

APPLIED MATHEMATICS HONOURS IV, 2009

Computational Projects in Applied Mathematics

Guidelines for writing up projects

The project write-ups are intended to be coherent, report-style documents giving a connected account of how you solved the given problem, the results you found, and the overall conclusions that can be drawn from them. The best mental picture to form of what you are required to do is to imagine that you are a member of some organisation and that some other member, or some external agency, has requested a solution to the problem. Your job is to solve it and report back in writing. The person or agency setting the problem can be assumed to know enough about the problem to have posed it in the first place, and to be reasonably technically literate without necessarily having the exact expertise or time to solve the problem without you. You should ask yourself how you can express your methods and conclusions as clearly as possible, and try to imagine what kind of information such a recipient of your report is likely to need.

The project report should be an integrated document, with an introduction and conclusion, explanation of the problem treated and the methods used, following the approach presented in the project sheet. It should include written description of results and appropriate interpretation. Output data and plots from the computer should be used to underpin and justify the main framework of the text – it is not adequate just to present printout and plots without any explanation. It is not necessary to repeat extensive sections of the project descriptions. Your own description should relate clearly to the points described there, but the reader will have the project sheet on hand. The lectures will provide supplementary material on the techniques to be used and you may justifiably feel that some of this should be included in the write-up; please though try to make an intelligent selection of what fits in with your narrative, rather than writing the whole lot down.

A good length for a report is of the order of 8-15 pages, depending on how much computer output you want to include. This is only a guide, and the exact amount will depend both on the project itself and on your own personal style.

As a general framework for writing the reports, something like the following is suggested:

1. *Introduction.* This need only be a few sentences, since the project sheet itself largely fills this role.
2. *Description of program development.* Describe how you went about writing your program, and what particular problems you had to overcome on the way. The extent of this section will be very dependent on the type of project and what proportion of the program has been supplied. This may also be the appropriate place to describe any tests you performed.
3. *Answers to individual topics specified in the project.* This is where you should detail your responses to the individual sections of the project. Answer the questions as best you can, as coherently and clearly as possible (remember that imaginary reader again). Include graphical or other output at this stage in such a way as to underline your argument or supply what is requested in the project sheet.
4. *Conclusion.* It is very important to summarise in perhaps half a page what you have learned overall by doing the project, and to discuss the main scientific and practical results from your investigation.