Operating System Homework 4 write up

For this homework assignment, I worked with multi-threaded programming. I was able to utilize four cores on my raspberry pi to improve performance on the calculation of 10 moments on 12 million randomly generated numbers.

I did notice a speed up when calculating moments with 4 threads rather than the default 1 thread. Since the threads work in parallel and the work is divided evenly among them, it is able to calculate the moments faster than one thread. The calculation time for one thread calculating 10 moments is 0.492 seconds, while the calculation time for 4 threads is 0.122 seconds.

When I made T to be larger than 4, the speed did not increase. The speed stayed around 0.10-0.13 seconds. This is because when more than one thread shares a core, a bottle neck effect occurs.

When N is made to be too big, there is not enough ram for the program to be allocated. So when compiling I get a relocation truncated to fit error.

This assignment helped me understand how to improve the performance of a program by utilizing the cores of a computer.