

Organizing a Computational Project

Thomas Kennedy

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Abstract

All of us have at one point been faced with a seemingly overwhelming computational assignment. Having received the assignment most of us hastily begin without any plan. After having spent a substantial amount of time on the project two outcomes are possible: the assignment is completed on time or the deadline passes and the assignment remains uncompleted.

1 The First Steps

1.1 Think

The first step is to think. Turn off the computer, clear your workspace and think. Without taking the time to analyse the problem, one will certainly find himself or herself stuck and not making any progress. No problem can be solved with time alone, one must have a plan regarding how the problem will be approached.

1.2 Evaluate The Project

To begin the project the following questions must be answered:

- What must be done?
- What information am I given?
- What data must I generate?

After the preceding questions have provided an orientation of where to begin, we begin designing the program.

2 Designing The Program

Now that an approach to the problem has been determined we may begin an outline of how the program will operate. This outline can be as sparse or as detailed as required. I find the three most useful categories to be:

1. Input
2. Simulation
3. Output

2.1 Input and Initialization

The first step is to identify what data will be input into the program. For most projects a data file is a necessity. Next we must identify how the data will be stored within the program.

2.2 Simulation

The simulation specifies what calculations the program will perform and how these calculations will be conducted. For large projects division of this section into smaller subsections or modules is required. The more time spent designing this section the better.

2.3 Output

Data output is specified in this section. There are two basic questions one must ask in this section:

- What do I need to output?
- How should I format this output?

3 Conclusion

Preparation is essential before beginning any computational project. Without spending the time to design the program not only do we increase the difficulty of the task at hand, but we decrease the chance the project will be completed on time.