

Computer Science 495 - Homework 5: Thinking Critically about a Programming Problem

Due: Wednesday, April 25. You should submit your work to me in my office: VH2166.

- 3 points: Submission shows mastery of all phases of the critical thinking process, is neat and tidy and contains no spelling or grammar errors.
- 2 points: Submission shows a better-than-emerging understanding of all phases of the critical thinking process, but does not display a mastery of all areas; or submission is not neat and tidy; or submission contains a single spelling or grammar error.
- 0 points: Submission displays only an emerging understanding of any area; or submission contains more than one spelling or grammar errors

For this homework assignment, I want you to think critically about a programming problem. Choose a significant programming project that you have completed during your college career **or** are in the process of completing. (Your capstone might be a good choice for those of you doing research.)

Then, write a short (400 - 600 words) paper about the process you went through when you solved the programming problem. The purpose of this homework is to get you to think about *the problem-solving process*, not the problem that you solved or are currently trying to solve.

Divide your paper into four sections corresponding to the first four steps in the critical thinking framework:

1. Formulate
2. Research
3. Analyze
4. Conclude

The paper itself as a whole will demonstrate your skill at step five - Communicating. Use the critical thinking framework to guide you as you write your paper¹.

Note that this paper is an *analysis of your work on the project*, not an analysis of the project itself. The next page can serve as a guideline for you.

¹ If you are still in the process of completing the project you are writing about, mark any section of the paper that you are unable to complete with the notation "This section is speculative." and write that section *as if* that phase of the project is done.

An Analysis of How I Solved the Problem of Concurrently Sorting a Fark

By
Saphie Space

The problem I was confronted with was how to concurrently sort a data structure known in computer science as a "Fark". The key difficulty of this task was not determining how to sort a fark; techniques to do just that are well known in computer science. Instead, I faced the challenge of concurrent sorting ...²

When I sat down to tackle the issue, the first thing that I considered was: which sorting algorithms can be adapted to run concurrently. I considered the following sorting algorithms: bubble sort, selection sort, quik sort, ...

Several people have worked on fark sorting, but little work has been done on the concurrent processing of a fark. Some of the most influential work is ...

I decided to adapt the bubble sort to solve the problem because ...³

My implementation was done in the Octopus programming language with the optional Curried package library. I used the "WiNe" integrated development environment. I was led to conclude that Curried Octopus in WiNe was the best choice by ...⁴

In conclusion, I believe that I could have selected a more elegant (or at least, more efficient) sorting algorithm to implement concurrent sorting for the fark problem. I was led to this conclusion because ...⁵

² Formulating the Issue

³ Considering the Context

⁴ Analyzing and/or assessing the evidence

⁵ Assessing the conclusion