UTD-CS Department

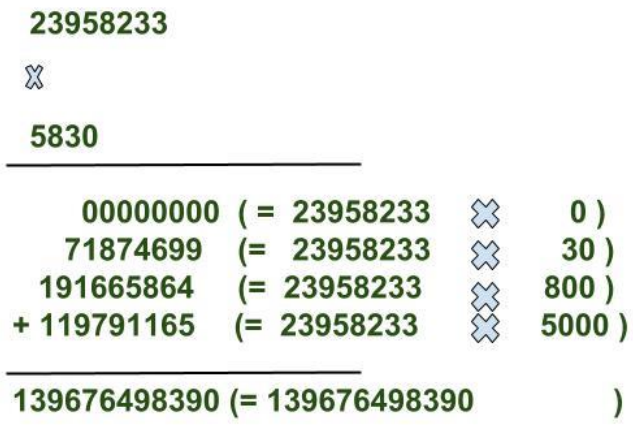
CS 4348 Spring 2021—Project 1

Multiplying two big numbers using multi threading

This is a group project. Form your own group of 2 or 3 members. Use elearning's discussion board to ask for buddies to join your group (of offer to join their group).

We are given two giant numbers n1 and n2 (each say 200 digits). We need to find the product of these two numbers n3 = n1*n2. Implement a solution to this using multithreading.

For example, see the picture below (from : https://www.geeksforgeeks.org/multiply-large-numbers-represented-as-strings/)



Your program will read 3 lines from the input file input.txt: In the first line is the number of threads you will create. (If the first line is 10, then you will create 10 threads. Then you will read in the two numbers in the next two lines (separated by newline character). Each of these two lines is a series of digits that forms one (large) number. Line 2 has the first number and line 3 has the second number. You will read

line 2 digits into an array number1[256] and line 2 digits into array number2[256]. (Note that number1 and number2 are guaranteed to be less than 256 digits long.) Now, find product[512] which is the result of multiplying the two numbers number1 and number2. Note that the product can be a 512 digit number. Number1, Number2 and product are arrays of unsigned short int data types.

We want each thread to share the work as equally as possible. At the end, output the result into a file called output.txt as a series of digits written to the file.

You can look at the code (and use the code) from https://www.geeksforgeeks.org/multiply-large-numbers-represented-as-strings/ as the starting point.

Due date: 3/25/2021 11:55 pm. Turning-in details will be provided after spring break.