

# CSE 1321L: Programming and Problem Solving I Lab

## Lab 7

### Methods

#### What students will learn:

- o Writing methods
- o Writing their own methods in different files and importing them
- o Using built-in methods
- o Calling methods

#### Content

- o Overview
- o Lab7A: Rectangle Area and Perimeter Calculator
- o Lab7B: Max and Min of two numbers

#### Overview

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All methods you will write in this class have a "template" that looks like:

```
def <method name>(<parameters>):
```

`<body>` is the name or identifier of the method (which can be any name except reserved keywords), the `<parameters>` list in parentheses (which are the method's inputs), and the `<body>` of the method, the code that will be executed once the method is called.

After a method is defined, instead of writing the same block of code over and over across our entire program, we can simply place that block apart, give it a name, and then call it whenever we need it.

To call a method, simply write its name or identifier followed with a set of parentheses. If the method includes parameters, place the value(s) inside the parentheses.

You may have noticed that we have used two different words to describe a method's input:

```
# prints the full name but returns None
```

```
def print_name():  
    print("John")
```

```
# returns a string but prints nothing
```

```
def return_name():  
    return "John"
```

Methods can also feature the return keyword without returning a value. This is because **the return** **signaling that the method is done executing**. As soon as the code being executed reaches a return, any code below that return will not be executed:

```
def print_name():  
    print("John")  
    return  
    print("John")
```

Finally, you may have noticed that Python already comes with some methods for you to use out of the box such as `print()` , `input()` , and `len()` . However, it is also possible for you to use methods

## Lab7A: Rectangle Area and Perimeter Calculator

This program will calculate the area and perimeter of a rectangle by asking the user for the width and height value of the rectangle. The program should validate the rectangle input by checking if the sum of the width and height is greater than 30.

### Requirements:

- o For this program, you **must implement and use** the specified methods, or it will not be graded.
- o Design and implement a program that implements the following methods:
  - Method `isValid` which takes in two values: width and height, and returns True if the sum of width and height is greater than 30, otherwise, return False.  
`isValid(width, height):`
  - Method `area` which takes in two values: width and height, and calculates and returns the area of the rectangle.  
`area(width, height):`
  - Method `perimeter` which takes in two values: width and height, and calculates and returns the perimeter of the rectangle.  
`perimeter(width, height):`
- o The user should be able to input fractional values for width and height.
- o Before calculating and outputting the area and perimeter, the program should check if the width and height values form a valid rectangle.
- o Print "This is not a valid rectangle." if the width and height are not for a valid rectangle. otherwise

## Lab7B: Max and Min of two numbers

This simple program will ask the user for two numbers, then the program should output which number is the lowest of the two, which number is the largest of the two, and the average of both numbers.

### Requirements:

- o For this program, you **must implement and use** the specified methods, or it will not be graded.
- o Implement two python files, one called **MyMath** which will contain the methods and **Lab7B.py** will have the main logic and implementation of the program.
- o Inside of **MyMath.py**, write the following methods:
  -

- o Programs must be saved in files with the correct file name:
  - Lab6A.py
  - Lab6B.py