

**ME171**  
**Computer-Aided Engineering Design**  
**Spring Term, 2001**

**Homework #4**

**Due: May 10, 2001**

Write a program, preferably in C or C++, to read a data file of 2-D control points ( $x, y$  pairs, one per line) on the range  $-1 < x < 1$  and  $-1 < y < 1$  and plot:

1. the straight lines through the control points,
2. a parametric (Lagrange) polynomial through all the control points,
3. a parametric cubic spline through all the control points.

Your program should produce an output file that can be displayed with the vtk script: `display.vtk` (available on the class Web site). Your program should handle at least ten (10) control points.

You should turn in one page that shows an example output plot of data from your program, and also turn in a print-out of the C or C++ program source itself.

Please copy your executable (with your username as its name) to the directory

`/home/cinyoung/ME171/hw4`

at the ECF. Since we will be testing the executables with our own (different) set of control points, your executable must read its (2-D) input from the file “`in.dat`” and must write its (2-D) output to the file “`out.dat`”.

**Class Web Page:** <http://www.design.caltech.edu/Courses/ME171/>

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