CSE 3001

Software Engineering Lab

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1. What do you understand about the Software testing?

Software testing is a technique for determining whether the actual software product meets the expected requirements and ensuring that it is defect-free. It entails the use of manual or automated methods to evaluate one or more properties of interest by executing software/system components. In contrast to actual requirements, software testing's goal is to find mistakes, gaps, and missing requirements. Some people prefer to refer to software testing as White Box and Black Box Testing. Simply put, software testing is the process of verifying the application under test (AUT). This Software Testing course introduces the audience to software testing and explains why it is important.

The following are some of the advantages of software testing:

- **Customer Satisfaction:** The main aim of any product is to give satisfaction to their customers. UI/UX Testing ensures the best user experience.
- **Product quality:** It is an essential requirement of any software product. Testing ensures a quality product is delivered to customers.
- **Cost-Effective:** It is one of the important advantages of software testing. Testing any IT project on time helps you to save your money for the long term. In case if the bugs caught in the earlier stage of software testing, it costs less to fix.
- **Security:** It is the most vulnerable and sensitive benefit of software testing. People are looking for trusted products. It helps in removing risks and problems earlier.

Software testing is the process of finding errors in the developed product. It also checks whether the real outcomes can match expected results, as well as aids in the identification of defects, missing requirements, or gaps.

Software Testing Process

Like any other process, software testing can also be divided into different phases. This sequence of phases is often known as the software testing life cycle. Let's look at them in brief.

Planning

Every process starts with planning. In this phase, you collect all the required details about the product. You collect a list of tasks that has to be tested first. If you're testing after a bug fix, then you'd want to know what the bug was and what's the ideal behavior.

Then you have the prioritize your checklist of tasks. If a complete team is involved, then division of tasks can also be done in this phase.

Preparation

Once you know what you have to do, you have to build the foundation for testing. This includes preparing the test environment, collecting test-cases, researching product features and test-cases. Gathering tools and techniques for testing and getting familiar with them should also be done here.

Execution

This is when you actually run tests on the product. You execute test-cases and collect the results. Then you compare the results with the expected result and see if the product is working as expected or not. You make a note of all the successful and failed tests and test-cases.

Reporting

This is the last phase of software testing where you have to document all your findings and submit it to the concerned personnel. Test-case failures are of most interest here. A proper and clear explanation of tests run and outputs should be mentioned.

For complex tests, steps to reproduce the error, screenshots, and whatever is helpful should be mentioned

2. Consider your J-component project and perform all types of testing.

Boundary Testing :

Boundary test case for marks obtained

Maximum marks : 100

Case 1 : The marks obtained less than 0

Case 2 : The marks obtained greater than 100

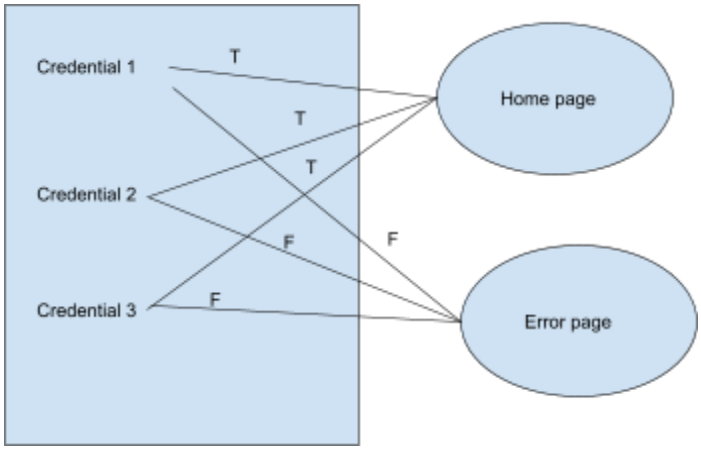
The above 2 are the boundary testcases and the marks entered should be between 0 to 100

Decision table

For entering into the login page

Email (condition1)	T	T	F	F
Password (condition2)	T	F	T	F
Expected Result (Action)	Account Page	Incorrect password	Incorrect email	Incorrect email

State transition technique



Credential 1	**Failed** **Passed**	Error page Home page
Credential 2	**Failed** **Passed**	Error page Home page
Credential 3	**Failed** **Passed**	Forgot password page Home page

Equivalence class Testing

Correct test cases:

Username : length>=3

Not correct	Not correct	Correct	Correct
Si	**Sa**	**Sivanesh**	**Arka_p**
String length<3	String <3	String length=3	String length>=3

Correct test cases:

PhoneNumber : Valid indian phone number

Not correct	Not correct	Correct	Correct
9090	**909090909009**	**9449441209**	**9025157456**
Length != 10	Length != 10	Length = 10	Length = 10

Test cases :

Login Credentials :

Name :

Email :

Phone number :

Field Required: **User entering a null value will generate error**

Test Case 1:

Input: Null value in form field

Output: USER Name Required

Test Case 2

Input: Name: 123

Output: Length must be greater than 3 and less than 30

Test Case 3

Input: **Name:** lknkja n jnbhjbsdaknjhbwruhj cns jhbkbAIU

Output: Length must be greater than 3 and less than 30

Test Case 4

Input: Null value in form field

Output: Email Required

Test Case 5

Input: Email: “Xyz@asd@haks.in”

Output: Fill a valid Email

Test Case 6

Input: Email: “Xyz&123”

Output: Fill valid Email

Test Case 7

Input: Email: “abc@gmail.com”

Output: —

Status: valid email

Test Case 8

Input: Phone number: 12345678980978675432

Output: Enter valid Phone Number