Shri Shankaracharya Institute of Professional Management & Technology, Raipur

Department of Computer Science & Engineering

LAB MANUAL

SOFTWARE LABORATORY (Scilab/Matlab)

SESSION:2021-2022

Submitted by:-

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Sec : 3rd " A "

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Department of Computer Science & Engineering

CERTIFICATE

THIS IS TO CERTIFY THAT THIS PRACTICAL RECORD CONTAINS THE BONAFIDE PRACTICAL WORK. FOR THE SUBJECT **OPERATING SYSTEN (UNIX)** OF **MR.** V.Om Sai Nageshwar Sharma . DURING THE ACADEMIC SESSION 2021-2022

SEMESTER 3

ROLL NO 303302220020

DATE

SIGN OF LECTURER **SIGN OF HOD**

DEX

Student Name : V. Om Sai Nageshwar Sharma

OUTPUT

Scilab 6.0.2 Console

```
Startup execution:
  loading initial environment

--> exec('/media/kite/86C65FF6C65FE549/scilab-6.0.2/softComputing/vectors.sci', -1)
 Multiply Vectors

   4.3677289

 A Divide Vectors

   0.7425743

 A Exponential Vectors

   0.0046454

-->
```

Subject : Date :

EXPERIMENT -01

Aim : Implementing Arithmetic Operations on Vectors in Scilab

Objective: Learn to handle vectors & performing basic arithmetical operat^n on it

A multiple Vectors	A Divide vectors	An Exponential Vectors
$x = t \sin(t)$	$y = (t-1)/(t+1)$	$z = [(\sin t2)/(t\,2)]$

Code :

```
/* Creating Vectors t with 10 elements 1 to 10 */

// A multiple vector
t = linspace (1, 10, 10);

disp ("Multiply vectors")
y = sin(t);
x = t * y';
disp(x);

disp ("A Divide vectors")
w = (t-1) / (t+1);
disp(w);

disp("A Exponential vectors")
b = sin(t*2);
c = b/(t*2);
disp(c);
```

@nand

OUTPUT

Scilab 6.0.2 Console

```
--> exec('/media/kite/86C65FF6C65FE549/scilab-6.0.2/softComputing/logBaseTen.sci',.
Enter value of x:500

   2.69897

   16.19382

-->
```

Subject : Date :

EXPERIMENT - 02

Aim: Scilab program to perform Logarithmic operations.

Objective: Learn to perform basic log base 10 and power operations in scilab. Finding log base 10 of any given number

Code:

Scilab code:

```
/* Scilab program to illustrate use of
   logarithm operator with base 10 */

x = input ("Enter value of x")
y = log10(x);
print ("value is", x)
disp(y);

// log base 10 with power
z = log10(x^6);
disp(z);
```

anand

OUTPUT

Scilab 6.0.2 Console

```
--> exec('/media/kite/86C65FF6C65FE549/scilab-6.0.2/softComputing/ePowers.sci',-1)
Enter a value you want in power of e:12


    162754.79141900391550 73

    162754.791419003828196
```

Subject : Date :

EXPERIMENT - 03

Aim: Scilab program to illustrate exponential operations.

Objective: How to use exponential power of any given number and print it on scilab console.

Code:

```
/* Scilab program to illustrate exponential
   powers e^pi/150 in scilab. */

y=input("Enter a value you want in
        power of e");
x=exp(y);
disp(x);

// Direct Format
disp(%e^y)
```

@nand

OUTPUT

Scilab 6.0.2 Console

```
-->exec('/media/kite/86C65FF6C65FE549/scilab-6.0.2/softComputing/areaOfCircle.sci',-1)
Enter radius of a circle(in cm):12

 Area of the circle is:

    452.38934211693020870 37
```

Subject : Date :

EXPERIMENT - 04

Aim: Scilab program to calculate area of circle.

Objective: How to use some mathematical symbols in scilab, like pi, and using it calculating area of circle.

Code:

```
/* Scilab Program to calculate area
   of a circle.
        Area = pi * r^2
*/

r = input("Enter radius of a circle (in cm)");

Area = %pi *(r^2);

msg = "Area of the circle is :";
disp(Area, msg)
```

@nand

OUTPUT

Scilab 6.0.2 Console

```
--> exec('/media/kite/86C65FF6C65FE549/scilab-6.0.2/softComputing/LineEquation.sci',-1)

        column 1 to 15

 -2.   -1.75  -1.5  -1.25  -1.  -0.75  -0.5  -0.25   0.   0.25   0.5   0.75   1.   1.25

        column 16 to 21

  1.75   2.   2.25   2.5   2.75   3.
```

Subject :

Date :

EXPERIMENT - 05

Aim : WAP to solve line equation in scilab.

Objective : How to find value of y coordinate from given values of x-coordinate, intercept and slope of line

Code :

```
/* Scilab program to solve line eqn
y = m*x + c
where m = slope of line
      x = x-coordinate
      c = intercept
      Y = y-coordinate
*/
m = 0.5;
c = -2;

x = linspace(0,10,21);
y = m*x + c;

disp(y);

plot(x,y);
```

@nand

OUTPUT

Scilab 6.0.2 Console

```
--> exec('/media/kite/86C65FF6C65FE549/scilab-6.0.2/softComputing/TrigonometryOperation.sci',-1)
Enter value of Theta : 45

With  Pi
   1.
With  variable x:
   1.

   '
```

Subject : Date :

EXPERIMENT - 06

AIM: WAP to solve trigonometric equation in scilab.

Objective: How to use trigonometric functions in scilab. And applying them in other mathematical operations.

Code:

```
/* SciLab program to solve a simple
   trigonometry equation

y = sin^2(%pi/3) + cos^2(%pi/3) it generates error
y = (sin(%pi/3)^2 + (cos(%pi/3))^2;
disp(y);

y = (sin(x)^2 + (cos(x)^2
disp(y);
```

Anand

OUTPUT

Scilab 6.0.2 Console

```
--> exec('/media/kite/86C65FF6C65FE549/scilab-6.0.2/softComputing/ComplexNumberTrig.sci',
Enter value of Theta : 60


    0.50000000000000111022 + 0.86602540378443859659i

    1.
```

Subject : Date :

EXPERIMENT - 07

Aim: WAP to solve complex Number problems.

Objective: How to work with complex number and handling real and imaginary part of a number.

Code:

```
/* Sci lab program to solve a complex number with trigonometry equation.

y = (cos(%pi/3))^2 + i(sin(%pi/3))^2;
                    Noo error correct answer
y = Real + imaginary i
*/
x = input("Enter value of Theta:")

y = %i*(sin(%pi/3)) + (cos(%pi/3));
disp(y);

y = (sin(x))^2 + (cos(x))^2;
disp(y);
```

Anand

OUTPUT

Scilab 6.0.2 Console

```
--> exec('/media/kite/86C65FF6C65FE549/scilab-6.0.2/softComputing/9CrossProduct.sci',
Enter vector x=[2,3,44]

Enter Vector y=[5,6,12]


  -228.   -196.   -3.
```

Subject : Date :

EXPERIMENT - 08

Aim: WAP compute cross product of two vectors u & v.

Objective: How to get every value of any vector and using direct access to produce cross product of given two vectors.

Code:

```
/* Scilab Program for vector and using direct access to produce
cross product of given two vectors

/* Scilab Program for vector cross product
*/
x = input ("Enter vector x =") // vector x
Y = input ("Enter vector Y =") // vector Y

z(1,1) = x(1,2) * y(1,3) - x(1,3) * y(1,2);
z(1,2) = x(1,1) * y(1,3) - x(1,3) * y(1,1);
z(1,3) = x(1,1) * y(1,2) - x(1,2) * y(1,1);

disp(z);
```

@anand

OUTPUT

Scilab 6.0.2 Console

```
-.-> exec('/media/kite/86C65FF6C65FE549/scilab-6.0.2/softComputing/8Recursionfactorial.sci',
Enter a number for factorial: 6

   1.

   2.

   6.

   24.

   120.

   720.
```

Subject :

Date :

EXPERIMENT - 09

AIM : WAP to find factorial of given number using function.

Objective : How to declare and define functions in scilab. implement a factorial finder
facto (argument_number)

Code :

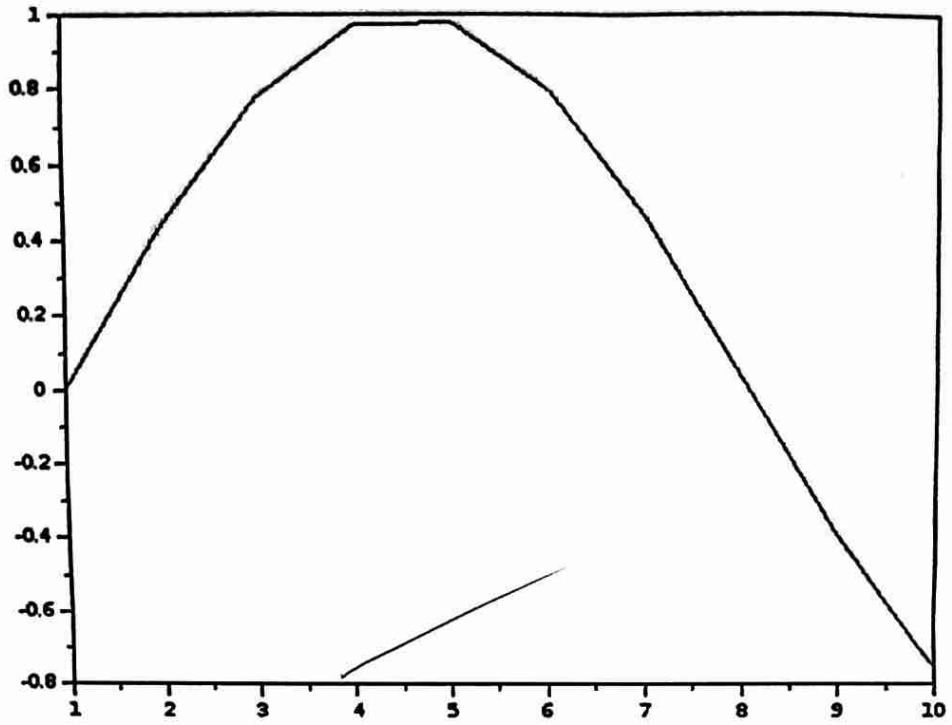
```
/* Scilab Program to illustrate
calculating factorial using function
Recursion */

function fact = facto(x)    // Function Definition
if x > 1 then
fact = x * facto(x-1);
else
fact = 1;
end
disp(fact);
endfunction

x = input("Enter a number for factorial:")
facto(x) : // calling function.
```

OUTPUT

Graphic window number 0



Subject : Date :

EXPERIMENT - 10

Aim: WAP for plotting e & sin(x)

Objective: How to use scilab builtin functions to plot charts on values generated during mathematical operations.

Code:

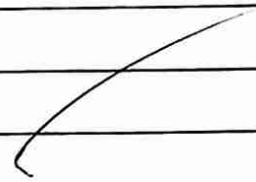
```
/* Scilab program for plotting e & sinx */

x = linspace(0.4, 10);
disp(x, "x matrix:");

w = exp(-0.4 * x);

y = sin(20) * w;

disp(y);
plot(Y);
```



Anand

OUTPUT

Scilab 6.0.2 Console

```
--> exec('/media/kite/86C65FF6C65FE549/scilab-6.0.2/softComputing/11SymmetryMatrix.sci',-1)
Enter a Matrix:[1,2,3;3,2,1]


 Given matrix is Not-symmetric.

--> exec('/media/kite/86C65FF6C65FE549/scilab-6.0.2/softComputing/11SymmetryMatrix.sci',-1)
Enter a Matrix:[1,0;0,1]


 Given matrix is symmetric.
```

Object:

Date:

EXPERIMENT - 11

Aim: WAP to check a given matrix is symmetrical or not.

Objective: How to implement decision making statements in scilab. And performing transpose of matrix.

Code:

```
/* Sci Lab program for checking a
   given matrix is symmetry or not

A matrix is symmetry if it's transpose
is same as actual matrix

      A = A'    */

a = input ("Enter a Matrix");

b = a';

if a==b then
disp("Given matrix is symmetry")
else
disp("Given matrix is Non-Symmetric")
end
```

Output 1 / 16/3/23 @nand