LU-DECOMPOSITION(A, n)

```
1   let L and U be new n × n matrices
2   initialize U with 0s below the diagonal
3   initialize L with 1s on the diagonal and 0s above the diagonal
4   for k = 1 to n
5       u_kk = a_kk
6       for i = k + 1 to n
7           l_ik = a_ik / a_kk              // a_ik holds v_i
8           u_ki = a_ki                     // a_ki holds w_i
9       for i = k + 1 to n                  // compute the Schur complement ...
10          for j = k + 1 to n
11              a_ij = a_ij − l_ik u_kj     // ... and store it back into A
12  return L and U
```