**SOR method for solving linear systems**

1. Create an N by N matrix A[][]:
   1. A[i][i] = 4.0, 0 ≤ I ≤ n-1;
   2. A[i][i+1] = -1.0, 0 ≤ I ≤n-2;
   3. A[i+1][i] = -1.0, 0 ≤ I ≤n-2;
   4. Otherwise A[i][j] = 0.0;
2. Create a right hand size  and form a linear system Ax = b.
3. Apparently, the solution of the linear system is: x[i] = 1.0;
4. Implement the SOR method to solve the linear system by using the initial guess: x[i] = 10.0;
5. Let N = 20. Try several w for the relaxation: w = {1.0, 1.1, 1.2, …, 1.8}.
6. Which w is the best? Please print out the numbers of iteration for the w’s.
7. You are encouraged to vary N and find out the best w for each N.