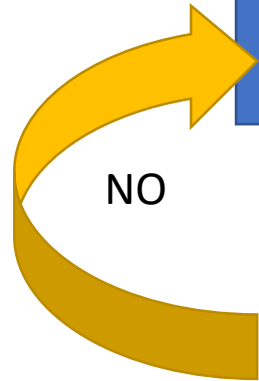


Initialize Field with $V_0(i,j)=0$ except for points defining the boundary conditions. (Subscripts will indicate the code iteration step.)

For all Points in Volume Not on Fixed Boundary, Assign a new value $V_n(i,j) = (1/8) [V_{(n-1)}(i+1,j-1) + V_{(n-1)}(i+1,j) + V_{(n-1)}(i+1,j+1) + V_{(n-1)}(i,j-1) + V_{(n-1)}(i,j+1) + V_{(n-1)}(i,j+1) + V_{(n-1)}(i-1,j-1) + V_{(n-1)}(i-1,j) + V_{(n-1)}(i-1,j+1)]$
(in other words, assign a new value $V_n(i,j) =$ the average of all its two-dimensional neighbors in the previous iteration (n-1)).

Leave Points Defining the Boundary Conditions Unchanged.

Note that the quantities on the RHS of the equation are taken from the PREVIOUS iteration step, so that the LHS gives $V(i,j)$ at computational time-step n computed from the 8 spatial neighbors at iteration step (n-1).



Is $\max_{(i,j)} (|V_n(i,j) - V_{(n-1)}(i,j)|) \leq$ some tolerance for convergence of the solution?

YES

Congratulations. You've found a numerical solution to Laplace's equations for the specified Boundary Conditions. $V_n(i,j)$ is approximately $V(i,j)$ with an uncertainty a few times your tolerance.