

Homework 2

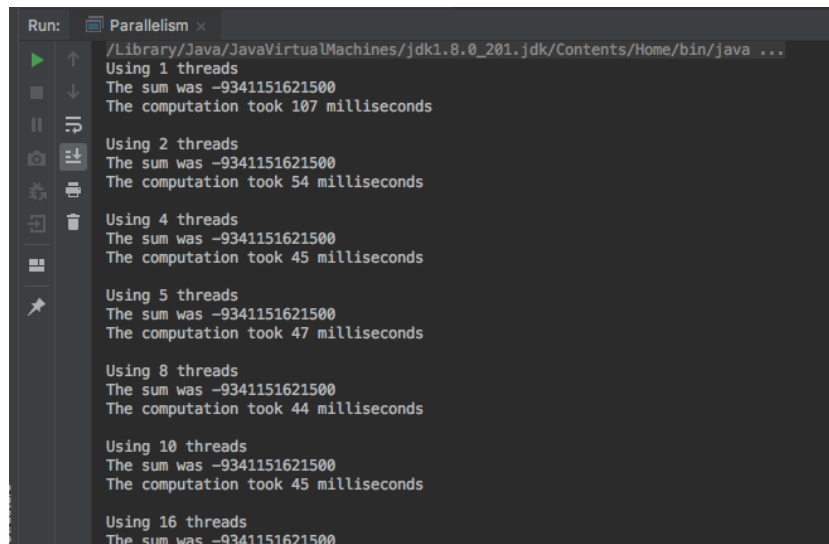
1. Recall in the class, we used two threads to compute the sum of an array to help the efficiency. In this homework, create an array of 250,000,000 **random** elements, use different numbers of threads to compute the sum and compare the run times.

The number of threads changes from 1 to 100. You may skip the numbers that are not factors of 250,000,000 so that the portion of the array processed by each thread can be the same size.

There is a global variable “**sum**” that can be accessed by all the threads. Each of the threads will add their result to “sum”. You need to make sure there is no data race so it will output the correct sum.

Please submit your solution on blackboard in the form of a single java file.

The following picture displays part of my running result.



```
Run: Parallelism x
/Library/Java/JavaVirtualMachines/jdk1.8.0_201.jdk/Contents/Home/bin/java ...
Using 1 threads
The sum was -9341151621500
The computation took 107 milliseconds

Using 2 threads
The sum was -9341151621500
The computation took 54 milliseconds

Using 4 threads
The sum was -9341151621500
The computation took 45 milliseconds

Using 5 threads
The sum was -9341151621500
The computation took 47 milliseconds

Using 8 threads
The sum was -9341151621500
The computation took 44 milliseconds

Using 10 threads
The sum was -9341151621500
The computation took 45 milliseconds

Using 16 threads
The sum was -9341151621500
```