

```
1  # EXCERCISE 3
2
3  from scipy import linalg as sl
4  import numpy as np
5
6  # Define the matrix A
7  A = np.zeros((4,4))
8  for i in range(np.shape(A)[0]):
9      for j in range(np.shape(A)[0]):
10         if i == j:
11             A[i][j] = 2
12         if i == (j-1):
13             A[i][j] = 1
14         if j == (i-1):
15             A[i][j] = 1
16
17  # get the L and U
18  P = sl.lu(A)
19  U = P[2]
20  L = P[1]
21  P = P[0]
22
23  # Define identity matrix
24  b = np.identity(np.shape(L)[0])
25  # Solve  $L*d = b$ 
26  d = sl.solve_triangular(L,b,lower=True)
27
28  # Solve  $U*x = d$ 
29  Ainv = sl.solve_triangular(U,d)
30  print Ainv
31
```