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Batch: COMPS B (Batch A)
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Ese

Program 1:-
Write a scilab code to find eigen value of the following matrix where A =

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

Code:-

```
clc;
clear all;
A=[3 -1 1;-1 3 -1;1 -1 3];
printf("Matrix A:\n");
disp(A);
a=A(1,1)+A(2,2)+A(3,3);
b=((A(2,2)*A(3,3))-(A(3,2)*A(2,3)))+((A(1,1)*A(3,3))-(A(3,1)*A(1,3)))+((A(1,1)*
A(2,2))-(A(2,1)*A(1,2)));
m=det(A);
p=[1 -a b -m];
m=roots(p);
printf("The eigen values of the corresponding matrix A is :\n");
disp(m);
```

Output:-

```
Scilab 6.0.2 Console
 Matrix A:

   3.   -1.    1.
  -1.    3.   -1.
   1.   -1.    3.
The eigen values of the corresponding matrix A is :

   5.
   2.
   2.

-->
```

Program 2:-

Write a scilab code using for loop to convert the given matrix into row equivalent form.where Matrix A =

$$\begin{bmatrix} 1 & 2 & 3 & 4 \\ 2 & 1 & 4 & 5 \\ 8 & 5 & 14 & 17 \\ 1 & 5 & 5 & -7 \end{bmatrix}$$

Code:-

```
clc;
A =[1 2 3 4;2 1 4 5;8 5 14 17;1 5 5 7];
printf("Matrix A:\n");
disp(A);
n = 4;
for i = 1:n
    if A(i,i) == 0
        A(i,:) = A(i,:);
    else
        A(i,:) = A(i,:)/A(i,i);
        disp(A);
        for j = 1:n-1
            if i+j < n+1
                A(i+j,:)= A(i+j,:)- A(i+j,i)*A(i,:);
            else
            end;
        end;
    end;
    if A(1,2) == A(2,2)
        A(1,:) = A(1,:) - A(2,:);
    else
    end;
disp(A);
end;
```

Output:-

Scilab 6.0.2 Console

```
Matrix A:

  1.    2.    3.    4.
  2.    1.    4.    5.
  8.    5.    14.   17.
  1.    5.    5.    7.

  1.    2.    3.    4.
  2.    1.    4.    5.
  8.    5.    14.   17.
  1.    5.    5.    7.

  1.    2.     3.     4.
  0.   -3.    -2.    -3.
  0.   -11.   -10.   -15.
  0.    3.     2.     3.

  1.    2.     3.           4.
  0.    1.     0.6666667    1.
  0.   -11.   -10.          -15.
  0.    3.     2.           3.

  1.    2.    3.           4.
  0.    1.    0.6666667    1.
  0.    0.   -2.6666667   -4.
  0.    0.    0.           0.

  1.    2.    3.           4.
  0.    1.    0.6666667    1.
  0.    0.    1.           1.5
  0.    0.    0.           0.

  1.    2.    3.           4.
  0.    1.    0.6666667    1.
  0.    0.    1.           1.5
  0.    0.    0.           0.

  1.    2.    3.           4.
  0.    1.    0.6666667    1.
  0.    0.    1.           1.5
  0.    0.    0.           0.
```

```
   1.    2.    3.           4.
   0.    1.    0.6666667    1.
   0.    0.   -2.6666667   -4.
   0.    0.    0.           0.

   1.    2.    3.           4.
   0.    1.    0.6666667    1.
   0.    0.    1.           1.5
   0.    0.    0.           0.

   1.    2.    3.           4.
   0.    1.    0.6666667    1.
   0.    0.    1.           1.5
   0.    0.    0.           0.

   1.    2.    3.           4.
   0.    1.    0.6666667    1.
   0.    0.    1.           1.5
   0.    0.    0.           0.

-->
```