What is Unit Test?

* Unit Test is a piece of code written by developer in order to test functionality of code.
* The class which he wants to test is called Class Under the Test.
* The method which he wants to test is called Method Under the Test.

**Good Unit Test**

* Easy to Write
* Readable
* Reliable
* Fast
* Isolated – If a class is dependent on various services then we need fake the services. These fake services are called Test Doubles.

Example: Movie – Stunt Doubles.

**Test Doubles**

It helps us removing external dependencies.

**Why we need Test Doubles**

Sometimes it is not possible to unit test a code because of unavailability of External Dependency

**Example:** If code under test is sending in email, it is not good to send email every time tests are run.

**Types of Test Doubles**

* Dummy
* Fake
* Stub
* Spy
* Mock

**Fake**

These objects are light weight used only for testing. They have working implementations, but not as actual production object.

For Example, Instead of actual production database we can use an (in memory database, hash map or List)

**Test Double without Mockito (fake)**

Practical

**Dummy**

When we do unit testing for a class, the class may be dependent on the external dependencies and it may have happened when we testing one of the methods for the class under test one or two dependencies does not play any role, but still they come into the picture. So, while unit testing them we create dummies out of it.

Dummies doesn’t have any business logic

It is an object that is used only for code to compile

**Dummy Test Doubles without Mockito**

Practical

**Stub**

Stub object provides predefined answers to method executions made during the test. The behavior is hardcoded programmatically for a particular test.

Instead of calling External service, stub is called and it returns back an expected response.

**Stub Test Doubles without Mockito**

Practical

**Spy**

Spy object are similar to stub, but they record information about how they were executed.

**Spy Test Doubles Without Mockito**

Practical

**Mock**

Mock object is similar to spy, only difference is asserts and behavior verification is done at mock object.