```
chan up[1:PR](real edge[0:n+1]);
chan down[1:PR](real edge[0:n+1]);
chan diff(real);

process worker[w = 1 to PR] {
  int HEIGHT = n/PR;   # assume PR evenly divides n
  real grid[0:HEIGHT+1,0:n+1], new[0:HEIGHT+1,0:n+1];
  real mydiff = 0.0, otherdiff = 0.0;
  initialize grid and new, including boundaries;
  for [iters = 1 to MAXITERS by 2] {
    # compute new values for my strip
    for [i = 1 to HEIGHT, j = 1 to n]
      new[i,j] = (grid[i-1,j] + grid[i+1,j] +
                  grid[i,j-1] + grid[i,j+1]) * 0.25;
    exchange edges of new -- see text;
    # compute new values again for my strip
    for [i = 1 to HEIGHT, j = 1 to n]
      grid[i,j] = (new[i-1,j] + new[i+1,j] +
                   new[i,j-1] + new[i,j+1]) * 0.25;
    exchange edges of grid -- see text;
  }
  # compute maximum difference for my strip
  for [i = 1 to HEIGHT, j = 1 to n]
    mydiff = max(mydiff, abs(grid[i,j]-new[i,j]));
  if (w > 1)
    send diff(mydiff);
  else       # worker 1 collects differences
    for [i = 1 to w-1] {
      receive diff(otherdiff);
      mydiff = max(mydiff, otherdiff);
    }
  # maximum difference is value of mydiff in worker 1
}
```

Figure 11.4 Jacobi iteration using message passing.

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