

# Assignment - Functions

## 1. Basic Functions

1. Create a function `area_circle` which calculates area of a circle.
  - Inputs: radius (default value = 1)
  - Returns: area of circle
2. Create a function `area_rectangle` which calculates area of a rectangle.
  - Inputs: width, height
  - Returns: area of rectangle
3. Create a main function which uses above two functions
  - Ask user to input radius
  - Call `area_circle` function to calculate and print result
  - Ask user to input width and height
  - Call `area_rectangle` using named arguments and print result
4. Add appropriate docstrings to the module and function

### Sample output:

```
Radius of circle: 10
Area of circle: 314.159
Width of rectangle: 10
Height of rectangle: 20
Area of rectangle: 200
```

## 2. Pass Argument by Reference

1. Create a list X with odd numbers between 1 and 9
2. Create another list Y with even numbers between 10 and 2 (reverse order)
3. Create a function which takes in both list
  - Update items in X with sum of item in both lists, i.e.  $x[0] = x[0] + y[0]$
4. Print X value outside function

### Sample output:

```
[1, 3, 5, 7, 9]
[10, 8, 6, 4, 2]
[11, 11, 11, 11, 11]
```

## 3. Lambda Functions

1. Generate 10 random numbers between 1 and 20

```
import random
list1 = random.sample(range(1,20),10)
```
2. Filter them into odd number sub list and even number sub list using `filter()` and lambda functions
3. Find multiplication of all items in each sub list using `reduce()` and lambda function

### Sample output:

```
[4, 11, 13, 19, 5, 10, 14, 9, 17, 2]
[4, 10, 14, 2]
[11, 13, 19, 5, 9, 17]
1120 2078505
```