

Homework Assignment: Mastering Loops in Python

Objective: The main objective of this assignment is to familiarize students with the use of `for` and `while` loops in Python, emphasizing their role in handling repetitive tasks and iterations.

Instructions:

Problem 1: For Loops

1. Write a Python script that uses a `for` loop to print the squares of numbers from 1 to 5. The output should resemble:

```
...  
The square of 1 is 1  
The square of 2 is 4  
The square of 3 is 9  
The square of 4 is 16  
The square of 5 is 25  
...
```

2. Extend the script to calculate and print the sum of these squared numbers.

Problem 2: While Loops

3. Create a program that uses a `while` loop to print the Fibonacci sequence up to the 10th term. The Fibonacci sequence starts with 0 and 1, and each subsequent term is the sum of the two preceding terms.

4. Implement a `while` loop to prompt the user for a number. Keep prompting the user until they enter a positive number. Print a message indicating the positive number entered.

Problem 3: Loop Operations

5. Write a Python script that uses a `for` loop to iterate through a list of words. Print each word in uppercase.

6. Create a program that utilizes a `while` loop to calculate the factorial of a given number. The factorial of a non-negative integer is the product of all positive integers less than or equal to that number.

Additional Tips:

- Utilize online resources, Python documentation, and course materials to reinforce your understanding.
- Collaborate with classmates to discuss concepts and problem-solving.
- Seek assistance from your instructor or classmates if you encounter difficulties.