

ITW Experiment 1

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AIM: Discuss the History of MATLAB

THEORY:

The first MATLAB (the name is short for “Matrix Laboratory”) was not a programming language. Written in Fortran in the late 1970s, it was a simple interactive matrix calculator built on top of about a dozen subroutines from the LINPACK and EISPACK matrix software libraries. There were only 71 reserved words and built-in functions. It could be extended only by modifying the Fortran source code and recompiling it.

The programming language appeared in 1984 when MATLAB became a commercial product. The calculator was reimplemented in C and significantly enhanced with the addition of user functions, toolboxes, and graphics. It was available initially on the IBM PC and clones; versions for Unix workstations and the Apple Macintosh soon followed.

In addition to the matrix functions from the calculator, the 1984 MATLAB included fast Fourier transforms (FFT). The Control System Toolbox appeared in 1985 and the Signal Processing Toolbox in 1987. Built-in support for the numerical solution of ordinary differential equations also appeared in 1987.

The first significant new data structure, the sparse matrix, was introduced in 1992. The Image Processing Toolbox and the Symbolic Math Toolbox were both introduced in 1993.

Several new data types and data structures, including single precision floating point, various integer and logical types, cell arrays, structures, and objects were introduced in the late 1990s.

Enhancements to the MATLAB computing environment have dominated development in recent years. Included are extensions to the desktop, major enhancements to the object and graphics systems, support for parallel computing and GPUs, and the “Live Editor”, which combines programs, descriptive text, output and graphics into a single interactive, formatted document.

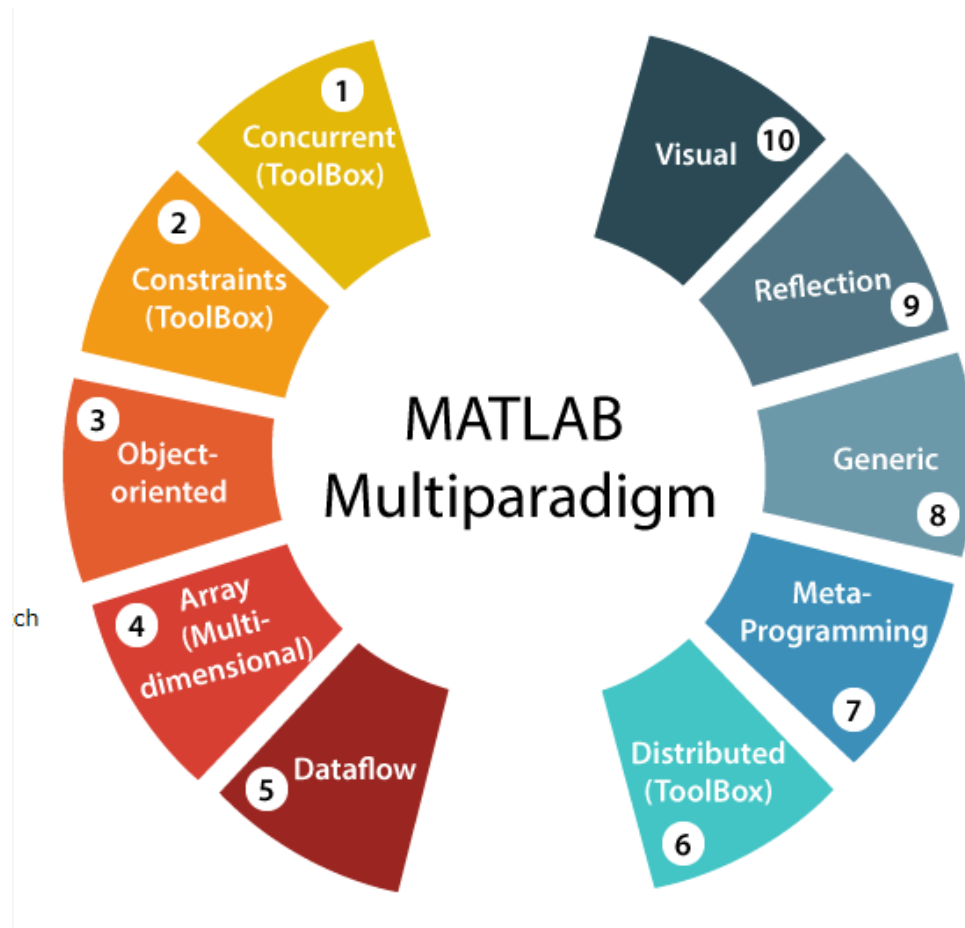
Today there are over 60 Toolboxes, many programmed in the MATLAB language, providing extended capabilities in specialized technical fields.

MATLAB's built-in functions provide excellent tools for linear algebra computations, data analysis, signal processing, optimization, numerical solution of ordinary differential equations (ODEs), quadrate, and many other types of scientific calculations.

Most of these functions use state-of-the-art algorithms. These are numerous functions for 2-D and 3-D graphics, as well as for animations.

MATLAB supports an external interface to run those programs from within MATLAB. The user is not limited to the built-in functions; he can write his functions in the MATLAB language.

There are also various optional "toolboxes" available from the developers of MATLAB. These toolboxes are a collection of functions written for primary applications such as symbolic computations, image processing, statistics, control system design, and neural networks.



The necessary building components of MATLAB are the matrix. The fundamental data type is the array. Vectors, scalars, real matrices, and complex matrices are all automatically handled as special cases of the primary data type. MATLAB loves matrices and matrix functions. The built-in functions are optimized for vector functions. Therefore, Vectorized commands or codes run much faster in MATLAB.