in one book, this work goes beyond Haworth's original ODS text to demonstrate the many new and enhanced features of ODS and SAS 9.2. It presents each of the wide array of ODS techniques in an easy-to-use, two-page layout.

Need help understanding the SAS macro facility? You will find all the answers that you need in this easy-to-follow book! Michele Burlew puts her decades of macro programming experience to work for you as she guides you through the basics, as well as the more complex features of the SAS macro facility. Updated extensively for SAS 9, this book includes plenty of examples and step-by-step instructions. You will learn the elements of the macro facility (macro variables, macro programs, macro language), how to write a macro program, macro programming techniques, tips on using the macro facility, how the macro facility fits into SAS, and about the interfaces between the macro facility and other components of SAS. New topics for the second edition include using SAS 9 macro and SAS language features, debugging macro programs, adding error checking to macro programs, and building a library of utility macro programs. Beginning macro programmers will learn to write SAS macro programs quickly and efficiently. More experienced macro programmers will find this book useful to refresh their conceptual knowledge and expand on their macro programming skills. It is also important to note that the macro facility is a highly popular part of SAS and found in the job requirements for many SAS programming jobs. In addition, macro facility concepts are tested on the SAS Advanced Programming Exam. The book assumes some SAS programming experience, including knowledge of how to write a DATA step and how to use SAS procedures.

Leverage the capabilities of SAS to process and analyze Big Data About This Book Combine SAS with platforms such as Hadoop, SAP HANA, and Cloud Foundry-based platforms for efficient Big Data analytics Learn how to use the web browser-based SAS Studio and iPython Jupyter Notebook interfaces with SAS Practical, real-world examples on predictive modeling, forecasting, optimizing and reporting your Big Data analysis with SAS Who This Book Is For SAS professionals and data analysts who wish to perform analytics on Big Data using SAS to gain actionable insights will find this book to be very useful. If you are a data science professional looking to perform large-scale analytics with SAS, this book will also help you. A basic understanding of SAS will be helpful, but is not mandatory. What You Will Learn Configure a free version of SAS in order to do hands-on exercises dealing with data management, analysis, and reporting. Understand the basic concepts of the SAS language which consists of the data step (for data preparation) and procedures (or PROCs) for analysis. Make use of the web browser based SAS Studio and iPython Jupyter Notebook interfaces for coding in the SAS, DS2, and FedSQL programming languages. Understand how the DS2 programming language plays an important role in Big Data preparation and analysis using SAS Integrate and work efficiently with Big Data platforms like Hadoop, SAP HANA, and cloud foundry based systems. In Detail SAS has been recognized by Money Magazine and Payscale as one of the top business skills to learn in order to advance one's career. Through innovative data management, analytics, and business intelligence software and services, SAS helps customers solve their business problems by allowing them to make better decisions faster. This book introduces the reader to the SAS and how they can use SAS to perform efficient analysis on any size data, including Big Data. The reader will learn how to prepare data for analysis, perform predictive, forecasting, and optimization analysis and then deploy or report on the results of these analyses. While performing the coding examples within this book the reader will learn how to use the web browser based SAS Studio and iPython Jupyter Notebook interfaces for working with SAS. Finally, the reader will learn how SAS's architecture is engineered and designed to scale up and/or out and be combined with the open source offerings such as Hadoop, Python, and R. By the end of this book, you will be able to clearly understand how you can efficiently analyze Big Data using SAS. Style and approach The book starts off by introducing the reader to SAS and the SAS programming language which provides data management, analytical, and reporting capabilities. Most chapters include hands on examples which highlights how SAS provides The Power to Know©. The reader will learn that if they are looking to perform large-scale data analysis that SAS provides an open platform engineered and designed to scale both up and out which allows the power of SAS to combine with open source offerings such as Hadoop, Python, and R.

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SAS software has been in existence for a long time and has been implemented in large, data-intensive environments, including data warehouses. This SAS book covers practical programming considerations to make when involving SAS in a data warehouse environment. You'll be able to develop the skills you need to apply SAS in your working environment.

A classic that just keeps getting better, The Little SAS Book is essential for anyone learning SAS programming. Lora Delwiche and Susan Slaughter offer a user-friendly approach so that readers can quickly and easily learn the most commonly used features of the SAS language. Each topic is presented in a self-contained, two-page layout complete with examples and graphics. Nearly every section has been revised to ensure that the sixth edition is fully up-to-date. This edition is also interface-independent, written for all SAS programmers whether they use SAS Studio, SAS Enterprise Guide, or the SAS windowing environment. New sections have been added covering PROC SQL, iterative DO loops, DO WHILE and DO UNTIL statements, %DO statements, using variable names with special characters, the ODS EXCEL destination, and the XLSX LIBNAME engine. This title belongs on every SAS programmer's bookshelf. It's a resource not just to get you started, but one you will return to as you continue to improve your programming skills.

A step-by-step introduction to using SAS® statistical software as a foundational approach to data analysis and interpretation Presenting a straightforward introduction from the ground up, SAS® Essentials: Mastering SAS for Data Analytics, Second Edition illustrates SAS using hands-on learning techniques and numerous real-world examples. Keeping different experience levels in mind, the highly-qualified author team has developed the book over 20 years of teaching introductory SAS courses. Divided into two sections, the first part of the book provides an introduction to data manipulation, statistical techniques, and the SAS programming language. The second section is designed to introduce users to statistical analysis using SAS Procedures. Featuring self-contained chapters to enhance the learning process, the Second Edition also includes: Programming approaches for the most up-to-date version of the SAS platform including information on how to use the SAS University Edition Discussions to illustrate the concepts and highlight key fundamental computational skills that are utilized by business, government, and organizations alike New chapters on reporting results in tables and factor analysis Additional information on the DATA step for data management with an emphasis on importing data from other sources, combining data sets, and data cleaning Updated ANOVA and regression examples as well as other data analysis techniques A companion website with the discussed data sets, additional code, and related PowerPoint® slides SAS Essentials: Mastering SAS for Data Analytics, Second Edition is an ideal textbook for upper-undergraduate and graduate-level courses in statistics, data analytics, applied SAS programming, and statistical computer applications as well as an excellent supplement for statistical methodology courses. The book is an appropriate reference for researchers and academicians who require a basic introduction to SAS for statistical analysis and for preparation for the Basic SAS Certification Exam.

SAS Programming for R Users, based on the free SAS Education course of the same name, is designed for experienced R users who want to transfer their programming skills to SAS. Emphasis is on programming and not statistical theory or interpretation. You will learn how to write programs in SAS that replicate familiar functions and capabilities in R. This book covers a wide range of topics including the basics of the SAS programming language, how to import data, how to create new variables, random number generation, linear modeling, Interactive Matrix Language (IML), and many other SAS procedures. This book also explains how to write R code directly in the SAS code editor for seamless integration between the two tools. Exercises are provided at the end of each chapter so that you can test your knowledge and practice your programming skills.

Updated extensively for SAS 9, this book includes examples and step-by-step instructions on macro programming. New topics for this second edition include using SAS 9 macro and SAS language features, debugging macro programs, adding error checking, and building a library of utility macro programs.

Hash objects, an efficient look-up tool in the SAS DATA step, are object-oriented programming structures that function differently from traditional SAS language statements. Michele Burlew's SAS Hash Object Programming Made Easy shows readers how to use these powerful features, which they can program to quickly look up and manage data and to conserve computing resources. SAS provides various look-up techniques, and hash objects are among the newest, so therefore many users may not have yet used them. Because the examples presented vary in complexity, SAS Hash Object Programming Made Easy is useful to SAS users of all experience levels, from novice programmer to advanced programmer. Novice programmers can adapt some of the simpler hash programming techniques as they develop their SAS programming skills. This book helps more experienced programmers learn how to take advantage of hash object programming by comparing traditional processing techniques to those that use hash objects. Additionally, users from diverse fields with different requirements can adapt the examples in SAS Hash Object Programming Made Easy to fit their unique situations.

The official guide by the SAS Global Certification Program, SAS Certified Professional Prep Guide: Advanced Programming Using SAS 9.4 prepares you to take the new SAS 9.4 Advanced Programming Performance-Based Exam. New in this edition is a workbook whose sample scenarios require you to write code to solve problems and answer questions. Answers to the chapter quizzes and solutions to the sample scenarios in the workbook are included. You will also find links to exam objectives, practice exams, and other resources such as the Base SAS Glossary and a list of practice data sets. Major topics include SQL processing, SAS macro language processing, and advanced SAS programming techniques. All exam topics are covered in the following chapters: SQL Processing with SAS PROC SQL Fundamentals Creating and Managing Tables Joining Tables Using PROC SQL Joining Tables Using Set Operators Using Subqueries Advanced SQL Techniques SAS Macro Language Processing Creating and Using Macro Variables Storing and Processing Text Working with Macro Programs Advanced Macro Techniques Advanced SAS Programming Techniques Defining and Processing Arrays Processing Data Using Hash Objects Using SAS Utility Procedures Using Advanced Functions Practice Programming Scenarios (Workbook)

Prepare for the SAS Base Programming for SAS 9 exam with the official guide by the SAS Global Certification Program. New and experienced SAS users who want to prepare for the SAS Base Programming for SAS 9 exam will find this guide to be an invaluable, convenient, and comprehensive resource that covers all of the objectives tested on the exam. Now in its fourth edition, the guide has been extensively updated, and revised to streamline explanations. Major topics include importing and exporting raw data files, creating and modifying SAS data sets, and identifying and correcting data syntax and programming logic errors. The chapter quizzes have been thoroughly updated and full solutions are included at the back of the book. In addition, links are provided to the exam objectives, practice exams, and other helpful resources, such as the updated Base SAS glossary and an expanded collection of practice data sets.

Reading External Data Files Using SAS: Examples Handbook is packed with examples that illustrate the many common issues you face when reading external data files.

Whether you need to handle a variety of input styles (list, column, formatted, and named), accommodate external file features, or use different methods for reading the data, you're sure to find examples in this book that address your coding requirements. The examples illustrate techniques that range from simple to complex, and you can easily copy, modify, and reuse the examples. Book jacket.

SAS Macro Programming Made EasySas Inst

PROC SQL: Beyond the Basics Using SAS®, Third Edition, is a step-by-step, example-driven guide that helps readers master the language of PROC SQL. Packed with analysis and examples illustrating an assortment of PROC SQL options, statements, and clauses, this book not only covers all the basics, but it also offers extensive guidance on complex topics such as set operators and correlated subqueries. Programmers at all levels will appreciate Kirk Lafler's easy-to-follow examples, clear explanations, and handy tips to extend their knowledge of PROC SQL. This third edition explores new and powerful features in SAS® 9.4, including topics such as: IFC and IFN functions nearest neighbor processing the HAVING clause indexes It also features two completely new chapters on fuzzy matching and data-driven programming. Delving into the workings of PROC SQL with greater analysis and discussion, PROC SQL: Beyond the Basics Using SAS®, Third Edition, explores this powerful database language using discussion and numerous real-world examples.

Increase the modularity, flexibility, and maintainability of your SAS code with the SAS macro facility. This comprehensive reference provides complete information about macro language elements, interfaces between the macro facility and other parts of SAS software, and macro processing in general. With this title, you will learn how to create efficient and portable macro code, reduce the amount of text needed for common tasks, integrate macros with other parts of your SAS programs, and debug macros during development. This title is also available online. To take advantage of this book, you should have at least an intermediate knowledge of Base SAS programming. Supports releases 9.1 and higher of SAS software.

Data simulation is a fundamental technique in statistical programming and research. Rick Wicklin's Simulating Data with SAS brings together the most useful algorithms and the best programming techniques for efficient data simulation in an accessible how-to book for practicing statisticians and statistical programmers. This book discusses in detail how to simulate data from common univariate and multivariate distributions, and how to use simulation to evaluate statistical techniques. It also covers simulating correlated data, data for regression models, spatial data, and data with given moments. It provides tips and techniques for beginning programmers, and offers libraries of functions for advanced practitioners. As the first book devoted to simulating data across a range of statistical applications, Simulating Data with SAS is an essential tool for programmers, analysts, researchers, and students who use SAS software. SAS Products and Releases: Base SAS: 9.3 SAS/ETS: 9.3 SAS/IML: 9.3 SAS/STAT: 9.3 Operating Systems: All

This book provides beginners with a thorough foundation in SAS macro programming. The macro facility is a popular part of SAS. Macro programming is a required skill for many SAS programming jobs, and the SAS Advanced Programming Certification Exam tests macro processing concepts. Whether you're looking to become certified, land a job, or increase your skills, you'll benefit from SAS Macro Programming Made Easy, Third Edition. By following Michele Burlew's examples and step-by-step instructions, you'll be able to rapidly perform repetitive programming tasks, to pass information between programming steps more easily, and to make your programming easier to read. Updated for SAS 9.4, this book teaches you the elements of the macro facility (macro variables, macro programs, macro language), how to write a macro program, techniques for macro programming, tips on using the macro facility, how the macro facility fits into SAS, and about the interfaces between the macro facility and other components of SAS. Beginning macro programmers will learn to write SAS macro programs quickly and efficiently. More experienced programmers will find this book useful to refresh their conceptual knowledge and expand on their macro programming skills. Ultimately, any user interested in automating their programs--including analysts, programmers, and report writers--will find Michele Burlew's book an excellent tutorial. This book is part of the SAS Press program.

This "go-to" guide helps users solve the most common problems that occur in the SAS DATA step, in Base SAS PROCs, and in SAS macro code. The author covers a broad range of programming problems, including how to read the SAS log; how to interpret error, note, and warning messages; and how to solve problems that might occur in the DATA step, Base SAS PROC steps, and SAS macros.

Clinical Data Quality Checks for CDISC Compliance using SAS is the first book focused on identifying and correcting data quality and CDISC compliance issues with real-world innovative SAS programming techniques such as Proc SQL, metadata and macro programming. Learn to master Proc SQL's subqueries and summary functions for multi-tasking process. Drawing on his more than 25 years' experience in the pharmaceutical industry, the author provides a unique approach that empowers SAS programmers to take control of data quality and CDISC compliance. This book helps you create a system of SDTM and ADaM checks that can be tracked for continuous improvement. How often have you encountered issues such as missing required variables, duplicate records, invalid derived variables and invalid sequence of two dates? With the SAS programming techniques introduced in this book, you can start to monitor these and more complex data and CDISC compliance issues. With increased standardization in SDTM and ADaM specifications and data values, codelist dictionaries can be created for better organization, planning and maintenance. This book includes a SAS program to create excel files containing unique values from all SDTM and ADaM variables as columns. In addition, another SAS program compares SDTM and ADaM codelist dictionaries with codelists from define.xml specifications. Having tools to automate this process greatly saves time from doing it manually. Features SDTMs and ADaMs Vitals SDTMs and ADaMs Data CDISC Specifications Compliance CDISC Data Compliance Protocol Compliance Codelist Dictionary Compliance

The SAS® Certified Specialist Prep Guide: Base Programming Using SAS® 9.4 prepares you to take the new SAS 9.4 Base Programming -- Performance-Based Exam. This is the official guide by the SAS Global Certification Program. This prep guide is for both new and experienced SAS users, and it covers all the objectives that are tested on the exam. New in this edition is a workbook whose sample scenarios require you to write code to solve problems and answer questions. Answers for the chapter quizzes and

solutions for the sample scenarios in the workbook are included. You will also find links to exam objectives, practice exams, and other resources such as the Base SAS® glossary and a list of practice data sets. Major topics include importing data, creating and modifying SAS data sets, and identifying and correcting both data syntax and programming logic errors. All exam topics are covered in these chapters: Setting Up Practice Data Basic Concepts Accessing Your Data Creating SAS Data Sets Identifying and Correcting SAS Language Errors Creating Reports Understanding DATA Step Processing BY-Group Processing Creating and Managing Variables Combining SAS Data Sets Processing Data with DO Loops SAS Formats and Informats SAS Date, Time, and Datetime Values Using Functions to Manipulate Data Producing Descriptive Statistics Creating Output Practice Programming Scenarios (Workbook)

Learn to program SAS by example! Learning SAS by Example, A Programmer's Guide, Second Edition, teaches SAS programming from very basic concepts to more advanced topics. Because most programmers prefer examples rather than reference-type syntax, this book uses short examples to explain each topic. The second edition has brought this classic book on SAS programming up to the latest SAS version, with new chapters that cover topics such as PROC SGPLOT and Perl regular expressions. This book belongs on the shelf (or e-book reader) of anyone who programs in SAS, from those with little programming experience who want to learn SAS to intermediate and even advanced SAS programmers who want to learn new techniques or identify new ways to accomplish existing tasks. In an instructive and conversational tone, author Ron Cody clearly explains each programming technique and then illustrates it with one or more real-life examples, followed by a detailed description of how the program works. The text is divided into four major sections: Getting Started, DATA Step Processing, Presenting and Summarizing Your Data, and Advanced Topics. Subjects addressed include Reading data from external sources Learning details of DATA step programming Subsetting and combining SAS data sets Understanding SAS functions and working with arrays Creating reports with PROC REPORT and PROC TABULATE Getting started with the SAS macro language Leveraging PROC SQL Generating high-quality graphics Using advanced features of user-defined formats and informats Restructuring SAS data sets Working with multiple observations per subject Getting started with Perl regular expressions You can test your knowledge and hone your skills by solving the problems at the end of each chapter.

For SAS programmers or analysts who need to generalize their programs or improve programming efficiency, Art Carpenter thoroughly updates his highly successful second edition of Carpenter's Complete Guide to the SAS Macro Language with an extensive collection of new macro language techniques and examples. Addressing the composition and operation of the SAS macro facility and the SAS macro language, this third edition offers nearly 400 ready-to-use macros, macro functions, and macro tools that enable you to convert SAS code to macros, define macro variables, and more! Users with a basic understanding of Base SAS who are new to the SAS macro language will find more detail, utilities, and references to additional learning opportunities; advanced macro language programmers who need help with data-driven macros and dynamic application development will find greatly expanded treatment of these topics. This revised and enlarged edition includes the following topics: New and expanded introduction to the macro language Functions, automatic macro variables, and macro statements new to the macro language Expanded macro language tools that interface with the operating system Expanded data-driven methodologies used to build dynamic applications Expanded discussion of list processing, with four alternative approaches presented Additional file and data management examples Expanded discussion of CALL EXECUTE and DOSUBL New discussion of using the macro language on remote servers Expanded discussion and examples of macro quoting Far beyond a reference manual issued from an "ivory tower," this book is pragmatic and example-driven: Yes, you will find syntax examples; yes, the code is explained. But the focus of this book is on actual code used to solve real-world business problems. In fact, an entire appendix is dedicated to listing the nearly 70 classes of problems that are solved by programs covered in this edition. Discussion of the examples elucidates the pros and cons of the particular solution and often suggests alternative approaches. Therefore, this book provides you both a compendium of reusable and adaptable code, and opportunities for deepening your understanding and growing as a SAS programmer.

Learn to write SAS programs quickly and efficiently. Programming in SAS is flexible, but it can also be overwhelming. Many novice and experienced programmers learn how to write programs that use the DATA step and macros, but they often don't realize that a simpler or better way can achieve the same results. In a user-friendly tutorial style, Practical and Efficient SAS® Programming: The Insider's Guide provides general SAS programming tips that use the tools available in Base SAS, including the DATA step, the SAS macro facility, and SQL. Drawing from the author's 30 years of SAS programming experience, this book offers self-contained sections that describe each tip or trick and present numerous examples. It therefore serves as both an easy reference for a specific question, and a useful cover-to-cover read. As a bonus, the utility programs included in the appendixes will help you simplify your programs, as well as help you develop a sleek and efficient coding style. With this book, you will learn how to do the following: use the DATA step, the SAS macro facility, SQL, and other Base SAS tools more efficiently choose the best tool for a task use lookup tables simulate recursion with macros read metadata with the DATA step create your own programming style in order to write programs that are easily maintained Using this book, SAS programmers of all levels will discover new techniques to help them write programs quickly and efficiently.

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