**Conjugate Gradient Method**

1. Generate a random 20X20 matrix B.



1. Generate the coefficient matrix A by:  Then generate the right hand side 



1. Solving the linear system  by using the Conjugate Gradient Method and the SOR with w=1.6. Assume the initial guess 
2. Compare the numbers of iterations required in the SOR method and the conjugate gradient method, assuming . Which method is superior?
3. Use the SSOR method to compute an initial solution and then solve the problem use the conjugate gradient method. Will the computation be sped-up? Remember to include the costs of the SSOR when counting the number of iteration.
4. You can form a team of at most two people.
5. Hand-in the results, including the values of and the comparison results.
6. Due day: two weeks later.