

Advanced Software Testing

Testing Workflows with Use Cases



RBCS

**TIME TESTED.
TESTING IMPROVED.**

www.RBCS-US.com



Advanced Software Testing

- A series of webinars excerpted from *Advanced Software Testing: Volume 1*, a book for test analysts and test engineers
- Equivalence partitioning and boundary value analysis are useful for testing input field validation
- Three additional techniques are handier and more powerful for business logic
 - Decision tables
 - State based testing
 - Use cases
- This third webinar covers use case testing



Use Cases

- Concept: test typical and exceptional workflows and scenarios for the system
- Model: formal or informal use case, with numbered list of steps and/or flowchart
- Test derivation: create tests to exercise all typical and exceptional workflows
- Coverage criteria: none formally, but informally at least one test per workflow
- Bug hypothesis: mishandling of a typical or exceptional scenario



Example: Informal Use Case

E-commerce purchase: Normal workflow

1. Customer places one or more Items in shopping cart
2. Customer selects checkout
3. System gathers address, payment, and shipping information from Customer
4. System displays all information for User confirmation
5. User confirms order to System for delivery

Exceptions

- Customer attempts to checkout with empty shopping cart; System gives error message
- Customer provides invalid address, payment, or shipping information; System gives error messages as appropriate
- Customer abandons transaction before or during checkout; System logs Customer out after 10 minutes of inactivity



Example: Deriving Tests (Typical)

#	Test Step	Expected Result
1	Place 1 item in cart	Item in cart
2	Click checkout	Checkout screen
3	Input valid US address, valid payment using American Express, and valid shipping method information	Each screen displays correctly and valid inputs are accepted
4	Verify order information	Shown as entered
5	Confirm order	Order in system
6	Repeat steps 1-5, but place 2 items in cart, pay with Visa, and ship international	As shown in 1-5
7	Repeat steps 1-5, but place the maximum number of items in cart and pay with MasterCard	As shown in 1-5
8	Repeat steps 1-5, but pay with Discover	As shown in 1-5



Example: Deriving Tests (Exception)

#	Test Step	Expected Result
1	Do not place any items in cart	Cart empty
2	Click checkout	Error message
3	Place item in cart, click checkout, enter invalid address, then invalid payment, then invalid shipping information	Error messages, can't proceed to next screen until resolved
4	Verify order information	Shown as entered
5	Confirm order	Order in system
6	Repeat steps 1-3, but stop activity and abandon transaction after placing item in cart	User logged out exactly 10 minutes after last activity
7	Repeats steps 1-3, but stop activity and abandon transaction on each screen	As shown in 6
8	Repeat steps 1-4; do not confirm order	As shown in 6



Logical and Concrete Test Cases

- Logical or high level test case describes the test conditions and results
- Concrete or low level test case gives the input data to create the test conditions and the output data observed in the results
- A use case can easily be translated into one or more logical test cases, as was just shown
- Translation of the logical test case into concrete test cases can require additional documentation



Elements of a Formal Use Case

- A formal use case usually contains more information than an informal one
- Some of this information can be useful for the test analyst
- Traceability can be finer-grained

ID
Name
Actor
Description
Priority
Frequency of use
Preconditions
Typical workflow
Exception 1
Exception 2...
Postconditions



Example: Formal Use Case (Part 1)

ID	02.001
Name	E-commerce Purchase
Actor	Customer
Description	Allow Customer to complete a transaction by purchasing the item(s) in her shopping cart
Priority	Very high
Frequency of use	25% of customers, up to 1,000 customers per day
Preconditions	<ol style="list-style-type: none">1. One or more items in shopping cart2. Customer is logged in3. Customer has clicked on checkout



Example: Formal Use Case (Part 2)

Typical workflow	<ol style="list-style-type: none">1. System gathers address, payment, and shipping information from Customer2. System displays all information for User confirmation3. User confirms order to System for delivery
Exception 1	Customer attempts to checkout with empty shopping cart System gives error message
Exception 2	Customer provides invalid address, payment, or shipping information System gives error messages as appropriate
Exception 3	Customer abandons transaction before or during checkout System logs Customer out after 10 minutes of inactivity
Postconditions	Order is active in system



Conclusion

- ❖ In this webinar, we've seen how to apply use cases to the testing of typical and exceptional workflows
- ❖ In our previous webinars, we looked at decision tables as a way to test detailed business rules and state based methods to test state dependent systems
- ❖ Use cases allow us to cover workflows
- ❖ With these three techniques, you can perform a range of business logic testing



...*Contact RBCS*

For over a dozen years, RBCS has delivered services in consulting, outsourcing and training for software and hardware testing. Employing the industry's most experienced and recognized consultants, RBCS conducts product testing, builds and improves testing groups and hires testing staff for hundreds of clients worldwide. Ranging from Fortune 20 companies to start-ups, RBCS clients save time and money through improved product development, decreased tech support calls, improved corporate reputation and more. To learn more about RBCS, visit www.rbc-us.com.

Address: RBCS, Inc.
31520 Beck Road
Bulverde, TX 78163-3911
USA

Phone: +1 (830) 438-4830

Fax: +1 (830) 438-4831

E-mail: info@rbc-us.com

Web: www.rbc-us.com