

2ND EDITION

DATA

MODELING MADE SIMPLE

With ER/Studio® Data Architect



ADAPTING TO AGILE DATA MODELING
IN A BIG DATA WORLD

STEVE HOBERMAN

Data Modeling Made Simple With Erstudio Data Architect

AN Whitehead



Data Modeling Made Simple With Erstudio Data Architect:

Data Modeling Made Simple Steve Hoberman, 2013 This book provides the business or IT professional with a practical working knowledge of data modelling concepts and best practices along with how to apply these principles with ER Studio DA You will build many ER Studio DA data models along the way applying best practices to master these ten objectives You will know why a data model is needed and which ER Studio DA models are the most appropriate for each situation You will be able to read a data model of any size and complexity with the same confidence as reading a book You will know how to apply all the key features of ER Studio DA You will be able to build relational and dimensional conceptual logical and physical data models in ER Studio DA You will be able to apply techniques such as indexing transforms and forward engineering to turn a logical data model into an efficient physical design You will improve data model quality and impact analysis results by leveraging ER Studio DAs lineage functionality and compare merge utility You will achieve enterprise architecture through ER Studio DAs repository and portal functionality You will be able to apply ER Studio DAs data dictionary features You will learn ways of sharing the data model through reporting and through exporting the model in a variety of formats You will leverage ER Studio DAs naming functionality to improve naming consistency This book contains four sections Section I introduces data modelling and the ER Studio DA landscape Learn why data modelling is so critical to software development and even more importantly why data modelling is so critical to understanding the business You will also learn about the ER Studio DA environment By the end of this section you will have created and saved your first data model in ER Studio DA and be ready to start modelling in Section II Section II explains all of the symbols and text on a data model including entities attributes relationships domains and keys By the time you finish this section you will be able to read a data model of any size or complexity and create a complete data model in ER Studio DA Section III explores the three different levels of models conceptual logical and physical A conceptual data model CDM represents a business need within a defined scope The logical data model LDM represents a detailed business solution capturing the business requirements without complicating the model with implementation concerns such as software and hardware The physical data model PDM represents a detailed technical solution The PDM is the logical data model compromised often to improve performance or usability The PDM makes up for deficiencies in our technology By the end of this section you will be able to create conceptual logical and physical data models in ER Studio DA Section IV discusses additional features of ER Studio DA These features include data dictionary data lineage automating tasks repository and portal exporting and reporting naming standards and compare and merge functionality

Data Modeling Made Simple with Embarcadero ER/Studio Data Architect Steve Hoberman, 2015-10 Build a working knowledge of data modeling concepts and best practices along with how to apply these principles with ER Studio This second edition includes numerous updates and new sections including an overview of ER Studio s support for agile development as well as a description of some of ER Studio s newer features for NoSQL such as MongoDB s containment

structure You will build many ER Studio data models along the way applying best practices to master these ten objectives Know why a data model is needed and which ER Studio models are the most appropriate for each situation Understand each component on the data model and how to represent and create them in ER Studio Know how to leverage ER Studio s latest features including those assisting agile teams and forward and reverse engineering of NoSQL databases Know how to apply all the foundational features of ER Studio Be able to build relational and dimensional conceptual logical and physical data models in ER Studio Be able to apply techniques such as indexing transforms and forward engineering to turn a logical data model into an efficient physical design Improve data model quality and impact analysis results by leveraging ER Studio s lineage functionality and compare merge utility Be able to apply ER Studio s data dictionary features Learn ways of sharing the data model through reporting and through exporting the model in a variety of formats Leverage ER Studio s naming functionality to improve naming consistency including the new Automatic Naming Translation feature This book contains four sections Section I introduces data modeling and the ER Studio landscape Learn why data modeling is so critical to software development and even more importantly why data modeling is so critical to understanding the business You will learn about the newest features in ER Studio including features on big data and agile and the ER Studio environment By the end of this section you will have created and saved your first data model in ER Studio and be ready to start modeling in Section II Section II explains all of the symbols and text on a data model including entities attributes relationships domains and keys By the time you finish this section you will be able to read a data model of any size or complexity and create a complete data model in ER Studio Section III explores the three different levels of models conceptual logical and physical A conceptual data model CDM represents a business need within a defined scope The logical data model LDM represents a detailed business solution capturing the business requirements without complicating the model with implementation concerns such as software and hardware The physical data model PDM represents a detailed technical solution The PDM is the logical data model compromised often to improve performance or usability The PDM makes up for deficiencies in our technology By the end of this section you will be able to create conceptual logical and physical data models in ER Studio Section IV discusses additional features of ER Studio These features include data dictionary data lineage automating tasks repository and portal exporting and reporting naming standards and compare and merge functionality

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ER Studio Know how to leverage ER Studio's latest features including those assisting agile teams and forward and reverse engineering of NoSQL databases Know how to apply all the foundational features of ER Studio Be able to build relational and dimensional conceptual logical and physical data models in ER Studio Be able to apply techniques such as indexing transforms and forward engineering to turn a logical data model into an efficient physical design Improve data model quality and impact analysis results by leveraging ER Studio's lineage functionality and compare merge utility Be able to apply ER Studio's data dictionary features Learn ways of sharing the data model through reporting and through exporting the model in a variety of formats Leverage ER Studio's naming functionality to improve naming consistency including the new Automatic Naming Translation feature This book contains four sections Section I introduces data modeling and the ER Studio landscape Learn why data modeling is so critical to software development and even more importantly why data modeling is so critical to understanding the business You will learn about the newest features in ER Studio including features on big data and agile and the ER Studio environment By the end of this section you will have created and saved your first data model in ER Studio and be ready to start modeling in Section II Section II explains all of the symbols and text on a data model including entities attributes relationships domains and keys By the time you finish this section you will be able to read a data model of any size or complexity and create a complete data model in ER Studio Section III explores the three different levels of models conceptual logical and physical A conceptual data model CDM

Data Modeling for MongoDB Steve Hoberman, 2014-06-01

Congratulations You completed the MongoDB application within the given tight timeframe and there is a party to celebrate your application's release into production Although people are congratulating you at the celebration you are feeling some uneasiness inside To complete the project on time required making a lot of assumptions about the data such as what terms meant and how calculations are derived In addition the poor documentation about the application will be of limited use to the support team and not investigating all of the inherent rules in the data may eventually lead to poorly performing structures in the not so distant future Now what if you had a time machine and could go back and read this book You would learn that even NoSQL databases like MongoDB require some level of data modeling Data modeling is the process of learning about the data and regardless of technology this process must be performed for a successful application You would learn the value of conceptual logical and physical data modeling and how each stage increases our knowledge of the data and reduces assumptions and poor design decisions Read this book to learn how to do data modeling for MongoDB applications and accomplish these five objectives Understand how data modeling contributes to the process of learning about the data and is therefore a required technique even when the resulting database is not relational That is NoSQL does not mean NoDataModeling Know how NoSQL databases differ from traditional relational databases and where MongoDB fits Explore each MongoDB object and comprehend how each compares to their data modeling and traditional relational database counterparts and learn the basics of adding querying updating and deleting data in MongoDB Practice a streamlined

template driven approach to performing conceptual logical and physical data modeling Recognize that data modeling does not always have to lead to traditional data models Distinguish top down from bottom up development approaches and complete a top down case study which ties all of the modeling techniques together This book is written for anyone who is working with or will be working with MongoDB including business analysts data modelers database administrators developers project managers and data scientists There are three sections In Section I Getting Started we will reveal the power of data modeling and the tight connections to data models that exist when designing any type of database Chapter 1 compare NoSQL with traditional relational databases and where MongoDB fits Chapter 2 explore each MongoDB object and comprehend how each compares to their data modeling and traditional relational database counterparts Chapter 3 and explain the basics of adding querying updating and deleting data in MongoDB Chapter 4 In Section II Levels of Granularity we cover Conceptual Data Modeling Chapter 5 Logical Data Modeling Chapter 6 and Physical Data Modeling Chapter 7 Notice the ing at the end of each of these chapters We focus on the process of building each of these models which is where we gain essential business knowledge In Section III Case Study we will explain both top down and bottom up development approaches and go through a top down case study where we start with business requirements and end with the MongoDB database This case study will tie together all of the techniques in the previous seven chapters Nike Senior Data Architect Ryan Smith wrote the foreword Key points are included at the end of each chapter as a way to reinforce concepts In addition this book is loaded with hands on exercises along with their answers provided in Appendix A Appendix B contains all of the book s references and Appendix C contains a glossary of the terms used throughout the text Technology Made Simple for the Technical Recruiter, Second Edition Obi Ogbanufe, 2019-04-27 If you re a technical recruiter who wants to keep your skills up to date in the competitive field of technical resource placement you need a detailed guidebook to outpace competitors This technical skills primer focuses on technology fundamentals from basic programming terms to big data vocabulary network lingo operating system jargon and other crucial skill sets Topics covered include sample questions to ask candidates types of networks and operating systems software development strategies cloud systems administration and DevOps data science and database job roles and information security job roles Armed with indispensable information the alphabet soup of technology acronyms will no longer be intimidating and you will be able to analyze client and candidate requirements with confidence Written in clear and concise prose Technology Made Simple for the Technical Recruiter is an invaluable resource for any technical recruiter **DAMA-DMBOK. Свод знаний по управлению данными** Коллектив авторов, 2020-11-16 DAMA DMBOK **DAMA-DMBOK: Guía Del Conocimiento Para La Gestión De Datos (Spanish Edition)** DAMA International, La Guía del Conocimiento para la Gestión de Datos DAMA DMBOK2 presenta una visión exhaustiva de los desafíos complejidades y valor de la gestión eficaz de los datos Las organizaciones de hoy en día reconocen que la gestión de los datos es fundamental para su éxito Reconocen que los datos tienen valor y quieren aprovechar ese valor A

medida que nuestra capacidad y deseo de crear y explotar datos ha aumentado también lo ha hecho la necesidad de prácticas de gestión de datos confiables La segunda edición de la Guía del Conocimiento para la Gestión de Datos de DAMA International actualiza y aumenta el exitoso DMBOK1 DMBOK2 un libro de referencia accesible y autorizado escrito por los principales pensadores en el campo y ampliamente revisado por los miembros de DAMA reúne materiales que describen exhaustivamente los desafíos de la gestión de datos y cómo cumplirlos mediante Definir un conjunto de principios rectores para la gestión de datos y describir cómo se pueden aplicar estos principios dentro de las áreas funcionales de gestión de datos Proporcionar un marco de referencia funcional para la implementación de prácticas de gestión de datos empresariales incluyendo prácticas métodos y técnicas ampliamente adoptadas funciones roles entregables y métricas Establecer un vocabulario común para los conceptos de gestión de datos y servir de base para las mejores prácticas para los profesionales de la gestión de datos DAMA DMBOK2 proporciona a los profesionales de la gestión de datos y de TI a ejecutivos trabajadores del conocimiento educadores e investigadores un marco para gestionar sus datos y madurar su infraestructura de información basado en estos principios Los datos son un activo con propiedades únicas El valor de los datos puede y debe expresarse en términos económicos Gestionar los datos significa gestionar la calidad de los datos Se necesitan metadatos para gestionar los datos Se necesita planificación para gestionar los datos La gestión de datos es multifuncional y requiere una amplia gama de habilidades y experiencia La gestión de datos requiere una perspectiva empresarial La gestión de datos debe tener en cuenta una serie de perspectivas La gestión de datos es la gestión del ciclo de vida de los datos Los diferentes tipos de datos tienen diferentes requerimientos de ciclo de vida La gestión de datos incluye la gestión de los riesgos asociados a los datos Los requerimientos de gestión de datos deben impulsar las decisiones sobre tecnología de la información Una gestión eficaz de los datos requiere un compromiso de liderazgo Los capítulos incluyen Gestión de Datos Manejo técnico de los Datos Gobierno de Datos Arquitectura de Datos Modelado y Diseño de Datos Almacenamiento de Datos y Operaciones Seguridad de Datos Integración de Datos e Interoperabilidad Gestión de Documentos y Contenidos Datos Maestros y de Referencia Data Warehousing e Inteligencia de Negocios Gestión de Metadatos Calidad de Datos Big Data y Ciencia de Datos Evaluación de la Madurez de la Gestión de Datos Organización de la Gestión de Datos y Expectativas de Roles Gestión de Datos y Gestión del Cambio Organizacional La estandarización de las disciplinas de gestión de datos ayudar a los profesionales de la gestión de datos a desempeñarse de forma más eficaz y consistente También permitir a los líderes de la organización reconocer el valor y las contribuciones de las actividades de gestión de datos

Database Architect: A Comprehensive Guide to Designing and Implementing Relational Databases Pasquale De Marco, 2025-04-17 In the realm of data management there lies a powerful tool that has revolutionized the way we store organize and access information the database This comprehensive guide unveils the intricacies of database systems providing a profound understanding of their concepts design principles implementation techniques and diverse applications Embark on a journey into the world of databases where you will discover the fundamental

building blocks of data management exploring different types of databases their components and the distinct advantages they offer Delve into the art of data modeling a crucial step in database design where you ll learn to structure and organize data efficiently ensuring integrity and consistency Unravel the intricacies of database design mastering the principles and methodologies that lead to efficient and scalable database architectures Explore the concept of normalization a cornerstone of data management and its impact on data integrity and performance Discover the tools that aid in the visual representation and optimization of database structures empowering you to design databases that meet specific business requirements Dive into the depths of SQL the ubiquitous database language gaining fluency in its commands advanced concepts and its power in data manipulation and retrieval Unlock the potential of SQL for complex data analysis and reporting harnessing its versatility to extract meaningful insights from vast amounts of data Witness the practical aspects of database implementation as you delve into the process of selecting the right database management system DBMS Learn the art of installing configuring and creating databases ensuring seamless data exchange through importing and exporting techniques Safeguard your data with robust security measures protecting it from unauthorized access and ensuring its confidentiality and integrity Explore the frontiers of database technology delving into advanced concepts such as distributed databases data warehousing and business intelligence NoSQL databases object oriented databases and cloud databases Gain an understanding of their unique features benefits and use cases expanding your knowledge of the diverse landscape of database solutions If you like this book write a review on google books

Data Architecture Charles Tupper, 2011-05-09 Data Architecture From Zen to Reality explains the principles underlying data architecture how data evolves with organizations and the challenges organizations face in structuring and managing their data Using a holistic approach to the field of data architecture the book describes proven methods and technologies to solve the complex issues dealing with data It covers the various applied areas of data including data modelling and data model management data quality data governance enterprise information management database design data warehousing and warehouse design This text is a core resource for anyone customizing or aligning data management systems taking the Zen like idea of data architecture to an attainable reality The book presents fundamental concepts of enterprise architecture with definitions and real world applications and scenarios It teaches data managers and planners about the challenges of building a data architecture roadmap structuring the right team and building a long term set of solutions It includes the detail needed to illustrate how the fundamental principles are used in current business practice The book is divided into five sections one of which addresses the software application development process defining tools techniques and methods that ensure repeatable results Data Architecture is intended for people in business management involved with corporate data issues and information technology decisions ranging from data architects to IT consultants IT auditors and data administrators It is also an ideal reference tool for those in a higher level education process involved in data or information technology management Presents fundamental concepts of enterprise architecture with

definitions and real world applications and scenarios Teaches data managers and planners about the challenges of building a data architecture roadmap structuring the right team and building a long term set of solutions Includes the detail needed to illustrate how the fundamental principles are used in current business practice **Data Modeling Essentials** Graeme Simsion, Graham Witt, 2004-12-03 Data Modeling Essentials Third Edition covers the basics of data modeling while focusing on developing a facility in techniques rather than a simple familiarization with the rules In order to enable students to apply the basics of data modeling to real models the book addresses the realities of developing systems in real world situations by assessing the merits of a variety of possible solutions as well as using language and diagramming methods that represent industry practice This revised edition has been given significantly expanded coverage and reorganized for greater reader comprehension even as it retains its distinctive hallmarks of readability and usefulness Beginning with the basics the book provides a thorough grounding in theory before guiding the reader through the various stages of applied data modeling and database design Later chapters address advanced subjects including business rules data warehousing enterprise wide modeling and data management It includes an entirely new section discussing the development of logical and physical modeling along with new material describing a powerful technique for model verification It also provides an excellent resource for additional lectures and exercises This text is the ideal reference for data modelers data architects database designers DBAs and systems analysts as well as undergraduate and graduate level students looking for a real world perspective Thorough coverage of the fundamentals and relevant theory Recognition and support for the creative side of the process Expanded coverage of applied data modeling includes new chapters on logical and physical database design New material describing a powerful technique for model verification Unique coverage of the practical and human aspects of modeling such as working with business specialists managing change and resolving conflict *Data Modeling Essentials* Mr. Rohit Manglik, 2024-07-20 EduGorilla Publication is a trusted name in the education sector committed to empowering learners with high quality study materials and resources Specializing in competitive exams and academic support EduGorilla provides comprehensive and well structured content tailored to meet the needs of students across various streams and levels

Data Model Scorecard Steve Hoberman, 2015-11-01 Data models are the main medium used to communicate data requirements from business to IT and within IT from analysts modelers and architects to database designers and developers Therefore it s essential to get the data model right But how do you determine right That s where the Data Model Scorecard comes in The Data Model Scorecard is a data model quality scoring tool containing ten categories aimed at improving the quality of your organization s data models Many of my consulting assignments are dedicated to applying the Data Model Scorecard to my client s data models I will show you how to apply the Scorecard in this book This book written for people who build use or review data models contains the Data Model Scorecard template and an explanation along with many examples of each of the ten Scorecard categories There are three sections In Section I Data Modeling and the Need for

Validation receive a short data modeling primer in Chapter 1 understand why it is important to get the data model right in Chapter 2 and learn about the Data Model Scorecard in Chapter 3 In Section II Data Model Scorecard Categories we will explain each of the ten categories of the Data Model Scorecard There are ten chapters in this section each chapter dedicated to a specific Scorecard category Chapter 4 Correctness Chapter 5 Completeness Chapter 6 Scheme Chapter 7 Structure Chapter 8 Abstraction Chapter 9 Standards Chapter 10 Readability Chapter 11 Definitions Chapter 12 Consistency Chapter 13 Data In Section III Validating Data Models we will prepare for the model review Chapter 14 cover tips to help during the model review Chapter 15 and then review a data model based upon an actual project Chapter 16

Data Modeling Made Simple with CA ERwin Data Modeler r8 Donna Burbank, Steve Hoberman, 2011-08-01 Data Modeling Made Simple with CA ERwin Data Modeler r8 will provide the business or IT professional with a practical working knowledge of data modeling concepts and best practices and how to apply these principles with CA ERwin Data Modeler r8 You ll build many CA ERwin data models along the way mastering first the fundamentals and later in the book the more advanced features of CA ERwin Data Modeler This book combines real world experience and best practices with down to earth advice humor and even cartoons to help you master the following ten objectives

- 1 Understand the basics of data modeling and relational theory and how to apply these skills using CA ERwin Data Modeler
- 2 Read a data model of any size and complexity with the same confidence as reading a book
- 3 Understand the difference between conceptual logical and physical models and how to effectively build these models using CA ERwin s Data Modelers Design Layer Architecture
- 4 Apply techniques to turn a logical data model into an efficient physical design and vice versa through forward and reverse engineering for both top down and bottom up design
- 5 Learn how to create reusable domains naming standards UDPs and model templates in CA ERwin Data Modeler to reduce modeling time improve data quality and increase enterprise consistency
- 6 Share data model information with various audiences using model formatting and layout techniques reporting and metadata exchange
- 7 Use the new workspace customization features in CA ERwin Data Modeler r8 to create a workflow suited to your own individual needs
- 8 Leverage the new Bulk Editing features in CA ERwin Data Modeler r8 for mass metadata updates as well as import export with Microsoft Excel
- 9 Compare and merge model changes using CA ERwin Data Modelers Complete Compare features
- 10 Optimize the organization and layout of your data models through the use of Subject Areas Diagrams Display Themes and more

Section I provides an overview of data modeling what it is and why it is needed The basic features of CA ERwin Data Modeler are introduced with a simple easy to follow example Section II introduces the basic building blocks of a data model including entities relationships keys and more How to examples using CA ERwin Data Modeler are provided for each of these building blocks as well as real world scenarios for context Section III covers the creation of reusable standards and their importance in the organization From standard data modeling constructs such as domains to CA ERwin specific features such as UDPs this section covers step by step examples of how to create these standards in CA ERwin Data

Modeling from creation to template building to sharing standards with end users through reporting and queries Section IV discusses conceptual logical and physical data models and provides a comprehensive case study using CA ERwin Data Modeler to show the interrelationships between these models using CA ERwin's Design Layer Architecture Real world examples are provided from requirements gathering to working with business sponsors to the hands on nitty gritty details of building conceptual logical and physical data models with CA ERwin Data Modeler r8 From the Foreword by Tom Bilcze President CA Technologies Modeling Global User Community Data Modeling Made Simple with CA ERwin Data Modeler r8 is an excellent resource for the ERwin community The data modeling community is a diverse collection of data professionals with many perspectives of data modeling and different levels of skill and experience Steve Hoberman and Donna Burbank guide newbie modelers through the basics of data modeling and CA ERwin r8 Through the liberal use of illustrations the inexperienced data modeler is graphically walked through the components of data models and how to create them in CA ERwin r8 As an experienced data modeler Steve and Donna give me a handbook for effectively using the new and enhanced features of this release to bring my art form to life The book delves into advanced modeling topics and techniques by continuing the liberal use of illustrations It speaks to the importance of a defined data modeling architecture with soundly modeled data to assist the enterprise in understanding of the value of data It guides me in applying the finishing touches to my data designs

Database Design, Query Formulation, and Administration Michael Mannino, 2023-11-30 Formerly published by Chicago Business Press now published by Sage Database Design Query Formulation and Administration Eighth Edition offers a comprehensive understanding of database technology Author Michael Mannino equips students with the necessary tools to grasp the fundamental concepts of database management and then guides them in honing their skills to solve both basic and advanced problems for operational databases and data warehouses in query formulation database design and administration Features of the Eighth Edition Unmatched SQL coverage in both breadth and depth Oracle and PostgreSQL coverage Problem solving guidelines Sample databases and examples Normalization Physical database design Triggers Data modeling tools Data warehouse design Data integration NoSQL coverage Current and cutting edge topics Comprehensive enough for multiple database courses

Database Design, Application Development, and Administration Michael Mannino, 2018-09-01 Formerly published by Chicago Business Press now published by Sage Database Design Application Development and Administration Seventh Edition offers a comprehensive understanding of database technology Author Michael Mannino equips students with the necessary tools to grasp the fundamental concepts of database management and then guides them in honing their skills to solve both basic and advanced challenges in query formulation data modeling and database application development

Database Modeling and Design Toby J. Teorey, Sam S. Lightstone, Tom Nadeau, H.V. Jagadish, 2011-02-10 Includes bonus chapters from the book Physical database design

Simulation Conceptual Modeling Jeffrey Strickland, 2011-10-27 Simulation Conceptual Modeling explores several system

analysis methods and conceptual modeling techniques It also discusses appropriate tools that may be used to assist with conceptual modeling In addition it discusses how to evaluate the quality of a conceptual model Some commonly used conceptual modeling techniques and methods include Data Flow Modeling Entity Relationship Modeling Event Drive Process Chain Joint Application Development Place Transition Net Modeling State Transition Modeling Object Role Modeling and Unified Modeling Language UML

Sun Tracking and Solar Renewable Energy Harvesting Gerro Prinsloo, Robert Dobson, 2015-11-02 Free to download eBook on Practical Solar Tracking Design Solar Tracking Sun Tracking Sun Tracker Solar Tracker Follow Sun Sun Position calculation Azimuth Elevation Zenith Sun following Sunrise Sunset Moon phase Moonrise Moonset calculators In harnessing power from the sun through a solar tracker or solar tracking system renewable energy system developers require automatic solar tracking software and solar position algorithms On axis sun tracking system such as the altitude azimuth dual axis or multi axis solar tracker systems use a sun tracking algorithm or ray tracing sensors or software to ensure the sun's passage through the sky is traced with high precision in automated solar tracker applications right through summer solstice solar equinox and winter solstice Eco Friendly and Environmentally Sustainable Micro Combined Solar Heat and Power m CHP m CCHP m CHCP with Microgrid Storage and Layered Smartgrid Control towards Supplying Off Grid Rural Villages in developing BRICS countries such as Africa India China and Brazil Off grid rural villages and isolated islands areas require mCHP and trigeneration solar power plants and associated isolated smart microgrid solutions to serve the community energy needs This article describes the development progress for such a system also referred to as solar polygeneration The system includes a sun tracker mechanism wherein a parabolic dish or lenses are guided by a light sensitive mechanism in a way that the solar receiver is always at right angle to the solar radiation Solar thermal energy is then either converted into electrical energy through a free piston Stirling or stored in a thermal storage container The project includes the thermodynamic modeling of the plant in Matlab Simulink as well as the development of an intelligent control approach that includes smart microgrid distribution and optimization The book includes aspects in the simulation and optimization of stand alone hybrid renewable energy systems and co generation in isolated or islanded microgrids It focusses on the stepwise development of a hybrid solar driven micro combined cooling heating and power mCCHP compact trigeneration polygeneration and thermal energy storage TES system with intelligent weather prediction weak ahead scheduling time horizon and look ahead dispatch on integrated smart microgrid distribution principles The solar harvesting and solar thermodynamic system includes an automatic sun tracking platform based on a PLC controlled mechatronic sun tracking system that follows the sun progressing across the sky An intelligent energy management and adaptive learning control optimization approach is proposed for autonomous off grid remote power applications both for thermodynamic optimization and smart micro grid optimization for distributed energy resources DER The correct resolution of this load following multi objective optimization problem is a complex task because of the high number and multi

dimensional variables the cross correlation and interdependency between the energy streams as well as the non linearity in the performance of some of the system components Exergy based control approaches for smartgrid topologies are considered in terms of the intelligence behind the safe and reliable operation of a microgrid in an automated system that can manage energy flow in electrical as well as thermal energy systems The standalone micro grid solution would be suitable for a rural village intelligent building district energy system campus power shopping mall centre isolated network eco estate or remote island application setting where self generation and decentralized energy system concepts play a role Discrete digital simulation models for the thermodynamic and active demand side management systems with digital smartgrid control unit to optimize the system energy management is currently under development Parametric simulation models for this trigeneration system polygeneration poligeneration quadgeneration are developed on the Matlab Simulink and TrnSys platforms In terms of model predictive coding strategies the automation controller will perform multi objective cost optimization for energy management on a microgrid level by managing the generation and storage of electrical heat and cooling energies in layers Each layer has its own set of smart microgrid priorities associated with user demand side cycle predictions Mixed Integer Linear Programming and Neural network algorithms are being modeled to perform Multi Objective Control optimization as potential optimization and adaptive learning techniques

Pro SQL Server Relational Database Design and Implementation
Louis Davidson, 2020-12-14 Learn effective and scalable database design techniques in SQL Server 2019 and other recent SQL Server versions This book is revised to cover additions to SQL Server that include SQL graph enhancements in memory online transaction processing temporal data storage row level security and other design related features This book will help you design OLTP databases that are high quality protect the integrity of your data and perform fast on premises in the cloud or in hybrid configurations Designing an effective and scalable database using SQL Server is a task requiring skills that have been around for well over 30 years using technology that is constantly changing This book covers everything from design logic that business users will understand to the physical implementation of design in a SQL Server database Grounded in best practices and a solid understanding of the underlying theory author Louis Davidson shows you how to get it right in SQL Server database design and lay a solid groundwork for the future use of valuable business data What You Will Learn Develop conceptual models of client data using interviews and client documentation Implement designs that work on premises in the cloud or in a hybrid approach Recognize and apply common database design patterns Normalize data models to enhance integrity and scalability of your databases for the long term use of valuable data Translate conceptual models into high performing SQL Server databases Secure and protect data integrity as part of meeting regulatory requirements Create effective indexing to speed query performance Understand the concepts of concurrency Who This Book Is For Programmers and database administrators of all types who want to use SQL Server to store transactional data The book is especially useful to those wanting to learn the latest database design features in SQL Server 2019 features that include graph objects in

memory OLTP temporal data support and more Chapters on fundamental concepts the language of database modeling SQL implementation and the normalization process lay a solid groundwork for readers who are just entering the field of database design More advanced chapters serve the seasoned veteran by tackling the latest in physical implementation features that SQL Server has to offer The book has been carefully revised to cover all the design related features that are new in SQL Server 2019

Data Warehousing Rob Botwright, 2024 Introducing the Data Warehousing Optimizing Data Storage and Retrieval for Business Success bundle Unlock the full potential of your data with this comprehensive collection of four essential books

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- 2 Mastering Data Modeling for Data Warehousing Take your data modeling skills to the next level with advanced techniques for conceptual logical and dimensional modeling Learn how to design scalable and efficient data warehouses that meet the evolving needs of your organization
- 3 Advanced ETL Techniques for Data Warehousing Optimization Optimize your ETL processes and streamline data extraction transformation and loading for maximum efficiency Explore advanced techniques such as incremental loading and change data capture CDC to ensure the smooth operation of your data warehouse
- 4 Big Data Analytics Harnessing the Power of Data Warehousing for Experts Unlock the transformative potential of big data analytics and gain actionable insights to drive informed decision making Discover how to leverage your data warehouse for real time data processing predictive modeling and more With this bundle you'll gain the knowledge and skills needed to optimize your data storage and retrieval processes empowering you to harness the power of data for business success

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