



BEACONHOUSE
INTERNATIONAL COLLEGE



**UNIVERSITY
OF LONDON**

**RECOGNISED
TEACHING CENTRE**

SOFTWARE DESIGN & DEVELOPMENT

Topic 2

TEST-DRIVEN DEVELOPMENT

Course Outline

(WEEK 6)

WE WILL COVER THE FOLLOWING KEY CONCEPTS:

TEST DRIVEN DEVELOPMENT

UNIT TESTING IN PYTHON

UNIT TESTING IN C++

UNIT TESTING A WEB API

QUICK PYTHON TUTORIAL

- ▶ <https://jupyter.org/try-jupyter/retro/notebooks/?path=Untitled2.ipynb>

USING THE UNIT TEST MODULE: INTRODUCTION

- ▶ <https://jupyter.org/try-jupyter/retro/notebooks/?path=Untitled4.ipynb>

ASSERTION FUNCTION IN UNITTEST

- ▶ `assertEqual(a,b)`
`a==b`
- ▶ `assertNotEqual(a,b)`
`a!=b`
- ▶ `assertTrue(x)`
`bool(x) is True`
- ▶ `assertFalse(x)`
`bool(x) is False`
- ▶ `assertIs(a,b)`
`a is b`
- ▶ `assertIsNot(a,b)`
`a is not b`
- ▶ `assertIsNone(x)`
`x is None`
- ▶ `assertIsNotNone(x)`
`x is not None`
- ▶ `assertIn(a,b)`
`a in b`
- ▶ `assertNotIn(a,b)`
`a not in b`
- ▶ `assertIsInstance(a,b)`
`isinstance(a,b)`
- ▶ `assertNotIsInstance(a,b)`
`Not isinstance(a,b)`

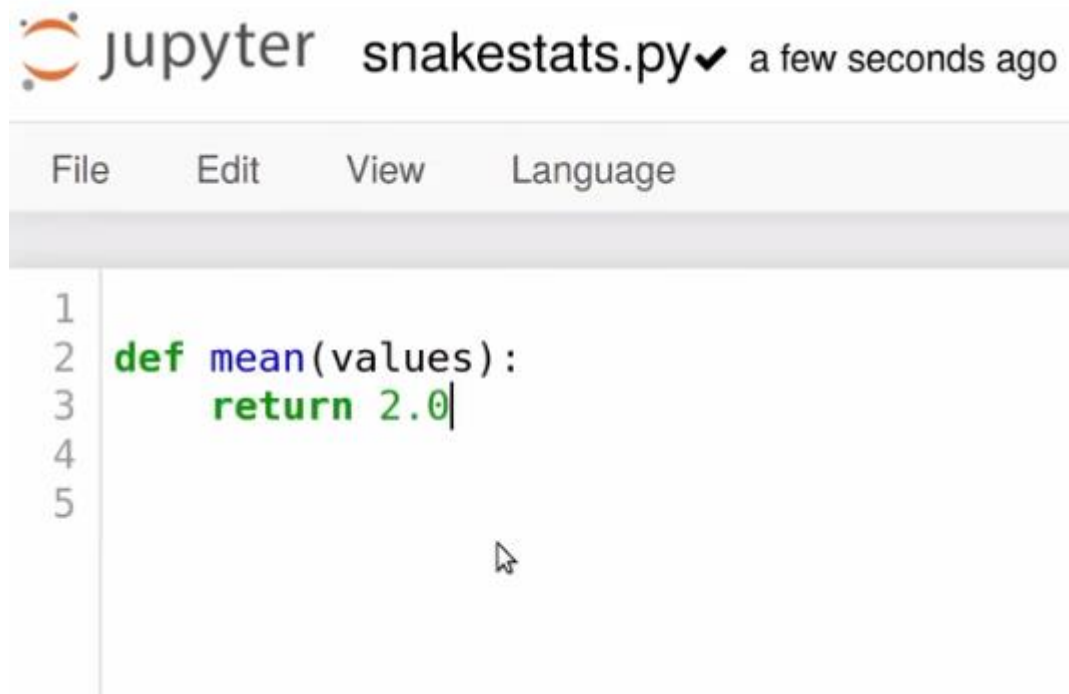
UNIT TESTING A STATISTICAL LIBRARY: INTRODUCTION

- ▶ Statistical library is a library of ready made routines which allow you to really quickly build programs which have statistical analysis capabilities.
- ▶ Python libraries numpy, scipy, pandas all have statistical functionality
- ▶ Functions like calculating mean, standard deviation, correlation coefficients between two lesser numbers, calculating histogram etc.

UNIT TESTING EXAMPLES

```
In [2]: 1 import unittest
        2 import snakestats
        3
        4 class TestsForSnakeStats(unittest.TestCase):
        5
        6     def test_mean(self):
        7         res = snakestats.mean([1,2,3])
        8         self.assertEqual(res, 2.0)
        9
       10 unittest.main(argv=['ignored', '-v'], exit=False)
       11
```


UNIT TESTING EXAMPLES



The image shows a Jupyter Notebook interface. At the top, the Jupyter logo is followed by the text "snakestats.py" with a checkmark and "a few seconds ago". Below this is a menu bar with "File", "Edit", "View", and "Language". The main area displays a Python function definition with line numbers 1 through 5 on the left. The code is: `def mean(values):` on line 2, and `return 2.0` on line 3. A mouse cursor is visible on line 5.

```
1
2 def mean(values):
3     return 2.0
4
5
```



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Thank You!