

SOFTWARE ENGINEERING

CSE 470 – Unit Testing

BRAC University



Inspiring Excellence

Testing

Manual Testing

- Done by Users
- Refers to using the software and identifying problems
- Generally uses excel sheet or similar tools to keep track of traces

Automated Testing

- Done by Development team – developers, testers
- Refers to writing and running test cases and to identify problems
- Can be done in many ways – testing libraries, automated testing tools

Manual Testing Example

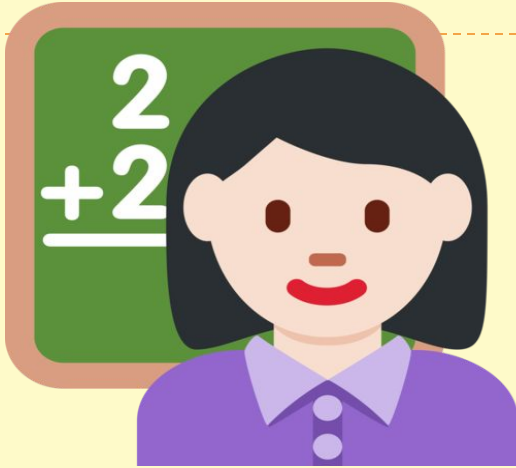
Test Case ID	Test Title	Testing Steps	Test Data	Expected Results	Actual Results	Pass/Fail
TU01	Check Customer Login with valid Data	1. Go to site http://mySampleProject.com	Userid = guru99 Password = pass99	User should Login into application	As Expected	Pass
		2. Enter UserId				
		3. Enter Password				
		4. Click Submit				
TU02	Check Customer Login with invalid Data	1. Go to site http://mySampleProject.com	Userid = guru99 Password = glass99	User should not Login into application	As Expected	Pass
		2. Enter UserId				
		3. Enter Password				
		4. Click Submit				



Unit Testing

- ❑ Unit testing is a type of automated testing to check if the small piece of code is doing what it is suppose to do.
- ❑ Unit testing checks a single component of an application. The components are methods / functions
- ❑ The scope of Unit testing is narrow, it covers the Unit or small piece of code under test. Therefore while writing a unit test shorter codes are used that target just a single class.
- ❑ Unit testing comes under White box testing type.

Example – Math Test



1. Teacher prepares the question set
 2. Give each question to students who appear under the test.
 3. Students do the math and return the calculated result
 4. The teacher knows the right result and compares it with the student's calculated result.
 5. Mark the student pass / fail
1. Developers prepares some prearrangements known as **,TEST SETUP,**
 2. For each unit, create a **TEST METHOD/CASE**. Then, write the **TEST STATEMENTS** in the method which will call the unit under test.
 3. The unit under test will execute and return a result known as, **ACTUAL RESULT.**
 4. The test method have the right result known as, **EXPECTED RESULT** and compares it with the previous actual result,
 5. The comparison identifies whether the unit passed or failed.

How to write unit tests

- ❑ *A TEST CASE is a set of conditions or variables or instructions under which a tester will determine whether a system under test satisfies requirements or works correctly.*
- ❑ Setup / pre-conditions are usually defined as a separate property of the test case. Are generally written under the setup method.
- ❑ test steps: instructions / statements written with in the test method
- ❑ a predefined expected result is required for invoking the unit

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- Please watch the next video on writing unit tests for detailed understanding

