**Introduction to Scilab:**

Scilab is an open source scientific software package which is specialized in handling matrices(basic matrix manipulation, concatenation, inverse etc.)and numerical computations. It is similar to Matlab, which is a commercial product. Yet it is almost as powerful as Matlab. Scilab consists of three main components:

1. An interpreter
2. Libraries of functions(Scilab procedures)
3. Libraries of Fortran and C routines

**Lab-1 Assignment:**

1.There are two operations used in scilab for division operation. They are –

i)Left division=It is represented as backslash(\).

ii)Right division=It is represented as slash(/).

In right division, there is conventional division which is used in all day practice. Let us see an example with numbers written in scilab-

--> 5/3

ans =

1.6666667

But in case of left division, there is reverse of division; hence it is contrary to the right division. There is an example of this operation written in scilab-

--> 5\3

ans =

0.6

2.To express the followings in scilab some predefined variables are used; which are given by:

i)pi-%pi

ii)infinity-%inf

iii)Not a number-%nan

iv)Imaginary unit-%i

Here are the examples of the above functions which is written in scilab software:

--> %pi

%pi =

3.1415927

--> %inf

%inf =

Inf

--> %nan

%nan =

Nan

--> 1+%i

ans =

1. + i

3.The correct order of precedence of the mathematical expressions in scilab is given by:

i)expressions used in bracket-( )

ii)powers-(^)

iii)multiplication and division-(\*, /)

iv)addition and subtraction-(+, -)

It should be noted that operations of the same precedence are evaluated from left to right. Some examples are given by-

--> 2\*4/8

ans=

1.

--> 3-9\*9+4

ans =

-74.

4.a) --> A=ones(2,5)

A =

1. 1. 1. 1. 1.

1. 1. 1. 1. 1.

--> A(1,2)=0

A =

1. 0. 1. 1. 1.

1. 1. 1. 1. 1.

--> A(1,3)=0

A =

1. 0. 0. 1. 1.

1. 1. 1. 1. 1.

--> A(2,1)=0

A =

1. 0. 0. 1. 1.

0. 1. 1. 1. 1.

--> A(2,3)=0

A =

1. 0. 0. 1. 1.

0. 1. 0. 1. 1.

(b) --> B = zeros(4,4)

B =

0. 0. 0. 0.

0. 0. 0. 0.

0. 0. 0. 0.

0. 0. 0. 0.

--> B(4,:) =1

B =

0. 0. 0. 0.

0. 0. 0. 0.

0. 0. 0. 0.

1. 1. 1. 1.

--> B(1,3)=1

B =

0. 0. 1. 0.

0. 0. 0. 0.

0. 0. 0. 0.

1. 1. 1. 1.

--> B(1,4)=1

B =

0. 0. 1. 1.

0. 0. 0. 0.

0. 0. 0. 0.

1. 1. 1. 1.

--> B(2,3)=1

B =

0. 0. 1. 1.

0. 0. 1. 0.

0. 0. 0. 0.

1. 1. 1. 1.

--> B(2,4)=1

B =

0. 0. 1. 1.

0. 0. 1. 1.

0. 0. 0. 0.

1. 1. 1. 1.

(c) --> C=zeros(4,5)

C =

0. 0. 0. 0. 0.

0. 0. 0. 0. 0.

0. 0. 0. 0. 0.

0. 0. 0. 0. 0.

--> C(:,1)=1

C =

1. 0. 0. 0. 0.

1. 0. 0. 0. 0.

1. 0. 0. 0. 0.

1. 0. 0. 0. 0.

--> C(:,2)=1

C =

1. 1. 0. 0. 0.

1. 1. 0. 0. 0.

1. 1. 0. 0. 0.

1. 1. 0. 0. 0.

--> C(1,5)=1

C =

1. 1. 0. 0. 1.

1. 1. 0. 0. 0.

1. 1. 0. 0. 0.

1. 1. 0. 0. 0.

LAB REPORT:

1+1

ans =

2.

--> 2+3

ans =

5.

--> 2+3;1+1

ans =

2.

-->

--> pi

Undefined variable: pi

--> x=[1 2 3 4]

x =

1. 2. 3. 4.

--> y=x'

y =

1.

2.

3.

4.

--> x=[1 3 4;4 5 6;7 8 9]

x =

1. 3. 4.

4. 5. 6.

7. 8. 9.

--> y=x'

y =

1. 4. 7.

3. 5. 8.

4. 6. 9.

--> a=1:3

a =

1. 2. 3.

--> b=4:6

b =

4. 5. 6.

--> A=[a;b]

A =

1. 2. 3.

4. 5. 6.

--> size of A

size: Wrong value for input argument #2: 'm', '\*', 'r' or 'c' expected.

--> size(A)

ans =

2. 3.

--> t=1:10

t =

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

--> m=1:@:10

m=1:@:10

^^

Error: syntax error, unexpected :

--> m=1:2:10

m =

1. 3. 5. 7. 9.

--> u=1:3:100

u =

column 1 to 13

1. 4. 7. 10. 13. 16. 19. 22. 25. 28. 31. 34. 37.

column 14 to 25

40. 43. 46. 49. 52. 55. 58. 61. 64. 67. 70. 73.

column 26 to 34

76. 79. 82. 85. 88. 91. 94. 97. 100.

--> k=2:-0.5:-1]

k=2:-0.5:-1]

^^

Error: syntax error, unexpected ], expecting end of file

--> k=2:-0.5:-1

k =

2. 1.5 1. 0.5 0. -0.5 -1.

--> B=[1:4;5:8]

B =

1. 2. 3. 4.

5. 6. 7. 8.

--> 5+3

ans =

8.

--> 5-3

ans =

2.

--> 5/3

ans =

1.6666667

--> 5\3

ans =

0.6

--> 5\*3

ans =

15.

--> 1/5

ans =

0.2

--> 1\5

ans =

5.

--> 2^6/3+4

ans =

25.333333

--> who

Your variables are:

%e %eps %fftw

%gui %i %inf

%io %nan %pi

%s %tk %z

A B PWD

SCI SCIHOME TMPDIR

WSCI a annealinglib

ans arnoldilib assertlib

atomsguilib atomslib b

cacsdlib compatibility\_functilib consolelib

corelib data\_structureslib datatipslib

demo\_toolslib development\_toolslib differential\_equationlib

dynamic\_linklib elementary\_functionslib enull

evoid external\_objectslib fileioguilib

fileiolib functionslib geneticlib

graphicslib guilib helptoolslib

home integerlib interpolationlib

iolib jnull jvmlib

jvoid k linear\_algebralib

m m2scilib matiolib

modules\_managerlib neldermeadlib optimbaselib

optimizationlib optimsimplexlib output\_streamlib

overloadinglib parameterslib polynomialslib

preferenceslib randliblib scicos\_autolib

scicos\_scicoslib scicos\_utilslib scinoteslib

signal\_processinglib soundlib sparselib

special\_functionslib spreadsheetlib statisticslib

stringlib t tclscilib

timelib u uitreelib

umfpacklib webtoolslib windows\_toolslib

x xcoslib xmlGetValues

xmllib y

using 0 elements out of 8078.

and 95 variables out of 0.

Your global variables are:

%modalWarning %toolboxes %toolboxes\_dir

using 0 elements out of 8078.

and 3 variables out of 0.

--> c=[1 2 3 4 5 6]

c =

1. 2. 3. 4. 5. 6.

--> c(3)

ans =

3.

--> c(5)

ans =

5.

--> A=[3 4 5;5 6 7;8 9 7]

A =

3. 4. 5.

5. 6. 7.

8. 9. 7.

--> A(3.3)

ans =

8.

--> A(3,3)

ans =

7.

--> zero(1,2)

Undefined variable: zero

--> 0(1,2)

Invalid index.

--> zeros(1,2)

ans =

0. 0.

--> ones(1,3)

ans =

1. 1. 1.

--> rand(1,3)

ans =

0.2113249 0.7560439 0.0002211

--> zeroes(2,1)

Undefined variable: zeroes

--> zeros(2,1)

ans =

0.

0.

--> y=[8 4 3 1 7 0]

y =

8. 4. 3. 1. 7. 0.

--> y(1,3)=[]

y =

8. 4. 1. 7. 0.