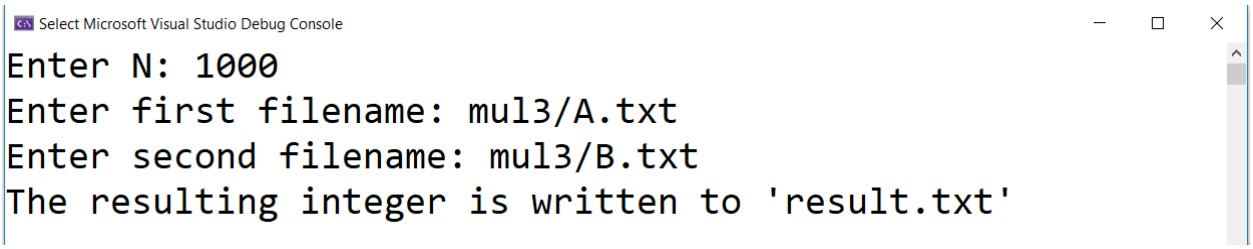
Project1: Long Integer Multiplication

In this project you are asked to implement the divide-and-conquer long integer multiplication algorithm that we discussed in class, whose running time is $O(n^{1.58})$.

Your program will first prompt for N, the number of digits that each integer has. Then the program will prompt for the name of the file where the first integer is stored, then prompt for the name of the file where the second integer is stored. It will then multiply the integers using the divide-and-conquer long integer multiplication algorithm and write the result to a file named "result.txt". Here is a typical interaction between the user and your program:



The first digit in the file represents the least significant digit of the number, and the last digit represents the most significant digit. That means that if A.txt contains "123456", this represents the decimal number 654321 and not 123456. The result must also be written with the least significant digit first.

Notes:

1. You can do the project in groups of two. When you submit the project, write the name, ID and section of each group member at the top of your .cpp file inside comments. You cannot change your project partner later on. So choose your partner wisely ☺
2. The TAs will grade your project by simply comparing your result with the correct result by comparing the two files. If your result is correct, you get the full credit. If your result is false, you get 0.
3. Please do not cheat. **Cheaters will be given to the discipline committee, and will FAIL the class**.