Week 2- Assignment: Control Statements, Loops, Function

Section 1: Control Statements (if-elif-else)

Task:

- Declare a variable num and check if it is:
- Positive, Negative, or Zero.
- Declare a variable year and check if it is a **leap year**.

Section 2: Loops (for, while, range)

Task:

- Use the range to print numbers from **1 to 19**.
- Use a **for loop** to iterate through a list and print its elements.
- Use a **while loop** to print even numbers from **2 to 20**.
- Use a loop with a break to stop the iteration when a number equals
- Use a loop with continue to **skip** printing the number **3** in a sequence.

- Find the second highest number in a list
- Sort the list of numbers in ascending order; don’t use an inbuilt function
- Sort a list containing student names in descending order; don’t use an inbuilt function

Section 3: Exception Handling (try-except-finally)

Task:

- Write a program that **divides two numbers** and handles the following exceptions:
    - ZeroDivisionError
    - ValueError
    - Add a finally block that prints "Execution Complete".

Section 4: Functions

Task:

- Write a function **calculate_area** that takes **length** and **width** as arguments and returns the **area of a rectangle**.

- Write a function **is_prime** that checks if a number is **prime**.
- Write a function **factorial** that calculates the **factorial** of a number using **recursion**.
- Write a function **greet** that takes a name as an argument and prints a greeting. If no name is given, it should default to "Guest".
- Write a function **count_vowels** that counts and returns the number of vowels in a given string

Section 5: Lambda Functions

Task:

- Write a lambda function to:
    - Find the square of a number.
    - Add two numbers.
    - Return the maximum of two numbers.
- Use the map() function with a lambda function to square all elements in a list.
- Use the filter() function with a lambda function to filter **even numbers** from a list.

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Submission Guidelines:

- Write your answers in a Jupyter Notebook.
- Add a Cover page on it using Markdown
- Describe each section before writing code. For example, in the function section, write about function
- Convert the Notebook to PDF and Upload it to GAP