```java
import java.util.Scanner;

public class GaussianElimination {
    public void solve(double[][] A, double[] B) {
        int N = B.length;
        for (int k = 0; k < N; k++) {
            int max = k;
            for (int i = k + 1; i < N; i++)
                if (Math.abs(A[i][k]) > Math.abs(A[max][k]))
                    max = i;

            /** swap row in A matrix **/
            double[] temp = A[k];
            A[k] = A[max];
            A[max] = temp;

            /** swap corresponding values in constants matrix **/
            double t = B[k];
            B[k] = B[max];
            B[max] = t;

            /** pivot within A and B **/
            for (int i = k + 1; i < N; i++) {
                double factor = A[i][k] / A[k][k];
                B[i] -= factor * B[k];
                for (int j = k; j < N; j++)
                    A[i][j] -= factor * A[k][j];
            }
        }
        printRowEchelonForm(A, B);

        /** back substitution **/
        double[] solution = new double[N];
        for (int i = N - 1; i >= 0; i--) {
            double sum = 0.0;
            for (int j = i + 1; j < N; j++)
                sum += A[i][j] * solution[j];
            solution[i] = (B[i] - sum) / A[i][i];
        }
        printSolution(solution);
    }
```

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42
43      public void printRowEchelonForm(double[][] A, double[] B) {
44          int N = B.length;
45          System.out.println("\nRow Echelon form : ");
46          for (int i = 0; i < N; i++) {
47                  for (int j = 0; j < N; j++)
48                      System.out.printf("%.3f ", A[i][j]);
49                  System.out.printf("| %.3f\n", B[i]);
50              }
51              System.out.println();
52      }
53
54      public void printSolution(double[] sol) {
55          int N = sol.length;
56          System.out.println("\nSolution : ");
57          for (int i = 0; i < N; i++)
58              System.out.printf("%.3f ", sol[i]);
59          System.out.println();
60      }
61
62      public static void main (String[] args) {
63          Scanner scan = new Scanner(System.in);
64          System.out.println("Gaussian Elimination Algorithm Test\n");
65          GaussianElimination ge = new GaussianElimination();
66          System.out.println("\nEnter number of variables");
67          int N = scan.nextInt();
68          double[] B = new double[N];
69          double[][] A = new double[N][N];
70
71          System.out.println("\nEnter equations coefficients ");
72          for (int i = 0; i < N; i++)
73              for (int j = 0; j < N; j++)
74                  A[i][j] = scan.nextDouble();
75
76          System.out.println("\nEnter "+ N +" solutions");
77          for (int i = 0; i < N; i++)
78              B[i] = scan.nextDouble();
79
80          ge.solve(A,B);
81      }
82  }
```