In physics applications, communication is often only between neighbouring processors. However, iterative methods often require inner products and other global stages such as for the stopping test: all processors need to agree on when to stop iterating.

Your homework is to simulate a program that performs a stopping test without global communications. The structure of the program is

iterate indefinitely:
   get a data item from your neighbour processors
   perform some work
   if every processor tests true on a stopping test,
      stop the iterative process
   otherwise, continue iterating

Write a parallel program that simulates a linear array of processors, so that each processor has two neighbours. Then implement the stopping test so that no global operations are used. Hint: there will be some wasted work.