Московский государственный технический университет имени Н.Э.Баумана

Факультет Радиотехнический

Кафедра ИУ5 Системы обработки информации и управления

Отчет по лабораторной работе №5 по курсу Базовые компоненты «Модульное тестирование в Python»

Исполнитель
Студент группы РТ5-31Б _____ Платонов А.В.
«__»_____ 2022 г.

Проверил
Доцент кафедры ИУ5 _____ Гапанюк Ю.Е.
«__»_____ 2022 г.

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Задание

1. Выберите любой фрагмент кода из лабораторных работ 1 или 2 или 3-4.
2. Модифицируйте код таким образом, чтобы он был пригоден для модульного тестирования.
3. Разработайте модульные тесты. В модульных тестах необходимо применить следующие технологии:
   - TDD - фреймворк (не менее 3 тестов).
   - BDD - фреймворк (не менее 3 тестов).
   - Создание Mock-объектов (необязательное дополнительное задание).

Файлы:

lab5_tdd_Platonov.py

features/

test.feature

steps/

lab5_tdd_Platonov.py

Листинг файла lab5_tdd_Platonov.py

```
import os
import sys
sys.path.append("../lab 2/lab_python_oop")

from rectangle import Rectangle
from circle import Circle
from square import Square

from math import pi
import unittest


class MyTesting(unittest.TestCase):
    def setUp(self):
        self.a = Rectangle('blue', 6, 6)
        self.b = Circle('green', 6)
        self.c = Square('red', 3)

    def test_area(self):
        import math
        self.assertEqual(self.a.square(), 36)
```

```
        self.assertEqual(self.b.square(), round(pi * 6**2, 2))
        self.assertEqual(self.c.square(), 9)

    def test_color(self):
        self.assertEqual(self.a.fc.colorproperty, 'blue')
        self.assertEqual(self.b.fc.colorproperty, 'green')
        self.assertEqual(self.c.fc.colorproperty, 'red')

    def test_get_name(self):
        self.assertEqual(self.a.get_figure_type(), 'Прямоугольник')
        self.assertEqual(self.b.get_figure_type(), 'Круг')
        self.assertEqual(self.c.get_figure_type(), 'Квадрат')


if __name__ == '__main__':
    unittest.main()
```

Листинг файла test.feature

```
Feature: Testing lab 3

  Scenario Outline: Testing properties of rectangle
    Given rectangle with sides of "<first>" and "<second>", color is "<color>"
    When we try to get properties
    Then we get square of "<square>", color is "<color>"

    Examples: Rectangle
      | first | second | color | square |
      | 9     | 4      | blue  | 45     |
      | 5     | 1      | red   | 5      |
      | 99    | 98     | yellow| 9702   |

  Scenario Outline: Testing properties of circle
    Given circle with radius of "<radius>", color is "<color>"
    When we try to get properties
    Then we get square of "<square>", color is "<color>"

    Examples: Circle
      | radius | color | square             |
      | 1      | cyan  | 3.141592653589793  |
      | 12     | gray  | 37.69911184307752  |
      | 200    | black | 348.71678454846705 |

  Scenario Outline: Testing properties of circle
    Given square with side of "<side>", color is "<color>"
    When we try to get properties
    Then we get square of "<square>", color is "<color>"

    Examples: Square
      | side | color | square |
      | 1    | lime  | 1      |
      | 12   | pink  | 144    |
```

| 200 | white | 40000 |

Листинг файла lab5_bdd_Platonov.py

```
from behave import Given, When, Then
import sys

sys.path.append("../../../lab 2/lab_python_oop")

from rectangle import Rectangle
from circle import Circle
from square import Square


@Given('rectangle with sides of "{first}" and "{second}", color is "{color}"')
def step_impl(context, first, second, color):
    global shape
    try:
        shape = Rectangle(color, int(first), int(second))
        return True
    except:
        return False


@Given('circle with radius of "{radius}", color is "{color}"')
def step_impl(context, radius, color):
    global shape
    try:
        shape = Circle(color, int(radius))
        return True
    except:
        return False


@Given('square with side of "{side}", color is "{color}"')
def step_impl(context, side, color):
    global shape
    try:
        shape = Square(color, int(side))
        return True
    except:
        return False


@When('we try to get properties')
def step_impl(context):
    if shape.square():
        if shape.get_figure_type():
            if shape.fc.colorproperty:
                return True
    return False


@Then('we get square of "{square}", color is "{color}"')
```

```
def step_impl(context, square, color):
    if shape.square() == square:
        if shape.fc.colorproperty == color:
                return True
    return False
```

Результаты работы программы lab5_tdd_Platonov.py

```
[анализируем lab5_tdd_Platonov.py]
...
----------------------------------
Ran 3 tests in 0.001s

OK
```

Результаты работы запуска behave в lab5_bdd_Platonov.py

```
D:\documents\Basic components\lab 5\features\steps>behave
Feature: Testing lab 3 # ../test.feature:1

  Scenario Outline: Testing properties of rectangle -- @1.1 Rectangle  # ../test.feature:10
    Given rectangle with sides of "9" and "4", color is "blue"         # lab5_bdd_Platonov.py:11
    When we try to get properties                                      # lab5_bdd_Platonov.py:41
    Then we get square of "45", color is "blue"                        # lab5_bdd_Platonov.py:50

  Scenario Outline: Testing properties of rectangle -- @1.2 Rectangle  # ../test.feature:11
    Given rectangle with sides of "5" and "1", color is "red"          # lab5_bdd_Platonov.py:11
    When we try to get properties                                      # lab5_bdd_Platonov.py:41
    Then we get square of "5", color is "red"                          # lab5_bdd_Platonov.py:50

  Scenario Outline: Testing properties of rectangle -- @1.3 Rectangle  # ../test.feature:12
    Given rectangle with sides of "99" and "98", color is "yellow"     # lab5_bdd_Platonov.py:11
    When we try to get properties                                      # lab5_bdd_Platonov.py:41
    Then we get square of "9702", color is "yellow"                    # lab5_bdd_Platonov.py:50

  Scenario Outline: Testing properties of circle -- @1.1 Circle  # ../test.feature:21
    Given circle with radius of "1", color is "cyan"             # lab5_bdd_Platonov.py:21
    When we try to get properties                                # lab5_bdd_Platonov.py:41
    Then we get square of "3.141592653589793", color is "cyan"   # lab5_bdd_Platonov.py:50

  Scenario Outline: Testing properties of circle -- @1.2 Circle  # ../test.feature:22
    Given circle with radius of "12", color is "gray"            # lab5_bdd_Platonov.py:21
    When we try to get properties                                # lab5_bdd_Platonov.py:41
    Then we get square of "37.69911184307752", color is "gray"   # lab5_bdd_Platonov.py:50

  Scenario Outline: Testing properties of circle -- @1.3 Circle  # ../test.feature:23
    Given circle with radius of "200", color is "black"          # lab5_bdd_Platonov.py:21
    When we try to get properties                                # lab5_bdd_Platonov.py:41
    Then we get square of "348.71678454846705", color is "black" # lab5_bdd_Platonov.py:50

  Scenario Outline: Testing properties of circle -- @1.1 Square  # ../test.feature:32
    Given square with side of "1", color is "lime"               # lab5_bdd_Platonov.py:31
    When we try to get properties                                # lab5_bdd_Platonov.py:41
    Then we get square of "1", color is "lime"                   # lab5_bdd_Platonov.py:50

  Scenario Outline: Testing properties of circle -- @1.2 Square  # ../test.feature:33
    Given square with side of "12", color is "pink"              # lab5_bdd_Platonov.py:31
    When we try to get properties                                # lab5_bdd_Platonov.py:41
    Then we get square of "144", color is "pink"                 # lab5_bdd_Platonov.py:50

  Scenario Outline: Testing properties of circle -- @1.3 Square  # ../test.feature:34
    Given square with side of "200", color is "white"            # lab5_bdd_Platonov.py:31
    When we try to get properties                                # lab5_bdd_Platonov.py:41
    Then we get square of "40000", color is "white"              # lab5_bdd_Platonov.py:50

1 feature passed, 0 failed, 0 skipped
9 scenarios passed, 0 failed, 0 skipped
27 steps passed, 0 failed, 0 skipped, 0 undefined
Took 0m0.012s
```