Experiment no 6

AIM - Solution of linear system of equations using Gauss Elimination method

Apparatus - Scilab Software

Program Code -

```
clf;
clc;
clear;
disp("Prattayaya Amrit")
disp("13601")
disp("B.Sc (Hons) Electronics")
disp("AIM : Solution of linear system of equations using Gauss
Elimination method ")
// Initialize an empty matrix
n = input("Enter the number of rows : ");
A = zeros(n,n+1);
// Loop to fill the matrix
for i = 1:n
    for j = 1:n+1
        A(i, j) = input("Enter element (" + string(i) + ", " +
string(j) + "): ");
    end
end
// Display the matrix
disp("The initial matrix is :")
disp(A);
//using loops to follow gauss elimination method
for i=1:n+1
    for j=i+1:n
        A(j,:)=A(j,:)-(A(i,:)*A(j,i))/A(i,i)
    end
end
disp("The matrix after Lower Triangle is Zero : ")
disp(A);
x = zeros(n, 1);
for i = n:-1:1
    x(i) = (A(i, n+1) - A(i, 1:n) * x) / A(i, i);
end
// Display the solution
disp("The solution vector [x1, x2, x3, x4] is : ");
disp(x);
```

```
  "Prattayaya Amrit"
  "13601"
  "B.Sc (Hons) Electronics"
  "AIM : Solution of linear system of equations using Gauss Elimination method "
Enter the number of rows : 3

Enter element (1, 1): 1

Enter element (1, 2): 4

Enter element (1, 3): 7

Enter element (1, 4): 2

Enter element (2, 1): 4

Enter element (2, 2): 4

Enter element (2, 3): 7

Enter element (2, 4): 3

Enter element (3, 1): 5

Enter element (3, 2): 9

Enter element (3, 3): 3

Enter element (3, 4): 5
```

```
"The initial matrix is :"
 1.    4.    7.    2.
 4.    4.    7.    3.
 5.    9.    3.    5.
"The matrix after Lower Triangle is Zero : "
 1.    4.     7.        2.
 0.   -12.   -21.      -5.
 0.    0.    -12.75   -0.4166667
"The solution vector [x1, x2, x3, x4] is : "
 0.3333333
 0.3594771
 0.0326797

--> |
```