1.Introduction to MATLAB

***MATLAB or matrix laboratory is a high –level programming language consisting of an interactive environment mainly used for numeric computation, programming and visualization. it has been developed by Math Works. The basic functions of MATLAB are plotting of functions and data, the creation of user interfaces, matrix manipulation. it also provide support for interfacing with other programming language in C,C++,Fortran, and java. Besides, it is also used to analyze data ,create models and applications, and also develop algorithms. Along with all this, introduction to MATLAB also provides numerous built-in-functions for mathematical operations involving numerous calculations, performing numerical methods, generating plots, and a lot of other functions. MATLAB also has a very good scope in the automotive domain using Rapid Prototyping or RCP used extensively in medical, automotive, and aerospace domains.***

***Main components / highlights***

*In the above section, we studied the introduction to MATLAB, so we’re going to learn the components of MATALB.MATLAB provides a lot of functionalities that can help in computational mathematics. Below are to most common functions and mathematical calculations used in MATLAB-*

1. *Dealing with Matrices and Arrays*
2. *2-D and 3-D Plotting and graphics*
3. *Linear Algebra*
4. *Algebraic Equations*
5. *Non-Linear Functions*
6. *Statistics*
7. *Data Analysis*
8. *Calculus and Differential Equations*
9. *Numerical Calculations*
10. *Integration*
11. *Transforms*
12. *Curve Fitting*
13. *Various other special functions*

*characteristics*

*MATLAB is a versatile tool designed for computational mathematics and supports lots of other operations , Below given are a few of the characteristics that make Mat lab an intelligent tool-*

*1.MATLAB contents are a huge library of built-in functions providing support for various mathematical functions like filtering, optimization , Fourier analysis, linear algebra, statistics, numerical integration, and solving differentials equations.*

*2.MATLAB is a high- level language used for visualization plots and data visualization , application development, and numerical computation.*

*3.MATLAB provides support for creating custom plots and data visualization with its built-in support for graphics.*

*4.MATLAB also supports and iterative environment helping to design and problem solving along with iterative.*

*Applications of MATLAB*

*As we discussed in the introduction to MATALAB we will now learn about MATLAB’s applications which are as follows-*

*1.Computational finance*

*2.Control system*

*3.Signal processing and communication*

*Advantages*

*1.MATLAB in a compiler independent tool and does not require any compiler to execute like as required in C,C++.*

*2.Being compiler independent makes MATLAB more efficient and productive.*

*3.MATLAB is fourth –generation high level language.*

*4.MATLAB coder is used to converting the code that is written in MATLAB to Java ,python, c++,NET etc.*

*5.Different languages can be used to implement scientific theory and after building he library files .*

*6.The in-built reach library of MATLAB contains a library of the natural network ,power system, communication.*

*7.Compiler mathematical operations system of the*

*8.MATLAB is*