

```

program main          ! the main program
integer n,maxiters   ! common data
common /idat/ n,maxiters
read values for n and maxiters (not shown)
call jacobi()
stop
end

subroutine jacobi()   ! implements Jacobi iteration
integer n,maxiters   ! repeat declaration of common
common /idat/ n,maxiters
integer i,j,iters
double precision grid(n,n), new(n,n)
double precision maxdiff,tempdiff
initialize grid and new (see text)

c main loop: update grids maxiters times
do iters = 1,maxiters,2 ! go from 1 to maxiters by 2
  do j = 2,n-1          ! update points in new
    do i = 2,n-1
      new(i,j) = (grid(i-1,j) + grid(i+1,j) +
                  grid(i,j-1) + grid(i,j+1)) * 0.25
    enddo
  enddo
  do j = 2,n-1          ! update points in grid
    do i = 2,n-1
      grid(i,j) = (new(i-1,j) + new(i+1,j) +
                   new(i,j-1) + new(i,j+1)) * 0.25
    enddo
  enddo
enddo

c compute maximum difference
maxdiff = 0.0
do j = 2,n-1
  do i = 2,n-1
    tempdiff = abs(grid(i,j)-new(i,j))
    maxdiff = max(maxdiff,tempdiff)
  enddo
enddo
return
end

```

Figure 12.3 Sequential Jacobi iteration in Fortran.