

Lecture_6

February 18, 2023

1 Gauss Elimination Method

```
[ ]: from numpy import *

n = int(input("Enter no of unknowns:"))
a = zeros((n,n))
x = zeros(n)
b = zeros(n)

# Define A and B matrix

for i in range(n):
    for j in range(n):
        a[i][j] = float(input('a['+str(i)+'']['+str(j)+'']='))

for i in range(n):
    b[i] = float(input('b['+str(i)+'']='))

# Make upper triangular form

for k in range(n):
    for i in range(k+1, n):
        b[i] = b[i] - b[k] * a[i][k]/a[k][k]
        for j in range(k+1, n):
            a[i][j] = a[i][j] - a[i][k]*a[k][j]/a[k][k]

# Now solve for unknowns

for i in range(n-1, -1, -1):
    x[i] = b[i]
    sum1 = 0.0

    for j in range(i+1, n):
        sum1 = sum1 + a[i][j] * x[j]

    x[i] = x[i] - sum1
    x[i] = x[i]/a[i][i]
```

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[17]: print(" The Solution is:")
      for i in range(n):
          print("x"+str(i)+" "+str(x[i]))
```

The Solution is:

x0 4.5
x1 3.5
x2 2.75

```
[18]: n = 10
      for i in range(n-1,-1,-1):
          print(i)
```

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[7]: for i in range(10):
      print("a"+str(i)+"")
      for j in range(10):
          print("b"+str(j)+"")
          for k in range(10):
              print("c"+str(k)+"")
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