

Started on Saturday, 7 December 2024, 8:20 PM

State Finished

Completed on Saturday, 7 December 2024, 8:46 PM

Time taken 26 mins

Grade **100.00** out of 100.00

Question 1

Correct

Mark 100.00 out of 100.00

Use Gaussian elimination without partial pivoting to solve a matrix.

Hint: First value is the number of unknowns, remaining values are the elements of the matrix.

For example:

Input	Result
3	X0 = 53.35 X1 = -8.88 X2 = -4.40
1	
2	
4	
18	
2	
12	
-2	
9	
5	
26	
5	
14	

Answer: (penalty regime: 0 %)

Reset answer

```

1  '''Program to solve a matrix using Gaussian elimination without partial pivoting.
2  Developed by: JAIYANTAN S
3  RegisterNumber: 24900025
4  '''
5  import numpy as np
6  import sys
7  n = int(input())
8  a = np.zeros((n,n+1))
9  x= np.zeros(n)
10 for i in range(n):
11     for j in range(n+1):
12         a[i][j] = float(input())
13
14 for i in range(n):
15     if a[i][i] == 0.0:
16         sys.exit("Divide by zero detected!")
17
18     for j in range(i+1, n):
19         ratio = a[j][i]/a[i][i]
20         for k in range(n+1):
21             a[j][k] = a[j][k]-ratio*a[i][k]
22
23 x[n-1] = a[n-1][n]/a[n-1][n-1]
24
25 for i in range(n-2, -1, -1):
26     x[i] = a[i][n]
27     for j in range(i+1, n):
28         x[i] = x[i]-a[i][j]*x[j]
29     x[i] = x[i]/a[i][i]
30
31 for i in range(n):
32     print('X%d = %0.2f' %(i, x[i]),end=' ')
33
34
35
36

```

	Input	Expected	Got	
✓	3 1 2 4 18 2 12 -2 9 5 26 5 14	X0 = 53.35 X1 = -8.88 X2 = -4.40	X0 = 53.35 X1 = -8.88 X2 = -4.40	✓

Passed all tests! ✓

► Show/hide question author's solution (Python3)

Correct

Marks for this submission: 100.00/100.00.