



**BHARATIYA VIDYA BHAVAN'S**  
**SARDAR PATEL INSTITUTE OF TECHNOLOGY**  
(Empowered Autonomous Institute Affiliated to Mumbai University)  
**Department Of Computer Engineering**

<b>Name</b>	Manish Shashikant Jadhav
<b>UID</b>	2023301005
<b>Subject</b>	Linear Algebra
<b>Experiment No.</b>	3
<b>Aim</b>	Implementation of Row Echelon Form in Scilab.
<b>Row Echelon Form 2x2</b>	<pre>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 &lt;= n                 A(i+j,:) = A(i+j,:) - A(i+j,i)*A(i,:);             end         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);</pre>



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	<div>Scilab 6.0.2 Console</div> <div>The Matrix A is</div> <div>1. 2. 3. -1.</div> <div>1. 2. 3. -1.</div> <div>1. 2. 0. 1.</div> <div>The final matrix is:</div> <div>1. 2. 0. 1.</div> <div>--&gt;</div>
<b>Row Echelon Form 3x3</b>	<pre>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 &lt;= 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);</pre>



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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**

```
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
```



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```
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.