Assignment 1: Sequential warmup

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Question 1

The source code is included in the folder under the name `main.c`. Parameters are defined as C-preprocessor variables and algorithm (i-j, j-i, or tiled) and block size are chosen at the compile time.

Note that in the tiled version, I used four separate for-loops for the edge cases when N is not divisible by the block size, as opposed to having one for-loop and branching using if-statements, which would be slower.

With $N = 18,000$ and using the Intel Compiler (`icc`), the running time for i-j was about 2 seconds. However, with the array being of type double (8 bytes = 64 bits), this means the the memory allocated for either arrays would be

$$8 \times 8 \times 18,000^2 \approx 4.83 \times 2^{32}\text{bits},$$

which necessitates the `-mcmodel=medium` parameter when compiled using Clang.

I wrote a Python script for invoking the compiler with various parameter combinations, collecting the results, and aggregate the results into a CSV file.

Question 2