In [37]:
```python
#Matrix Inversion Method Program
import numpy as np

Y = [9, 7.4, 8.6, 9.4, 6.8]

matY = np.array(Y)


X = [[1, 95, 5, 5.84],
     [1, 56, 2, 5.19],
     [1, 87, 3, 5.78],
     [1, 121, 6, 5.89],
     [1, 35, 2, 5.57]]


mat0 = np.array(X)

#Multiplication of Matrix X and Transpose(X)
mat1 = np.matmul(mat0,mat0.T)


#INVERSE (X and Transpose(X))
print('Inverse(X * Transpose(X)):')
matinv = np.linalg.inv(mat1)

print('')
print('Inverted Matrix:')
print(matinv)

print('')
print('Dimensions of X Transpose:', mat0.T.shape)


print('')
print('Dimensions of Inverted Matrix', matinv.shape)

#Multiplication of INVERSE (X and Transpose(X)) and Transpose(X)
mat2 = np.matmul(mat0.T, matinv)
print('')
print('INVERSE (X and Transpose(X)) and Transpose(X):')
print(mat2)

print('')
print('Dimensions of Multiplication of INVERSE [(X and Transpose(X))* Transpos
e(X)]', mat2.shape)


print('')
print('Target Matrix Y Dimension:', matY.shape)

print('')
print('[(X and Transpose(X))* Transpose(X)] * Y:')
targmat = np.matmul(mat2, matY)

print('')
print('Final Matrix Dimension:', targmat.shape)
```

```python
print('')
print('FINAL COEFFICIENT MATRIX:')
print(targmat)
```

```
Inverse(X * Transpose(X)):

Inverted Matrix:
[[ 1.77517962e+12  1.85947585e+11  1.33882262e+11 -1.36485528e+12
   -7.30154186e+11]
 [ 1.85947585e+11  1.94777500e+10  1.40239798e+10 -1.42966684e+11
   -7.64826312e+10]
 [ 1.33882262e+11  1.40239798e+10  1.00972656e+10 -1.02936013e+11
   -5.50674945e+10]
 [-1.36485528e+12 -1.42966684e+11 -1.02936013e+11  1.04937546e+12
    5.61382513e+11]
 [-7.30154186e+11 -7.64826312e+10 -5.50674944e+10  5.61382513e+11
    3.00321798e+11]]

Dimensions of X Transpose: (4, 5)

Dimensions of Inverted Matrix (5, 5)

INVERSE (X and Transpose(X)) and Transpose(X):
[[-9.11340332e+00  1.06406403e+01 -8.40866852e+00  8.43737793e+00
   -5.55664062e-01]
 [ 3.33251953e-02  5.38635254e-03  2.82516479e-02 -1.53808594e-02
   -2.81982422e-02]
 [-2.99560547e-01 -5.64880371e-02 -7.10464478e-01  6.53076172e-01
    4.15283203e-01]
 [ 1.75408813e+00 -1.94638419e+00  1.59888030e+00 -1.71585851e+00
    3.09146636e-01]]

Dimensions of Multiplication of INVERSE [(X and Transpose(X))* Transpose(X)]
(4, 5)

Target Matrix Y Dimension: (5,)

[(X and Transpose(X))* Transpose(X)] * Y:

Final Matrix Dimension: (4,)

FINAL COEFFICIENT MATRIX:
[-0.06160431  0.24642181 -0.26120911  1.10704783]
```