Python For ML Assignment 1

100 marks Deadline: 17th October, 11:59 PM
90 marks Deadline: 18th October, 11:59 PM

Submission instructions :

1. First of all, watch the assignment instruction video very carefully
2. Create a Google Collaboratory File in your google drive, write all of the answers of the questions in that single .ipynb (colab) file or if you want you can use our Answer Template https://colab.research.google.com/drive/1qiuvOAARbw8eXxqeIuQev0WHBgRnyHE9?usp=sharing
3. For each question create a **Text cell** with the question number and then a **Code cell** containing the solution.
4. Print or return sample outputs shown in the question so graders can verify results easily.
5. Share the colab file in '**Anyone with the link**' & '**Editor**' Mode , copy the link and just submit that link

---

Question : 1	**20 Marks**

Using `filter()` and `lambda`, extract even numbers from a given list.

Input Format:
Integers separated by space.

Output Format:
List of even integers.

Example:

```
Input: 5 6 7 8 9 10
Output: [6, 8, 10]
```

Question : 2	**20 Marks**

Write a function `safe_divide(a,b)` that performs `a/b` and handles division by zero using `try-except`.
Print `"Division by zero"` if `b = 0`.

Input Format:
Two integers `a b`.

Output Format:
Result or error message.

Example:

```
Input: 10 0
Output: Division by zero
```

Question : 3	20 Marks

Create a base class Shape with a method `area()` that returns 0.
Create subclasses:

- `Rectangle(w,h)` → area = w × h
- `Circle(r)` → area = π × r²

Read shape type and parameters, then print area (rounded to 2 decimals).

Input Format 1:

```
Rectangle 5 10
```

Output Format 1:

```
Area: 50.00
```

Input Format 2:

```
Circle 7
```

Output Format 2:

```
Area: 153.94
```

Question : 4	20 Marks

Find and print the **longest word** in a given sentence (if tie, print first one).

Input Format:
One line string

Output Format:
Longest word

Example:

```
Input: Python programming is enjoyable
Output: programming
```

Question : 5	20 Marks

A number is called *strong* if the sum of the factorial of its digits equals the number itself.
Example: `145 = 1! + 4! + 5!`

Input Format:
Single integer

Output Format:
`"Strong Number"` or `"Not Strong Number"`

Example:

```
Input: 145
Output: Strong Number
```