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DataSys+ Study Guide

Exam DS0-001



Mike Chapple
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To Renee. You inspire me to be a better person. Thank you for your love and friendship over the last 25 years. I love you.

—Mike

To Allison, the love of my life. Thank you for accompanying me on life's adventures, for your curious blend of logic and passion, and for your unwavering energy and support. I'm so excited to spend the rest of my life with you.

—Sharif

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Introduction

If you're preparing to take the CompTIA DataSys+ exam, you'll undoubtedly want to find as much information as you can about data and analytics. The more information you have at your disposal and the more hands-on experience you gain, the better off you'll be when attempting the exam. This study guide was written with that in mind. The goal was to provide enough information to prepare you for the test, but not so much that you'll be overloaded with information that's outside the scope of the exam.

We've included review questions at the end of each chapter to give you a taste of what it's like to take the exam. If you're already working in the data field, we recommend that you check out these questions first to gauge your level of expertise. You can then use the book mainly to fill in the gaps in your current knowledge. This study guide will help you round out your knowledge base before tackling the exam.

If you can answer 90 percent or more of the review questions correctly for a given chapter, you can feel safe moving on to the next chapter. If you're unable to answer that many correctly, reread the chapter and try the questions again. Your score should improve.



Don't just study the questions and answers! The questions on the actual exam will be different from the practice questions included in this book. The exam is designed to test your knowledge of a concept or objective, so use this book to learn the objectives behind the questions.

The DataSys+ Exam

The DataSys+ exam is designed to be a vendor-neutral certification for data systems professionals and those seeking to enter the field. CompTIA recommends this certification for those currently working, or aspiring to work, in data systems and database administration roles.

The exam covers five major domains.

1. Database Fundamentals
2. Database Deployment
3. Database Management and Maintenance
4. Data and Database Security
5. Business Continuity

These five areas include a range of topics, from Structured Query Language (SQL) to scripting and from data security to business continuity, while focusing heavily on scenario-based learning. That's why CompTIA recommends that those attempting the exam have 2–3 years of hands-on work experience, although many individuals pass the exam before moving into their first database administration role.

The DataSys+ exam is conducted in a format that CompTIA calls “performance-based assessment.” This means the exam combines standard multiple-choice questions with other, interactive question formats. Your exam may include several types of questions such as multiple-choice, fill-in-the-blank, multiple-response, drag-and-drop, and image-based problems.

The exam costs \$358 in the United States, with roughly equivalent prices in other locations around the globe. More details about the DataSys+ exam and how to take it can be found here:

www.comptia.org/certifications/datasys

You’ll have 90 minutes to take the exam and will be asked to answer up to 90 questions during that time period. Your exam will be scored on a scale ranging from 100 to 900, with a passing score of 700.

You should also know that CompTIA is notorious for including vague questions on all of its exams. You might see a question for which two of the possible four answers are correct—but you can choose only one. Use your knowledge, logic, and intuition to choose the best answer and then move on. Sometimes, the questions are worded in ways that would make English majors cringe—a typo here, an incorrect verb there. Don’t let this frustrate you; answer the question and move on to the next one.



CompTIA frequently does what is called *item seeding*, which is the practice of including unscored questions on exams. It does so to gather psychometric data, which is then used when developing new versions of the exam. Before you take the exam, you will be told that your exam may include these unscored questions. So, if you come across a question that does not appear to map to any of the exam objectives—or for that matter, does not appear to belong in the exam—it is likely a seeded question. You never really know whether a question is seeded, however, so always make your best effort to answer every question.

Taking the Exam

Once you are fully prepared to take the exam, you can visit the CompTIA website to purchase your exam voucher.

<https://store.comptia.org/Certification-Vouchers/c/11293>

Currently, CompTIA offers two options for taking the exam: an in-person exam at a testing center and an at-home exam that you take on your own computer.



This book includes a coupon that you may use to save 10 percent on your CompTIA exam registration.

In-Person Exams

CompTIA partners with Pearson VUE's testing centers, so your next step will be to locate a testing center near you. In the United States, you can do this based on your address or your ZIP code, while non-U.S. test takers may find it easier to enter their city and country. You can search for a test center near you at the Pearson Vue website, where you will need to navigate to "Find a test center."

www.pearsonvue.com/comptia

Now that you know where you'd like to take the exam, simply set up a Pearson VUE testing account and schedule an exam on their site.

On the day of the test, take two forms of identification, and make sure to show up with plenty of time before the exam starts. Remember that you will not be able to take your notes, electronic devices (including smartphones and watches), or other materials in with you.



Be sure to review the Candidate Identification policy at www.comptia.org/testing/testing-policies-procedures/test-policies/candidate-id-policy to learn what types of ID are acceptable.

At-Home Exams

CompTIA began offering online exam proctoring in response to the coronavirus pandemic. As of the time this book went to press, the at-home testing option was still available and appears likely to continue. Candidates using this approach will take the exam at their home or office and be proctored over a webcam by a remote proctor.

Because of the rapidly changing nature of the at-home testing experience, candidates who want to pursue this option should check the CompTIA website for the latest details.

After the Data Systems Exam

Once you have taken the exam, you will be notified of your score immediately, so you'll know if you passed the test right away. You should keep track of your score report with your exam registration records and the email address you used to register for the exam.

What Does This Book Cover?

This book covers everything you need to know to pass the Data Systems exam.

Chapter 1: Today's Data Systems Professional

Chapter 2: Database Fundamentals

Chapter 3: SQL and Scripting

Chapter 4: Database Deployment

Chapter 5: Database Management and Maintenance

Chapter 6: Governance, Security, and Compliance

Chapter 7: Database Security

Chapter 8: Business Continuity

Appendix: Answers to Review Questions

Study Guide Elements

This study guide uses a number of common elements to help you prepare. These include the following:

Summaries The summary section of each chapter briefly explains the chapter, allowing you to easily understand what it covers.

Exam Essentials The exam essentials focus on major exam topics and critical knowledge that you should take into the test. The exam essentials focus on the exam objectives provided by CompTIA.

Chapter Review Questions A set of questions at the end of each chapter will help you assess your knowledge and if you are ready to take the exam based on your knowledge of that chapter's topics.

Interactive Online Learning Environment and Test Bank

The authors have worked hard to create some really great tools to help you with your certification process. The interactive online learning environment that accompanies the CompTIA DataSys+ Study Guide: Exam DS0-001 includes a test bank with study tools to help you prepare for the certification exam—and increase your chances of passing it the first time! The test bank includes the following:

Sample tests All the questions in this book are included online, including the assessment test at the end of this Introduction and the review questions at the end of each chapter. In addition, there is a custom practice exam with 90 questions. Use these questions to assess how you're likely to perform on the real exam. The online test bank runs on multiple devices.

Flashcards The online text bank includes more than 100 flashcards specifically written to hit you hard, so don't get discouraged if you don't ace your way through them at first. They're there to ensure that you're really ready for the exam. And no worries—armed with the review questions, practice exams, and flashcards, you'll be more than prepared when exam day comes. Questions are provided in digital flashcard format

(a question followed by a single correct answer). You can use the flashcards to reinforce your learning and provide last-minute test prep before the exam.

Glossary A glossary of key terms from this book is available as a fully searchable PDF.



Go to www.wiley.com/go/sybextestprep to register and gain access to this interactive online learning environment and test bank with study tools.

Like all exams, the DataSys+ certification from CompTIA is updated periodically and may eventually be retired or replaced. At some point after CompTIA is no longer offering this exam, the old editions of our books and online tools will be retired. If you have purchased this book after the exam was retired, or are attempting to register in the Sybex online learning environment after the exam was retired, please know that we make no guarantees that this exam's online Sybex tools will be available once the exam is no longer available.

Exam DS0-001 Exam Objectives

CompTIA goes to great lengths to ensure that its certification programs accurately reflect the IT industry's best practices. They do this by establishing committees for each of its exam programs. Each committee comprises a small group of IT professionals, training providers, and publishers who are responsible for establishing the exam's baseline competency level and who determine the appropriate target-audience level.

Once these factors are determined, CompTIA shares this information with a group of hand-selected subject matter experts (SMEs). These folks are the true brainpower behind the certification program. The SMEs review the committee's findings, refine them, and shape them into the objectives that follow this section. CompTIA calls this process a *job-task analysis (JTA)*.

Finally, CompTIA conducts a survey to ensure that the objectives and weightings truly reflect job requirements. Only then can the SMEs go to work writing the hundreds of questions needed for the exam. Even so, they have to go back to the drawing board for further refinements in many cases before the exam is ready to go live in its final state. Rest assured that the content you're about to learn will serve you long after you take the exam.

CompTIA also publishes relative weightings for each of the exam's objectives. The following table lists the five DataSys+ objective domains and the extent to which they are represented on the exam:

Domain	% of Exam
1.0 Database Fundamentals	24%
2.0 Database Deployment	16%
3.0 Database Management and Maintenance	25%
4.0 Data and Database Security	23%
5.0 Business Continuity	12%

DS0-001 Certification Exam Objective Map

Objective	Chapter
1.0 Database Fundamentals	
1.1 Compare and contrast database structure types	Chapter 2
1.2 Given a scenario, develop, modify, and run SQL code	Chapter 3
1.3 Compare and contrast scripting methods and scripting environments	Chapter 3
1.4 Explain the impact of programming on database operations	Chapter 2
2.0 Database Deployment	
2.1 Compare and contrast aspects of database planning and design	Chapter 4
2.2 Explain database implementation, testing, and deployment phases	Chapter 4
3.0 Database Management and Maintenance	
3.1 Explain the purpose of monitoring and reporting for database management and performance	Chapter 5
3.2 Explain common database maintenance processes	Chapter 5
3.3 Given a scenario, produce documentation and use relevant tools	Chapter 5
3.4 Given a scenario, implement data management tasks	Chapter 5
4.0 Data and Database Security	
4.1 Explain data security concepts	Chapter 6
4.2 Explain the purpose of governance and regulatory compliance	Chapter 6
4.3 Given a scenario, implement policies and best practices related to authentication and authorization	Chapter 6
4.4 Explain the purpose of database infrastructure security	Chapter 7
4.5 Describe types of attacks and their effects on data systems	Chapter 7
5.0 Business Continuity	
5.1 Explain the importance of disaster recovery and relevant techniques	Chapter 8
5.2 Explain backup and restore best practices and processes	Chapter 8



Exam objectives are subject to change at any time without prior notice and at CompTIA's discretion. Please visit CompTIA's website (www.comptia.org) for the most current listing of exam objectives.

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To submit your possible errata, please email it to our Customer Service Team at wileysupport@wiley.com with the subject line "Possible Book Errata Submission."

Assessment Test

1. Kathleen, a data systems analyst at a midsize tech company, is monitoring and configuring the alerts for the company's cloud-based database. The company wants to manage storage resources effectively to prevent unexpected interruptions. Kathleen wants to set a primary alert related to storage management based on a management-by-exception strategy. Which primary alert should Kathleen set up?
 - A. An alert when the database size reaches 70 percent of the total storage capacity
 - B. An alert when there's an unusual surge in active users
 - C. An alert when the system encounters a sudden increase in error rates
 - D. An alert when the database read/write ratio significantly deviates from the normal range
2. Paige, a database administrator at a multinational company, needs to change the data type of the postal code attribute in the address table to accommodate Canadian addresses, which contain characters and numbers. Which SQL command should she use to achieve this?
 - A. ALTER TABLE
 - B. DROP TABLE
 - C. CREATE TABLE
 - D. SELECT
3. Raseel, a database administrator at a growing company, is responsible for designing and deploying a new database system. She must consider various assets and factors to ensure optimal performance and scalability while adhering to budget constraints. Which of the following factors should Raseel prioritize when acquiring hardware assets for the new database system?
 - A. Storage, network bandwidth, and decorative server cases
 - B. Processing capacity, memory, storage, and network bandwidth
 - C. Number of database administrators, processing capacity, and storage
 - D. Open-source software, processing capacity, and memory
4. Brian is planning to conduct a disaster recovery test. During the test, he will relocate personnel to the hot site, activate the site, and simulate live operations by processing the same data at the hot site as the organization processes at the primary site. The primary site will be taken offline once the test is underway. What type of test is Brian planning?
 - A. Parallel test
 - B. Structured walk-through
 - C. Full-interruption test
 - D. Simulation test
5. Tanika is a data systems analyst at an e-commerce startup working on a class diagram using UML. Which of the following tools best suits her needs?
 - A. Microsoft Word
 - B. erwin
 - C. Google Sheets
 - D. Lucidchart