Test Design, Development and Review.

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Agenda

Test case Design and Development
- What is a test case
- Test case: Design to maintenance.
- Test case template: How to write a test case.
- Test case design techniques.
- Test case writing Guidelines.
- Test case management tools.

Test case review
- What is review process.
- Types of reviews
- Test case review checklist.

What is a test case?

"A set of test inputs, execution conditions, and expected results developed for a particular objective, such as to exercise a particular program path or to verify compliance with a specific requirement." (IEEE)
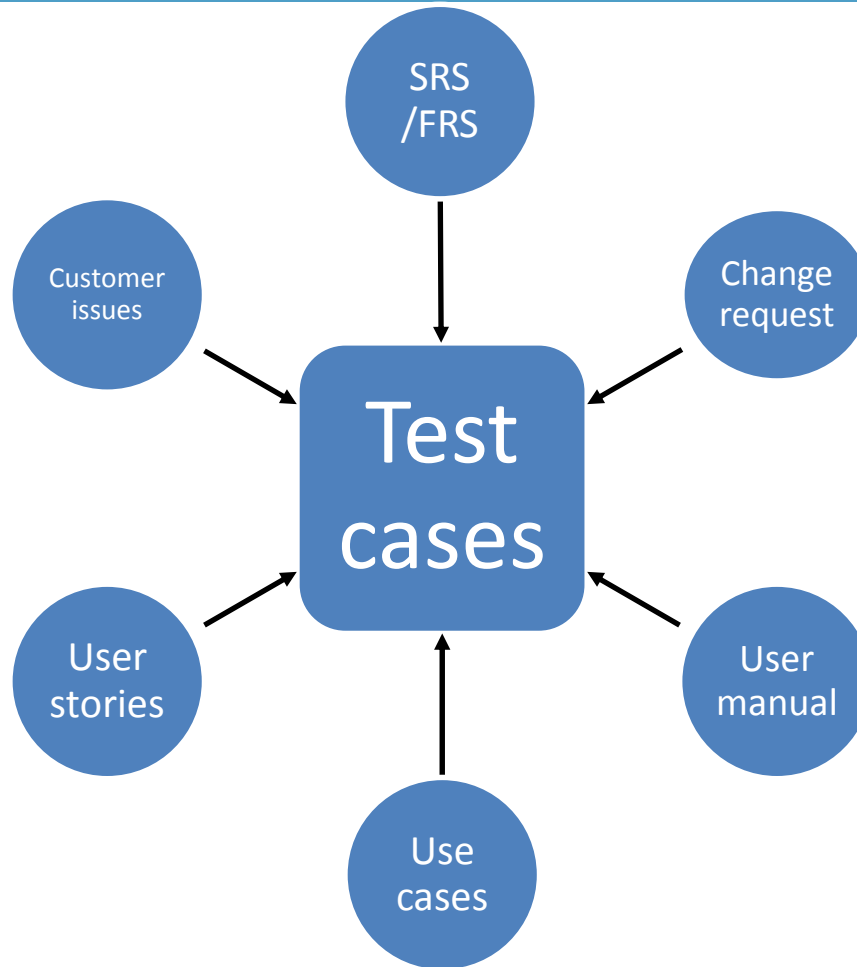
Simply put:

A test case is a question you ask of the program

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Test Cases: Design to Maintenance.

Test Case Design

Development of Test Case

Review of Test Case

Execution

Maintenance
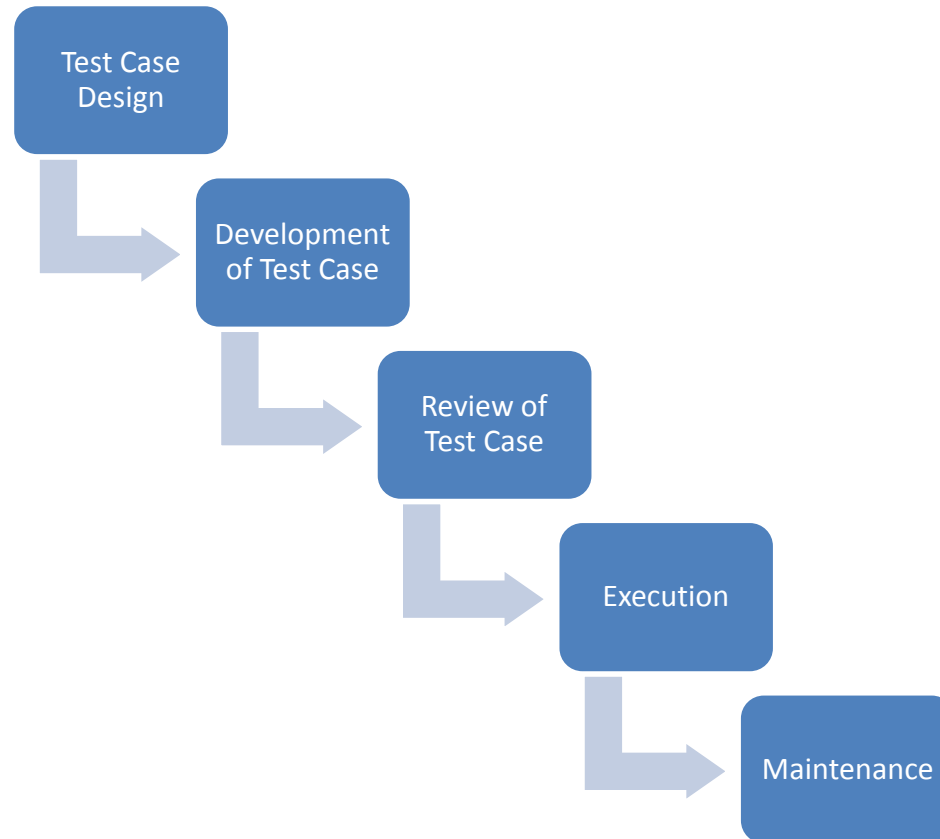
Input for test case writing

Writing a Test case

Test Case

Project Abbreviated Name:	<Mention Cybage MIS Project	Author:	
Project Name:		Reviewed by:	
Type of Testing:		Tested by:	
Prerequisites / Assumptions:		References (If any):	

> Unique, with some naming convention

> Clear and easy to understand, each step on individual line

> Date on which test case has been created

Build Ref

Test Case Id	Test Description	Steps For Execution	Expected Result	Test Case Created On	Test Case Updated On	Result
		<Also add input data, if any>				

> Short, but descriptive enough to indicate what this test will validate

> Expected result for steps for execution

> Date on which test case has been updated

> Pass /Fail/Blocked/ Not tested

Writing a Test Case (Cont..)

Project Abbreviated Name:	<Mention Cybage	Author:	
Project Name:		Reviewed	
Type of Testing:		Tested by:	
Prerequisites /		Reference	

Smoke/Regression/UI/Security/Performance etc.

Date on which test case is executed

						Build Ref			
Test Case Id	Test Description	Steps For Executio	Expected Result	Test Case	Test Case Updated On	Result	Defect ID	Execution Date	Comments
		<Also add input data,						<dd-Mon-yy>	
								<dd-Mon-yy>	
								<dd-Mon-yy>	
								<dd-Mon-yy>	

Defect ID for failed test case from Defect management tools

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Test Design Techniques

Negative Testing:

Negative testing ensures that your application can gracefully handle invalid input or unexpected user behavior
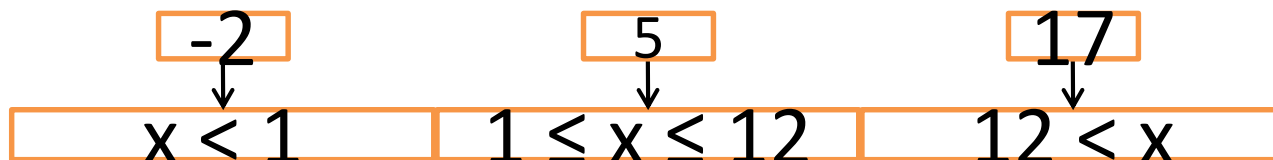•Integer for fields that can accept Text only and vice versa
•Submitting form without inputting required fields
•Putting more than allowed number of characters

Equivalence partitioning
   What is mean by Equivalence?
     Set of values that will be handled same
     way by program.
Example of Equivalence partitions for month as input.

-2	5	17
↓	↓	↓
$x < 1$	$1 \leq x \leq 12$	$12 < x$

Test Design Techniques (Cont..).

Boundary value analysis

| -2 | 1 | 5 | 12 | 17 |

| 0 | 2 | 11 | 13 |

| x < 1 | 1 ≤ x ≤ 12 | 12 < x |
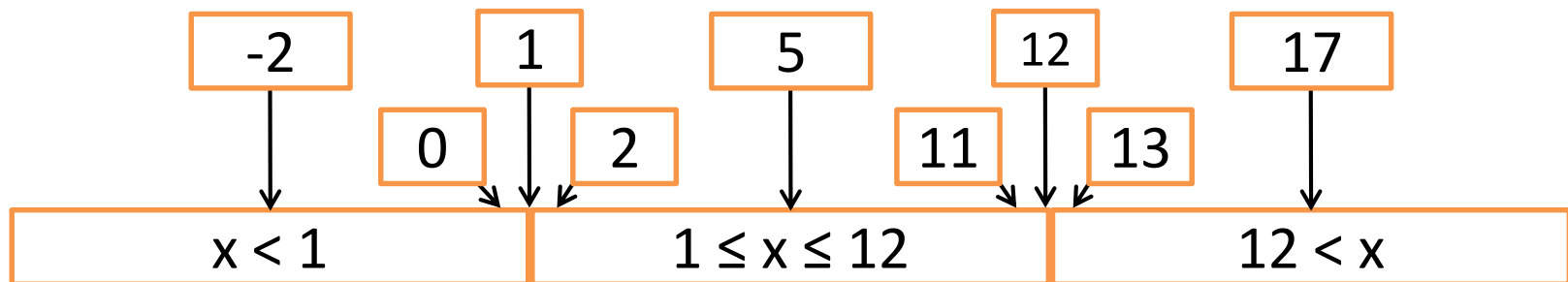
Error Guessing

Past Experience to determine what situation causes error, e.g. missing input, low memory, unavailable resources etc.

Test case writing Guideline

- Make sure requirement is clearly understood, in case of any questions discuss with stakeholders.

- All requirements are covered, use RTM.

- Don't give an example in the step with hard coded values.

- Making Data available, preconditions mentioned.

- Each statement in a step should have a corresponding expected Result

- Be Precise and complete so that test case is author independent.

- Test cases should be sequenced in order of execution

Test case Management tools.

Most of the tools in industry provides below features in tool

•Requirement traceability and test planning

•Easy to priorities test cycle as per build release cycles.

•Can store and run automation scripts

•Useful reporting features (Execution Progress/staffing/Estimation)

Test Director	Microsoft Test manager
HP Quality Center	ApTest Manager Tool
eManager	Test Tracker
Star Team	SPIRA Test
Rational Test Manager	

Test Case Management Tool Features

1) Test Suites
2) Release specific Test Plan
3) Query based Test suit creation
4) Test case modification History
5) Test case assignment and tracking execution progress
6) Traceability
7) Reports

Test case Review.

What is a review process?.

Review process is methodical examination of the software work product by the reviewer to identify the areas and changes that are to be executed as a result of review comments

It is a Horizontal activity and hence is applicable through the SDLC Review helps to remove the defects in early course of project execution.

It helps identifying the problems at initial level of project to save on cost and rework at later stage of project.

It is a good knowledge sharing platform for the author and reviewer.

Types of Review .

- Self Review.
  - In this kind of review processes, Author of test cases reviews the test cases written by himself to remove the oversight defects.
  - Author corrects the defects found in review and updates the test cases.
  - If required can repeat the self review of Test cases.

- Peers Review.
  - Project Lead Identifies the reviewer and schedule the review.
  - Reviewer reviews the test cases, log all the review comments in Review report, have discussion with author.
  - Author reworks on issues found during review to correct the test cases.

Types of Review (cont..)   .

- Formal Review/Walkthrough.

  - In this kind of review a team of people reviews the artifacts from owner/author.

  - Lead schedules this kind of review, author walk through the artifact in front of team of people

  - This kind of review is there to facilitate the discussion, where most of the issues are uncovered while questioning.

  - Author correct the artifact as per review defects.

Test case review checklist.

It's Advisable to have a TC review checklist created.

Some basic and nice to have points are as below.

- Are all implicit and explicit test conditions for a requirement are included as test case.

- Are all statements are free from grammatical/spell mistakes.

- Have the required negative scenarios been identified in the test conditions?

- Has all test cases contain required test data embedded.

- Have all test cases are placed in proper execution sequence.

Metrics

- Test Case Effectiveness:

It gives idea about test Case Effectiveness

Formula: (100 - (No of defects logged by Cybage QA without test cases attached to them / Total Defects logged by Cybage QA) *100)

- Test case writing

Test case writing rate

Formula: Total No. of Test Cases Written / Total Efforts spent in writing Test Cases

- Test case Execution

Test case execution rate

Formula: Total No. of Test Cases Executed /Total efforts spent in executing Test cases

Questions?