CS311 Assignment 3

Instructions:

- Submit the following items to the class TA:
  - Code file.
    - *RegNo-Code.cpp*
  - A word document containing the **filled table**, as given below and **the answer to 6**.
  - Make sure the subject of your email is as follows:
    - CS311B - Assignment 3 - *RegNo*

Q1. Implement a multi-threaded system that calculates the result for the following formula:

$$Y = \sum_{x=1}^{M} \frac{(x-1)^2}{5}$$

1. Your code must take the following two command line parameters:
   a. N: Number of threads
   b. M: The value of M
2. Your code must also allow single-threaded operation.
3. Run your code on the following values of N and M (as given in the table below), and determine the total time required for execution.
   a. Use the terminal command ***time*** to determine the **real-time** taken.
4. Also calculate the speed-up over single-threaded code observed.
   a. Speed-up = Time taken by *single-threaded* method / Time taken *by multi-threaded* method
5. Fill the following table in your assignment.

Run	N	M	Time (secs)	Speed-Up
A.1	1	100		1.0
A.2	4	100		
B.1	1	5000		1.0
B.2	4	5000		
C.1	1	5000000		1.0
C.2	4	5000000		

6. Explain the discrepancy observed between A.1 and A.2 and compare it to C.1 and C.2. Why is the code not as fast as expected.