Python Assignment – (Multithreading)

1. Calculate the sum of squares of numbers from 1 to 100 using four threads. Divide the range equally among the threads, and each thread calculates the sum of squares for its range. Finally, combine the results to get the total sum of squares.

2. Create two threads, one printing even numbers and the other printing odd numbers from 1 to 10. Ensure proper synchronization to alternate between even and odd numbers.

3. Implement two threads to print lowercase and uppercase alphabets concurrently from 'a' to 'z' and 'A' to 'Z'.

4. Implement a producer-consumer problem with a limited buffer of size 5. Create two producer threads and two consumer threads. Producers produce items, and consumers consume them. Ensure proper synchronization to avoid buffer overflows or underflows.