

# Assignment 4

Write a program to generate and print Fibonacci series, one thread must generate the series upto number and other thread must print them. Ensure proper synchronization.

```
In [1]: import threading
import time
```

```
In [2]: def generate_fibonacci(n, fib_list, lock, start_time):
    a, b = 0, 1
    for _ in range(n):
        with lock:
            fib_list.append((a, time.time() - start_time))
            a, b = b, a + b
```

```
In [3]: def print_fibonacci(fib_list, lock):
    with lock:
        for entry in fib_list:
            thread_id = threading.current_thread().ident
            current_time = time.strftime("%Y-%m-%d %H:%M:%S", time.localtime())
            fibonacci_value, time_taken = entry
            print(f"{fibonacci_value}, Thread ID {thread_id} at {current_time}: , Tim
```

```
In [4]: def main():
    n = int(input("Enter the number of Fibonacci numbers to generate: "))

    fib_list = []
    lock = threading.Lock()
    start_time = time.time()

    # Create two threads
    generate_thread = threading.Thread(target=generate_fibonacci, args=(n, fib_list,
    print_thread = threading.Thread(target=print_fibonacci, args=(fib_list, lock))

    # Start the threads
    generate_thread.start()
    print_thread.start()

    # Wait for both threads to finish
    generate_thread.join()
    print_thread.join()

if __name__ == "__main__":
    main()
```

Enter the number of Fibonacci numbers to generate: 20

0, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
1, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
1, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
2, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
3, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
5, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
8, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
13, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
21, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
34, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
55, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
89, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
144, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
233, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
377, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
610, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
987, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
1597, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
2584, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds  
4181, Thread ID 1880 at 2024-02-01 16:18:35: , Time Taken: 0.000721 seconds

In [ ]: