

Software Testing

Unit Testing

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Automation in Unit Testing

- In automated unit testing, you make use of a test automation framework to write and run your program tests
- Unit testing frameworks provide generic test classes that you extend to create specific test cases
- They can then run all of the tests that you have implemented and report on the success or failure of the tests.
- An entire test suite can often be run in a few seconds so it is possible to execute all the tests every time you make a change to the program

Automated Testing Process

- **Setup:** initialize the system with the test case, namely the inputs and expected outputs.
- **Call:** call the object or method to be tested.
- **Compare:** compare the result of the call with the expected result through an assertion. If the assertion evaluates to true, the test has been successful; if false, then it has failed

- Mock objects are objects with the same interface as the external objects being used that simulate its functionality.
- Can be used even if the implementation of the real object is not available
- Computationally less expensive
- Can be used to simulate abnormal operation or rare events

Example Frameworks

- **C++:** Googletest/Googlemock
- **Java:** JUnit/JMock

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