

TRAINING & CERTIFICATION



Salesforce.com Certified Force.com Advanced Developer Study Guide

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About the Force.com Certification Program

The Force.com certification program is for individuals who want to demonstrate their knowledge, skills, and capabilities to build custom applications on the Force.com platform. The program encompasses the breadth of application development on the Force.com platform, including the declarative capabilities, the programmatic capabilities of Apex Code and Visualforce, and application development lifecycle management with cloud-computing development as a service.

- :: The Salesforce.com Certified Force.com Developer certification exam encompasses the declarative capabilities of the Force.com platform. To achieve this credential, a candidate must successfully complete the exam. This exam is a prerequisite to the Salesforce.com Certified Force.com Advanced Developer exam.
- :: The Salesforce.com Certified Force.com Advanced Developer credential encompasses the programmatic capabilities of the Force.com platform, including Apex and Visualforce. To earn this credential, a candidate must successfully complete three activities:
 1. The Salesforce.com Certified Force.com Advanced Developer exam: A multiple-choice/multiple-select proctored exam. This portion of the credential program **must** be passed successfully to move on to the next portion: the programming assignment.
 2. The Advanced Developer programming assignment: At scheduled times throughout the year, certification candidates who have passed the Salesforce.com Certified Force.com Advanced Developer exam will be given the opportunity to complete the second portion of the credential program: the programming assignment. A set of requirements and development parameters will be sent to the candidate, and the candidate will have a fixed amount of time to complete and submit the assignment. The candidate will be given the evaluation criteria and detailed instructions on how to complete and submit the final working application. The programming assignment is completed at the candidate's own pace and does not require working at a proctored site. However, there will be a deadline for assignment completion.
 3. The Advanced Developer essay exam: Upon submission of the programming assignment, the candidate will be required to complete a short-answer proctored exam that covers the specifics of the programming assignment. The candidate will need to go to a testing center and complete the essay exam. The essay exam, in combination with the programming assignment, will be evaluated and scored as the final portion of the Salesforce.com Certified Force.com Advanced Developer certification program.

The Salesforce.com Certified Force.com Advanced Developer credential will be granted to a candidate upon successful completion of all parts of the program.

This study guide provides information about the Salesforce.com Certified Force.com Advanced Developer exam.

Section 1. Purpose of this Study Guide

This study guide is designed to help you evaluate whether you are ready to successfully complete the Salesforce.com Certified Force.com Advanced Developer exam. This guide provides information about recommended training from Salesforce.com Training and Certification, a complete list of exam objectives, supplemental study material, and several sample exam items—all with the intent of helping you achieve a passing score. Salesforce.com highly recommends a combination of course attendance and self-study to maximize your chances of passing the exam.

Note that this study guide describes the exam portion of this credential process. Upon successful completion of this exam, you will be required to successfully complete the programming assignment and short-answer exam before receiving the credential. The materials and objectives referenced in this guide are relevant to completing these additional program activities.

Section 2. Audience Description: Salesforce.com Certified Force.com Advanced Developer

The Salesforce.com Certified Force.com Advanced Developer exam is intended for an individual who has experience developing custom applications on the Force.com platform, including practical application of the skills and concepts noted in the exam objectives below. The candidate has successfully completed the Salesforce.com Certified Force.com Developer exam and the Force.com: Visualforce, Apex, and DaaS course (DEV501) from salesforce.com or an Authorized Training Center or possesses equivalent experience and knowledge. The candidate:

- :: May not necessarily administer standard Salesforce CRM applications, but has experience with the Salesforce user interface and data model
- :: Is competent developing Apex and custom interfaces using Visualforce, and can develop code within the Salesforce interface or the Force.com IDE as required
- :: Can deploy production-ready applications, has a broad understanding of DaaS, and can develop for the Force.com platform within an organization-specific development environment
- :: Is capable of using Force.com capabilities as described in the exam objectives and identifying appropriate solutions to specific business challenges/process requirements by applying his/her knowledge of these features in the current version of the Force.com platform
- :: Has invested time in studying the materials from this course and the additional required study materials provided by salesforce.com

A candidate for this exam is not expected to be able to administer any standard Salesforce application, develop integrations using the Force.com API, or publish new packages.

Section 3. About the Exam

The Salesforce.com Certified Force.com Advanced Developer exam has the following characteristics:

- :: Content: 69 multiple-choice/multiple-select questions
- :: Time allotted to complete the exam: 120 minutes
- :: Passing score: 73 percent
- :: References: No hard-copy or online materials may be referenced during the exam
- :: Prerequisites: Successful completion of the Salesforce.com Certified Force.com Developer exam; course attendance highly recommended

Section 4. Recommended Training and Reference

Salesforce.com Training and Certification recommends the following as preparation for this exam:

- :: Attend the Force.com: Visualforce, Apex, and DaaS (DEV501) course. To register, go to: <http://www.salesforce.com/training>
- :: Become a member of developer.force.com
- :: Create a Developer Edition account
- :: Review the *Force.com Cookbook*
- :: Read the *Developer's Guide to the Force.com Platform*
- :: Review product documentation: *Apex Language Reference*, *Visualforce Developer's Guide*, *Force.com Metadata API*, and *Force.com Migration Guide*—all available on developer.force.com

Section 5. Exam Outline

The Salesforce.com Certified Force.com Advanced Developer exam measures a candidate’s knowledge and skills related to the objectives listed below. A candidate should have hands-on experience developing custom applications on the Force.com platform and have demonstrated the application of each of the following features/functions.

| Objective | Weighting |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Development Lifecycle | 13% |
| List and describe the key features, tools, and technologies of application lifecycle management (ALM) and Force.com development. | |
| Describe best practices for managing multi-team and multi-project development initiatives with Force.com and describe how to use these best practices. | |
| List and describe the various development and test environments available on the Force.com platform. | |
| Describe how to manage Sandbox environments. | |
| Given a scenario, determine whether to use package or metadata deployment. | |
| Describe how to use the Force.com migration tool. | |
| Describe the capabilities and constraints of metadata text files for manipulating application metadata. | |
| Describe the requirements and processes for deploying changes to an application using a metadata tool. | |
| Apex Code | 33% |
| List and describe the features of Apex and distinguish between it and other programming languages. | |
| Describe when and why to use Apex. | |
| List and describe syntax features of Apex. | |
| Describe the ways Apex can be invoked. | |
| Describe use cases for Apex in an integration scenario. | |
| Describe how to send and receive email via Apex. | |
| Describe use cases for dynamic Apex. | |
| Describe use cases for asynchronous Apex. | |
| Describe the save execution order and use of before and after triggers. | |
| Describe the types of governor limits and contexts and the rationale behind them. | |
| Describe how to write scalable code that handles bulk operations. | |
| Visualforce | 38% |
| Describe the benefits, functions, and features of Visualforce and how it conforms to the model-view-controller pattern. | |
| Describe how to incorporate Visualforce pages into Force.com applications. | |
| Describe how to create data, action, and component binding expressions. | |
| List and describe syntax features of Visualforce. | |
| Describe best practices for incorporating static resources, stylesheets, and other content into Visualforce pages. | |
| Describe how to create and use a Visualforce page as the template for multiple pages. | |
| Describe how to handle client-side behavior through the use of either standard components or custom JavaScript. | |
| Describe and incorporate proper error handling techniques. | |
| Describe how to create a custom component and the benefits of custom components versus other techniques for code reuse. | |
| Describe how to leverage PDF generation. | |
| Distinguish between standard controllers, custom controllers, and extensions. | |
| Describe the request lifecycle of a Visualforce page. | |
| Describe viewstate and the stateful programming model of Visualforce. | |
| Describe the benefits of using Apex classes as structs or wrappers of subjects. | |
| Testing and Debugging | 16% |
| Describe the techniques and tools available to debug, test, and monitor Apex Code execution. | |
| List and describe the contents and use of the System Log. | |
| Describe how to create and run unit tests as well as techniques for achieving 100% test coverage. | |
| Describe how to test Visualforce controllers. | |
| Describe how to test email send and receive in different environments. | |

Section 6. Sample Exam Questions

The following questions are representative of those on the Salesforce.com Certified Force.com Advanced Developer exam. These questions are *not* designed to test your readiness to successfully complete the certification exam, but should be used to become familiar with the types of questions on the exam. The actual exam questions may be more or less difficult than this set of questions.

1. A customer wants to add a custom validation process to the contact save process. Before a contact is created, the customer wants to include validation, which checks if the associated account is active. This validation should be active for all UI as well as integration requests. Which design accomplishes this goal?
 - A. a custom Web service
 - B. a before insert trigger
 - C. a custom Visualforce controller
 - D. a client-side S-control

2. How could the use of Lists, Sets, or Maps help avoid governor limit exceptions in the following code? (Choose *two* answers.)

```
for (Account a : trigger.new) {
    for (Contact c : [select id,otherphone from contact where accountid = :a.id]) {
        c.OtherPhone= a.Phone;
        update c;
    }
}
```

- A. reduce the number of SOQL queries executed
 - B. reduce the total number of records retrieved by SOQL queries
 - C. reduce the number of DML statements
 - D. reduce the number of records processed as a result of DML statements
3. Given the following Visualforce page markup and assuming the controller and each extension include an action method named “go,” which class method will be invoked when the user clicks on the commandButton?

```
1 <apex:page controller="theController" extensions="ext1, ext2, ext3">
2   <apex:form>
3     <apex:commandButton value="Go" action="{!go}" reRender="out" />
4     <apex:outputPanel id="out">{!output}</apex:outputPanel>
5   </apex:form>
6 </apex:page>
```

- A. theController
 - B. ext1
 - C. ext2
 - D. ext3
4. Which statement is *true* about automated testing of custom controllers for Visualforce pages?
 - A. Unlike other Apex tests, Visualforce tests must be executed in the browser.
 - B. Calling Test.startTest() after setting a page fixture invokes a controller action specified in the page’s action attribute.
 - C. Form submission in a Visualforce page using a custom controller can be simulated in an Apex test class.
 - D. Expected navigation can only be asserted in an Apex test when the resulting page is a Visualforce page.
 5. A Visualforce page has a command button that directly calls the doSomething() method shown below, where the MyCustomException is a class that extends the System.Exception class.

```
public void doSomething(){
    throw new MyCustomException('An error message.');
```

Where would the exception be displayed to the user?

- A. in a <apex:messages> component, provided one is included on the page
- B. unhandled exceptions are only recorded in the debug log
- C. at the top of the Visualforce page
- D. on a separate page displaying the exception

Section 7. Answers to Sample Exam Questions

1. B
2. A, C
3. B
4. C
5. D

For More Information
Contact your account executive
to learn how we can help you
accelerate your CRM success.

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