4. EQUATION SOLVING

<div align="center">

b) Simple system solver

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</div>

1 AIM

Creating a basic function that inputs coefficients and constants of a system of linear equations and solves this system.

```python
[1]: import numpy as np
     def solveEqs(order):
         try:
             n = int(order)
         except:
             print("Not a positive integer!")
         if n < 1:
             print("Number of equations is too small")
             return 0
         A = np.zeros((n, n))
         B = np.zeros((n, 1))
         for i in range(0, n):
             print("Equation #{0}:".format(i + 1))
             for j in range(0, n):
                 try:
                     A[i][j] = float(input(("Coefficient #{0}: ").format(j + 1)))
                 except:
                     print("Invalid input")
                     return 0
             try:
                 B[i][0] = float(input(("Constant sum: ")))
             except:
                 print("Invalid input")
                 return 0
             print()
         X = np.linalg.solve(A, B)
         print(X)
         print("x = {0}".format(float(X[0, 0])))
         print("y = {0}".format(float(X[1, 0])))
         print("z = {0}".format(float(X[2, 0])))
```

```python
[2]: solveEqs(3)
```

```
Equation #1:
Coefficient #1: 2
Coefficient #2: 3
Coefficient #3: 4
Constant sum: -3

Equation #2:
Coefficient #1: 3
Coefficient #2: 4
Coefficient #3: 2
Constant sum: -3

Equation #3:
Coefficient #1: -4
Coefficient #2: 0
Coefficient #3: 23
Constant sum: -1

[[-3.47058824]
 [ 2.17647059]
 [-0.64705882]]
x = -3.4705882352941178
y = 2.1764705882352944
z = -0.6470588235294118
```