

CS 2420 – Written 1
Due – September 5
10 Points

Understanding how work grows with the problem size

For each of the following pieces of code, the number of characters that are printed corresponds to the amount of work that is done.

For each method in Written1.cpp:

- (a) Run the code for various values of $N = 2, 4, 8, 16, 32$.
- (b) Count how many characters are printed for each value of N .
- (c) Using Excel, chart the number of characters as a function of N . The following handout will be helpful: <http://www.cs.usu.edu/~allan/DS/Files/ExcelComplexity.pdf>
- (d) Explain what the relationship is between N and the amount of work. For example, you might say, “The work to perform doit varies directly with N . In other words, as N doubles, so does the work.”

Include your results, your charts, and your explanation of how work varies with the size of the problem.

Notes

Turn in your written homework through Eagle in a .doc, .odt, .pdf format. It will be graded by randomly selecting a subset of problems to evaluate. Not every problem will be graded. **Bring a copy of the answers to class so that we can discuss them.**

Written homework provides an excellent framework for achieving the goals of obtaining a working knowledge of data structures, perfecting programming skills, and developing critical thinking strategies to aid the design and evaluation of algorithms. Since programming has a high overhead in terms of program entry and debugging, all important topics in this course cannot be covered via programming projects. Written homework exercises allow students to learn important material without a high time investment. Although the point value is low, the benefits are great. You can perfect your programming skills without spending hours at the computer and can get feedback on your thinking skills from your study partners. Students that consistently do quality homework, have far superior test scores. Because assignments are done as a group and any questions are discussed in class or during office hours, written solutions to the homework will not be provided.

*Note, these exercises may be done in groups of one, two, or three. If more than one person is involved, list all the names on **one** set of answers. Groups may change throughout the semester. Answers should not be compared with others not in your group. You will learn much more by working in a group than you will learn working by yourself.*