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EVALUATION OF SCILAB ON BASIC OPERATIONS FOR RESEARCH AND TEACHING

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Abstract: - Scilab is a commercial software package which is widely used as a numerical computation package. Scilab is open source software which is freely available to the user and easily available to download to LINUX, WINDOWS and MAC operating systems. In this paper user will be able to get to know about the various operations in Scilab such as solving linear equations, addition, multiplication, plotting in 2-Dimension. Scilab gives similar numerical results as Matlab, with a limitation in the size of the linear system when dealing with complex problems. For teaching purposes. Scilab offers a simple, easy and understandable syntax.

Keywords: Scilab

INTRODUCTION: There are varieties of numerical packages available nowadays like Matlab, Scilab Octave. The focus of this paper is mainly to introduce numerical computational package- Scilab. This paper analysis the various operations that are possible in Scilab. Scilab offers various computations like:

1. Matrix Data Handling.
2. Data visualization through 2D and 3D plots.
3. Ordinary Differential Equations.
4. Sparse matrix.
5. Polynomials.
6. Linear Algebra.

Scilab further offers application designing with the help of GUI (Graphical User Interface), embedding Scilab in C/C++. Scilab has the ability to visualize data required in numerical computation. Scilab can also be utilized for image enhancement, numerical enhancement and signal processing. Scilab offers many toolbox like Signal Image Processing Toolbox (SIP), Wavelet toolbox and MySql to name a few.

BASIC OPERATIONS ON SCILAB: In this research paper the operations that are elaborated are as follows:

1. Evaluate simultaneous equations in Scilab.

Steps:

Step1: Enter the matrix A.

Step2: Enter the matrix B.

Step3: New matrix X is evaluated by calculating the inverse of matrix and then multiplying with the second matrix.

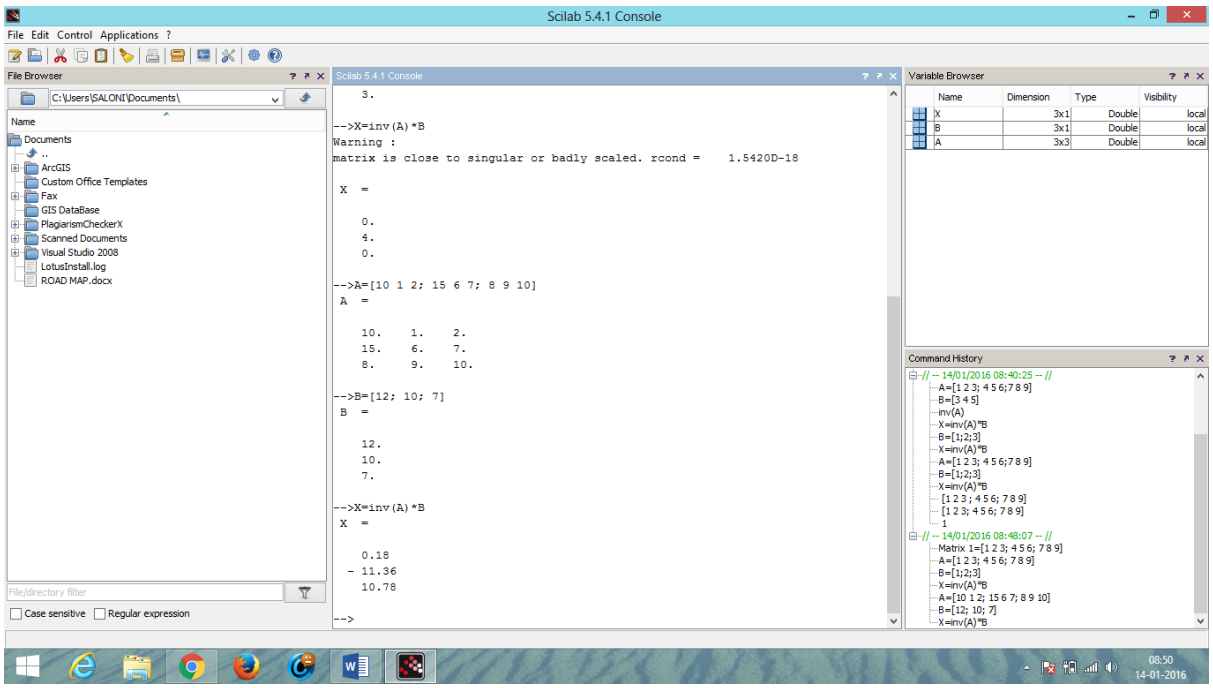

Fig 1: Evaluating the simultaneous equation.

2. Finding the Eigen values in Scilab.

Steps:

Step1: Input a matrix.

Step2: Write the inbuilt scilab command spec(Matrix Name) which is used to calculate the eigen value of a matrix.

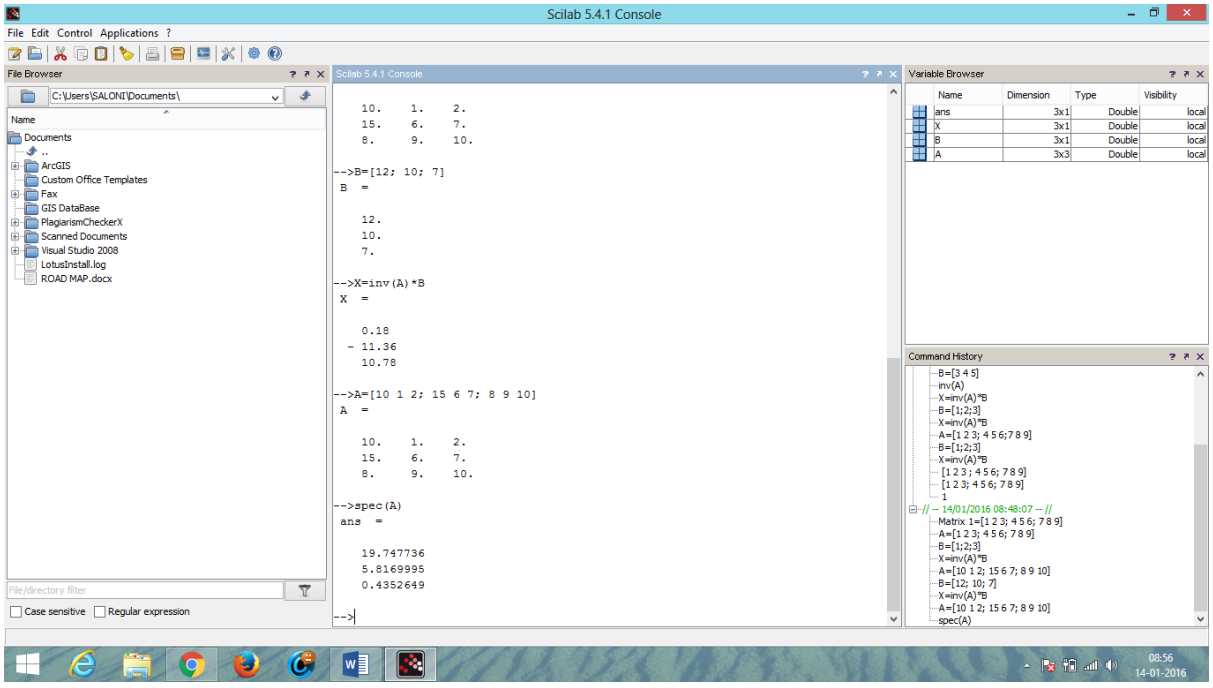

Fig 2: Finding the eigen value.

3. Plotting a graph in Scilab.

Steps:

Step1: Specify the range for which the graph is to be plotted.

X=0:0.0001:2*%pi;

Step2: Give the equation of the graph.

Y=sin(X);

Step3: Write the command for plotting in scilab.

plot (X,Y);

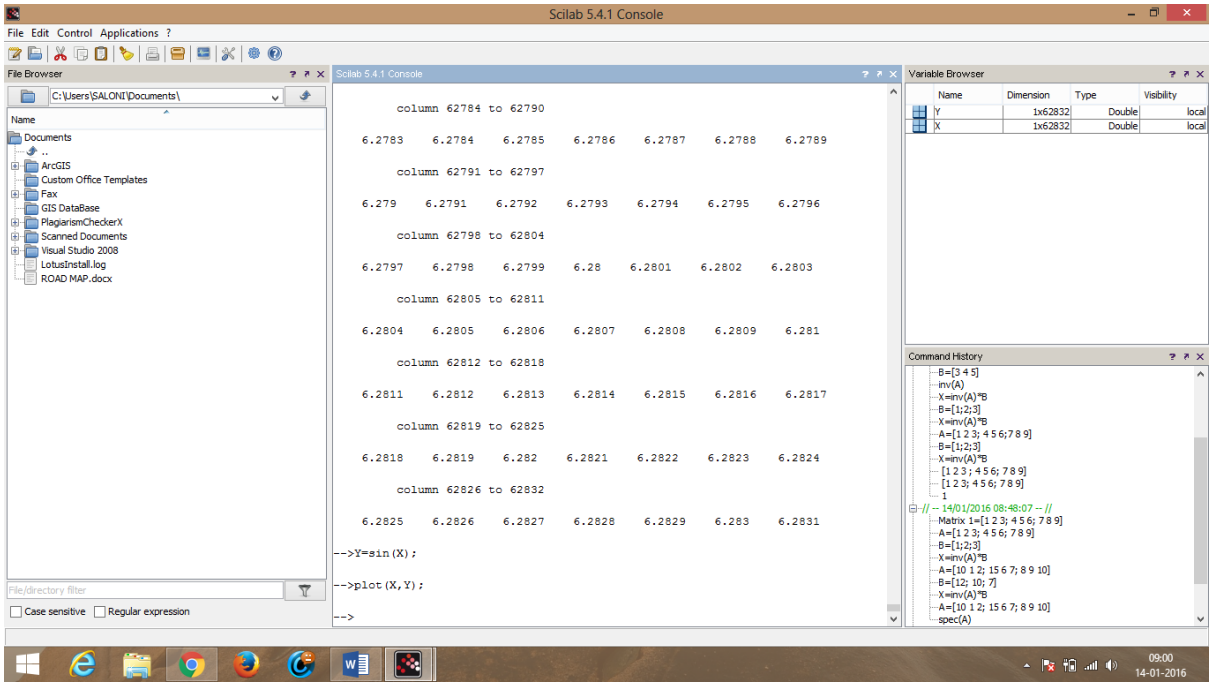

Fig 3: Plotting a graph.

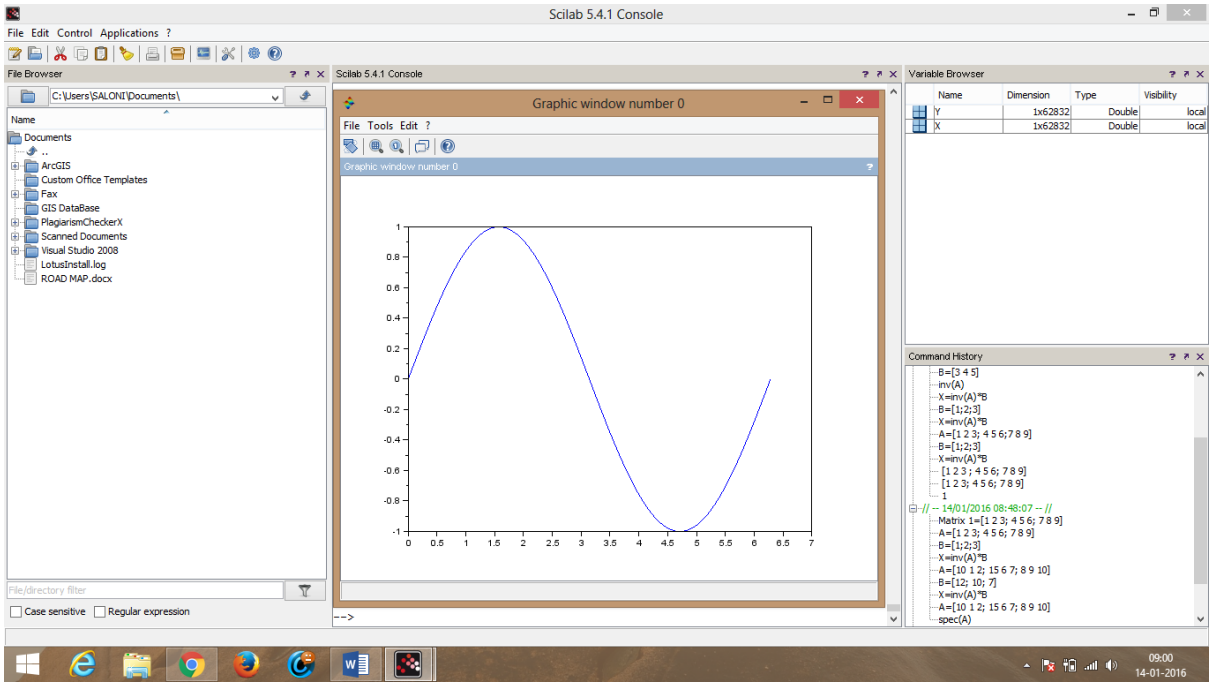

Fig 4: Graph Shown.

4. Evaluation of a polynomial
Steps:
Step1: Input a polynomial.
p1=poly([3,2],'x','r');
Step2: For finding the roots of polynomial.
roots(p1);
For finding the derivative:
derivate(p1);

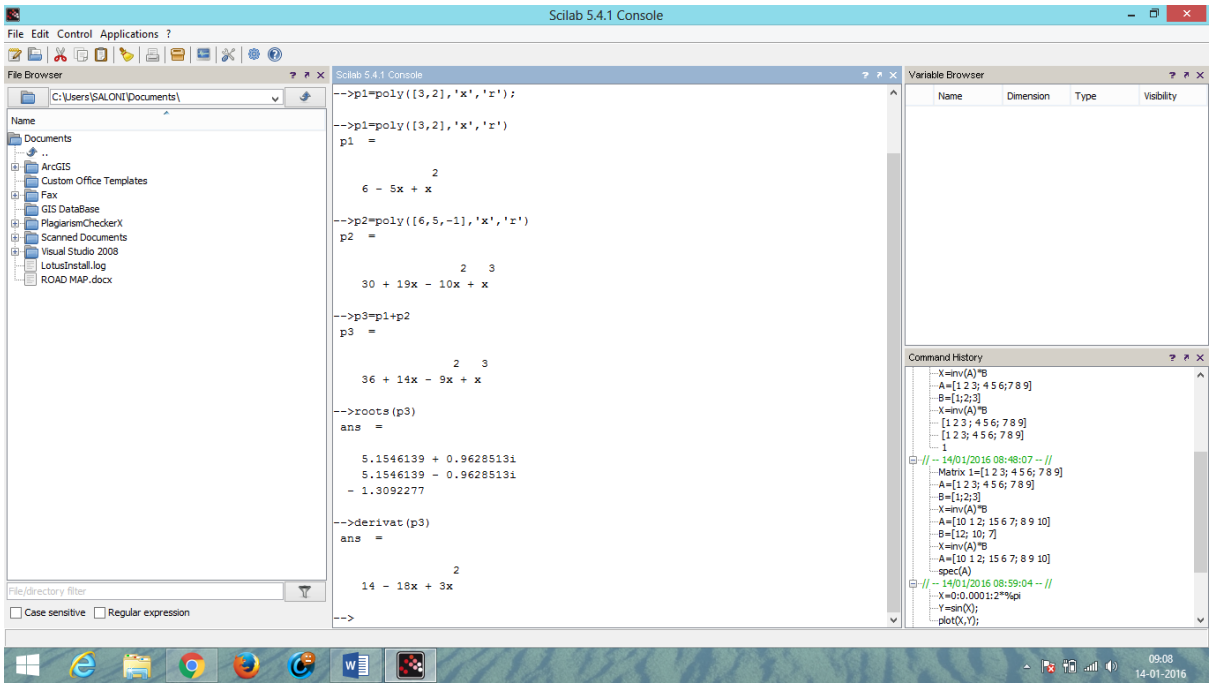

Fig 5: Operations on Polynomial.

CONCLUSION: This paper presents a few of the operations performed in Scilab. Scilab is very useful for performing numerical operations as elaborated in this paper. In the course of developing this paper it can be suggested that Scilab is an easy language to learn for teaching as well as for research purposes. Many projects can be developed using Scilab in the field of Digital Image Processing as Scilab offers a separate module for Image Processing also.

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