HW7: THREADS IN C++

Scientific Computing II
Fundación Universitaria Konrad Lorenz
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- Full score will only be given to correct and completely justified answers. Miraculous, obtuse and unnecessarily complex solutions will receive partial or null score.
- You can ask any question of this assignment during class or through email: juliano.jimenezc@konradlorenz.edu.co.

The goal of this assignment is to write a C++ program that calculates the sum of elements in an array using multiple threads. The program should perform the following steps.

(1) Create a global constant for the array size (for example, **const int** arraySize = 10000).
(2) Initialize the array with random integers between 1 and 100. You can use the random library.
(3) Create a function called calculateSum that takes two arguments: the start index and the end index for a segment of the array.
(4) Insithe calculateSum function, calculate the sum of elements in the specified segment of the array.
(5) In the main function, create a specified number of threads (e.g., 4) and divide the work of calculating the sum among these threads. Each thread should work on a different segment of the array.
(6) Use std :: thread to start and manage the threads.
(7) Ensure proper synchronization to avoid race conditions when updating the sum.
(8) Calculate and print the total sum by combining the partial sums calculated by each thread.