Tutorial 04: Introduction to Loops

Guided Practice:

Simple Questions

Question 1: Printing Numbers with a For Loop
- **Task**: Write a for loop to print numbers from 1 to 5.
- **Objective**: Understand the basic syntax of a for loop.

Question 2: Counting Down with a While Loop
- **Task**: Create a while loop that counts down from 5 to 1.
- **Objective**: Learn how to use a while loop with a decrementing counter.

Question 4: Simple Sum with a While Loop
- **Task:** Use a while loop to sum numbers from 1 to 5.
- **Objective:** Practice accumulating a sum within a while loop.

Moderate Questions

Question 4: Sum of Even Numbers
- **Task:** Write a program that sums all even numbers between 1 and 10 using a for loop.
- **Objective:** Practice using conditionals within a loop to select specific elements.

Question 5: User Input Loop
- **Task:** Create a program that asks the user to enter positive numbers, and stops asking when the user enters a negative number. Then, print the total sum of the entered positive numbers.
- **Objective:** Use a while loop that depends on user input.

Question 6: Multiplication Table
- **Task:** Write a program that prints the multiplication table of a number entered by the user, from 1 to 10.
- **Objective:** Practice using for loops and user input.

Unguided Practice (Try at home)

Question 7: Factorial Calculation
- **Task:** Calculate the factorial of a given number using a while loop. The factorial of a number n is the product of all positive integers less than or equal to n.
- **Objective:** Use a while loop to perform repeated multiplication.

Question 8: Finding Prime Numbers
- **Task:** Use a for loop to print all prime numbers between 2 and 20.
- **Objective:** Combine loops with conditional logic to solve a more complex problem.

Question 8: Number Pattern
- **Task:** Generate the following pattern using nested loops:

Expected output:
1
22
333
4444
55555
- **Objective:** Practice nested loops to create patterns.