**Lab Exercise 1 – Python Generator**

**Objective: In this lab exercise, you will learn about Python generators, how they differ from regular functions, and how to create and use them.**

**Instructions:**

* Part 1: Understanding Generators
* Open a Python IDE or text editor.
* Create a Python function that generates a list of square numbers from 1 to 5. Print the list.

**Part 1: Square Number Generator**

Create a generator function that generates the same list of square numbers. Use the yield keyword to yield each square one at a time.

**Part 2: Lazy Evaluation**

* Implement a generator function that generates an infinite sequence of random numbers between 1 and 100. Use the random module for generating random numbers.

**Part 3: Applying Generators**

* Create a text file named "sample.txt" (you can create this file with some sample text).
* Implement a generator function that yields lines from the text file one by one.
* Use the generator to iterate through the text file and print the first 10 lines.
* Modify the generator to skip lines that start with a specific character, such as "#". Print the first 10 non-comment lines.

**Conclusion:** In this lab exercise, you learned about Python generators, lazy evaluation, and how to create and use them for efficient data processing and manipulation. Generators are a powerful tool for working with large or infinite sequences of data in a memory-efficient manner.