Name	Manish Shashikant Jadhav
UID	2023301005
Subject	Linear Algebra
Experiment No.	3
Aim	Implementation of Row Echelon Form in Scilab.
| **Row Echelon Form 2x2** | ```
clc
A = [1 2; 3 -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
if A(1,2) == A(2,2)
  A(1,:) = A(1,:) - A(2,:);
end

printf("The final matrix is: ")
disp(A);
``` |

```
Scilab 6.0.2 Console
 The Matrix A is

   1.    2.
   3.   -1.

   1.    2.
   3.   -1.

   1.    2.
   0.    1.
The final matrix is:
   1.    2.
   0.    1.

-->
```

| **Row Echelon Form 3x3** | ```
clc
A = [1 2 -1 ; 3 -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
if A(1,2) == A(2,2)
   A(1,:) = A(1,:) - A(2,:);
end

printf("The final matrix is: ")
disp(A);
``` |

```
Scilab 6.0.2 Console
 The Matrix A is

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

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

    1.    2.   -1.
    0.    1.   -0.5714286
    0.   -6.    5.

    1.    2.   -1.
    0.    1.   -0.5714286
    0.    0.    1.
The final matrix is:
    1.    2.   -1.
    0.    1.   -0.5714286
    0.    0.    1.

-->
```

Row Echelon Form 4x4	

Row Echelon Form 4x4	clc
	A = [1 2 -1 3 ; 1 -1 1 -1 ; 2 -2 3 2 ; 3 -1 2 1]
	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
	if A(1,2) == A(2,2)
	  A(1,:) = A(1,:) - A(2,:);
	end

printf("The final matrix is: ")
disp(A);

```
Scilab 6.0.2 Console                                                    ?
 The Matrix A is

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

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

   1.    2.   -1.          3.
   0.    1.   -0.7142857   1.1428571
   0.   -6.    5.          -4.
   0.   -3.    2.          -4.

   1.    2.   -1.          3.
   0.    1.   -0.7142857   1.1428571
   0.    0.    1.          4.
   0.    0.   -0.1428571  -0.5714286

   1.    2.   -1.          3.
   0.    1.   -0.7142857   1.1428571
   0.    0.    1.          4.
   0.    0.    0.          1.
The final matrix is:
   1.    2.   -1.          3.
   0.    1.   -0.7142857   1.1428571
   0.    0.    1.          4.
   0.    0.    0.          1.

-->
```

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