AMSC/CMSC 660   Quiz 10   ,   Fall 2002

1. (10) List 5 important things to include in documentation for a Matlab function that someone else needs to read or use.

Answer:

- purpose of code *Why: this is certainly the first thing a user wants to know!*

- Name of author *Why: someone to whom bugs can be reported and questions asked. (Mathworks is the author of the Matlab codes.)*

- date of original code, and list of later modifications *Why: it gives information such as whether the code is likely to run under the current computer environment and whether it might include the latest advances.*

- description of each input parameter *Why: so that a user knows what information needs to be provided and in what format.*

- description of each output parameter *Why: so that a user knows what information will be yielded.*

- brief description of the method, and references. *Why: to help a user decide whether the method fits his/her needs.*

2. (10) Explain how you would decide whether to choose the Nelder-Meade algorithm, the quasi-Newton algorithm, or the Newton algorithm for minimizing a function of many variables.
Answer: Here is how I would make the decision:

- If the function is not differentiable, use Nelder-Meade.

- If 2nd derivatives (Hessians) are cheaply available and there is enough storage for them, use Newton.

- Otherwise, use quasi-Newton (with a finite-difference 1st derivative if necessary).