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*#Gaussian Elimination and Back Substitution Generator*

*import* numpy *as* np

*import* sys

n = int(input("Enter dimension: "))

a = np.zeros((n, n + 1))

x = np.zeros(n)

print("Enter Augmented Matrix Coefficients:")

*for* i *in* range(n):

*for* j *in* range(n + 1):

a[i][j] = float(input("a[" + str(i) + "][" + str(j) + "]="))

*for* i *in* range(n):

*if* a[i][i] == 0.0:

sys.exit("No Solution")

*for* j *in* range(i + 1, n):

ratio = a[j][i] / a[i][i]

*for* k *in* range(n + 1):

a[j][k] = a[j][k] - ratio \* a[i][k]

x[n - 1] = a[n - 1][n] / a[n - 1][n - 1]

*for* i *in* range(n - 2, -1, -1):

x[i] = a[i][n]

*for* j *in* range(i + 1, n):

x[i] = x[i] - a[i][j] \* x[j]

x[i] = x[i] / a[i][i]

print("\nSolution: ")

*for* i *in* range(n):

print("X%d = %0.2f" % (i, x[i]), end="\t")