COMP1891- Week 1 Tutorial/Lab

Task sheet

The aim of this tutorial is to familiarise with the development environment (Notebook in Goole Colab /Jupyter Notebook) that will be utilised in the subsequent weeks for programming and executing the Python code.

Task 1:
Using the Notebook, execute the following expressions. Which ones, if any, produce a runtime error?

```
1. 10 / 3 + 7
2. 10 // 3 + 7
3. 10 / (3 + 7)
4. 10 / 3 - 3
5. 10 / (3 - 3)
6. 10 // (3 - 3)
```

Task 2:
Create the variables `x = 5` and `y = 7`, then determine what each of the following statements displays:

```
1. print('x =', x)
2. print('Value of', x, '+', x, 'is', (x + x))
3. print('x =')
4. print((x + y), '=', (y + x))
```

Task 3:
Sarah wants to distribute 38 pens among her 4 friends. All friends should receive an equal amount of pens. Write a script that can determine if this is possible.

Task 4:
Add comments or markdown cell in the Notebook to explain each line of code below. What is the output of this code?

```
total = 0
grade_counter = 0
grades = [98, 76, 71, 87, 83, 90, 57, 79, 82, 94]

for grade in grades:
      total += grade
      grade_counter += 1
```

```
average = total / grade_counter
print(f'Class average is {average}')
```

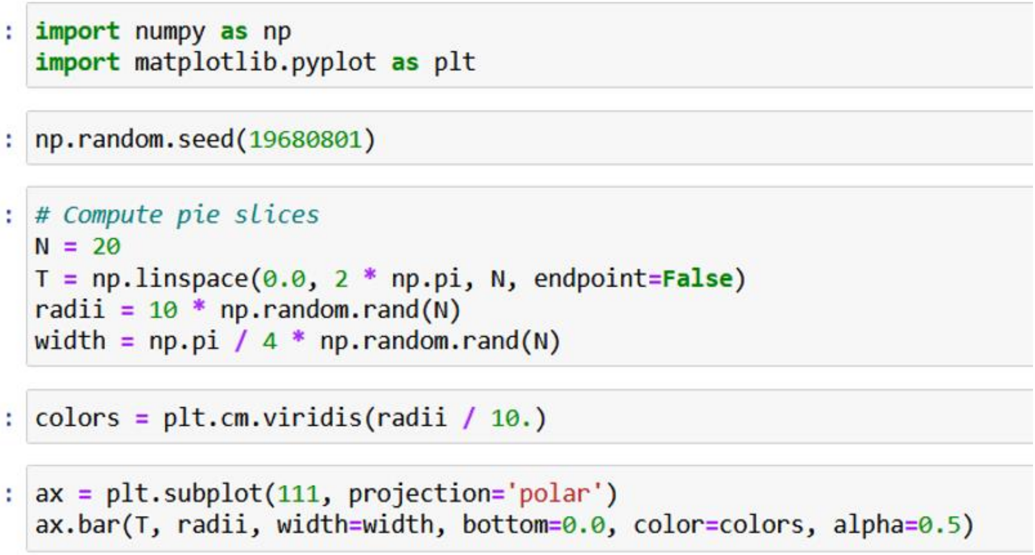
Task 5:
In task 4 import *statistics* module and calculate the *mean*, *median* and *mode* of the grades.
Hint: mean is a method in statistics module that can be called using the period (.) operator.

Task 6:
What is the output of the following code if the inputs for value1, value2, value3 in function call to `maximum` function are provided as

1. 12, 27, 36
2. 12.3, 45.6, 9.7
3. yellow', 'red', 'orange'

```
def maximum(value1, value2, value3):
      """Return the maximum of three values."""
      max_value = value1
      if value2 > max_value:
            max_value = value2
      if value3 > max_value:
            max_value = value3
      return max_value
```

Task 7:
For the look and feel of Python libraries' functionality, write and execute the code below. Your output should be a pie chart. Experiment with different *seed* values.



```
import numpy as np
import matplotlib.pyplot as plt
```

```
np.random.seed(19680801)
```

```
# Compute pie slices
N = 20
T = np.linspace(0.0, 2 * np.pi, N, endpoint=False)
radii = 10 * np.random.rand(N)
width = np.pi / 4 * np.random.rand(N)
```

```
colors = plt.cm.viridis(radii / 10.)
```

```
ax = plt.subplot(111, projection='polar')
ax.bar(T, radii, width=width, bottom=0.0, color=colors, alpha=0.5)
```

Task 8:
Search and experiment with different types of Markdown settings in the Notebook for better look and feel of the text cells.