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Salesforce.com Certified Force.com Advanced Developer **Study Guide**

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About the Salesforce.com Certified Force.com Advanced Developer Program

The Salesforce.com Certified Force.com Advanced Developer certification program is for individuals who want to demonstrate their knowledge, skills, and capabilities in building 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 Force.com code (Apex) and Force.com pages (Visualforce), and application development lifecycle management with cloud computing development as a service.

- The Salesforce.com Certified Force.com Developer certification credential 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 Force.com code and Force.com pages. 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 doesn't 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 three 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 if you are ready to successfully complete the Salesforce.com Certified Force.com Advanced Developer exam. This guide provides information about the target audience for the certification program, the recommended training and documentation, and a complete list of exam objectives—all with the intent of helping you achieve a passing score. Salesforce.com highly recommends a combination of on-the-job experience, course attendance, and self-study to maximize your chances of passing the exam.

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 Code (Apex) and Force.com Page Controllers course (DEV 501) 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 (UI) and data model.
- Is competent developing Force.com code and custom interfaces using Force.com pages 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 development as a service (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 resources listed in this Study Guide 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 Web Services 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
- Registration fee: 400
- 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 References

Salesforce.com Training and Certification recommends experience building custom applications on the Force.com platform using the declarative and programmatic capabilities of Force.com code and Force.com pages as well as hands-on practice in the areas listed in the Exam Outline section below as preparation for this exam.

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

- Instructor-led course: Force.com Code (Apex) and Force.com Page Controllers (DEV 501)
- Online resource: *Force.com Cookbook*
- Online course: Apex
- Online course: Managing Development with Force.com
- Online course: Visualforce Controllers
- Book: *Force Platform Developer Guide*

- Documentation: *Apex Language Reference*, *Visualforce Developer’s Guide*, *Force.com Metadata API Developer’s Guide*, and *Force.com Migration Tool Guide*—available on developer.force.com
- Become a member of developer.force.com
- Create a Developer Edition account

In addition to the resources above, or as an alternative if you do not have access to the online courses, Salesforce.com Training and Certification recommends studying the online Documentation by searching for topics listed in the Exam Outline section below and fully reviewing all information related to those topics. Online courses, Documentation, Tip Sheets and User Guides can be accessed through the [Help](#) site in your Salesforce CRM application by clicking **Help & Training** in the top-right corner of your screen (requires login).

Documentation is also available in PDF format here: <https://na1.salesforce.com/help/doc/en/sf.pdf>.

Register for instructor-led courses here: <http://www.salesforce.com/training>.

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 features/functions below.

Objective	Weighting
Development Lifecycle	13%
List and describe the key features, tools, and technologies of application lifecycle management 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	
Force.com Code (Apex)	33%
List and describe the features of Force.com code and distinguish between it and other programming languages	
Describe when and why to use Force.com code	
List and describe syntax features of Force.com code	
Describe the ways Force.com code can be invoked	
Describe use cases for Force.com code in an integration scenario	
Describe how to send and receive email via Force.com code	
Describe use cases for dynamic Force.com code	
Describe use cases for batch Force.com code	
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	
Force.com Pages (Visualforce)	38%

Describe the benefits, functions, and features of Force.com pages and how it conforms to the model-view-controller pattern	
Describe how to incorporate Force.com pages into Force.com applications	
Describe how to create data, action, and component binding expressions	
List and describe syntax features of Force.com pages	
Describe best practices for incorporating static resources, style sheets, and other content into Force.com pages	
Describe how to create and use a Force.com 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 Force.com page	
Describe viewstate and the stateful programming model of Force.com pages	
Describe the benefits of using Force.com code classes as structs or wrappers of sObjects	
Testing and Debugging	16%
Describe the techniques and tools available to debug, test, and monitor Force.com 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 Force.com page 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 Force.com page (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 Force.com 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}" re-render="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 Force.com pages?
- A. Unlike other Force.com code tests, Force.com page 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 Force.com page using a custom controller can be simulated in a Force.com code test class.
 D. Expected navigation can only be asserted in an Force.com code test when the resulting page is a Force.com page.
5. A Force.com 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 Force.com page.
 D. On a separate page displaying the exception.

Section 7. Answers to Sample Exam Questions

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

Section 8. Maintaining a Certification

Successful completion of online, release-specific Salesforce.com Certified Force.com Developer exams is required to maintain the pre-requisite to the Salesforce.com Certified Force.com Advanced Developer credential. Release exams are published three times a year for each of the Salesforce.com product releases throughout the year.

Successful maintenance of the pre-requisite credential, Salesforce.com Certified Force.com Developer, is required to maintain this credential. An annual maintenance fee of \$100 will be charged when registering for every third release exam, based on when the pre-requisite credential was earned. The maintenance fee includes the three release exams and access to the supporting training material. Salesforce.com Certified professionals will be notified automatically when new release training material and exams become available.



For more information:

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