In [1]:

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#Question 1:
#Use LU decomposition, both Crout’s and Doolittle’s method, to solve for xi’s and hence
compare your answers. [2+2]

# x1 + x3 + 2x4 = 6
# x2 – 2x3 = –3
# x1 + 2x2 – x3 = –2
# 2x1 + x2 + 3x3 – 2x4 = 0


from My_Lib import *

#calling the matrix in readable form
list_C=[]
with open("matrix1.txt") as matC:
    for k in matC:
        list_C.append(list(map(float, k.split())))



#Printing the solutions of crout
x1 = linear_solver_crout(list_C)
if x1!=None:
    print("x_1 =", x1[0])
    print("x_2 =", x1[1])
    print("x_3 =", x1[2])
    print("x_4 =", x1[3])

#Printing the solutions of do little
x2 = linear_solver_do_little(list_C)
if x2!=None:
    print("x_1 =", x2[0])
    print("x_2 =", x2[1])
    print("x_3 =", x2[2])
    print("x_4 =", x2[3])

if x1 == x2:
    print("\nHence, Solutions for both methods matched! ")
else:
    print("No they didn't match!")
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The solutions of the system of linear equations by Crout's method is
x_1 = 1.0
x_2 = -1.0
x_3 = 1.0
x_4 = 2.0
The solutions of the system of linear equations by Dolittle's method is
x_1 = 1.0
x_2 = -1.0
x_3 = 1.0
x_4 = 2.0

Hence, Solutions for both methods matched!
```