Unit Testing

**UNIT TESTING** is a level of software testing where individual units/ components of a software are tested. The purpose is to validate that each unit of the software performs as designed. A unit is the smallest testable part of any software. It usually has one or a few inputs and usually a single output. In procedural programming, a unit may be an individual program, function, procedure, etc. In object-oriented programming, the smallest unit is a method, which may belong to a base/ super class, abstract class or derived/ child class. (Some treat a module of an application as a unit. This is to be discouraged as there will probably be many individual units within that module.) Unit testing frameworks, drivers, stubs, and mock/ fake objects are used to assist in unit testing.

## Unit Testing Benefits

* Unit testing increases confidence in changing/ maintaining code. If good unit tests are written and if they are run every time any code is changed, we will be able to promptly catch any defects introduced due to the change. Also, if codes are already made less interdependent to make unit testing possible, the unintended impact of changes to any code is less.
* Codes are more reusable. In order to make unit testing possible, codes need to be modular. This means that codes are easier to reuse.
* Development is faster. How? If you do not have unit testing in place, you write your code and perform that fuzzy ‘developer test’ (You set some breakpoints, fire up the GUI, provide a few inputs that hopefully hit your code and hope that you are all set.) But, if you have unit testing in place, you write the test, write the code and run the test. Writing tests takes time but the time is compensated by the less amount of time it takes to run the tests; You need not fire up the GUI and provide all those inputs. And, of course, unit tests are more reliable than ‘developer tests’. Development is faster in the long run too. How? The effort required to find and fix defects found during unit testing is very less in comparison to the effort required to fix defects found during system testing or acceptance testing.

**from** **django.test** **import** TestCase

**from** **myapp.models** **import** Animal

**class** **AnimalTestCase**(TestCase):

**def** setUp(self):

Animal.objects.create(name="lion", sound="roar")

Animal.objects.create(name="cat", sound="meow")

**def** test\_animals\_can\_speak(self):

*"""Animals that can speak are correctly identified"""*

lion = Animal.objects.get(name="lion")

cat = Animal.objects.get(name="cat")

self.assertEqual(lion.speak(), 'The lion says "roar"')

self.assertEqual(cat.speak(), 'The cat says "meow"')