Computer Science/Mathematics 555
Assignment Two
Due 3 October 2003

Do problems 3.1 and 3.9 from the end of Chapter 3 in MATLAB please. To do these problem, you need to pass a function as an argument. In MATLAB that is done as follows. Suppose you have the Rosenbrock function in a file

function fx=rosenbrock(x)
its gradient in

function gradfx=grad_rose(x)
and its Hessian in

function Hfx=Hess_rose(x).

Let Line_search be one of your minimization functions.

function xstar= Line_search(f,gradf,Hess,x0,tol)
When calling your function you would say

\[ f=@\text{rosenbrock} ; \]
\[ \text{gradf}@\text{grad}_\text{rose} ; \]
\[ \text{Hess}@\text{Hess}_\text{rose} ; \]
\[ x\text{start}= \text{Line\_search(f,gradf,Hess}.x0,1e-5) ; \]

where \( tol \) is the tolerance for \( \| x_{k+1} - x_k \|_2 \).

Inside the function, you evaluate the function, gradient, and Hessian from

\[ \text{fx=feval(f,x)} ; \]
\[ \text{gradfx=feval(gradf,x)} ; \]
\[ \text{Hessfx=feval(Hess,x)} ; \]

Of course, you only need the Hessian for the full blown Newton method.