

**College of Engineering**

## CS 1337/1337L Introduction to Object-Oriented Programming

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## Fall 2021

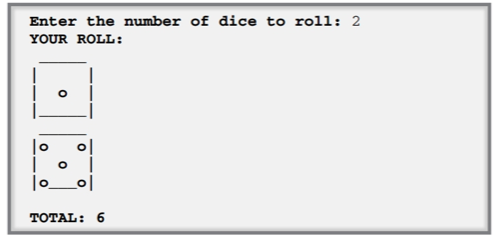
**Lab - 10/21/2021**

**Due:10/26/2021**

Please upload your assignments through your WTClass on time. The assignment will NOT be accepted if the time is passed or not submitted properly through the WTClass. It is your responsibility to make your submissions before the deadline.

**Enhance the Dice Roller program**

In this exercise, you’ll enhance the Dice Roller program by making some improvements to its classes. When you’re done, rolling two dice should look something like this:

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**Open and test the program**

1. In IDLE, open the dice.py and dice\_roller.py files that are in the assignment folder.
2. Review the code and run the program to make sure it works correctly. Note that it starts by displaying an image for each of the 6 possible die values.

**Improve the Die class**

1. In the Die class, modify the roll() method so it returns the \_\_value attribute after it sets it to a random number from 1 to 6.

**def roll(self):**

**self.\_\_value = random.randrange(1, 7)**

**return self.\_\_value**

1. In the Die class, add a \_\_post\_int\_\_() method that sets the \_\_value attribute by calling the roll() method. This makes sure that the \_\_value attribute for a new Die object stores a valid number for the die.

**def \_\_post\_int\_\_(self):**

**if self.\_\_value <1 or self.\_\_value > 6:**

**print("Invalid data. Please try again.")**

**else:**

**self.\_\_value=Die.roll()**

1. In the Die class, modify the setter for the value property so it doesn’t allow a value greater than 6.

**@value.setter**

**def value(self, value):**

**if value < 1:**

**raise ValueError("Die can't be less than 1.")**

**elif value >6:**

**raise ValueError("Die cannot be more than 6.")**

**else:**

**self.\_\_value = value**

1. Run the dice module and use Python’s interactive shell to make sure these changes work correctly.
2. In the Die class, add a read-only property named image that gets a string for the image that represents the die’s current value.

**@property**

**def image(self):**

**if self.\_\_value==6:**

**return "\_\_\_\_\_\n" + \**

**"|o o|\n" + \**

**"|o o|\n" + \**

**"|o\_\_\_o|\n"**

**elif self.\_\_value==5:**

**return "\_\_\_\_\_\n" + \**

**"|o o|\n" + \**

**"| o |\n" + \**

**"|o\_\_\_o|\n"**

**elif self.\_\_value==4:**

**return "\_\_\_\_\_\n" + \**

**"|o o|\n" + \**

**"| |\n" + \**

**"|o\_\_\_o|\n"**

**elif self.\_\_value==3:**

**return "\_\_\_\_\_\n" + \**

**"|o |\n" + \**

**"| o |\n" + \**

**"|\_\_\_\_o|\n"**

**elif self.\_\_value==2:**

**return "\_\_\_\_\_\n" + \**

**"|o |\n" + \**

**"| |\n" + \**

**"|\_\_\_\_o|\n"**

**elif self.\_\_value==1:**

**return "\_\_\_\_\_\n" + \**

**"| |\n" + \**

**"| o |\n" + \**

**"|\_\_\_\_\_|\n"**

**Improve the Dice Roller program**

1. Open the dice\_roller.py file and run it to make sure the Dice Roller program still works correctly. Since you didn’t change the interface for the Die class, it should.
2. Modify the code that displays the roll so it uses the new image property to display an image for each die instead of displaying the value.

**while True:**

**# roll the dice**

**dice.rollAll()**

**print("YOUR ROLL: \n", end="")**

**for die in dice.list:**

**print(die.image, end=" ")**

**print("\n")**

1. At the start of the program, modify the code that displays the 6 die images so it uses a loop to create a Die object for each valid number and to display its image. This reduces code duplication since the code that defines the image is only stored in one place now, in the Die class.

**Improve the Dice class**

1. In the Dice class, add a method named getTotal() that gets the total value of all Die objects currently stored in the Dice object.

**Answer**

1. In the dice\_roller.py file, add the code that displays the total each time the user rolls the dice.

**Answer**

\*\*Please upload both the file of the object and modified program dice\_roller\_StudentName.py. Please make sure to test your code before uploading.