Doolittle Factorization

1) Ask the user for a matrix A. Needs to be a squared matrix.
2) Ask the use for vector b and make sure that is the same length as matrix A, and a whole number n.
3) Next, we create 2 more matrices, we call them L and U. Matrices L and U need to have the following characteristics
   a) Have the same size as matrix A
   b) L will have the same elements that are below the diagonal in A but with the opposite sign. The diagonal in L will be the same as A, and all other elements will be 0.
   c) U will have the same elements in A that are above the diagonal with opposite signs, and will have the same elements in the diagonal as A and the rest of the elements will be 0.
4) Time for a cycle
   a) (i) For k = 1 < n, with 1 step increments (k++)
         (1) sum1 = 0
      (ii) For p = 1 < k-1, with 1 step increments (p++)
         (1) sum1 = sum1 + $L_{kp} * U_{kp}$
      (iii) For i = k+1 < n , with 1 step increments (i++)
         (1) sum2 = 0
            (A) For r = 1 < k-1 , with 1 step increments (r++)
         (2) sum2=sum2+$L_{ir} * U_{rk}$
      (iv) $L_{ik} = (a_{kk} - \text{sum2})/U_{kk}$
   b) For j = k+1 < n , with 1 step increments (j++)
      (i) sum3 = 0
         (1) For s = 1 < s-1, with 1 step increments (s++)
            (A) sum3 = sum3 + $L_{ks} * U_{sj}$
            (B) $U_{kj} = (a_{kj} - \text{sum3})$
5) z = progressive replacement (1,b) x = regressive replacement (u,z)
6) Regressive Replacement
   a) Para i = n < 1 , with 1 step increments (i++)
      (i) sum = 0

(1) for $j = i + 1 < n$, with 1 step increments (j++)

(A) $sum = sum + a_{ij} * x_{ij}$

(2) $xi = (a_{in+1} - sum)/a_{ii}$

7) Progressive Replacement

a) Para $i = 1 < n$, with 1 step increments (i++)

(i) $sum = 0$

(1) for $j = i + 1 < n$, with 1 step increments (j++)

(A) $sum = sum + a_{ij} * x_{ij}$

(2) $xi = (a_{in+1} - sum)/a_{ii}$