```
 1
 2
 3 def printr(rat,a1,a2):
 4     res=[[1,0,0],[0,1,0],[0,0,1]]
 5
 6     n=len(res)
 7
 8     for i in range(n):
 9         for j in range(n):
10             if i==a1 and j==a2:
11                 res[i][j]=rat
12
13     return res
14
15
16 def gauss(a,b):
17     n=len(a)
18     for i in range(n):
19
20         for j in range(i + 1, n):
21             ratio = a[j][i] / a[i][i]
22
23             print(printr(ratio,i,j),end = " * ")
24             print(a,end=" = ")
25
26             for k in range(n):
27                 a[j][k] = a[j][k] - ratio * a[i][k]
28
29             print(a)
30             b[j]=b[j]-ratio*b[i]
31
32
33     x=[[0,0,0],[0,0,0],[0,0,0]]
34
35     x[n - 1] = b[n - 1] / a[n - 1][n - 1]
36
37     for i in range(n - 2, -1, -1):
38         x[i] = b[i]
39
40         for j in range(i + 1, n):
41
42             x[i] = x[i] - a[i][j] * x[j]
43
44         x[i] = x[i] / a[i][i]
```

```
45
46
47
48     return x
49
50
51 X=[[1,1/2,1/3],[1/2,1/3,1/4],[1/3,1/4,1/5]]
52 b=[1,0,0]
53
54 res = gauss(X,b)
55 print("")
56 print("final result is: ",res)
57
58
```