1. (15 points) Exercise 18.1 of textbook.
2. (15 points) Exercise 21.4 of textbook.
3. (15 points) Exercise 21.6 of textbook.
4. (15 points) Exercise 22.1 of textbook.
5. (40 points) Following the code template provided, write a C program implementing Gaussian elimination with no pivoting, partial pivoting, and complete pivoting. Generate several linear systems with random matrices (i.e., use a random number generator to obtain the matrix entries) and right-hand sides chosen so that the solutions are known, and compare the accuracy, residuals, and performance of the three implementations. In addition, devise a (nonrandom) matrix for which complete pivoting is significantly more accurate than partial pivoting.

Submit your program, the plots, and an analysis of your results.