Input:

$2x_1 + x_2 + x_3 = 5$

$2x_1 + x_2 + x_3 = -2$

$-2x_1 + 7x_2 + 2x_3 = 9$

Output:

```
              ******Gaussian Elimination with Partial Pivoting******

  Input number of variables: 3

  Input coefficients row-wise :
  2 1 1
  4 -6 0
  -2 7 2

  Enter vector b: 5 -2 9

  Solution vector x:
         1      1      2
PS C:\Users\Roshan\Desktop\Roshan NM\unit 5>
```

Input:

$4x_1 + 3x_2 + 2x_3 = 8$

$X_1 + 0x_2 + 5x_3 = -11$

$-2x_1 + 6x_2 + 3x_3 = 3$

Output:

```
              ******Gaussian Elimination with Partial Pivoting******

  Input number of variables: 3

  Input coefficients row-wise :
  4 3 2
  1 0 5
  -2 6 3

  Enter vector b: 8 -11 3

  Solution vector x:
         1.55102 2.27211 -2.5102
PS C:\Users\Roshan\Desktop\Roshan NM\unit 5>
```

Input:

$4x_1 - 2x_2 + x_3 = 15$

$-3x_1 - x_2 + 4x_3 = 8$

$x_1 - x_2 + 3x_3 = 13$

Output:

```
                ******Gauss-Jordan Method with partial Pivoting******

 Input number of variables: 3

 Input coefficients row-wise :
 4 -2 1
 -3 -1 4
 1 -1 3

 Enter vector b: 15 8 13

 Solution vector x:
         2        -2       3
 PS C:\Users\Roshan\Desktop\Roshan NM\unit 5>
```

Input:

$3x_1 + 5x_2 - 5x_3 = 12$

$4x_1 - 5x_2 + 3x_3 = 4$

$x_1 + 0x_2 + 4x_3 = 3$

Output:

```
                ******Gauss-Jordan Method with partial Pivoting******

 Input number of variables: 3

 Input coefficients row-wise :
 3 5 -5
 4 -5 3
 1 0 4

 Enter vector b: 12 4 2

 Solution vector x:
         2.26667 0.973333         -0.0666667
 PS C:\Users\Roshan\Desktop\Roshan NM\unit 5>
```

Input:

$4x_1 + x_2 + 2x_3 = 4$

$3x_1 + 5x_2 + x_3 = 7$

$x_1 + x_2 + 3x_3 = 3$

Output:

```
                    ******Gauss-Seidel Iterative Method******

  Input number of variables: 3

  Input coefficients row-wise :
  4 1 2
  3 5 1
  1 1 3

  Enter vector b:4 7 3

  Solution vector x:
          0.500006        0.999997        0.499999
   Number of iterations : 8
  PS C:\Users\Roshan\Desktop\Roshan NM\unit 5>
```

Input:

$10x_1 + x_2 + x_3 = 12$

$2x_1 + 10x_2 + x_3 = 13$

$2x_1 + 2x_2 + 10x_3 = 14$

Output:

```
                    ******Gauss-Seidel Iterative Method******

  Input number of variables: 3

  Input coefficients row-wise :
  10 1 1
  2 10 1
  2 2 10

  Enter vector b:12 13 14

  Solution vector x:
          1       1       1
   Number of iterations : 5
  PS C:\Users\Roshan\Desktop\Roshan NM\unit 5>
```

Input:

$4x_1 + x_2 + 2x_3 = 4$

$3x_1 + 5x_2 + x_3 = 7$

$x_1 + x_2 + 3x_3 = 3$

Output:

```
                ******Jacobi's Iterative method******

 Input number of variables: 3

 Input coefficients row-wise :
 4 1 2
 3 5 1
 1 1 3

 Enter vector b:4 7 3

 Solution vector x:
        0.499981        0.999979        0.499982
 Number of iterations: 34
PS C:\Users\Roshan\Desktop\Roshan NM\unit 5> █
```

Input:

$10x_1 + x_2 + x_3 = 12$

$2x_1 + 10x_2 + x_3 = 13$

$2x_1 + 2x_2 + 10x_3 = 14$

Output:

```
                ******Jacobi's Iterative method******

 Input number of variables: 3

 Input coefficients row-wise :
 2 1 0
 1 3 1
 0 1 4

 Enter vector b:4 7 8

 Solution vector x:
        1.3333  1.33331 1.66665
 Number of iterations: 16
PS C:\Users\Roshan\Desktop\Roshan NM\unit 5> █
```
\

Input:

3 -1 0

-3 4 3

0 -1 1

Output:

```
            ******Eigen Value & vector Power Method******

  Input size of matrix: 3

  Input elements row-wise :
  3 -1 0
  -2 4 3
  0 -1 1

  Approximate eigenvalue is 4.48498:
  Corresponding eigenvector is:
          -0.672986        1        -0.286927
  Number of iterations: 14
  PS C:\Users\Roshan\Desktop\Roshan NM\unit 5> 
```

Input:

2 1 0

1 3 1

0 1 4

Output:

```
            ******Eigen Value & vector Power Method******

  Input size of matrix: 3

  Input elements row-wise :
  2 1 0
  1 3 1
  0 1 4

  Approximate eigenvalue is 5:
  Corresponding eigenvector is:
          0.44     0.92     1
  Number of iterations: 2
  PS C:\Users\Roshan\Desktop\Roshan NM\unit 5> 
```