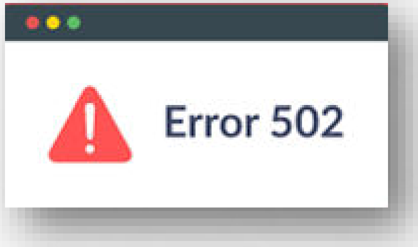
TESTING TERMINOLOGIES

TESTING TERMINOLOGY

- ERROR
- FAULT
- FAILURE
- VALIDATION
- VERIFICATION
- TESTCASE

ERROR



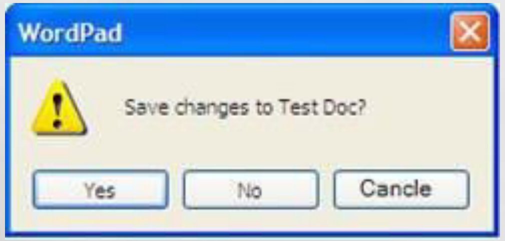
Error 502

- AN ERROR IS A MISTAKE.
- IT IS A MISCONCEPTION OR MISUNDERSTANDING ON THE PART OF A SOFTWARE DEVELOPER
- IT IS DETERMINED BY DEVELOPERS
- A requirements error may be magnified during design and still amplified during coding.
- So, an error is a mistake during SDLC.

TYPES OF ERROR

SYNTACTIC ERROR

MISSPELLED WORD CANCEL SPELLED AS CANCLE



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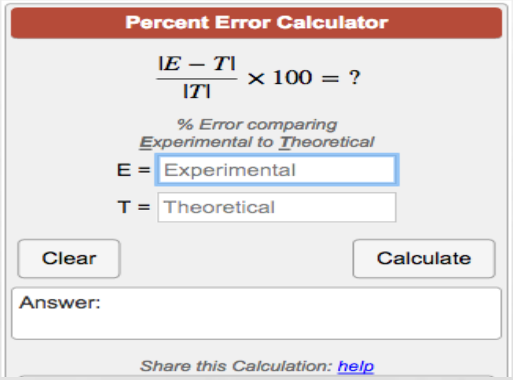
CALCULATION ERRORS

INCORRECT FORMULAS



$$\frac{|E - T|}{|T|} \times 100 = ?$$

% Error comparing Experimental to Theoretical

E = Experimental

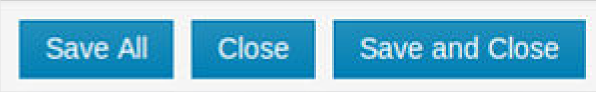
T = Theoretical

Answer:

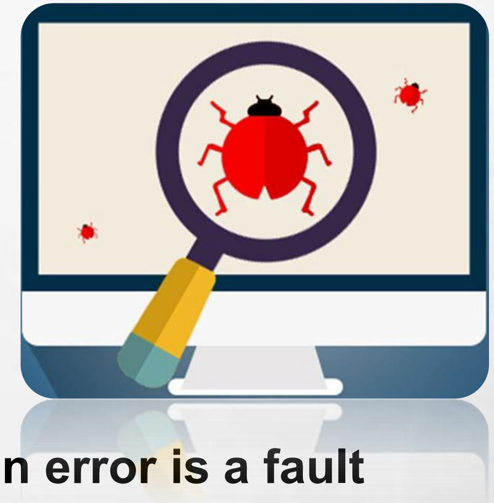
Share this Calculation: help

FLOW CONTROL ERROR

IF A USER CLICKS ON 'SAVE AND CLOSE' BUTTON, THE USER INFORMATION IN THE FORM SHOULD BE SAVED AND THE FORM SHOULD CLOSE. IF CLICKING ON THE BUTTON DOES NOT CLOSE THE FORM, THEN IT IS A CONTROL FLOW ERROR.



DEFECT

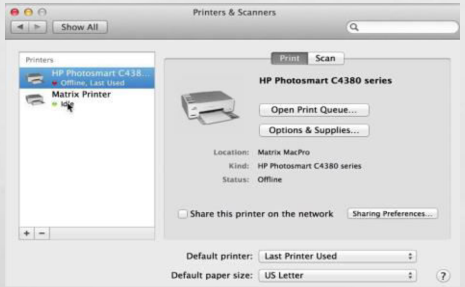


- FAULT OR DEFECT
  - A missing or incorrect statement in a program resulting from an error is a fault
- DEFECT IS AN ERROR FOUND AFTER THE APPLICATION GOES INTO PRODUCTION.
- IN OTHER WORDS DEFECT IS THE DIFFERENCE BETWEEN EXPECTED AND ACTUAL RESULT IN THE CONTEXT OF TESTING.
- A fault is the representation of an error.
  - Representation here means the mode of expression, such as a narrative text, data flow diagrams, hierarchy charts, etc.
- IT IS DETERMINED BY TESTERS

TYPES OF DEFECTS

LATENT DEFECT

A HIDDEN FLAW IN A SOFTWARE WHICH IS NOT IDENTIFIED BY THE USER UNTIL A SET OF OPERATIONS IS NOT PERFORMED.



Location: Matrix MacPro

Kind: HP Photosmart C4380 series

Status: Offline

□ Share this printer on the network

Default printer: Last Printer Used

Default paper size: US Letter

SETTING DEFAULT PRINTER BY DOES NOT PRINT IN IT

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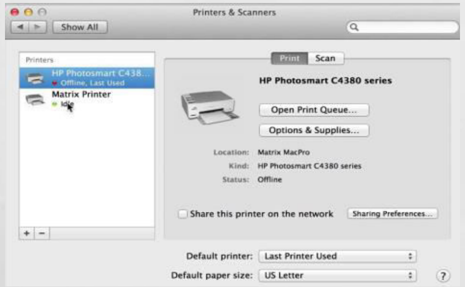


Printers & Scanners

Printers

HP Photosmart C438... Offline, Last Used

Matrix Printer Idle

HP Photosmart C4380 series

Location: Matrix MacPro

Kind: HP Photosmart C4380 series

Status: Offline

□ Share this printer on the network

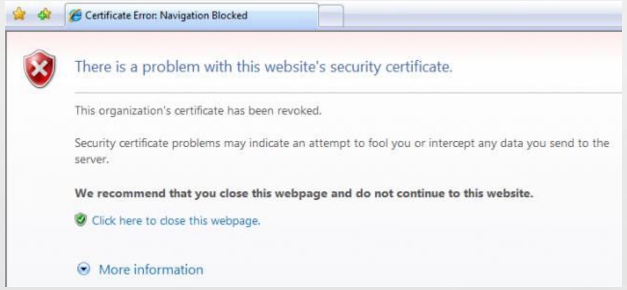
Default printer: Last Printer Used

Default paper size: US Letter

SETTING DEFAULT PRINTER BY DOES NOT PRINT IN IT

MASKED DEFECT

IT DOES NOT CAUSED ANY FAILURE AS IT IS COVERED OR MASKED BY ANOTHER DEFECT.



Certificate Error: Navigation Blocked

There is a problem with this website's security certificate.

This organization's certificate has been revoked.

Security certificate problems may indicate an attempt to fool you or intercept any data you send to the server.

We recommend that you close this webpage and do not continue to this website.

Click here to close this webpage.

More information

IN PAGE NAVIGATIONS WHEN THERE IS A DEFECT IN ONE PAGE, IT PREVENTS THE TEAM TO MOVE TO ANOTHER.

TYPES OF DEFECTS

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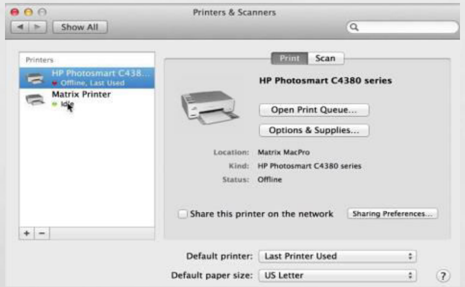

HP Photosmart C438...
Offline, Last Used

Matrix Printer
Idle

HP Photosmart C4380 series

Location: Matrix MacPro
Kind: HP Photosmart C4380 series
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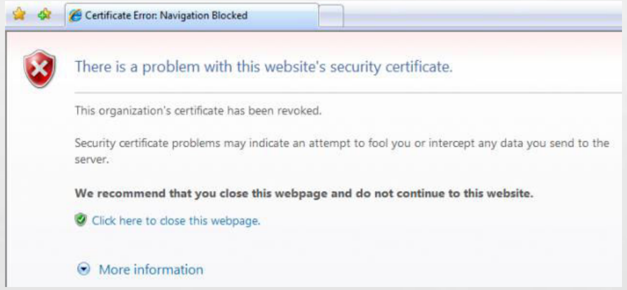

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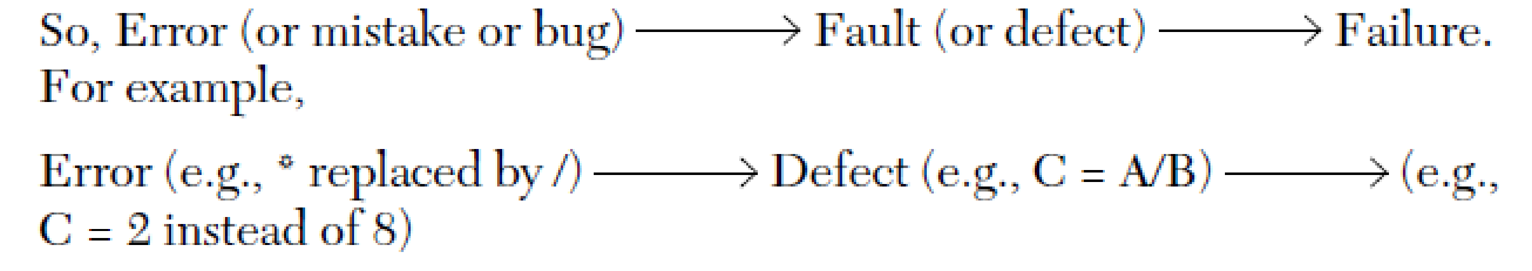
DEFECT CASCADING

WHEN A DEFECT IS NOT IDENTIFIED IN TESTING, IT INVOKES OTHER DEFECTS. AS A RESULT, MULTIPLE DEFECTS CROP UP IN THE LATER STAGES.

DEFECT UNIDENTIFIED IN CALCULATING SALARIES MAY REFLECT IN BALANCE SHEET, TAX CALCULATIONS, AND ANNUAL SALARY CALCULATIONS

FAILURE

- FAILURE OCCURS WHEN THE SOFTWARE FAILS TO PERFORM IN THE REAL ENVIRONMENT.
- Occurs when a fault executes
- IT IS THE OBSERVABLE INCORRECT BEHAVIOR OF THE SYSTEM.
- The manifested inability of a system or component to perform a required function within specified limits is known as a failure.
- IT IS DETERMINED BY CUSTOMERS - dynamic process



So, Error (or mistake or bug) ⟶ Fault (or defect) ⟶ Failure.
For example,

Error (e.g., * replaced by /) ⟶ Defect (e.g., $C = A/B$) ⟶ (e.g., $C = 2$ instead of 8)

EXAMPLES OF FAILURES

- ANY PHYSICAL DAMAGE OR OVERHEATING IN THE HARDWARE CAN CAUSE THE WHOLE SYSTEM TO FAIL.
- IF THE SOFTWARE IS NOT COMPATIBLE WITH THE HARDWARE.
- FAILURES ALSO HAPPEN BY ENVIRONMENTAL CONDITIONS LIKE A RADIATION BURST, A STRONG MAGNETIC FIELD, ELECTRONIC FIELDS, OR POLLUTION COULD CAUSE FAULTS IN HARDWARE OR SOFTWARE.

- **Incident:**
  - An incident is the symptom associated with a failure that alerts the user to the occurrence of a failure.
  - It is an unexpected occurrence that requires further investigation.
  - It may not need to be fixed.
- **Test:**
  - Concerned with errors, faults, failures, and incidents.
  - A test is the act of exercising software with test cases.
  - Two distinct goals—to find failures or to demonstrate correct execution.

VERIFICATION

- ARE WE BUILDING THE SYSTEM RIGHT ?

- ENSURES THAT THE SYSTEM DEVELOPED IS ERROR FREE WITHOUT DEFECTS (I.E., DOES NOT MEAN THAT IT NEED TO SATISFY THE REQUIREMENT SPECIFICATION)

VALIDATION

- ARE WE BUILDING THE RIGHT SYSTEM ?
- ENSURE THE SYSTEM IS DELIVERED AS PER THE REQUIREMENT OF THE CUSTOMER (I.E., MEETING THE REQUIREMENT SPECIFICATION)

Verification vs VALIDATION

ASSUME THAT YOU GO TO A HOTEL AND ORDER A BUTTERSCOTCH MILKSHAKE WHICH IS YOUR FAVORITE MENU.

- ONCE YOU RECEIVE THE ORDERED YOU SHALL LOOK FOR THE **COLOR, AROMA** AND LOOK FOR **BUTTERSCOTCH TOPPINGS** AND CONFIRMS THAT IT'S A BUTTERSCOTCH MILKSHAKE.
- THIS IS CALLED AS **VERIFICATION**

Let see how?

- ONCE YOUR VERIFICATION IS DONE IT DOES NOT MEAN THAT IT IS AN 100% BUTTERSCOTCH MILKSHAKE.

Verification vs VALIDATION

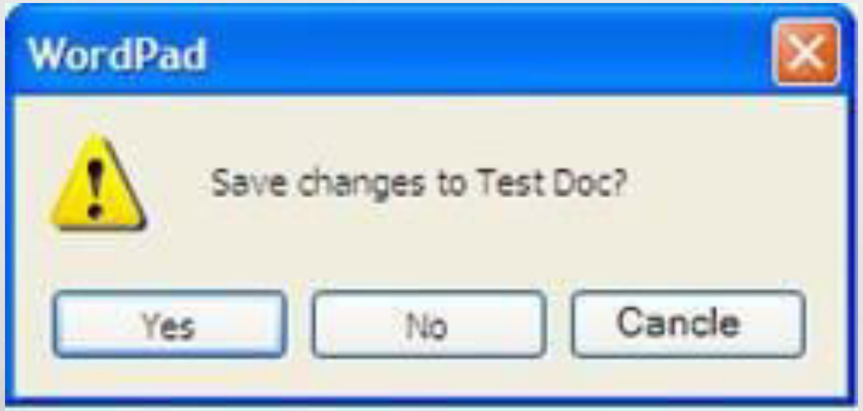
ASSUME THAT YOU GO TO A HOTEL AND ORDER A BUTTERSCOTCH MILKSHAKE WHICH IS YOUR FAVORITE MENU

- THE MILKSHAKE THAT YOU OBTAINED COULD BE SIMILAR LIKE THE ORIGINAL, BUT WHAT IF THE TASTE OF IT VARY.
- **TASTING THE MILKSHAKE AND CONFIRMING IT** AS A BUTTERSCOTCH MILKSHAKE.
- THIS IS CALLED AS **VALIDATION.**

Verification vs VALIDATION

CONSIDER THE DEVELOPMENT OF USER INTERFACE

- THE MENUS AND BUTTONS ARE BE MADE IN THE USER INTERFACE DESIGN AND APPROACHES FOR TESTING



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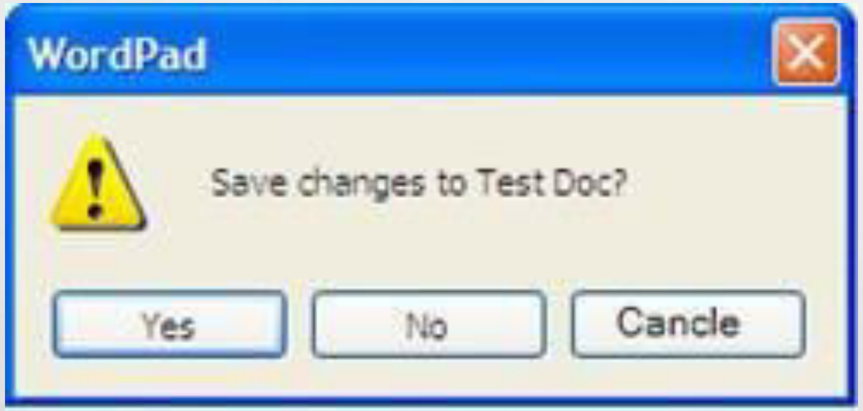
What is Verification?

&

What is Validation?

Verification vs VALIDATION

CONSIDER THE DEVELOPMENT OF USER INTERFACE



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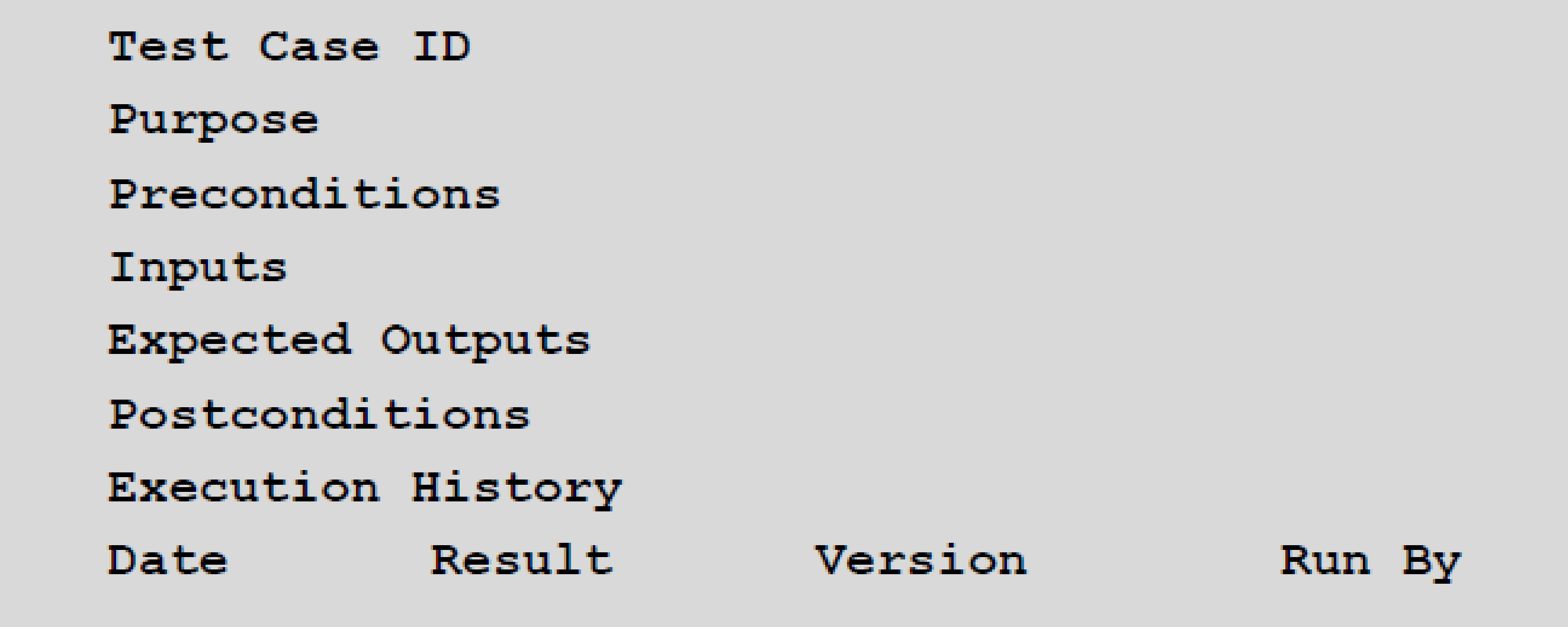
- DETERMINING AND UPDATING THE SYNTACTIC ERROR (MISSPELLED WORK) IS VERIFICATION
- DETERMINING WEATHER THE WORDPAD IS SAVED ON CLICK YES AND DISCARDED ON CLICKING NO IS CALLED AS VALIDATION

TESTCASE

- INPUT TO TEST THE SYSTEM
- ENSURE THE CORRECT WORKING OF THE FUNCTIONALITY BY EXECUTING PROGRAM ELEMENTS(I.E., PRE CONDITIONS, POST CONDITIONS, TEST PROCEDURE, ETC.,) .
- ALSO DETERMINE THE STATE OF SOFTWARE
- A test case has an identity and is associated with program behavior.
- A test case also has a set of inputs and a list of expected outputs.
- The essence of software testing is to determine a set of test cases for the item to be tested.

Test case template



Test Case ID

Purpose

Preconditions

Inputs

Expected Outputs

Postconditions

Execution History

Date	Result	Version	Run By

- There are 2 types of inputs:

a. Preconditions: Circumstances that hold prior to test case execution.

b. Actual inputs: That were identified by some testing method.

- Expected outputs are also of two types:

a. Post conditions

b. Actual outputs

- Test cases need to be developed, reviewed, used, managed, and saved.

TESTCASE EXAMPLE

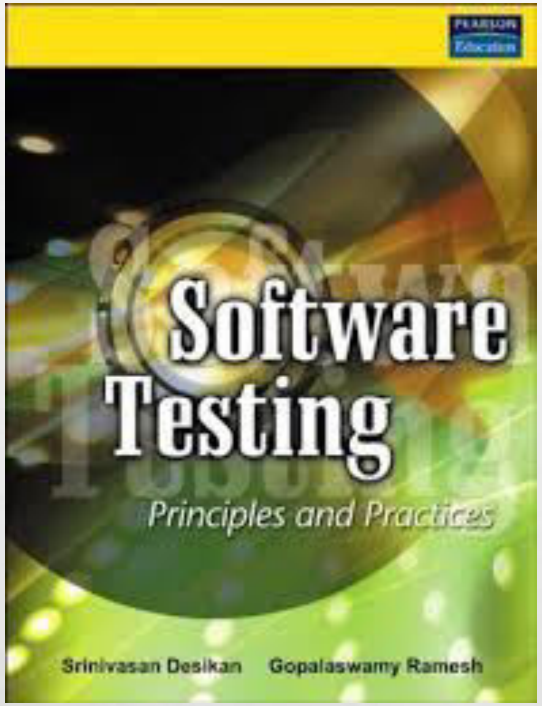
TEST CASES TO CHECK VALIDATE THE PASSWORD HAVING 7 SEVEN CHARACTERS, WITH FIRST CHARACTER NUMERIC AND REMAINING ALPHA NUMERIC

TESTCASE	INPUT VALUE	EXPECTED RESULT	ACTUAL RESULT	TEST OUTCOME
CASE -1 (POSITIVE CASE)	**4TEST64**	PASSWORD SHOULD ACCEPT AND PROCEED TO LOGIN	PASSWORD ACCEPTED AND LOGGED IN	TEST CASE PASSED
CASE -2 (NEGATIVE CASE) *	**TEST464**	PASSWORD SHOULD NOT ACCEPT AND ASK TO RE-LOGIN	PASSWORD ACCEPTED AND LOGGED IN	TEST CASE FAILED AS MISMATCH IN ACTUAL & EXPECTED RESULTS

* IN CASE 2 TEST CASE FAILED BECAUSE THE FIRST CHARACTER OF INPUT SHOULD BE NUMERIC

- **Test suite:**
  - A collection of test scripts or test cases that is used for validating bug fixes (or finding new bugs) within a logical or physical area of a product.
- **Test script:**
  - The step-by-step instructions that describe how a test case is to be executed.
- **Test ware:**
  - It includes all of testing documentation created during the testing process.
  - For example, test specification, test scripts, test cases, test data, the environment specification.
- **Test oracle:** Any means used to predict the outcome of a test.
- **Test log:** A chronological record of all relevant details about the execution of a test.
- **Test report:** A document describing the conduct and results of testing carried out for a system.

REFERENCES



PEARSON Education

Software Testing

Principles and Practices

Srinivasan Desikan Gopalaswamy Ramesh

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NPTEL ONLINE CERTIFICATION COURSE

TOOLSQA

Medium

Guru99

TestingWhiz

Code Less, Test More

Software Testing Help