Lebanese American University

School of Arts and Sciences

Department of Computer Science & Mathematics

CSC447: Parallel Programming for Multicore and Cluster Systems

Lab #1: Pthread Pi

Karim El Jammal - 201903088

March 15, 2022

1.
   - Array size 1000:
     - Value of Pi: 3.1416035449
     - Time it took: 0.000000 s
   - Array size 10000:
     - Value of Pi: 3.1415929980
     - Time it took: 0.000000 s
   - Array size 100000:
     - Value of Pi: 3.1415926645
     - Time it took: 0.000000 s
   - Array size 10000000:
     - Value of Pi: 3.1415926542
     - Time it took: 0.042000 s

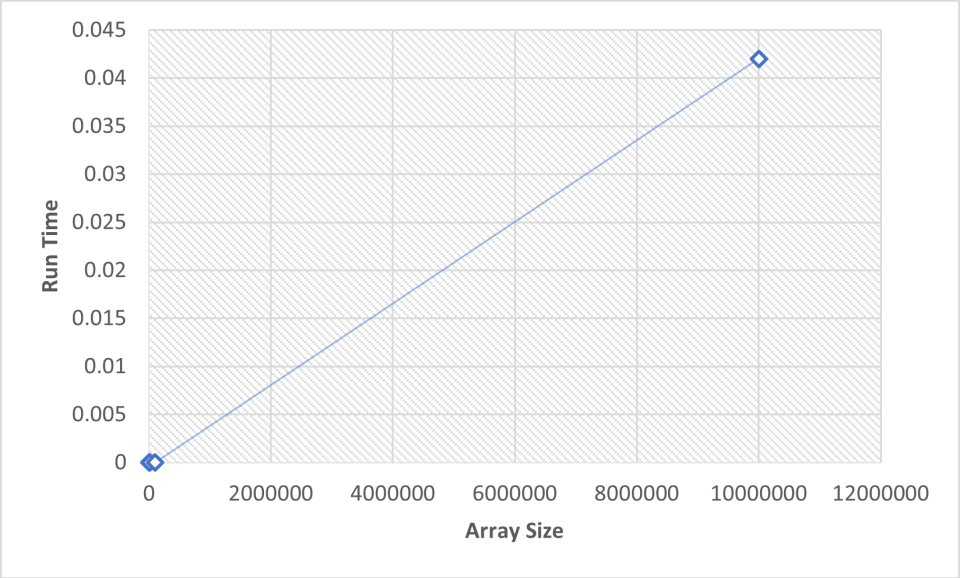

Figure 1: Plot showing the run time versus array size

2. Looking at the obtained results, we can notice that when we increase the input, the difference between the computed and reference Pi decreases. Hence, rationally our margin of error decreases. There is a burden with the running time though; an increase in the input will increase the run-time. However, the increase occurs when we augment the input to 10 million steps. We can tolerate this by giving an input of 100k steps and still aim for approximately a 0 s run-time with an acceptable difference to the reference Pi of -1.09 * 10^{-8}.