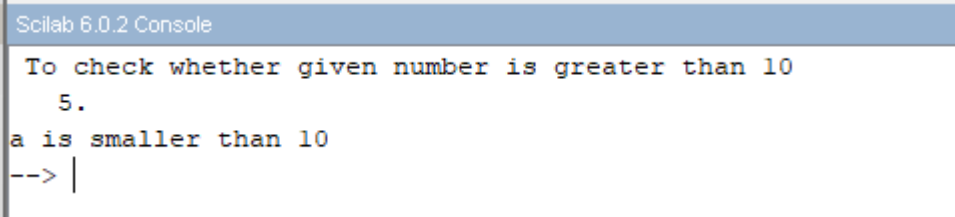




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<b>Name</b>	Manish Shashikant Jadhav
<b>UID</b>	2023301005
<b>Subject</b>	Linear Algebra
<b>Experiment No.</b>	2
<b>Aim</b>	Implementation of Conditional Branching and Looping in Scilab.
<b>1.</b> To check whether given number is greater than 10	<pre>clc; printf("To check whether given number is greater than 10"); a=5; disp(a); if a&gt;10 then printf("a is more than 10"); else printf("a is smaller than 10"); end</pre> 
<b>2.</b> Write a program to check whether you are attending Linear Algebra lab for any time input from user.	<pre>clc; printf("Write a program to check whether you are attending Linear Algebra lab for any time input from user."); t=input("Enter the current time: ") if t&gt;16 &amp; t&lt;18 then printf("student is attending Linear Algebra Lab"); else printf("Student has finished Linear Algebra Lab") end</pre>

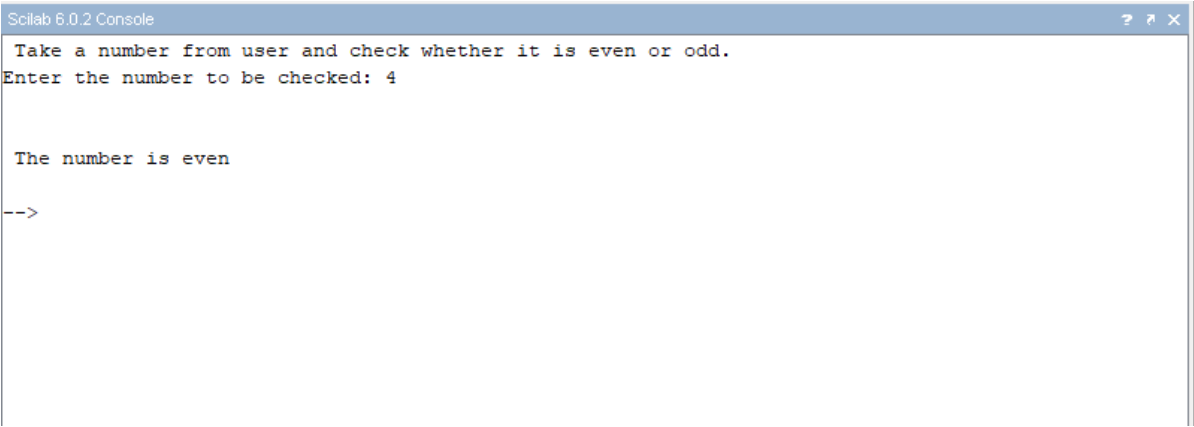


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	<div>Scilab 6.0.2 Console</div> <div>Write a program to check whether you are attending Linear Algebra lab for any time input from user Enter the current time: 17  student is attending Linear Algebra Lab --&gt;</div>
<p><b>3.</b> Enter a month (number) from a user and check whether it's a first, second, third and forth quarter</p>	<div>clc; printf("Enter a month(number) from a user and check whether its a first, second, third or fourth quarter."); month = input("Enter a month: ") if month &gt;=1 &amp; month &lt;=3 then printf("first quarter"); elseif month &gt;= 4 &amp; month &lt;= 6 then printf("second quarter"); elseif month &gt;= 7 &amp; month &lt;=9 then printf("third quarter"); elseif month &gt;= 10 &amp; month &lt;=12 then printf("fourth quarter"); else printf("Invalid month"); end</div> <div>Scilab 6.0.2 Console</div> <div>Enter a month(number) from a user and check whether its a first, second, third or fourth quarter. Enter a month: 6  second quarter --&gt;</div>



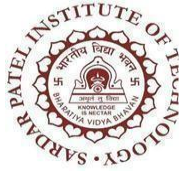
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<p><b>4.</b> Take a number from user and check whether it is odd or even. (Use modulo command)</p>	<pre>clc; printf("Take a number from user and check whether it is even or odd."); x=input("Enter the number to be checked: ") if modulo(x,2)==0 then disp("The number is even") ; else disp("The number is odd"); end</pre> 
<p><b>5.</b> Display values from 10 to 20 using for loop and while loop.</p>	<pre>clc; printf("Using while loop"); a=10; while a&lt;=20 printf("\nValue of a: %d",a); a=a+1; end</pre>



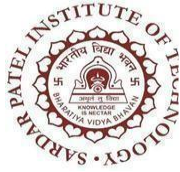
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	<div>Scilab 6.0.2 Console</div> <div>Using while loop Value of a: 10 Value of a: 11 Value of a: 12 Value of a: 13 Value of a: 14 Value of a: 15 Value of a: 16 Value of a: 17 Value of a: 18 Value of a: 19 Value of a: 20 --&gt;  </div>
<p><b>6.</b> Write a program to find values for x=1 to 5 for <math>f(x)=x^2 + \sqrt{x}</math> using for loop and while loop</p>	<pre>clc; printf("Write a program to find values for x=1 to 5 for f(x)=x^2 + sqrt(x) using for and while loop."); for x= 1:1:5 f(x)= x^2 + sqrt(x); printf("\nThe value of f(x)= %f at x= %i',f(x),x ) end //using while loop printf("\n*****"); x=1; while x&lt;=5 f(x)= x^2 + sqrt(x); printf("\nThe value of f(x)= %g at x= %i',f(x),x ) x=x+1; end</pre>



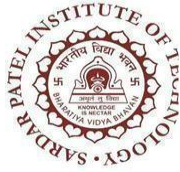
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	<div>Scilab 6.0.2 Console</div> <pre>Write a program to find values for x=1 to 5 for f(x)=x^2 + sqrt(x) using for and while loop. The value of f(x)= 2.000000 at x= 1 The value of f(x)= 5.414214 at x= 2 The value of f(x)= 10.732051 at x= 3 The value of f(x)= 18.000000 at x= 4 The value of f(x)= 27.236068 at x= 5 ***** The value of f(x)= 2 at x= 1 The value of f(x)= 5.41421 at x= 2 The value of f(x)= 10.7321 at x= 3 The value of f(x)= 18 at x= 4 The value of f(x)= 27.2361 at x= 5 --&gt;  </pre>
<p><b>7.</b> Write a Scilab code to input a matrix and check whether the matrix is invertible or not.</p>	<pre>B = [1,1 ; 2,2]; if B == ((-B)) then     printf("It is Invertible \n"); else     printf("It is not Invertible \n"); end  printf("\n");</pre> <div>Startup execution: loading initial environment  --&gt; exec('D:\1.sce', -1) It is not Invertible  --&gt;</div>
<p><b>8.</b> Write a Scilab code to input a matrix and check whether the matrix is</p>	<pre>A = [1 2+3*%i 3-4*%i; 2-3*%i 5 6+7*%i; 3+4*%i 6-7*%i 8];  if A == A' then     disp("The input matrix is Hermitian."); else</pre>



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Hermitian or not.	<pre> disp("The input matrix is not Hermitian."); end  --&gt; exec('D:\1.sce', -1)  The input matrix is Hermitian.  --&gt; </pre>
<p><b>9.</b> Write a Scilab code to input a matrix and check whether the matrix is Symmetric, Skew Symmetric or none.</p>	<pre> // Input matrix A = input("Enter the matrix: ");  // Check if the matrix is square [m, n] = size(A); if m ~= n     disp('Matrix must be square');     return; end  isSymmetric = isequal(A, A');  isSkewSymmetric = isequal(A, -A');  if isSymmetric     disp('Matrix type: symmetric'); elseif isSkewSymmetric     disp('Matrix type: skew-symmetric'); else     disp('Matrix is neither symmetric nor skew-symmetric'); end </pre>



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	<pre>--&gt; exec('D:\1.sce', -1) Enter the matrix: [1 1 -1; 1 2 0; -1 0 5]  Matrix type: symmetric  --&gt;</pre>
<p><b>10.</b> If <math>U_n = 4(U_{n-1} + 4)</math> and <math>U_0 = 4</math>, Print 20th term of the Sequence</p>	<pre>clc U=[4]; for n=1:19     U(n+1)=4*U(n)+4; end disp(U) printf("\n") printf("the 20th term is: ") disp(U(20))</pre> <div>Scilab 6.0.2 Console ?</div> <pre>4. 20. 84. 340. 1364. 5460. 21844. 87380. 349524. 1398100. 5592404. 22369620. 89478484. 3.579D+08 1.432D+09 5.727D+09 2.291D+10 9.163D+10 3.665D+11 1.466D+12  the 20th term is: 1.466D+12  --&gt;</pre>



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**11. Write a program to find the Pythagorean triplet up to the number 50 or 20.**

```
clc
for i=1:50
    for j=i+1:50
        c=(i*i)+(j*j)
        for k=i+2:50
            if c==(k*k)
                printf("\n")
                printf("Pythagorean Triplet is %d, %d, %d, \n", i,j,k);
            end
        end
    end
end
end
```

Scilab 6.0.2 Console

```
Pythagorean Triplet is 3, 4, 5,
Pythagorean Triplet is 5, 12, 13,
Pythagorean Triplet is 6, 8, 10,
Pythagorean Triplet is 7, 24, 25,
Pythagorean Triplet is 8, 15, 17,
Pythagorean Triplet is 9, 12, 15,
Pythagorean Triplet is 9, 40, 41,
Pythagorean Triplet is 10, 24, 26,
Pythagorean Triplet is 12, 16, 20,
Pythagorean Triplet is 12, 35, 37,
Pythagorean Triplet is 14, 48, 50,
Pythagorean Triplet is 15, 20, 25,
Pythagorean Triplet is 15, 36, 39,
Pythagorean Triplet is 16, 30, 34,
Pythagorean Triplet is 18, 24, 30,
Pythagorean Triplet is 20, 21, 29,
Pythagorean Triplet is 21, 28, 35,
Pythagorean Triplet is 24, 32, 40,
Pythagorean Triplet is 27, 36, 45,
Pythagorean Triplet is 30, 40, 50,
```





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<b>Conclusion</b>	Hence, by completing this experiment I came to know about Implementation of Basic Commands and Operations on Matrix.
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