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**2022300118**

**SE-Comps B/Batch C**

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**LA Lab ESE**

**Program No.1** :- Find the Eigen values of the following matrix.

A=

**Code :-**

clc;

A = [1 2 2; 2 1 2; 2 2 1];

printf("The Matrix A is: ");

disp(A);

a = A(1, 1) + A(2, 2) + A(3, 3);

b = A(1, 1)\*A(2, 2) - A(1, 2)\*A(2, 1) + A(2, 2)\*A(3, 3) - A(2, 3)\*A(3, 2) + A(1, 1)\*A(3, 3) - A(1, 3)\*A(3, 1);

m = det(A);

p = [1 -a b -m];

m = roots(p);

printf("The Eigen Values of Matrix A are:");

disp(m);

**Output :-**

A screenshot of a computer

Description automatically generated

**Program No. 2:-** Solve the given system of equations in terms of x,y,z,w using Gauss Elimination method

2x+3y+4z-2w=11

2x+3y-3z-w=1

7x+9y-4z+7z=21

102x-y+70z+301w=72

**Code**:-

clc;

A= [2 3 4 -2;2 3 -3 -1;7 9 -4 7;102 -1 70 301];

B= [11;1;21;72];

printf("The matrix A is:");

disp(A);

printf("The matrix B is:");

disp(B);

C=[A B];

printf("The matrix C is:");

disp(C);

n=4;

for i=1:n

if C(i,i)==0

C(i,:)=C(i,:)+C(i+1,:);

end

if C(i,i)~=0

C(i,:)=C(i,:)/C(i,i);

end

disp(C);

for j=i+1:n

C(j,:)=C(j,:)-C(i,:)\*C(j,i);

end

disp(C);

end

for i=n:-1:2

for j=1:i-1

C(j,:)=C(j,:)-C(i,:)\*C(j,i);

end

disp(C);

end

printf("x=%g\n",C(1,5));

printf("y=%g\n",C(2,5));

printf("z=%g\n",C(3,5));

printf("w=%g\n",C(4,5));

**Output** :-

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