

Laboratory 5

Objective

Familiarize with Python's OOP concepts, classes, inheritance.

Problem 1

Create a class having two methods:

- A method asking user to enter a string from the console
- A method that transform that string to uppercase and print it to stdout

Provide also a method to test that class. Also make sure that if imported in other module, the test code will not be executed.

Problem 2

Create a class called `Shape`, which has a constructor, a `display` and an `getarea` method. The `display` method will output the name of the shape, the `getarea` method will compute the shape's area.

Then subclass the `Shape` class with a `Circle` class, which has a parameter called `radius`, a `Square` class, with a parameter called `side`, a `Rectangle` class having two parameters, the two sides of the rectangle, and a `Triangle` class, having the three sides as parameters.

Override the `getarea` and `display` methods of the base class with the concrete implementations for each shape.

Use the same main program in *Laboratory 4* to ask for a particular shape, then instantiate the corresponding object and compute the area. Print the results to the `stdout`.

Problem 3

Create a class called `Dice` which will model a real dice, having six faces. Every face of the dice has a representation in the files called `one.txt` for face 1, `two.txt` for face 2, `three.txt` for face 3, `four.txt` for face 4, `five.txt` for face 5 and `six.txt` for face 6.

Create then a method `roll_dice()` which uses the Python's `random` module to generate random integers between 1 and 6 (`randint(1,6)`) then print the face on the `stdout`.

Also create all the necessary helper methods for reading from files, assign the faces, etc.

To test the final program, use:

```
Dice_one = Dice()
Dice_two = Dice()
dice_one.rollDice()
dice_two.rollDice()
```

The output should be like:

```
+  - - - - -  +
|              |
|  *          *  |
|              |
|  *          *  |
|              |
+  - - - - -  +
+  - - - - -  +
|              |
|  *          |
|          *  |
|              *  |
|              |
+  - - - - -  +
```