Proposing a Capstone Project

A capstone project is a project done at the culmination of a college career. The point of the capstone is to go beyond what has been done in any single computer science course, demonstrating both what the student has learned from the curriculum and how they can learn *beyond* the computer science curriculum.

This document addresses how to write a proposal for a capstone project. The capstone proposal is expected to go through several drafts as it will, in the end, serve as a contract between the student and faculty: it documents an agreement on what the student and faculty member must do for the project to succeed. It documents what *done* looks like.

The proposal is an essay describing the project, why it rises to the level of being a capstone project, and how previous coursework has prepared the student to complete the project.

An *essay* has an introduction, a body, and a conclusion. The introduction to the proposal gives a synopsis of the project: how would you describe the project in two sentences. This is where you gloss over details that are not important to the meat of the project. The introduction also has the *thesis statement* of the whole essay. The thesis is, most likely, "This is a great capstone project for *student-name*." Flesh this out to make it unique.

The body of the essay supports the thesis. This begins with a more detailed description of the project. What are the deliverables of the project? What are the interesting questions to be answered by the project? What elements are less interesting (the solved parts of the problem) and how will they be addressed (perhaps with off-the-shelf solutions).

Follow the project description with a discussion of what makes this a capstone to the computer science curriculum: how does it bring together previous courses (and other disciplines)? How does it extend what the student learned?

Finally, in support of the proposal, how do you propose to complete it? Convince the reader that you are ready to take on the project.

The conclusion brings all this full circle, closing the loop by summarizing the evidence given and showing how it supports the thesis.

In addition to the proposal there are two other documents: a timeline and a rubric.

The timeline is a schedule for the project. It is not a strict schedule but it proposes how long various parts of the project will take. Of particular importance in the timeline is how much time (how often and for how long) you intend to spend with the faculty member. How often will you make progress reports? How will progress be measured?

The rubric is a grading guide for the project. It is a multi-dimensional evaluation guide. The exact dimensions are up to you but they might include: code quality, depth of understanding, clarity of presentation, scalablity of the solution. Choose four to six dimensions that you feel reflect what you intend to learn.

Then, along each dimension, describe what a 4.0, 3.0, 2.0, and 1.0 performance would look like. Remember that this is a *final* project in your college career and should reflect your best work. Don't sell yourself short by aiming too low.

The rubric is the grading criteria for your project and when finalized provides you with a description of what the project will look like when it is finished. This is important for you (to know when to stop working) and the faculty member (to know when to stop bugging you).