Applications of Matlab in Control System Design

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Abstract: This paper present basic idea of MATLAB Programming used to solve control engineering problems. MATLAB is not limited to any engineering field. It finds its applications in almost all engineering discipline i.e. chemical, mechanical, environmental, civil etc. MATLAB is an interactive system whose basic data element is matrix. This paper is suitable for the beginners to learn about MATLAB.

Keywords: MATLAB, Control systems, Matrix

I. INTRODUCTION

MATLAB is a technical computing environment for high performance numeric computation and visualization .MATLAB integrates numerical analysis, matrix computation, and signal processing to graphics in an easy to use environment where problems and solutions are expressed just as they are written mathematically.

MATLAB is a matrix based system for mathematical and engineering calculations. We may think of MATLAB as a kind of language designed solely to do matrix manipulations. All variables handled in MATLAB are matrices. That is, MATLAB has only one data type, a matrix, or a rectangular array of numbers. MATLAB has an extensive set of routines for obtaining graphical outputs. MATLAB IS AN INTERACTIVE SYSTEM WHOSE BASIC DATA ELEMENT is a matrix that does not require dimensioning MATLAB also features a family of application specific solution that we call to tool boxes .Tool boxes are comprehensive collection of MATLAB functions (M-files) that extend the MATLAB environment. Areas in which tool boxes are available include signal processing, control systems design, dynamic system simulation, systems identification neural network optimization techniques and others MATLAB has many predefined functions that can be called by the user to solve many different types of control problems. On most systems, once MATLAB has been installed, to invoke MATLAB, execute the command MATLAB. To exit MATLAB, execute the command exit or quit. The current MATLAB program was written in C programming by Math work.

II. HOW MATLAB IS USED

MATLAB is usually used in a command driven mode. When single line commands are entered, MATLAB process them immediately band displays the results. MATLAB is also capable of executing sequences of commands that are stored in files

The commands that are typed maybe accessed later by using the up arrow key.

It is possible to scroll through some of the latest commands that are entered and recall a particular command line.

A convenient feature of MATLAB is that the variables need not be dimensioned before use. In MATLAB variables are generated automatically once they are used. (The dimensions of the variables can be altered later if necessary).Such variables remain in memory until the command exit or quit is entered.

To obtain a list of variables in the workspace simply type the command, who, then all variables currently in the work space appear on the screen

The command clear will clear all non permanent variables from the work space .If it is desired to clear only a particular variable say' x', from the work space , enter the command clear x.

III. HOW TO SAVE VARIABLES WHEN EXITING FROM MATLAB

When exit or quit is typed, all variables in MATLAB are lost .If the command save is entered before exiting, the all variables can be kept in a disk file named matlab. Mat. When we later re enter MATLAB, the command load will restore the work space to its former state.

A. Applications of MATLAB
1. Computing matrix function
2. Mathematical models of linear system
3. Plotting response curves

IV. CONCLUSION

MATLAB is sued to solve mathematical problems as well as problems of control systems also. This paper is very useful for those who want to learn programming using MATLAB

REFERENCES

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