



**Sabaragamuwa**  
University of Sri Lanka

## **Faculty of Computing**

**Department of Computing & Information Systems**

### **Assignment 01**

**IS5103 – High Performance Computing**

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Reg. no : 20APC4911

Academic Year : 2020/2021

Degree program : Information Systems

Due Date : 22/07/2024

```
1 package thread;
2 public class SumComparison {
3     public static void main(String[] args) throws InterruptedException {
4         long n = 100_000_000L;
5         int numThreads = 8;
6
7         // Without Threads
8         long startTime = System.currentTimeMillis();
9         long sumWithoutThreads = 0;
10        for (long i = 1; i <= n; i++) {
11            sumWithoutThreads += i;
12        }
13        long endTime = System.currentTimeMillis();
14        long executionTimeWithoutThreads = endTime - startTime;
15
16        System.out.println("Sum without threads: " + sumWithoutThreads);
17        System.out.println("Execution time without threads: " + executionTimeWithoutThreads + " milliseconds");
18
19        // With Threads
20        SumThread[] threads = new SumThread[numThreads];
21        long chunkSize = n / numThreads;
22        startTime = System.currentTimeMillis();
23        for (int i = 0; i < numThreads; i++) {
```

```
PS D:\Semester \V\ISS103 HPC\Assignment01> & 'C:\Program Files\Java\jdk-21\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\pathu\AppData\Roaming\Code\User\workspaceStorage\adaa1b4818a03c7391b92ac8be2518b4\redhat.java\jdt_ws\Assignment01_36c6c131\bin' 'thread.SumComparison'
Sum without threads: 5000000050000000
Execution time without threads: 48 milliseconds
Sum with threads: 5000000050000000
Execution time with threads: 63 milliseconds
PS D:\Semester \V\ISS103 HPC\Assignment01>
```

100,000,000 is much little number, Therefore, 100,000,000,000 is used for this.

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PS D:\Semester \V\ISS103 HPC\Assignment01> & 'C:\Program Files\Java\jdk-21\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\pathu\AppData\Roaming\Code\User\workspaceStorage\adaa1b4818a03c7391b92ac8be2518b4\redhat.java\jdt_ws\Assignment01_36c6c131\bin' 'thread.SumComparison'
Sum without threads: 932356074711512064
Execution time without threads: 30809 milliseconds
Sum with threads: 932356074711512064
Execution time with threads: 22487 milliseconds
PS D:\Semester \V\ISS103 HPC\Assignment01>
```