

Cobol Db2 Programming Guide

This IBM® Redbooks® publication provides information about installation and migration changes to be aware of if you are responsible for migrating systems from IBM z/OS® V1R10, z/OS V1R11, and z/OS V1R12 to z/OS V1R13. It also highlights actions that are needed to prepare for the installation of z/OS V1R12, including ensuring driving system and target system requirements are met and coexistence requirements are satisfied. There is a special focus on identifying new migration actions that must be performed for selected elements when migrating to z/OS V1R13. The book addresses the following topics: - z/OS V1R13 overview, z/OS V1R13 installation, managing volume backups with fast replication, XCF enhancements, console service enhancements - DFSMSdftp, DFSMSoam, DFSMSHsm, ISPF enhancements, DFSMSrmm enhancements, establishing IBM RACF® security for RRSF TCP/IP connections - GRS enhancements, BCP supervisor, contents supervisor and RSM updates, improved channel recovery, Service aids enhancements, System Logger - SMF - z/OS UNIX System Services, z/OS UNIX-related applications, RRS, z/OS Management Facility, z/OS HCD and HCM, C language - Storage management enhancements, Common Information Model, Predictive Failure Analysis, Extended Address Volume, BCPii, Capacity Provisioning - System SSL enhancements, UNICODE, IBM Language Environment®, SDSF enhancements, JES2 enhancements, JES3 enhancements, IBM RMFTM enhancements - IBM WebSphere® Application Server OEM, z/OSMF, CIM, and Capacity Provisioning setups - BCPii Metal C example

Beginning COBOL for Programmers is a comprehensive, sophisticated tutorial and modular skills reference on the COBOL programming language for established programmers. This book is for you if you are a developer who would like to—or must—add COBOL to your repertoire. Perhaps you recognize the opportunities presented by the current COBOL skills crisis, or are working in a mission critical enterprise which retains legacy COBOL applications. Whatever your situation, Beginning COBOL for Programmers meets your needs as an established programmer moving to COBOL. Beginning COBOL for Programmers includes comprehensive coverage of ANS 85 COBOL features and techniques, including control structures, condition names, sequential and direct access files, data redefinition, string handling, decimal arithmetic, subprograms, and the report writer. The final chapter includes a substantial introduction to object-oriented COBOL. Benefiting from over one hundred example programs, you'll receive an extensive introduction to the core and advanced features of the COBOL language and will learn to apply these through comprehensive and varied exercises. If you've inherited some legacy COBOL, you'll be able to grasp the COBOL idioms, understand the constructs, and recognize what's happening in the code you're working with. Today's enterprise application developers will find that COBOL skills open new—or old—doors, and this extensive COBOL reference is the book to help you acquire and develop your COBOL skills.

The Definitive Solutions-Oriented Guide to IBM® DB2® for z/OS®: Now Fully Updated for Both v9 and v10! The largest database tuning performance gains can often be obtained from tuning application code, and applications that use SQL to retrieve data are the best candidates for tuning. This well-organized, easy-to-understand reference brings together more than 100 SQL-related skills and techniques that any developer can use to build and optimize DB2 applications for consistently superior performance. DB2 tuning expert Tony Andrews (“Tony the Tuner”) draws on more than 20 years of DB2-related experience, empowering you to take performance into your own hands, whether you're writing new software or tuning existing systems. Tony shows you exactly how to clear bottlenecks, resolve problems, and improve both speed and reliability. This book fully reflects the latest SQL programming best practices for DB2 V9 and DB2 V10 on z/OS: techniques that are taught in no other book and are rarely covered in general DB2 SQL courses. Drawing on his extensive consulting experience and

highly praised training with Themis Inc., Tony also presents practical checklists and an invaluable 15-step methodology for optimizing virtually any DB2 application. Coverage includes Empowering developers on knowing what to do and where to look in resolving performance problems in queries or programs Providing many programming and SQL coding examples Establishing standards and guidelines that lead to high-performance SQL Implementing time-efficient code walkthroughs to ensure that your standards are followed Focusing on the small number of SQL statements that consume the most resources Identifying simple solutions that deliver the most sizable benefits Optimizing performance by rewriting query predicates more efficiently Providing a better understanding of SQL optimization and Runstat statistics Recognizing opportunities to tweak your code more effectively than the Optimizer Optimizing SQL code with COBOL applications Efficiently checking for the existence of data, rows, or tables Using Runstats' newest capabilities to consistently optimize paths to data

Mainframe computers play a central role in the daily operations of many of the world's largest corporations, and batch processing is a fundamental part of the workloads that run on the mainframe. A large portion of the workload on IBM® z/OS® systems is processed in batch mode. Although several IBM Redbooks® publications discuss application modernization on the IBM z/OS platform, this book specifically addresses batch processing in detail. Many different technologies are available in a batch environment on z/OS systems. This book demonstrates these technologies and shows how the z/OS system offers a sophisticated environment for batch. In this practical book, we discuss a variety of themes that are of importance for batch workloads on z/OS systems and offer examples that you can try on your own system. The audience for this book includes IT architects and application developers, with a focus on batch processing on the z/OS platform.

The DB2 Certification Handbook is a complete self-study guide for the latest release of DB2 relational database, version 2 Common Server. An ITSO IBM Redbook which provides in-depth coverage of two primary database job functions: database developer and database administrator. Also includes sample test questions and gives real-world examples and exercises.

IBM's definitive DB2 UDB V7.1 application development reference and exam study guide for the OS/390 and z/OS platforms An official IBM self-study guide for the DB2 UDB V7.1 Family Application Development Exam (#514) Expert DB2 programming tips, techniques, and guidelines from application development experts Covers data structures, SQL, stored procedures, programming/language environments, debugging, tuning, and more CD-ROM contains complete DB2 application development sample exam The definitive, authoritative guide to DB2 OS/390 application development certification Covers data structures, SQL, stored procedures, programming/language environments, debugging, tuning, and much more Includes a full section on object-relational programming and other advanced techniques Sample test questions help you prepare for the IBM DB2 UDB V7.1 Family Application Development Exam (#514) About the CD The CD-ROM included with this book contains a complete DB2 UDB V7.1 Family Application Development Exam (#514) sample exam. IBM DB2 UDB Version 7.1 for OS/390 and z/OS delivers unparalleled performance, scalability, and reliability in today's enterprise business environments. Now, there's a complete, authoritative guide to developing applications with DB2 UDB V7.1 in both OS/390 and z/OS environments--and preparing for the IBM DB2 UDB V7.1 Family Application Development Exam (#514). This comprehensive day-to-day guide to DB2 UDB application development is also the only book that delivers the depth of knowledge professionals need to pass IBM's challenging application development exam for the OS/390 and z/OS platforms. IBM Gold Consultant Susan Lawson presents hundreds of useful tips, practical techniques, and expert guidelines for every facet of DB2 UDB application development and every stage of the development process for both OS/390 and z/OS platforms Coverage includes: Foundations for

effective DB2 development, including an overview of the DB2 UDB product family and DB2 for OS/390 data structures SQL: basic concepts and coding techniques through advanced OLAP features, star schemas, and star joins Stored procedures, including the SQL procedure language and IBM's Stored Procedure Builder Best practices for application testing, debugging, and performance tuning The full range of DB2 development tools, including ODBC/CLI, Java(tm), COBOL, C, C++, REXX, CAF, CICS, and RRSF Object-relational programming, including user-defined functions, user-defined data types, and triggers In-depth coverage of locking and concurrency Whether you're developing for DB2 UDB V7.1 in an OS/390 or z/OS environment, managing DB2 UDB V7.1 application development, preparing for DB2 UDB V7.1 Family Application Development, or all three, DB2 UDB for OS/390 Version 7.1 Application Certification Guide will be your single most valuable resource. IBM DB2 Series IBM® Problem Determination (PD) Tools consists of a core group of IBM products that are designed to work with compilers and run times to provide a start-to-finish development solution for the IT professional. This IBM Redbooks® publication provides you with an introduction to the tools, guidance for program preparation to use with them, an overview of their integration, and several scenarios for their use. If an abend occurs during testing, Fault Analyzer enables the programmer to quickly and easily pinpoint the abending location and optionally, the failing line of code. Many times, this information is all the programmer requires to correct the problem. However, it might be necessary to delve a little deeper into the code to figure out the problem. Debug Tool allows the programmer to step through the code at whatever level is required to determine where the error was introduced or encountered. After the code or data is corrected, the same process is followed again until no errors are encountered. However, volume testing or testing with multiple terminals is sometimes required to ensure real-world reliability. Workload Simulator can be used to perform this type of testing. After all of the tests are completed, running the application by using Application Performance Analyzer can ensure that no performance bottlenecks are encountered. It also provides a baseline to ensure that future enhancements do not introduce new performance degradation into the application. This publication is intended for z/OS® application developers and system programmers. Written by a down-in-the-trenches programmer, this handbook will show you how to write quality, high-performance COBOL II applications. It explains all the new COBOL II features from a programmer's perspective. Includes extensive examples and techniques on building better, more sophisticated, more efficient COBOL II systems.

A comprehensive Perl reference contains a CD-Rom with sample scripts and applications from the book, in addition to appendices for the advanced Perl user with an alphabetized function reference for the built-in Perl functions, and much more. Original. (All Users).

The ABCs of IBM® z/OS® System Programming is a 13-volume collection that provides an introduction to the z/OS operating system and the hardware architecture. Whether you are a beginner or an experienced system programmer, the ABCs collection provides the information that you need to start your research into z/OS and related subjects. If you want to become more familiar with z/OS in your current environment or if you are evaluating platforms to consolidate your e-business applications, the ABCs collection can serve as a powerful technical tool. This volume describes the basic system programming activities related to implementing and maintaining the z/OS installation and provides details about the modules that are used to manage jobs and data. It covers the following topics: Overview of the parmlib definitions and the IPL process. The parameters and system data sets necessary to IPL and run a z/OS operating system are described, along with the main daily tasks for maximizing performance of the z/OS system. Basic concepts related to subsystems and subsystem interface and how to use the subsystem services that are provided by IBM subsystems. Job management in the z/OS system using the JES2 and JES3 job entry subsystems. It provides a detailed discussion about how JES2 and JES3 are used to receive jobs into the operating

system, schedule them for processing by z/OS, and control their output processing. The link pack area (LPA), LNKLST, authorized libraries, and the role of VLF and LLA components. An overview of SMP/E for z/OS. An overview of IBM Language Environment® architecture and descriptions of Language Environment's full program model, callable services, storage management model, and debug information. Other volumes in this series include the following content: Volume 1: Introduction to z/OS and storage concepts, TSO/E, ISPF, JCL, SDSF, and z/OS delivery and installation Volume 3: Introduction to DFSMS, data set basics, storage management, hardware and software, catalogs, and DFSMSStvs Volume 4: Communication Server, TCP/IP, and IBM VTAM® Volume 5: Base and IBM Parallel Sysplex®, System Logger, Resource Recovery Services (RRS), global resource serialization (GRS), z/OS system operations, automatic restart management (ARM), IBM Geographically Dispersed Parallel Sysplex™ (IBM GDPS®) Volume 6: Introduction to security, IBM RACF®, Digital certificates and PKI, Kerberos, cryptography and z990 integrated cryptography, zSeries firewall technologies, LDAP, and Enterprise Identity Mapping (EIM) Volume 7: Printing in a z/OS environment, Infoprint Server, and Infoprint Central Volume 8: An introduction to z/OS problem diagnosis Volume 9: z/OS UNIX System Services Volume 10: Introduction to IBM z/Architecture®, the IBM Z platform and IBM Z connectivity, LPAR concepts, HCD, and the DS Storage Solution Volume 11: Capacity planning, performance management, WLM, IBM RMFTM, and SMF Volume 12: WLM Volume 13: JES3, JES3 SDSF

Mainframe computers play a central role in the daily operations of many of the worlds largest corporations. Batch processing is still a fundamental, mission-critical component of the workloads that run on the mainframe and a large portion of the workload on IBM® z/OS® systems is processed in batch mode. This IBM Redbooks® publication is the second volume in a series of four in which we describe new technologies introduced by IBM to facilitate the use of hybrid batch applications that combine the best aspects of Java and procedural programming languages such as COBOL. This volume specifically focuses on the z/OS batch runtime. The audience for this book includes IT architects and application developers, with a focus on batch processing on the z/OS platform.

This IBM® Redbooks® publication is based on the book Introduction to the New Mainframe: z/OS Basics, SG24-6366, which was produced by the International Technical Support Organization (ITSO), Poughkeepsie Center. It provides students of information systems technology with the background knowledge and skills necessary to begin using the basic facilities of a mainframe computer. For optimal learning, students are assumed to have successfully completed an introductory course in computer system concepts, such as computer organization and architecture, operating systems, data management, or data communications. They should also have successfully completed courses in one or more programming languages, and be PC literate. This textbook can also be used as a prerequisite for courses in advanced topics, or for internships and special studies. It is not intended to be a complete text covering all aspects of mainframe operation. It is also not a reference book that discusses every feature and option of the mainframe facilities. Others who can benefit from this course include experienced data processing professionals who have worked with non-mainframe platforms, or who are familiar with some aspects of the mainframe but want to become knowledgeable with other facilities and benefits of the mainframe environment. As we go through this course, we suggest that the instructor alternate between text, lecture, discussions, and hands-on exercises. Many of the exercises are cumulative, and are designed to show the student how to design and implement the topic presented. The instructor-led discussions and hands-on exercises are an integral part of the course, and can include topics not covered in this textbook. In this course, we use simplified examples and focus mainly on basic system functions. Hands-on exercises are provided throughout the course to help students explore the mainframe style of computing. At the end of this course, you will be

familiar with the following information: Basic concepts of the mainframe, including its usage and architecture Fundamentals of IBM z/VSE® (VSE), an IBM zTM Systems entry mainframe operating system (OS) An understanding of mainframe workloads and the major middleware applications in use on mainframes today The basis for subsequent course work in more advanced, specialized areas of z/VSE, such as system administration or application programming

This is an updated and expanded version of Murach's two best-selling CICS books. Now, in just one book, IBM mainframe programmers will learn everything they need to know for developing interactive programs with CICS. In addition, they will learn new design and implementation methods for distributed CICS processing. These methods also make it The #1 choice of professional COBOL programmers because it shows how to design, code, test, and maintain structured COBOL programs on the IBM mainframes (or enterprise systems), this book also presents the IBM products that every mainframe programmer needs to know including TSO, ISPF, OS/390 JCL, VSAM Access Method Services, CICS, and DB2. DB2 pureXML Cookbook Master the Power of the IBM Hybrid Data Server Hands-On Solutions and Best Practices for Developing and Managing XML Database Applications with DB2 More and more database developers and DBAs are being asked to develop applications and manage databases that involve XML data. Many are utilizing the highly praised DB2 pureXML technology from IBM. In the DB2 pureXML Cookbook, two leading experts from IBM offer the practical solutions and proven code samples that database professionals need to build better XML solutions faster. Organized by task, this book is packed with more than 700 easy-to-adapt "recipe-style" examples covering the entire application lifecycle—from planning and design through coding, optimization, and troubleshooting. This extraordinary library of recipes includes more than 250 XQuery and SQL/XML queries. With the authors' hands-on guidance, you'll learn how to combine pureXML "ingredients" to efficiently perform virtually any XML data management task, from the simplest to the most advanced. Coverage includes pureXML in DB2 9 for z/OS and DB2 9.1, 9.5, and 9.7 for Linux, UNIX, and Windows Best practices for designing XML data, applications, and storage objects Importing, exporting, loading, replicating, and federating XML data Querying XML data, from start to finish: XPath and XQuery data model and languages, SQL/XML, stored procedures, UDFs, and much more Avoiding common errors and inefficient XML queries Converting relational data to XML and vice versa Updating and transforming XML documents Defining and working with XML indexes Monitoring and optimizing the performance of XML queries and other operations Using XML Schemas to constrain and validate XML documents XML application development—including code samples for Java, .NET, C, COBOL, PL/1, PHP, and Perl

The practical guide for every circuit designer creating FPGA designs with Verilog Walk through design step-by-step—from coding through silicon. Partitioning, synthesis, simulation, test benches, combinatorial and sequential designs, and more. Real World FPGA Design with Verilog guides you through every key challenge associated with designing FPGAs and ASICs using Verilog, one of the world's leading hardware design languages. You'll find irreverent, yet rigorous coverage of what it really takes to translate HDL code into hardware—and how to avoid the pitfalls that can occur along the way. Ken Coffman presents no-frills, real-world design techniques that can improve the stability and reliability of virtually any design. Start by walking a typical Verilog design all the way through to silicon; then, review basic Verilog syntax, design; simulation and

testing, advanced simulation, and more. Coverage includes: Essential digital design strategies: recognizing the underlying analog building blocks used to create digital primitives; implementing logic with LUTs; clocking strategies, logic minimization, and more Key engineering tradeoffs, including operating speed vs. latency Combinatorial and sequential designs Verilog test fixtures: compiler directives and automated testing A detailed comparison of alternative architectures and software-including a never-before-published FPGA technology selection checklist Real World FPGA Design with Verilog introduces libraries and reusable modules, points out opportunities to reuse your own code, and helps you decide when to purchase existing IP designs instead of building from scratch. Essential rules for designing with ASIC conversion in mind are presented. If you're involved with digital hardware design with Verilog, Ken Coffman is a welcome voice of experience--showing you the shortcuts, helping you over the rough spots, and helping you achieve competence faster than you ever expected

The DB2® pureXML® feature offers sophisticated capabilities to store, process and manage XML data in its native hierarchical format. By integrating XML data intact into a relational database structure, users can take full advantage of DB2's relational data management features. In this IBM® Redbooks® publication, we document the steps for the implementation of a simple but meaningful XML application scenario. We have chosen to provide samples in COBOL and Java™ language. The purpose is to provide an easy path to follow to integrate the XML data type for the traditional DB2 for z/OS® user. We also add considerations for the data administrator and suggest best practices for ease of use and better performance.

A time-saving guide for solving all kinds of programming problems, this book picks up where other programming codebooks leave off--assuming programmers know the basics, and providing help with more complex programming problems. Each subject in the book is treated in detail, with numerous code samples that can be interfaced with all high-level languages.

DB2 Developer's Guide is the field's #1 go-to source for on-the-job information on programming and administering DB2 on IBM z/OS mainframes. Now, three-time IBM Information Champion Craig S. Mullins has thoroughly updated this classic for DB2 v9 and v10. Mullins fully covers new DB2 innovations including temporal database support; hashing; universal tablespaces; pureXML; performance, security and governance improvements; new data types, and much more. Using current versions of DB2 for z/OS, readers will learn how to: * Build better databases and applications for CICS, IMS, batch, CAF, and RRSAP * Write proficient, code-optimized DB2 SQL * Implement efficient dynamic and static SQL applications * Use binding and rebinding to optimize applications * Efficiently create, administer, and manage DB2 databases and applications * Design, build, and populate efficient DB2 database structures for online, batch, and data warehousing * Improve the performance of DB2 subsystems, databases, utilities, programs, and SQL stat DB2 Developer's Guide, Sixth Edition builds on the unique approach that has made previous editions so valuable. It combines: * Condensed, easy-to-read coverage of all essential topics: information otherwise scattered through dozens of documents * Detailed discussions of crucial details within each topic * Expert, field-tested implementation advice * Sensible examples

A basic reference for programming in REXX--IBM's SAA procedure language--covering

all the language details, concise examples and solid, practical information on how to use REXX. Includes the most important REXX programming idioms, tips, and techniques to show readers how to get the most out of it.

This is a guide designed to familiarize users with the DB2 standard while helping to optimize their use of the technology.

Procedures, triggers, and user-defined functions (UDFs) are the key database software features for developing robust and distributed applications. IBM Universal Database™ for i (IBM DB2® for i) supported these features for many years, and they were enhanced in V5R1, V5R2, and V5R3 of IBM® OS/400® and V5R4 of IBM i5/OSTM. This IBM Redbooks® publication includes several of the announced features for procedures, triggers, and UDFs in V5R1, V5R2, V5R3, and V5R4. This book includes suggestions, guidelines, and practical examples to help you effectively develop IBM DB2 for i procedures, triggers, and UDFs. The following topics are covered in this book: External stored procedures and triggers Java procedures (both Java Database Connectivity (JDBC) and Structured Query Language for Java (SQLJ)) External triggers External UDFs This publication also offers examples that were developed in several programming languages, including RPG, COBOL, C, Java, and Visual Basic, by using native and SQL data access interfaces. This book is part of the original IBM Redbooks publication, Stored Procedures, Triggers, and User-Defined Functions on DB2 Universal Database for iSeries, SG24-6503-02, that covered external procedures, triggers, and functions, and also SQL procedures, triggers, and functions. All of the information that relates to external routines was left in this publication. All of the information that relates to SQL routines was rewritten and updated. This information is in the new IBM Redbooks publication, SQL Procedures, Triggers, and Functions on IBM DB2 for i, SG24-8326. This book is intended for anyone who wants to develop IBM DB2 for i procedures, triggers, and UDFs. Before you read this book, you need to know about relational database technology and the application development environment on the IBM i server.

IBM® Rational® Application Developer for WebSphere® Software V7.0 (for short, Rational Application Developer) is the full function Eclipse 3.2 based development platform for developing Java™ 2 Platform Standard Edition (J2SE™) and Java 2 Platform Enterprise Edition (J2EE™) applications with a focus on applications to be deployed to IBM WebSphere Application Server and IBM WebSphere Portal. Rational Application Developer provides integrated development tools for all development roles, including Web developers, Java developers, business analysts, architects, and enterprise programmers. Rational Application Developer is part of the IBM Rational Software Delivery Platform (SDP), which contains products in four life cycle categories: - Architecture management, which includes integrated development environments (Application Developer is here) - Change and release management - Process and portfolio management - Quality management This IBM Redbooks® publication is a programming guide that highlights the features and tooling included with Rational Application Developer V7.0. Many of the chapters provide working examples that demonstrate how to use the tooling to develop applications, as well as achieve the benefits of visual and rapid application development. This publication is an update of Rational Application Developer V6 Programming Guide, SG24-6449. This book consists of six parts: - Introduction to Rational Application Developer - Develop applications - Test and debug applications - Deploy and profile applications - Team development - Appendixes

If you are looking for a practical DB2 book that focuses on application programming, this is the book for you. Written from the programmer's point of view, it will quickly teach you what you need to know to access and process DB2 data in your COBOL programs using embedded SQL. This second edition has been thoroughly updated and expanded to make it even more valuable to the programmer who is slugging it out on the job. You will learn: the critical DB2 concepts that let you understand how DB2 works; the basic DB2 coding features you will use

in every program you write; how to use version 4 enhancements like outer joins and explicit syntax for inner joins; how to work with column functions, scalar functions, and subqueries to manipulate data; how to use error handling techniques and ROLLBACK to protect DB2 data; why program efficiency is vital under DB2... and more.

Marketshare for DB2 has been growing steadily over the past 5 years and with the announcement of DB2 Universal Database V8 (T-Rex), the product has never had more momentum. DB2 owns about 30 percent of the database market--the same as Oracle. Not only is the product used in many Fortune 500 companies, but it is becoming very popular in small to medium sized businesses as well. This book provides the reader with a comprehensive reference and research tool for DB2 for the mainframe. Official material is awkwardly written, spans over a dozen manuals in PDF format, and lacks real-world guidance. Author, Craig Mullins, consistently hears from readers of past editions that they rely on this book as their primary reference for DB2. Craig Mullins is constantly being asked when it will support a new release.

This is a comprehensive .NET-retraining guide written for the COBOL/CICS mainframe programmer from the perspective of a former COBOL/CICS programmer.

Mainframe computers play a central role in the daily operations of many of the world's largest corporations. Batch processing is still a fundamental, mission-critical component of the workloads that run on the mainframe. A large portion of the workload on IBM® z/OS® systems is processed in batch mode. This IBM Redbooks® publication is the fourth volume in a series of four. They address new technologies introduced by IBM to facilitate the use of hybrid batch applications that combine the best aspects of Java and procedural programming languages such as COBOL. This volume focuses on the latest enhancements in IBM IMSTM batch support. IMS has been available to clients for 45 years as IMS Transaction Manager, IMS Database Manager, or both. The audience for this book includes IT architects and application developers with a focus on batch processing on the z/OS platform.

IBM's DB2 Express Edition is one of the most capable of the free database platforms available in today's marketplace. In *Beginning DB2*, author Grant Allen gets you started using DB2 Express Edition for web sites, desktop applications, and more. The author covers the basics of DB2 for developers and database administrators, shows you how to manage data in both XML and relational form, and includes numerous code examples so that you are never in doubt as to how things work. In this book, you'll find: A friendly introduction to DB2 Express Edition, an industrial-strength, relational database from IBM Dozens of examples so that you are never in doubt as to how things work Coverage of important language interfaces, such as from PHP, Ruby, C#, Python, and more The book is aimed at developers who want a robust database to back their applications.

This book provides a REXX tutorial combined with practical tips on programming methods and application development. Includes practical coverage of: programming for good performance; effective debugging techniques; user interface design strategies; system dependencies and interfaces; program maintenance guidelines; REXX interpreter and compiler implementations. DB2® packages were introduced with DB2 V2.3 in 1993. During the 15 years that have elapsed, a lot has changed. In particular, there is a more widespread use of distributed computing, Java™ language, new tools, and upgrades in the platform software and hardware. The best practices back then just might not be optimal today. In this IBM® Redbooks® publication, we take a fresh look at bringing packages into the 21st century. We begin with an overview of packages and explain the advantages of using packages. Because database request module (DBRM) based plans have been deprecated in DB2 9, you need to convert to packages if you did not use packages already. We provide guidance on using a DB2 provided function to convert from DBRM-based plans to packages. We re-examine the application development frameworks for packages: program preparation, package setup, and execution.

For distributed applications, we include a discussion of a utility to identify and remove deprecated private protocol and converting to DRDA® as well as an introduction to the new pureQuery function of Data Studio. We also discuss common problems and their resolutions. We then explore administration and operational activities dealing with packages, including security, access path management (where we discuss the newly introduced package stability feature to allow for a seamless fallback), and management and performance aspects. The appendixes include useful queries and mention tools for managing packages effectively. A database administrator's guide to DB2 implementation in large-scale or complex applications. By explaining important technical issues underlying DB2 constructs, Werman gives programmers insight into the trade-offs involved in successful program strategies for complicated applications.

This book will teach you the basic information and skills you need to develop applications on IBM mainframe computers running z/OS. The instruction, examples and sample programs in this book are a fast track to becoming productive as a developer in the IBM mainframe environment as quickly as possible. The coverage includes JCL, MVS Utilities, COBOL, VSAM, IMS, DB2 and CICS. The content of this book is easy to read and digest, well organized and focused on honing real job skills. Acquiring these skills is a key step in mastering IBM application development so you'll be ready to perform effectively on an application development team.

DB2 SQL developers now have a handy reference guide with tuning tips to improve performance in queries, programs and applications. Poorly coded programs or improperly coded SQL statements are often the culprit causing poor performance. Many developers working with an IBM DB2 relational database will benefit from this guide, entitled 'DB2 SQL 75+ Tuning Tips For Developers'. The book's focus is to increase developers' knowledge in the ways of performance and tuning in an IBM DB2 relational database environment. In an organized and easy-to-understand format, the guide provides development and SQL tips that will help developers improve performance problems. By modifying application and SQL code, understanding Runstat options, or adding and altering indexes, there are many things that developers can do to resolve performance issues. This book provides development tips and suggestions, along with many SQL coding examples, all with the purpose of gaining better performance.

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