**Experiment 5:** *To understand Gauss Elimination Method to find solution to system of linear equations*

**Exercise:**

1. Write a MATLAB/SciLab program to solve the following set of simultaneous linear equations using method of Gauss Elimination.

/\* **Gauss Elimination Method**

by *Keivalya Pandya* in *SciLab*

\*/

function elimination(**C**, **x**, **b**)

a = [**C**, **b**'];

n = size(a, "r");

for i = 1:n

if a(i,i) == 0

print("Division by ZERO detected!",'s');

break;

end

for j = i+1:n

ratio = a(j,i)/a(i,i);

for k = 1:(n+1)

a(j,k) = a(j,k) - (ratio \* a(i,k));

end

end

end

**x**(n) = a(n,n+1)/a(n,n);

for i = (n-1):-1:1

**x**(i) = a(i,n+1);

for j = i+1:n

**x**(i) = **x**(i) - a(i,j)\***x**(j);

end

**x**(i) = **x**(i)/a(i,i);

end

for i = 1:n

printf("\n \t Result: variable %d is \t %f", i, **x**(i))

end

endfunction

*// Q1*

printf("\n Question 1: . 2x+y−3z=11; 4x−2y+3z=8; −2x+ 2y−z=−6", "s")

C = [2, 1, -3;

4, -2, 3;

-2, 2, -1]; *// Defining coefficient of variables into matrix*

x = zeros(size(C, "r")); *// Gives number of variables*

b = [11, 8, -6]; *// RHS of given equations, in vector form*

elimination(C, x, b);

funcprot(0);

*// Q2*

printf("\n\n Question 2: . 6x+3y+6z=17; 2x+3y+3z=17; x+2y+2z=11", "s")

C = [6, 3, 6;

2, 3, 3;

1, 2, 2]; *// Defining coefficient of variables into matrix*

x = zeros(size(C, "r")); *// Gives number of variables*

b = [17, 17, 11]; *// RHS of given equations, in vector form*

elimination(C, x, b);

funcprot(0);

*// Q3 SEEMS INCORRECT. Please check*

printf("\n\n Question 3: . 2x+y+z=4; 3y-3y=0; −y+2y=1", "s")

C = [2, 1, 1;

0, 0, 0;

0, 1, 0]; *// Defining coefficient of variables into matrix*

x = zeros(size(C, "r")); *// Gives number of variables*

b = [4, 0, 1]; *// RHS of given equations, in vector form*

elimination(C, x, b);

funcprot(0);

*// Q4*

printf("\n\n Question 4: . a+2b+3c+4d=8; 2a-2b-c-d=-3; a-3b+4c-4d=8; 2a+2b-3c+4d=-2", "s")

C = [1, 2, 3, 4;

2, -2, -1, -1;

1, -3, 4, -4;

2, 2, -3, 4]; *// Defining coefficient of variables into matrix*

x = zeros(size(C, "r")); *// Gives number of variables*

b = [8, -3, 8, -2]; *// RHS of given equations, in vector form*

elimination(C, x, b);

funcprot(0);

*// Q5*

printf("\n\n Question 5: . EQUATIONS", "s")

C = [2,1,1,-1;

1,5,-5,6;

-7,+3,-7,-5;

1,-5,2,7]; *// Defining coefficient of variables into matrix*

x = zeros(size(C, "r")); *// Gives number of variables*

b = [10,25,5,11]; *// RHS of given equations, in vector form*

elimination(C, x, b);

funcprot(0);

*// Q6*

printf("\n\n Question 6: . EQUATIONS", "s")

C = [1,1,1,1;

2,-1,3,0;

0,2,0,3;

-1,0,2,1]; *// Defining coefficient of variables into matrix*

x = zeros(size(C, "r")); *// Gives number of variables*

b = [3,3,1,0]; *// RHS of given equations, in vector form*

elimination(C, x, b);

funcprot(0);

***OUTPUT:***

