

Юнит-тестирование

- <http://pycheesecake.org/wiki/PythonTestingToolsTaxonomy>
- Тестирование: юнит, интеграционное, функциональное, нагрузочное, стресс, ...
- smoke tests vs overnight tests
- Проверки
- Поиск и исполнение тестов
- Моки
- Генерация отчетов и интеграция с системами CI

assert & AssertionError

- AssertionError - lingua franca юнит-тестов
- `assert expr[, msg]` — `assert x == 3`

```
In [3]: x = 1
```

```
In [4]: y = 2
```

```
In [5]: assert x == y
```

```
-----
```

```
AssertionError          Traceback (most recent call last)
```

```
<ipython-input-5-0578c5880ed0> in <module>()
```

```
----> 1 assert x == y
```

```
AssertionError:
```

```
1     def test_some_func():
2         assert some_func(1) == 2
```

unittest

```
1  import unittest
2
3  class TestSome(unittest.TestCase):
4      def test_simple(self):
5          x = 1
6          y = 2
7          self.assertEqual(x, y)
8
9      def test_simple2(self):
10         y = x = 1
11         self.assertEqual(x, y)
12
13     def test_simple3(self):
14         x = 1 / 0
15
16 if __name__ == "__main__":
17     unittest.main()
```

assert & AssertionError

```
$ python ut_simplest.py
F.E
=====
ERROR: test_simple3 (__main__.TestSome)
-----
Traceback (most recent call last):
  File "ut_simplest.py", line 16, in test_simple3
    y = 1 / 0
ZeroDivisionError: integer division or modulo by zero

=====
FAIL: test_simple (__main__.TestSome)
-----
Traceback (most recent call last):
  File "ut_simplest.py", line 7, in test_simple
    self.assertEqual(x, y)
AssertionError: 1 != 2

-----
Ran 3 tests in 0.001s

FAILED (failures=1, errors=1)
```

Тестовые методы

- `self . assertEquals (x, y)`
- `self . assertIn (x, set)`
- `self . assertRaises (ExcClass, func, params),`
- `self . assertAlmostEqual(x, y)`
-

```
1 def r(x):  
2     return 1 / x  
3  
4 class TC(TestCase):  
5     def test_r():  
6         self.assertRaises(ZeroDivisionError, r, 0)  
7         self.assertEqual(r(1), 1)
```

setUp + tearDown

```
1  class TestSome( unittest . TestCase ):
2      def setUp( self ):
3          self.x = 1
4          self.y = 1
5
6      def tearDown( self ):
7          del self.x
8          del self.y
9
10     def test_simple3( self ):
11         self.assertEqual( self.x, self.y)
```

Поиск тестов

- `python -m unittest test_module1 test_module2`
- `python -m unittest test_module.TestClass`
- `python -m unittest test_module.TestClass.test_method`
- `python -m unittest discover project_directory '*_test.py'`

oktest

```
1  from oktest import ok
2
3  def simple_test():
4      ok(1) == 1
5      ok([]).is_a(list)
6      ok("/tmp/x.txt").is_file()
```


nose

- Замена unittest
- Плагины
- coverage, parallel test, etc
- CI integration

mock

```
1  import os
2  import glob
3
4  def remove_tmp_files():
5      for fname in glob.glob("/tmp/*.tmp"):
6          os.unlink(fname)
```

```
1  import mock
2
3  def glob_mock( path ):
4      return [ "/tmp/x.tmp" , "/tmp/y.sh" ]
5
6  all_unlinked = []
7  def unlink_mock( path ):
8      return all_unlinked.append( path )
9
10 @mock.patch( "os.unlink" , unlink_mock )
11 @mock.patch( "glob.glob" , glob_mock )
12 def test_remove_tmp():
13     remove_tmp_files()
14     ok( all_unlinked ) == [ "/tmp/x.tmp" ]
```