Lab 11-1 – Objects

Goals

- Practice with objects
- Practice with instance variables
- Practice with instance methods

Setup

- In PyCharm, create a new project or open an existing one (such as Labs)
- Create a new Python file using the following naming convention:
  ITP115_L11_1_*LastName_FirstName*
  (replace *LastName* with your last/family name and *FirstName* with your first name)
- Your new file must begin with comments in the following format (replace the name and email with your actual information):

```
# Name, USC email
# ITP 115, Spring 2020
# Lab 11-1
```

Requirements

Your program must perform the following:

- Write a **`Die`** class and a **`main`** function that creates two **`Die`** objects
- Write the **`Die`** class to have the following:
  - Instance attributes / variables (to be assigned inside **`__init__`**)
    - **`rollValue`**: holds value of dice roll
    - **`sides`**: number of sides of dice
  - Constructor method
    - **`__init__`**
      - Input arguments (1): **`numSides`**
        - the number of sides you would like your die to have;
        - if no input argument is provided, a **default value** of 6 should be assigned
      - Return value: none
      - Set **`sides`** equal to **`numSides`**
      - Set **`rollValue`** equal to **`0`**

    - Instance methods
        - **`roll`**
            - Input arguments (0): none
            - Return value: none
            - Simulate "rolling" a die by choosing a random number from 1 through **`sides`**
            - Store the number of the die rolled to **`rollValue`**
        - **`__str__`**
            - Input arguments (0): none
            - Return value: A string containing the **`sides`** and the **`rollValue`** in the following format: "Die has 6 sides and rolled a 2"
- Write two additional functions (not part of the class)
    - **`calculateSum(die1, die2)`**
        - Input arguments (2): two die objects
        - Output: an int
        - Call **`roll()`** on each die
        - Print each die (will call `__str__` method)
        - Return the sum
    - **`main()`**
        - Ask the user if they want to use the default number of sides for first die
        - If not, then ask the user for the number of sides
        - Ask the user if they want to use the default number of sides for second die
        - If not, then ask the user for the number of sides
        - Ask the user for the number of times to roll the dice
        - Create two Die objects
        - Loop for the number of times to roll the dice
        - In the loop,
            - Pass each die into **`calculateSum()`**
            - Print the result of **`calculateSum()`**

Sample Output

Output 1:

```
Use the default number of sides for first die (y/n)? y
Use the default number of sides for second die (y/n)? y
How many times do you want to roll the die? 3
Die has 6 sides and rolled a 2
Die has 6 sides and rolled a 1
The sum of Dice 1 and Dice 2 is 3
Die has 6 sides and rolled a 1
Die has 6 sides and rolled a 4
The sum of Dice 1 and Dice 2 is 5
Die has 6 sides and rolled a 6
Die has 6 sides and rolled a 2
The sum of Dice 1 and Dice 2 is 8
```

Output 2:

```
Use the default number of sides for first die (y/n)? n
How many sides? 8
Use the default number of sides for second die (y/n)? n
How many sides? 12
How many times do you want to roll the die? 4
Die has 8 sides and rolled a 3
Die has 12 sides and rolled a 7
The sum of Dice 1 and Dice 2 is 10
Die has 8 sides and rolled a 7
Die has 12 sides and rolled a 6
The sum of Dice 1 and Dice 2 is 13
Die has 8 sides and rolled a 7
Die has 12 sides and rolled a 12
The sum of Dice 1 and Dice 2 is 19
Die has 8 sides and rolled a 7
Die has 12 sides and rolled a 3
The sum of Dice 1 and Dice 2 is 10
```

Deliverables and Submission Instructions

- Create a zip file containing your Python code. This cannot be done within PyCharm. Find the file or folder on your computer and compress it.
  a. Windows*:*
     1. Using File Explorer, select your lab file
     2. Right click
     3. Send to ->
     4. Compressed (zipped) folder
  b. Mac OSX:
     1. Using Finder, select your lab file
     2. Right click
     3. Compress "*FileName*"
- Upload the zip file to your Blackboard section:
  1. On Blackboard, click on the Labs item in the course menu on the left.
  2. Click on the specific item for this assignment (starts with L and a number).
  3. Click on the Browse My Computer button and select your zip file.
  4. Click the Submit button.