Topic #5 – Scenario Testing Method

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TOPIC #4 – SCENARIO TESTING METHOD

- What is Scenario Testing?
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What is scenario-based testing?

Scenario testing is done by creating test scenarios which replicate the end users usage scenarios based on the given system requirements and use cases.

A test scenario can be a independent test case or a series of test cases that makes a test suit. Test scenario is just a story which explains the usage of the software by any end user.

In scenario testing, testers needs to communicate with system users, clients, stakeholders, and developers to come up the user scenarios first, then create test scenarios.

In scenario testing the testers put themselves in the end users shoes and figure out the real world scenarios or consider the use cases which can be performed on the software by end users.

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Importance of Scenario Testing

- Since scenario testing focus on system usage scenarios, it helps engineers to detect many system usage problems/bugs.
- Scenario testing is very useful to check user-oriented system transactions, for example, online banking transactions.
- Because scenario testing requires engineers focus on system usage contexts, it is also very effective to discover system context problems on a customer site.
- Scenario testing could be useful to end-to-end system functions and user-oriented constraints and workflow operations.

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How to Perform Scenario Testing?

Scenario Testing Steps:

Step #1 – Identify use cases/user operation scenarios

Step #2 - Define test cases based on the identified scenarios

Step #3 - Execute scenario tests

Identify system usage scenarios based on system use cases and user operations by using the following ways:

1. Story lines
2. State transitions
3. Business verticals
4. Implementation story from customers

You can apply the following approach:

Use-case and role-based scenarios : This method focuses on how a user uses the system with different roles and environment.

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Scenario Creation Procedure

Below template can be used to formulate the scenario

#	Step Description
1	Find all actors (roles played by persons/external systems) interacting with the system
2	Find all (relevant system external) events
3	Determine inputs, results and output of the system
4	Determine system boundaries
5	Create coarse overview scenarios (instance or type scenarios on business process or task level)
6	Prioritize scenarios according to importance, assure that the scenarios cover system functionality
7	Create a step-by-step description of events and actions for each scenario (task level)
8	Create an overview diagram and a dependency chart (see section 3.3)
9	Have users review and comment on the scenarios and diagrams
10	Extend scenarios by refining the scenario description, break down tasks to single working steps
11	Model alternative flows of actions, specify exceptions and how to react to exceptions
12	Factor out abstract scenarios (sequences of interactions appearing in more than one scenario)
13	Include non-functional (performance) requirements and qualities in scenarios
14	Revise the overview diagram and dependency chart
15	Have users check and validate the scenarios (Formal reviews)

Scenario Testing Example

Example 1: Authentication Scenario in ATM

a. The Authentication scenario reads
Precondition: The ATM is operational, card being inserted.

1. The customer inserts the card
2. The system checks the card's validity
3. The system displays the "Enter PIN" Dialog
4. The customer enters his PIN
5. The system checks the PIN
6. The system displays the main menu

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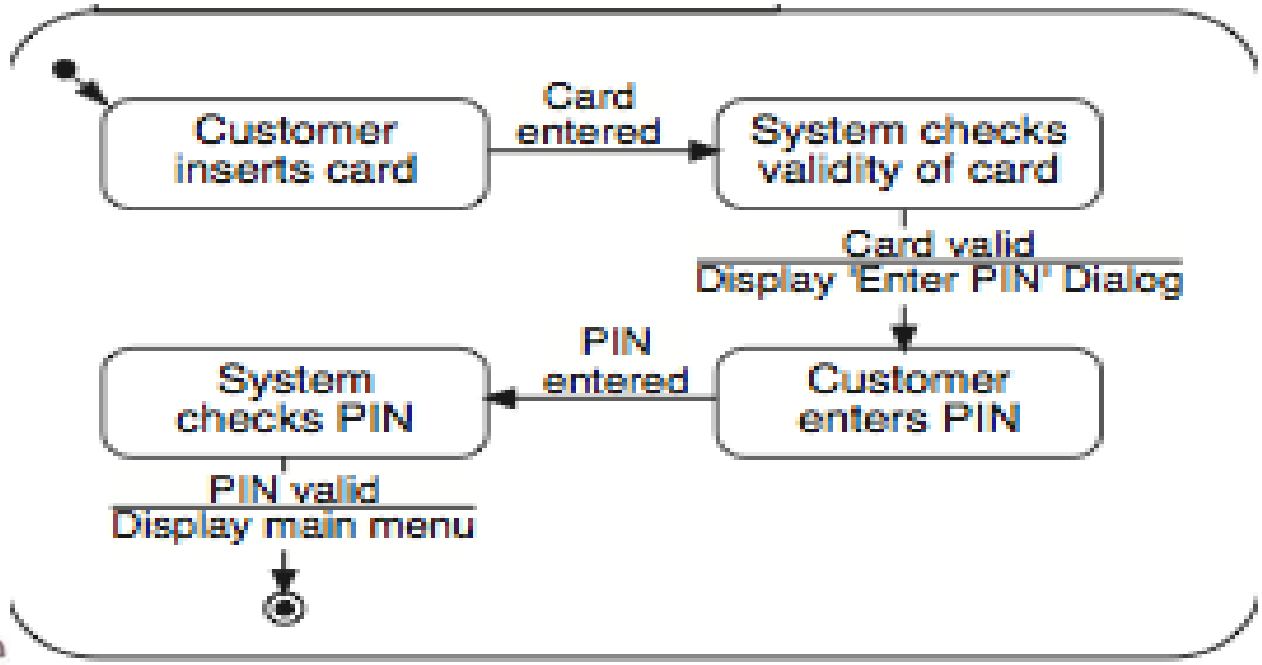
Scenario Testing Example

The authentication scenario depicted in flow chart.



Scenario Testing Example

Test case derived from the scenario:

Test preparation:		ATM operational, card and PIN (1234) have been issued, card is being inserted	
ID	*State*	*Input/User actions/ Conditions*	*Expected output*
1.1	Card sensed	Card can be read, card valid, valid PIN (1234) entered in time	Main menu displayed
1.2	Card sensed	Card can be read, card valid, invalid PIN (1245) entered in time (first try)	Retry message displayed
1.3	Retry msg	Invalid PIN (123) entered in time, second try	Retry message
1.4	Retry msg	Invalid PIN (1234567) entered in time, third try	Card retained, user informed
…	…	…	…

Scenario Testing Summary

Advantage:

- Helps to find bugs at the application level from user perspectives
- Easy to understand and apply based on user-centered understanding
- Reduces the chances of repeatability
- Understand the complexity of the application easily

Test Coverage:

- Scenario-based test coverage based on usage scenarios

Limitations:

- Scenario testing only useful for system level testing
- Depending on engineers' understanding of the under-test system

Challenges:

- How to achieve the completed coverage for all of system scenarios?