Certified Lotus Professional Application Development Study Guide

CLP: Lotus 认证专家应用开发

学习指南
（英文原版）

〔美〕 Cate McCoy 著

考试号 510、511、512

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Introduction

Hello! In the following pages, you'll find everything you need to know not only to pass the Certified Lotus Professional Domino Application Developer certification exams but also to build good Notes and Web applications. This study guide has been designed from the ground up to teach you, then test you on the essential concepts of Notes, as well as the nuances that distinguish the beginners from the advanced Notes programmers. We hope that this book will be both a test preparation guide as well as one of the most useful Lotus Notes Domino reference guides on your shelf. When you complete your exam track, you *will* be an advanced Domino programmer. Good luck with your goals!

Lotus Certifications

Lotus offers a series of certifications for power users, programmers, and system administrators. This book will help prepare you for two Lotus certifications in the application developer track:

- Certified Lotus Specialist
- Certified Lotus Professional Domino Application Developer

By acquiring the Certified Lotus Specialist certification, you demonstrate the fundamental skills required to build and maintain Lotus Notes Domino applications. When you continue on and pursue the Certified Lotus Professional certification, your skills advance to the level of demonstrating in-depth knowledge of Lotus Notes Domino application architecture and security.

Certified Lotus Specialist

To receive your Certified Lotus Specialist (CLS) certification, you must pass the 191-510 Domino R5 Designer Fundamentals exam. The criteria for this exam are as follows:

Exam	191-510 Domino R5 Designer Fundamentals
Length of exam	60 minutes
Number of questions	40
Passing grade	70%
Competencies tested	—Client
	—Database
	—Design Elements
	—Formulas

To become a CLS, you need to pass the 510 exam. To accomplish this goal, you should study this book as test preparation and work with the Domino Designer for a few months. It is recommended that you design and build at least one comprehensive Domino application prior to taking the 510 exam.

Certified Lotus Professional Domino Application Developer

You can receive your Certified Lotus Professional (CLP) certification by passing three exams:

- 191-510 Domino R5 Designer Fundamentals
- 191-511 Domino R5 Application Security and Workflow
- 191-512 Domino R5 Application Architecture

In addition to the CLS certification 510 exam criteria outlined in the preceding section, the exam requirements are as follows:

Exam	191-511 Domino R5 Application Security and Workflow
Length of exam	60 minutes
Number of questions	45
Passing grade	70%
Competencies tested	—Creating Workflow Applications
	—Monitoring/Maintaining/Troubleshooting Workflow Applications
	—Planning and Designing Workflow Applications
	—Security: Maintaining/Monitoring/Troubleshooting Problems
	—Security: Planning/Design
	—Security: Setting up/Configuring/Implementing/Enabling

Exam	191-512 Domino R5 Application Architecture
Length of exam	60 minutes
Number of questions	45
Passing grade	74%
Competencies tested	—Designing
	—Implementing and Maintaining
	—Planning

To reach CLP status, you need to be a CLS and then pass the 511 and 512 exams. You will benefit in your preparation for these exams by using this book as a study guide. In addition, you should have six months of experience using Domino Designer with the creation of several solid applications to your credit.

It is essential that you have a hands-on working knowledge of Domino Designer to be successful with the 511 and 512 exams.

What Does This Book Cover?

This book covers everything you need to know to pass the Lotus application developer CLS and CLP Domino Application Developer series of exams: 191-510, 191-511, and 191-512. You will learn how to plan, design, develop, and secure Lotus Notes Domino applications.

The chapters in the book are organized to sequentially cover the 510, 511, and 512 exams, with four chapters devoted to each exam. Since Lotus tests similar material on each of the exams but to different technical depth, there is overlapping coverage in the chapters. Each chapter covers the content to the depth tested on the exam. The 510 exam is broad and expansive, while the 511 exam is targeted and specific, and the 512 exam deep and comprehensive. Studying all the chapters will not only position you to pass the exams, it will push your skills to the next level.

The individual competencies measured in a chapter are listed at the beginning of each chapter. Please read them before working through the material. These competencies will appear on your test results when you take the actual exam.

This book's chapters are outlined in the following sections, and they split the material covered into modules that focus on an overall learning concept.

Exam 510: Domino Designer Fundamentals

The 191-510 exam covers all the foundation concepts needed to start building Domino applications.

Chapter 1: Notes Databases: Core Concepts A Domino application is built as a Notes database. This chapter provides an introduction to the container that is a Notes database including how to create, configure, and maintain one.

Chapter 2: Design Elements: Gathering, Storing, and Retrieving Data Interactive database applications are geared toward managing user data. This chapter focuses on how to build forms, configure fields, and create views as the essential design elements required to capture and present data to users.

Chapter 3: Presenting, Navigating, and Processing Notes Data With data captured from users, an application becomes user friendly through the strategic use of outlines, pages, navigators, and framesets. This chapter presents information on the design elements that make an application come together for users. Agents that process data are also covered.

Chapter 4: Formulas: Adding Code to an Application Lotus Formula Language is a core programming skill required to build successful Domino applications. This chapter shows you how and where to write formula code for your applications.

Exam 511: Domino Application Security and Workflow

The 191-511 exam focuses on building a secure application and on the components needed to add workflow capabilities.

Chapter 5: Server and Database Security The Domino approach to security starts at the server level and gets more specific within a database. This chapter teaches you the essential settings needed for a secure application server and a secure database.

Chapter 6: Client Security As a product that can be used to build both Web client and Notes client applications, security needs to be considered from both perspectives. This chapter explains the options available, and in some cases, unavailable, for securing both Web and Notes applications.

Chapter 7: Design Element Security The design elements in a database are the building blocks of the application. This chapter looks at the security options that can be added to forms, form contents, views, and agents to protect the data stored in an application.

Chapter 8: Workflow Applications The Notes product is a workflow tool that lets you build applications that support distribution, routing, and collaboration. This chapter explains all the pieces you need to build workflow applications and highlights how to make them work in applications.

Exam 512: Domino Application Architecture

The 191-512 is an advanced exam that tests your knowledge of the internal requirements necessary for building robust Lotus Notes Domino applications.

Chapter 9: Application Planning Planning a Notes application is ground zero for building a good application. In this chapter, you'll learn the thought process you need to apply to tailor a Domino solution to a business problem.

Chapter 10: Application Design Designing the structure of an application involves making design element choices and fitting the problem at hand to the tool you've chosen. This chapter teaches you how to design a successful Notes application.

Chapter 11: Application Coding The Domino Designer integrated development environment supports the use of Simple Actions, Formula Language, JavaScript, LotusScript, and Java as coding vehicles. This chapter examines how to make a good coding choice and where to write the appropriate types of code.

Chapter 12: Application Security Securing an application involves several levels of protection from server and database down to the field level. In this chapter, you'll consider an application from top to bottom and learn about the security options available for protecting your application.

Each chapter ends with review questions that are specifically designed to help you retain the knowledge presented. To really nail down your skills, read each question carefully and, without looking at the options provided, try to answer the question in your own words. Then, review the answer options one at a time, ruling out any obviously wrong answers and matching the potential correct answers to your own thoughts. Be sure to choose the most correct and complete answer, keeping in mind that a given answer may provide only a partial solution.

In addition to the chapters, we've provided practice exams in Appendices A, B, and C so you can test yourself on the concepts presented in the chapters. And the glossary is a great resource for understanding key terms introduced throughout the book.

Where Do You Take the Exam?

Lotus offers its exams through two independent testing organizations:

- Sylvan Prometric Testing Centers
  800-74-LOTUS (800-745-6887)
  www.2test.com
- CATGlobal Centers
  www.catglobal.com

To register for a Lotus exam, do the following:

1. Determine the number of the exam you want to take. This book prepares you for the application developer series: 191-510, 191-511, and 191-512.

2. Register with a test center. At this point, you will be asked to pay in advance for the exam. At the time of this writing, the exams are $100 each and must be taken within one year of payment. You can schedule exams up to six weeks in advance or as soon as one working day prior to the day you wish to take one. If something comes up and you need to cancel or reschedule your exam appointment, you must do so at least 24 hours in advance.

3. When you schedule the exam, you'll get instructions regarding all appointment and cancellation procedures, the ID requirements, and information about the testing-center location.

Tips for Taking the Application Developer Exams

The standard exams are timed, multiple-choice tests. You must schedule a test in advance, and depending on the testing-center location requirements, up to 24 hours advance registration may be necessary.

Many questions on the exam have answer choices that at first glance look identical—especially the syntax questions! Remember to read through the choices carefully because close doesn't cut it. If you get commands in the wrong order or forget one character, you'll get the question wrong. So, the best approach is to combine this study guide with a hands-on approach to building an application.

Unlike Microsoft or Novell tests, the exam has answer choices that are very close to one another syntactically, and although some syntax is dead wrong, it is usually just *subtly* wrong. Some other syntax parameter choices may be right, but they're shown in the wrong order. Some of the questions do split hairs, and Lotus is not at all averse to giving you classic trick questions. Also, never forget that the right answer is the Lotus answer. In many cases, more than one appropriate answer is presented, but the *correct* answer is the one that Lotus recommends.

Here are some general tips for exam success:

- Arrive early at the exam center, so you can relax and review your study materials.
- Read the questions and all the answers *carefully*. Don't jump to conclusions; instead, read and digest the material being presented. Make sure that you're clear about *exactly* what each question asks.
- Don't leave any questions unanswered. They count against you.
- When answering multiple-choice questions that you're not sure about, use the process of elimination to get rid of the obviously incorrect answers first. Doing this greatly improves your odds if you need to make an educated guess.
- If you are unsure about a question, choose the best answer and mark the question for review at the end of the exam so that you make it through all the exam questions in the time allotted. Then, review the marked questions when you have completed all the questions.

After you complete an exam, you'll get immediate, online notification of your pass or fail status, a printed Examination Score Report that indicates your pass or fail status, and your exam results by section. (The test administrator will give you the printed score report.) Test scores are automatically forwarded to Lotus, so you don't need to personally send your score to them. File your passing result sheet, given to you by the test administrator, in a safe place.

How to Use This Book

This book can provide a solid foundation for the serious effort of preparing for the CLS and CLP Domino Application Developer series of exams. To best benefit from this book, use the following study method:

1. Take the assessment test immediately following this introduction. (The answers are at the end of the test.) Carefully read over the explanations for any question you get wrong, and note which chapters the material comes from. This information should help you plan your study strategy.

2. Study each chapter carefully, making sure that you fully understand the information and the test competencies listed at the beginning of each chapter. Pay extra close attention to any chapter where you missed questions in the assessment test.

3. Answer the review questions related to that chapter. (The answers appear at the end of the chapter, after the review questions.) Note the questions that confuse you, and study those sections of the book again.

4. Take the practice exams in this book. You'll find one for each exam (510, 511, and 512) in Appendices A, B, and C, respectively. The answers appear at the end of the exam.

5. Before taking the exam at a testing center, try your hand at the bonus practice exam that is included on this book's CD. The questions in this exam appear only on the CD. This will give you a complete overview of what you can expect to see on the real thing.

6. Remember to use the products on the CD included with this book. The electronic flashcards and the EdgeTest exam preparation software have been specifically picked to help you study for and pass your exam. Study on the road with the electronic book in PDF, and be sure to test yourself with the electronic flashcards.

NOTE The electronic flashcards can be used on your Windows computer or on your Palm device.

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7. Make sure to review the Key Terms list at the end of each chapter.

To learn all the material covered in this book, you'll have to apply yourself regularly and with discipline. Try to set aside the same time period every day to study, and select a comfortable and quiet place to do so. If you work hard, you will be surprised at how quickly you learn this material. All the best!

What's on the CD?

The CD included with this book contains all the complete text of the book in PDF as well as bonus material designed to help you pass the Lotus suite of exams.

The EdgeTest Test Preparation Software

The test preparation software, provided by EdgeTek Learning Systems, prepares you to successfully pass the 191-510, 191-511, and 191-512 exams. The test engine includes all the questions from the book, plus an additional bonus practice exam that appears exclusively on the CD. You can take the assessment test, test yourself by chapter or competency, take the practice exam that appears in the book or on the CD, or take an exam randomly generated from any of the questions.

Electronic Flashcards for PC and Palm Devices

We extracted 20 key concepts from each chapter to create true/false electronic flashcard questions that can be downloaded to your PC or a handheld computer such as a Palm device so you can study anywhere you find a spare minute. With 80 questions for each exam, these flashcards are great for solidifying facts that were presented in the chapters and that are tested on the exams. With 12 chapters, that's 240 questions covering a wide range of essential Lotus Notes Domino information.

CLP: Application Development Study Guide in PDF

You can read this book as a PDF file, which is great for working offline or even in an airplane (which is where I'm writing this… this technology stuff is great!). For your convenience, the Adobe Acrobat Reader is included on this book's supplemental CD.

Sample Chapter from *Notes and Domino R5 Developer's Guide to Building Applications*

We've included a sample chapter in PDF from Matt Riggsby's book *Notes and Domino R5 Developer's Guide to Building Applications* (Sybex, 2001) for you to check out. This chapter discusses the structure and placement of scripts, fundamental LotusScript syntax, debugging and error handling, and the Domino object model.

How to Contact the Author

I'd love to hear about your progress on your Lotus exam goals and about the business projects that you are solving using Lotus Notes Domino. You can reach me at cate@alphapointsys.com or through AlphaPoint's R5 Web site at www.alphapointsys.com. Happy computing!

Assessment Test

1. An application you're writing interacts with Microsoft Excel on a field level, exchanging sales forecast figures for the budget. A named range of cells interacts with a field on your form. What field type is the field on your form?

   A. Text

   B. Number

   C. Rich text

   D. Editable

2. You've encrypted a local replica of your mail file. Which of the following will be used to decrypt the database when you access it?

   A. Your public key

   B. Your private key

   C. The server's public key

   D. The server's private key

3. You've created four fields on your form that are enabled for encryption. You've also created four separate secret encryption keys. How many keys are needed to encrypt the document?

   A. One

   B. Two

   C. Three

   D. Four

4. You're in the process of creating a set of actions that can be reused on multiple pages and forms. Where should you create these?

   A. Resources

   B. Subforms

   C. Navigators

   D. Pages

5. You're creating a page that will be used as the home page for your Web site. Which of the following kinds of content should you avoid adding to the page?

   A. Horizontal rules

   B. Graphics

   C. Hotspot links

   D. Fields

6. You've decided to use the Generate Default Outline button to create a new outline. Which of the following will not be automatically added to the outline that is created?

A. Views

B. Forms

C. Pages

D. Placeholders for future data-design elements added to the database

7. You're designing an interface that will allow a user to navigate through it using clickable links. When the user clicks a link on one area of the screen, you want data to automatically appear on another area of the same screen. Which design element can be used to achieve this effect?

A. Tables

B. Views

C. Framesets

D. Embedded forms

8. You're developing a database that will be used by Web clients and Notes clients. Which of the following database settings forces you as a programmer to add a Submit button to every input form?

A. Allow Soft Deletions

B. When Opened In A Browser: Launch Designated Doclink

C. Web Access: Require SSL Connection

D. Web Access: Use JavaScript When Generating Pages

9. You've written an agent in a Mail-In database that will send users a document to edit. When they're done editing, they'll click a button on the document that will automatically mail it back to the Mail-In database. Each user who receives the document needs only to modify their own portion of the document, and when the document is back in the Mail-In database, everyone will be able to read the entire document. What kind of security can be put in place to best support this selective editing?

A. Hide When attributes on the portions of the document

B. Controlled access sections for each user's information

C. Form access list security

D. Encryption of the Mail-In database

10. You've added several signable fields to a controlled access section in a form. At what point will a digital signature be added to the document?

A. When the document is created

B. When the document is edited

C. When the document is saved

D. When the document is mailed

11. You're using an Author field named DocAuthors that has the value "CN=Cate McCoy/OU=HR/O=AlphaPoint/C=US". If you code an input translation event using @Name([OU1]; DocAuthors), what value will be stored in the DocAuthors field?

    A. Cate McCoy

    B. HR

    C. AlphaPoint

    D. US

12. You're coding an input validation event formula to limit the length of the ProdCode field to 1—3 characters. Which formula should you use?

    A. @If(@Length(@Trim(ProdCode))=3;@Success;@Failure ("Error!"))

    B. @If(@Length(@Trim(ProdCode))<4;@Success;@Failure ("Error!"))

    C. @If(@Length(@Trim(ProdCode))=>4;@Success;@Failure ("Error!"))

    D. @If(@Length(@Trim(ProdCode))<>4;@Success;@Failure ("Error!"))

13. You've created an application that implements parallel distribution to the marketing, sales, and accounting groups. In what order will the information be distributed to the groups?

    A. Marketing, sales, and accounting

    B. Accounting, marketing, and sales

    C. Sales, marketing, and accounting

    D. None of the above

14. You're building a view that will show standing orders that need to be filled five days before the promised FillDate, which is a field on the Order form. Which of the following view selection formulas will display Order forms meeting this criteria?

    A. SELECT form = "Order" & @Now >= @Adjust(FillDate;0;0;5;0;0;0)

    B. SELECT form = "Order" & @Now >= @Adjust(FillDate;0;-5;0;0;0;0)

    C. SELECT form = "Order" & @Now >= @Adjust(FillDate;0;0;-5;0;0;0)

    D. SELECT form = "Order" & @Now >= @Adjust(FillDate;0;0;-5)

15. You've created a shopping cart form in your Web application that collects user credit card information. To heighten security on the database, you want to use SSL. How should you go about doing this?

    A. Place the database in the SSL directory on the Domino server.

    B. Place the database in the HTML directory on the Domino server.

    C. Enable the database property Web Access: Require SSL Connection.

    D. Create the shopping cart form using hidden fields for the credit card numbers.

16. You're designing a database that contains two forms and will list all users and groups in the ACL with Author access. People who create documents using one type of form should not be allowed to create documents using the other type of form. Which of the following can help you accomplish this?

    A. Readers field

    B. Authors field

C. Readers and Authors fields used together

D. Encryption

17. You've created an invoice application that sends a copy of invoices to managers for approval. After the invoice has been approved, an e-mail is sent to the application's creator with a document link to the original invoice, stating the results. Which workflow model is being used?

A. The send model

B. The share model

C. The hybrid model

D. None of the above

18. You've created an application that requires certain users to be grouped together and referred to by a single name for security purposes. You do not have appropriate privileges on the Domino Directory to create groups. Which of the following can you create instead?

A. Person groups

B. Server groups

C. New users

D. Roles

19. You've enabled SSL for your database, and the system administrator has enabled SSL on the server. The Web users log in with x.509 client certificates. All the Web users are part of the WebUsers group in the Domino Directory, and this group has Editor access to your database. The advanced ACL setting for maximum Internet access is set to Author. The database's default ACL setting is Reader. What access do users in the WebUsers group have to the database?

A. No Access

B. Editor

C. Author

D. Reader

20. You've accessed a database to which you have Editor rights. The database contains documents that contain encrypted fields of data, but you don't have the encryption key. Which statement best describes your ability to work with the encrypted documents?

A. You can read the documents but not edit them.

B. You can edit the documents.

C. You cannot read or edit the documents.

D. You cannot open the documents.

21. You're constructing a view that will include documents in either the Product Profile form or the Vineyard Profile and that contain a field called Region that has a value of "France." Which of the following view selection

formulas will accomplish this task?

    A. SELECT (Form = "Product Profile" | Form = "Vineyard Profile") & Region = "France"

    B. SELECT (Form = "Product Profile" OR Form = "Vineyard Profile") AND Region = "France"

    C. SELECT (Form = ("Product Profile" | "Vineyard Profile")) & (Region = "France")

    D. SELECT (Form = Product Profile & Region = France) | (Form = Vineyard Profile & Region = France)

22. You've added an Authors field to the form you've designed and created a formula that will set the field's value with the name of the user who creates the document. What effect will this have on the document after it is saved?

    A. The document can only be read by the user who created it.

    B. The document can only be deleted by the user who created it.

    C. The document can only be edited by the user who created it.

    D. The document can only be mailed by the user who created it.

23. You're designing a main document and response document that will share the same value for the CompanyName field. At a minimum, which two things must you do in order for the field to be inherited into the response document from the main document?

    A. Mark the field property to allow inherited values, and use a Computed When Composed field value type for the CompanyName field on the response document.

    B. Mark the database property to allow inheritance.

    C. Enable field exchange between the two documents.

    D. Mark the form property to allow inherited values, and use a Computed When Composed field value type for the CompanyName field on the response document.

24. You're building a series of 15 forms, which can be grouped into three sets. In order for these forms to appear in an organized manner in the Notes client Create▶Document menu, which of the following can you do?

    A. Precede the name of each form with a special character to group the views into three major categories

    B. Name the forms using a backslash (\ ) in the name to create three major categories

    C. Add a keyboard shortcut to each of the form names

    D. Build a floating pop-up menu to show one set of forms at a time

25. You've noticed that the setting Run Restricted LotusScript Agents in the ORG2741 server document is blank. What effect does this have on users when they run agents on the server?

   A. No users can run restricted LotusScript agents on the server.

   B. Only users with Designer access can run restricted LotusScript agents on the server.

   C. Anyone can run restricted LotusScript agents on the server.

   D. Only the system administrator can run LotusScript agents on the server.

26. You've created a custom template from a very heavily used database so that you can separate where the programmer coding takes place from where the user interaction with data takes place. You put everything in place to make this happen; however, your production database does not seem to be inheriting automatically from your template database. What is a likely cause of this problem?

   A. The template alias name is exactly the same in the template properties as it is in the production database properties.

   B. The template does not have an NTF file extension.

   C. One of the databases is stored locally while the other is stored on the Domino server.

   D. The production database does not have an NSF file extension.

27. You're having trouble getting the Product view to categorize correctly based on the value contained in the InventoryCount field. InventoryCount is defined as a Computed For Display number field. The column in the view is also set to display totals. What is the likely cause of your problem?

   A. Columns using totals cannot be categorized.

   B. The InventoryCount field contains the wrong data type.

   C. Computed For Display fields cannot be used to categorize a view.

   D. Number fields cannot be used to categorize a view.

28. You've developed a workflow application that will be used by remote users. The documents will be mailed to remote users, and then they will act on them. Which of the following is an advantage to the information distribution method you've chosen?

   A. Users only need to access one database: their mail database.

   B. Users can use a Web client to access the information.

   C. Server disk space is reduced.

   D. Forms do not need to be stored in the document.