CSI701 - Adam Cadien
Assignment #3
10/7/09

#Solving the Laplacian

The main() function can be found in gradfield.cpp. Nearly all of the code used in assignment 2 was re-used. As the program grows I have seperated blocks of code in to functions. The Laplacian is calculated based on the boundary values read in from bp.in and bp.out, this is done in the function calc_laplace(flat,**,float*). As described in class, the shape function derivatives are used in a finite element method. The gfortran, lapack function sgesv was used to solve the linear system of equations.

#Results & Plotting

Results are written to two files, the scalar field is written to scl_fld.dat and the vector field is written to vec_fld.dat. These are read in and contour plots are drawn up using the matlab file plot_vec_fields.m. Plotting was done in a similar way to assignment 2. Resulting plots can be found in scl_field_countour_hole.pdf and vec_field_contour_hole.pdf.