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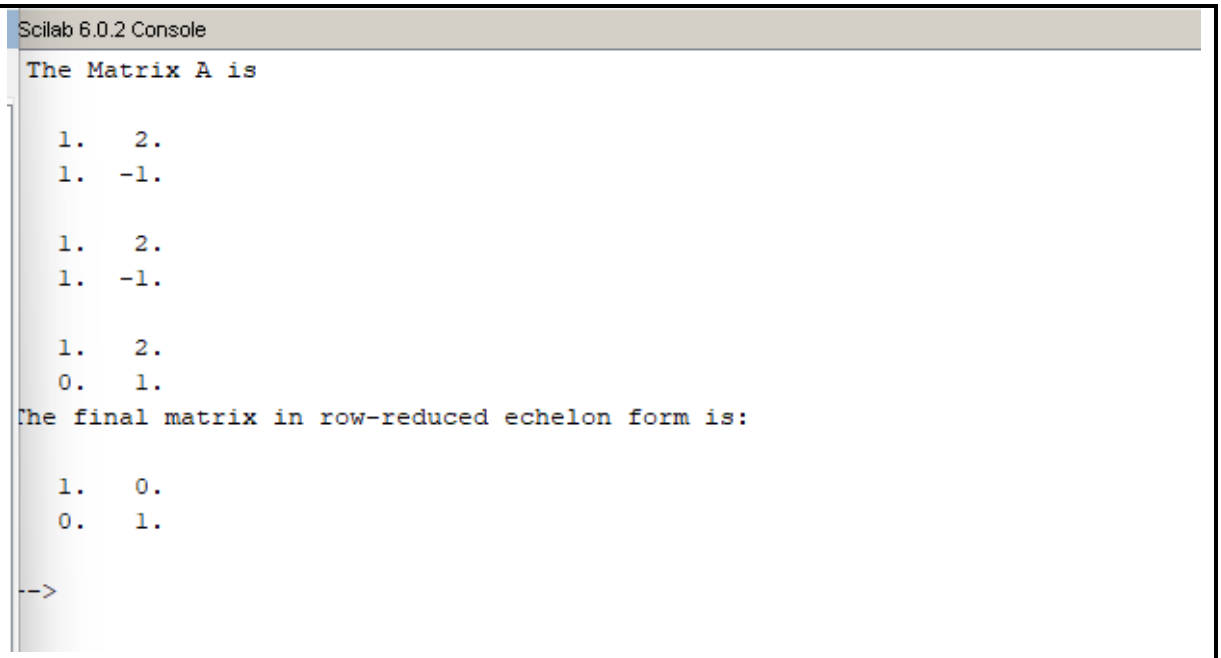
Subject	Linear Algebra
Experiment No.	4
Aim	Implementation of Reduced Row Echelon Form in Scilab.

Reduced Row Echelon Form 2x2	clc
	A = [1 2 ; 1 -1];
	printf("The Matrix A is\n");
	disp(A);
	n = 2;
	
	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
	  A(i+j,:) = A(i+j,:) - A(i+j,i)*A(i,:);
	  end
	  end
	  end
	end
	
	for i = n:-1:2
	  for j = i-1:-1:1
	  A(j,:) = A(j,:) - A(j,i)*A(i,:);
	  end
	end
	
	printf("The final matrix in row-reduced echelon form is: \n");
	disp(A);



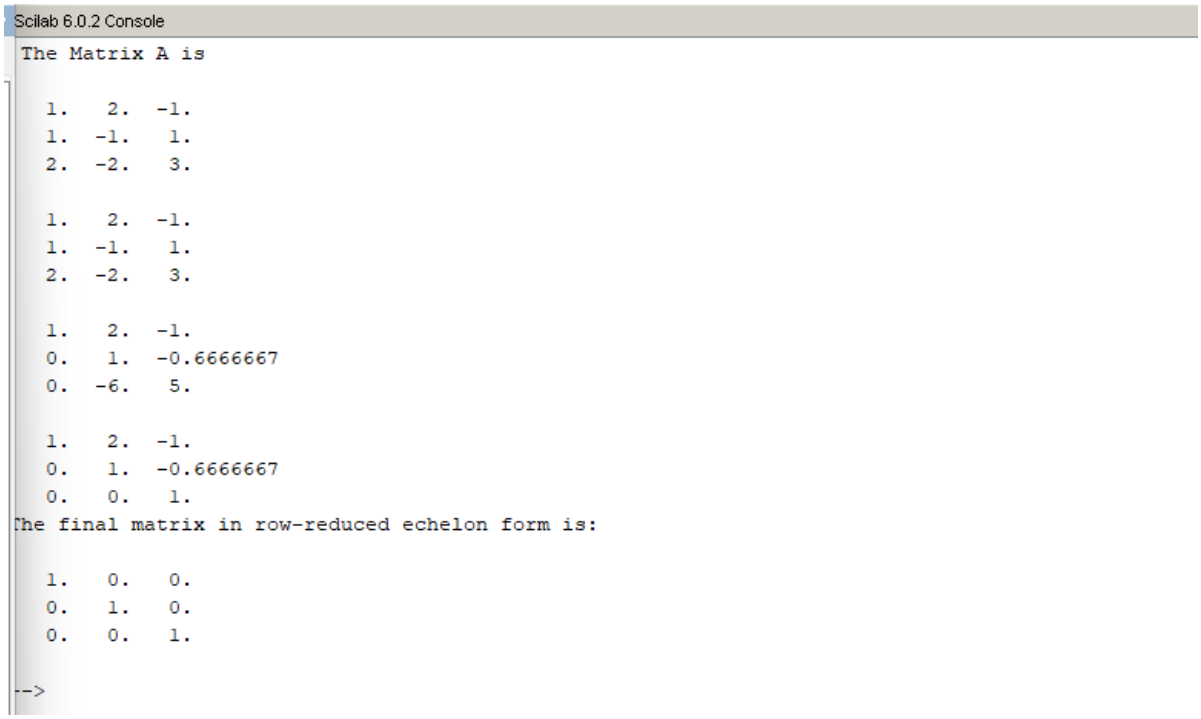
Reduced Row Echelon Form 3x3

```
clc
A = [1 2 -1 ; 1 -1 1 ; 2 -2 3];
printf("The Matrix A is\n");
disp(A);
n = 3;

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
            A(i+j,:) = A(i+j,:) - A(i+j,i)*A(i,:);
         end
      end
   end
end

for i = n:-1:2
   for j = i-1:-1:1
      A(j,:) = A(j,:) - A(j,i)*A(i,:);
   end
end
```

```
printf("The final matrix in row-reduced echelon form is: \n");
disp(A);
```



```
Scilab 6.0.2 Console
 The Matrix A is

   1.    2.   -1.
   1.   -1.    1.
   2.   -2.    3.

   1.    2.   -1.
   1.   -1.    1.
   2.   -2.    3.

   1.    2.   -1.
   0.    1.   -0.6666667
   0.   -6.    5.

   1.    2.   -1.
   0.    1.   -0.6666667
   0.    0.    1.
The final matrix in row-reduced echelon form is:

   1.    0.    0.
   0.    1.    0.
   0.    0.    1.

-->
```

Reduced Row Echelon Form 4x4

```
clc
A = [3 -1 2 1 ; 2 -2 3 2 ; 1 -1 1 -1 ; 1 2 -1 3];
printf("The Matrix A is\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
            A(i+j,:) = A(i+j,:) - A(i+j,i)*A(i,:);
         end
      end
   end
end

for i = n:-1:2
   for j = i-1:-1:1
```

```
      A(j,:) = A(j,:) - A(j,i)*A(i,:);
   end
end

printf("The final matrix in row-reduced echelon form is: \n");
disp(A);
```

```
Scilab 6.0.2 Console
The Matrix A is

   1.    2.  -1.    3.
   1.   -1.   1.   -1.
   2.   -2.   3.    2.
   3.   -1.   2.    1.

   1.    2.  -1.    3.
   1.   -1.   1.   -1.
   2.   -2.   3.    2.
   3.   -1.   2.    1.

   1.    2.  -1.          3.
   0.    1.  -0.6666667   1.3333333
   0.   -6.   5.         -4.
   0.   -7.   5.         -8.

   1.    2.  -1.          3.
   0.    1.  -0.6666667   1.3333333
   0.    0.   1.          4.
   0.    0.   0.3333333   1.3333333

   1.    2.  -1.          3.
   0.    1.  -0.6666667   1.3333333
   0.    0.   1.          4.
   0.    0.   0.          1.
The final matrix in row-reduced echelon form is:

   1.    0.   0.   0.
   0.    1.   0.   0.
   0.    0.   1.   0.
   0.    0.   0.   1.

-->
```

Conclusion

Hence, by completing this experiment I came to know about Implementation of Reduced Row Echelon Form in Scilab.