

Blog Entry © Tuesday, May 5, 2026, by James Pate Williams, Jr., Solution of the Laplace Equation on a Rectangle

Reference: "Boundary Value Problems Second Edition (c) 1979 by David L. Powers  
 "Potential in a rectangle" pages 179 to 183

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Rebuild started at 1:25 PM...
1>----- Rebuild All started: Project: Win32LaplaceEquation2DFD,
Configuration: Release x64 -----
1>IterativeSolution.cpp
1>Win32LaplaceEquation2DFD.cpp
1>Generating code
1>Previous IPDB not found, fall back to full compilation.
1>All 205 functions were compiled because no usable IPDB/IOBJ
from previous compilation was found.
1>Finished generating code
1>Win32LaplaceEquation2DFD.vcxproj ->
D:\Win32LaplaceEquation2DFD\x64\Release\Win32LaplaceEquation2DFD
.exe
===== Rebuild All: 1 succeeded, 0 failed, 0 skipped
=====
===== Rebuild completed at 1:25 PM and took 07.700 seconds
=====
    
```

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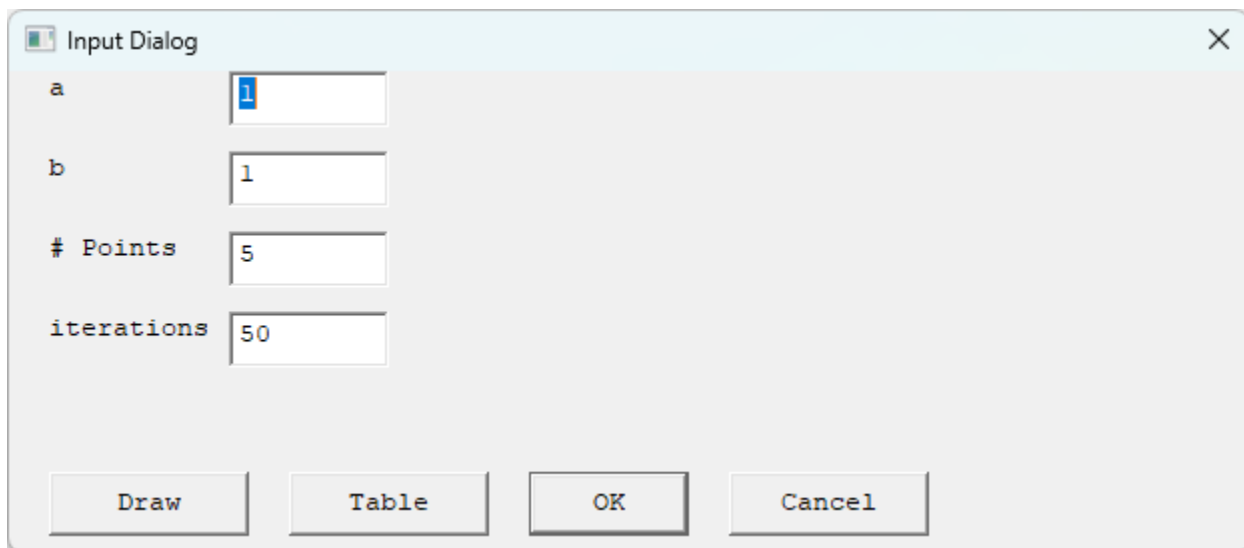
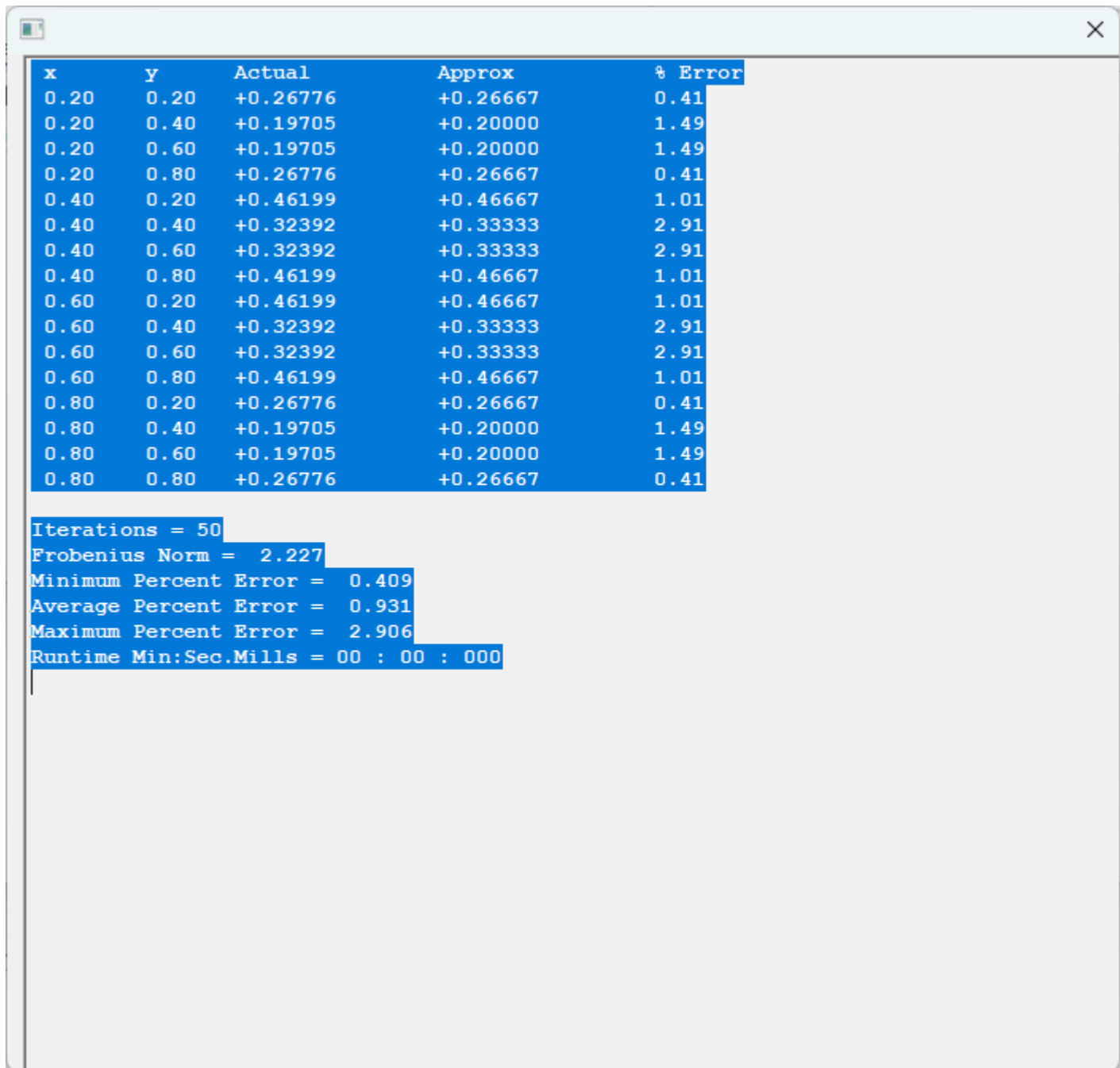


Figure 1 Data Input Dialog



The screenshot shows a software window with a table of data and summary statistics. The table has five columns: x, y, Actual, Approx, and % Error. The data is as follows:

x	y	Actual	Approx	% Error
0.20	0.20	+0.26776	+0.26667	0.41
0.20	0.40	+0.19705	+0.20000	1.49
0.20	0.60	+0.19705	+0.20000	1.49
0.20	0.80	+0.26776	+0.26667	0.41
0.40	0.20	+0.46199	+0.46667	1.01
0.40	0.40	+0.32392	+0.33333	2.91
0.40	0.60	+0.32392	+0.33333	2.91
0.40	0.80	+0.46199	+0.46667	1.01
0.60	0.20	+0.46199	+0.46667	1.01
0.60	0.40	+0.32392	+0.33333	2.91
0.60	0.60	+0.32392	+0.33333	2.91
0.60	0.80	+0.46199	+0.46667	1.01
0.80	0.20	+0.26776	+0.26667	0.41
0.80	0.40	+0.19705	+0.20000	1.49
0.80	0.60	+0.19705	+0.20000	1.49
0.80	0.80	+0.26776	+0.26667	0.41

Below the table, the following summary statistics are displayed:

- Iterations = 50
- Frobenius Norm = 2.227
- Minimum Percent Error = 0.409
- Average Percent Error = 0.931
- Maximum Percent Error = 2.906
- Runtime Min:Sec.Mills = 00 : 00 : 000

Figure 2 Table Generation

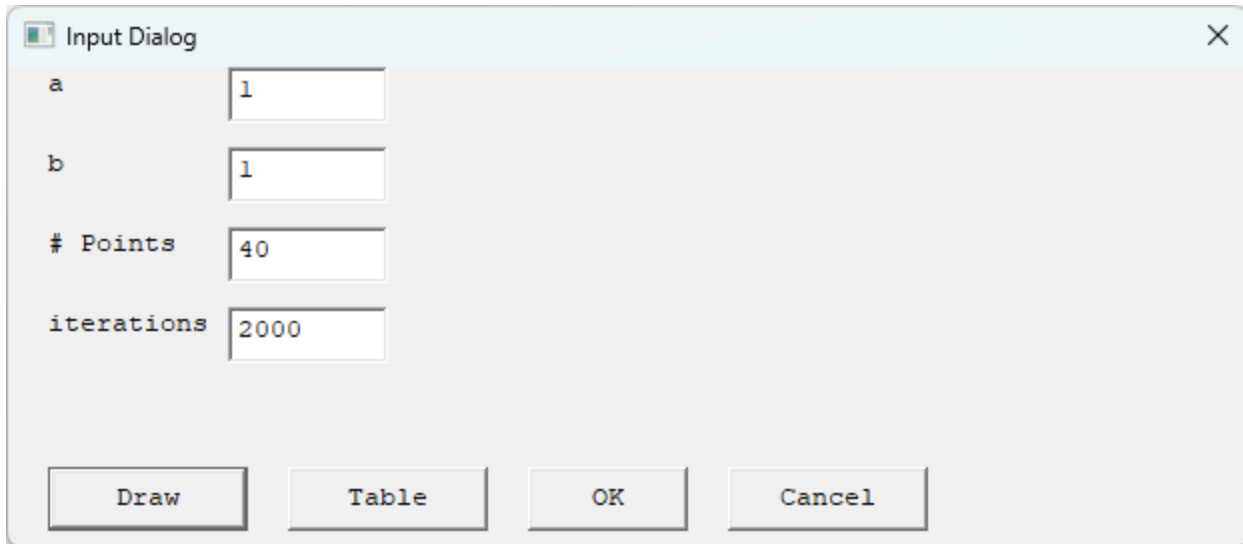


Figure 3 Contour Map Data Input Dialog

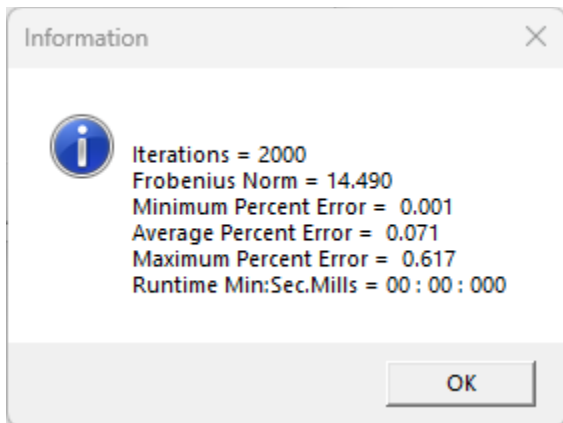


Figure 4 Information Message Box

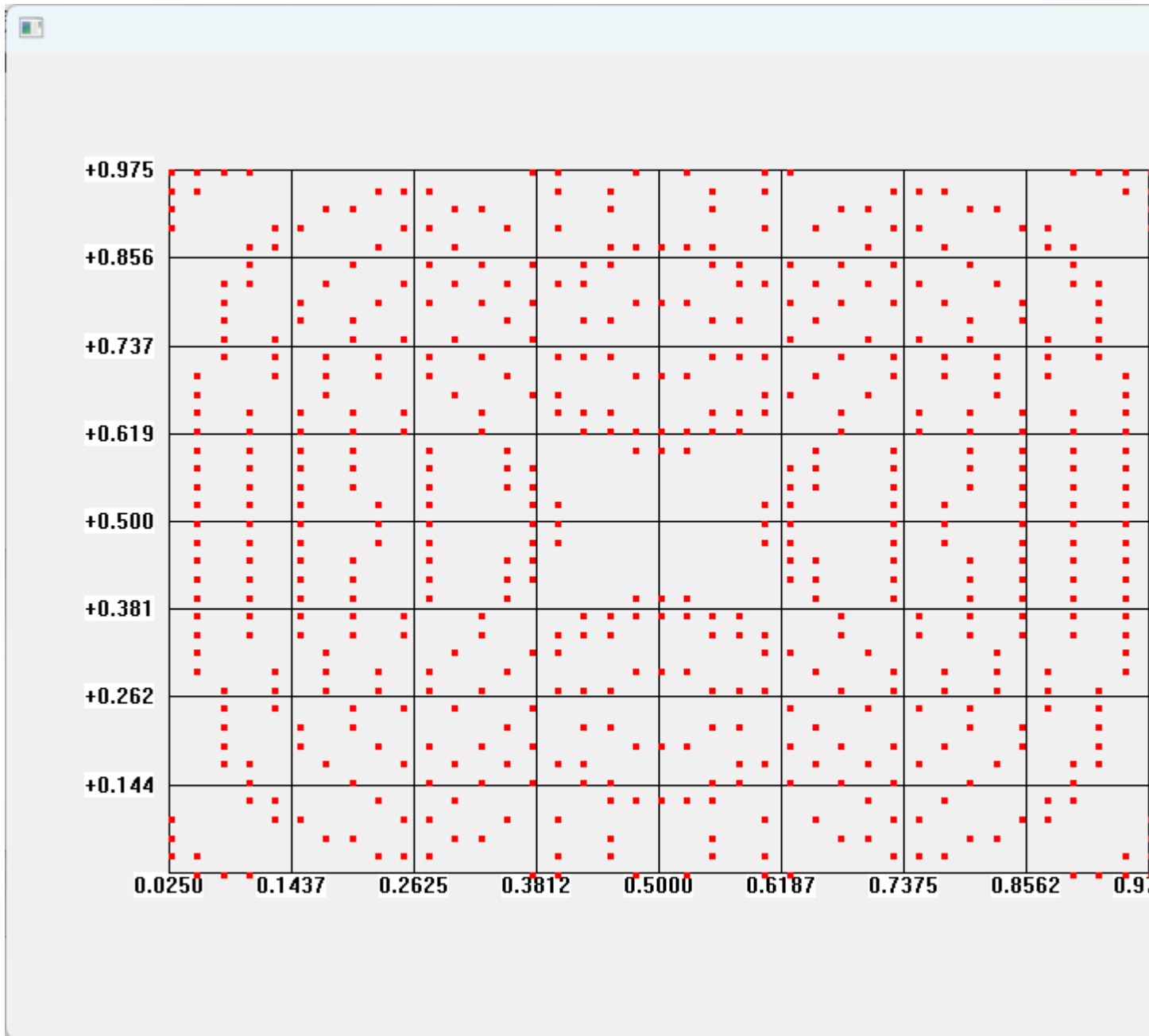


Figure 5 Contour Map