

# Chapter 7

## Black box and white box

- black box approach

- white box approach

- testing term



## A specific black-box testing approach

### Functional Specification

1. Independently testable features

2. Identify categories

3. Partition categories into choices

4. Identify constraints among choices

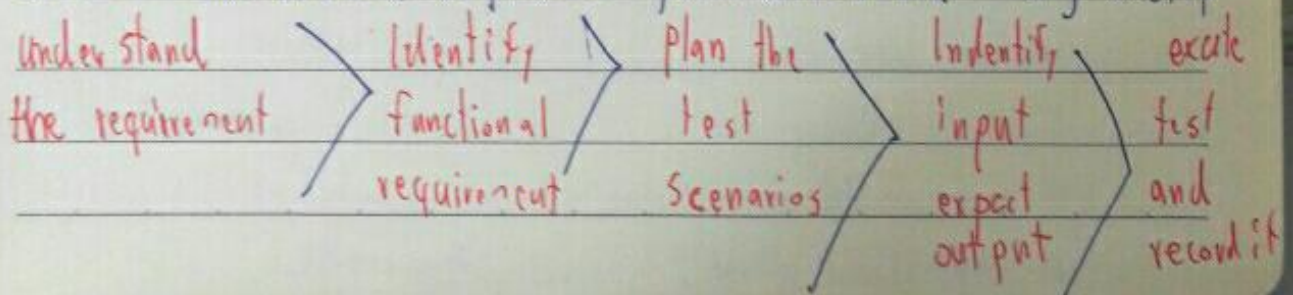
5. Produce / Evaluate test case specification

6. Generate test cases from test case specification

Test case

## System test

check the behavior of a complete and fully integrated product based on the software requirement specification doc using 5 Step



## White-box testing

- based on the code
- Allows for covering the coded behavior
  - Statement coverage
  - branch coverage
  - Condition coverage
  - All-path coverage

"Don't skip tests that you know the method can handle"

## Statement coverage

- test requirement: statements in the program
- Coverage measure: number of executed statement / total num of statement
- "typical coverage target is 80-90%."

## Branch Coverage

- test requirement: branches in the program
- Coverage measure: no. executed branches / total no. of branches

## Condition Coverage

- test requirement: individual condition in the program
- Coverage measure: no. of condition that are T or F / total condition

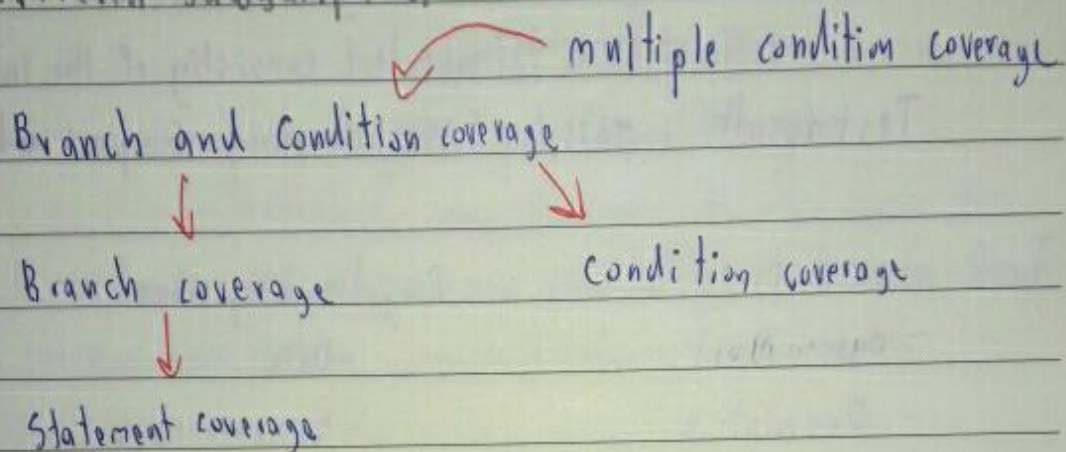




## Branch and Condition coverage

Test requirements: Branches and Individual condition in the program  
Coverage measure: Computed considering both coverage measures

## Test criteria subsumption



## Multiple Condition Coverage

Test requirement: Invoke each point of entry at least once test case  
Coverage measure: Computed considering every possible combination

## Grey-box testing

- Combination of White-box and black-box
- the tester knows some but not all for the internals of the method
- Use 2 Programmers
  - tester who didn't write the code : black-box test case
  - tester who write the code : white-box test case
- timing
  - before writing the code: write black-box test
  - After writing the code: write white-box test



## Software testing terms

Test plan: high level doc descript scope to testing

Test Design Specification

- Test description: specify execution condition

- Test procedure: Step to run the test

- Test case: single test consisting of the input

Test result: PASS or FAIL, comparing Expect and real

## Test record template

- Case No.

- Description

- Expected result

- Actual result

- Pass/Fail

## Bug tracking sheet

- Date

- Reviewer name

- Page title

- Issue type

- Issue comment

- Change / v

- Status

## Usability testing

- quality attribute that assesses how easy UI to use

- used in user-centered interaction design to evaluate product

- observe the real user's behavior and reaction to UI

## How the usability testing work

How

Participants Materials

Convey predefined  
task

5+ representative  
user

Early prototype  
Mock up

Think aloud as he or she  
uses

test moderator  
observer

task  
per logger

- expressed intention by

- Realistic

- Don't hint the correct

- Have a correct solution