NM Lab Sheet
II Year / II Part
Faculty: Computer/Electrical

Labsheet#6

Objective

1. To Implement **Gauss-Jordan Method** to find solution of following linear simultaneous equations:

$x + y + z = 9$
$2x - 3y + 4z = 13$
$3x + 4y + 5z = 40$

x = 1, y = 3, z = 5

$2p + 4q - 6r = -8$
$p + 3q + r = 10$
$2p - 4q - 2r = -12$

p = 1, q = 2, r = 3

$x1 + 2x2 + x3 - x4 = -2$
$2x1 + 3x2 - x3 + 2x4 = 7$
$x1 + x2 + 3x3 - 2x4 = -6$
$x1 + x2 + x3 + x4 = 2$

x1 = 1, x2 = 0, x3 = -1, x4 = 2

Algorithm

1. Start
2. Read the order of the matrix 'n' and read the augmented matrix.
3. Do for i=0 to n-1

       Do for j=0 to n-1

           If (i equal to j) then,

               Set pivot = a[i][i]

               Do for k=0 to **n**

                   a[j][k] = a[i][k]/pivot;

               End for k

           Else

               Set pivot = a[j][i]/a[i][i]

               Do for k=0 to **n**

                   a[j][k] = a[j][k] – pivot*a[i][k];

               End for k

           Endif

       End for j

   End for i
4. Display Solution:

   Do for i=0 to n-1

       x[i] = a[i][n]

       Display x[i]

   End for i
5. Stop

Lab Assignment#6
1. Solve the following equations by Gauss-Jordan Elimination Method:
    a. $x + 2y + z = 8, 2x + 3y + 4z = 20, 4x + 3y + 2z = 16$
    b.

$$10x - 7y + 3z + 5u = 6,$$
$$-6x + 8y - z - 4u = 5,$$
$$3x + y + 4z + 11u = 2,$$
$$5x - 9y - 2z + 4u = 7$$

    c.

$$\begin{bmatrix} 0 & 2 & 2 & 4 \\ -2 & 1 & 4 & 0 \\ -1 & 3 & 0 & 2 \\ 2 & 1 & 2 & -3 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \\ u \end{bmatrix} = \begin{bmatrix} 4 \\ -7 \\ 0 \\ -7 \end{bmatrix}$$

2. Find the inverse of following matrix by Gauss-Jordan Method:

$$\begin{bmatrix} 2 & -2 & 4 \\ 2 & 3 & 2 \\ -1 & 1 & 1 \end{bmatrix}$$