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// Attached: HW\_11

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// Program: HW\_11

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// Class: CS 1B

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#include<iostream>

#include<cmath>

#include<ctime>

#include<fstream>

#include<thread>

using namespace std;

void writeRoots();

void writeSquares();

int main()

{

bool usingMultiThread = true;

clock\_t start;

clock\_t end;

start = clock();

cout << "main: startup\n";

if(!usingMultiThread)

{

cout << "Waiting for file thread\n";

writeRoots();

writeSquares();

}

else

{

thread firstThread(writeRoots);

thread secondThread(writeSquares);

cout << "Waiting for file thread\n";

firstThread.join();

secondThread.join();

}

end = clock();

cout << "main: done\n";

if(!usingMultiThread)

cout << "Runtime without threads = ";

else

cout << "Runtime with threads = ";

cout << (double)(end-start)/CLOCKS\_PER\_SEC << " seconds.\n\n";

return 0;

}

void writeRoots()

{

ofstream outFile;

outFile.open("roots.txt");

cout << "Writing 1,000,000 square roots to a file\n";

for(int i = 0; i < 1000000; i++)

{

outFile << sqrt(i);

}

outFile.close();

cout << "The roots are ready.\n";

}

void writeSquares()

{

ofstream outFile;

outFile.open("squares.txt");

cout << "Squaring 1,000,000 numbers\n";

for(int i = 0; i < 1000000; i++)

{

outFile << i\*i;

}

outFile.close();

cout << "The squares are ready.\n";

}

// ============== OUTPUT ================

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main: startup

Waiting for file thread

Writing 1,000,000 square roots to a file

The roots are ready.

Squaring 1,000,000 numbers

The squares are ready.

main: done

Runtime without threads = 0.40125 seconds.

main: startup

Waiting for file thread

Writing 1,000,000 square roots to a file

Squaring 1,000,000 numbers

The squares are ready.

The roots are ready.

main: done

Runtime with threads = 0.4981 seconds.

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