**Matlab**

**Introduction**

Matlab (*Stands for Matrix Laboratory)* is the efficient performance language, that integrates productive visualization, image processing and fast programming for computing. Matlab is used to create ideal prototypes of many engineering programs to software solutions.

Currently, the Matlab program operates as an ideal interactive programming environment with graphical outputs. It consists of many toolboxes, 2D Graphics functions and 3D Graphics functions that help us to run many applications. With Matlab, you can solve different problems in a fraction of time that are associated with vector and matrix formula.

**What is Matlab?**

Matlab is the fourth generation ideal programming language which was published by MathWorks. This language is similar to some common languages ( *C+, Java etc* ) that come with its own IDE (*Integrated Development Environment)* and different libraries. Cleve Moler discovered Matlab and initially, it was known as Matrix Programming Language. Later in 1984, owners of Matlab (*Cleve Moler and his team*) founded MathWork. In 1984, Matlab was the first version of Mathworks released in 1984.

You can run Matlab on mobile devices and computers as it is the most sophisticated and advanced version of the calculator. In simple words, you can perform many operations by using text editor or command lines. Matlab program contains help icon that explains everything in details. Below are some of the uses of Matlab:

* Data visualization and analysis
* Plotting graphs data sets
* Performing numerical and linear algebra
* Creating Algorithm
* Developing GUI (Graphical User Interface)

**Matlab System**

Being a Multi-Paradigm software package, Matlab can work with Visual,

Functional and Object-oriented programming approaches. It performs every computing based on arrays and matrices. Matlab consists of five main elements:

**1.Matlab Language:** It is high-level matric and array language with data structure, control flow statement, functions and input/output characteristics.

**2.Development Environment:** It is the productive set of tools that helps us to use Matlab files and functionalities. Maximum of its tools are GUI ( *Graphical user interface*).

**3.Matlab Advanced Mathematical Functional Library:** It is the best compilation of different designs like sine, cos, sum, cosine and other sophisticated functions like matrix eigenvalues, fast Fourier transform, matrix inverse and Bessel functions.

**4.API/External Interface:** With the help of this library, you can write Fortran and C programme in Matlab. Many facilities are offered here like dynamic linking, calling this software as a computational engine and writing MAT Files

**5.Graphics:** Matrices and Display vectors are some of the important extensions of Matlab. It contains high-level programme design for 2D and 3D animation, data visualization, presentation graphics and image processing.

**How Matlab makes your work easy**

In Matlab, you can code fast because all your code is compiled by using JIT (*Just-in-time compiler*), tasks are distributed and library calls are all optimized among the computer’s core. Here you can run the algorithm in parallels to make execution much faster. It provides access to different interactive applications to perform many computational operations.

**The Needs of Matlab?**

Over other languages, Matlab allows us many advantages:

* Every single data in Matrix are considered as Matrix. It helps us to perform different matrix-based operation like inversion, matrix addition and multiplication etc.
* Vectorized operation in Matlab can reduce the size of the code file.
* We can enhance the functionalities of Matlab with the help of its toolboxes
* Simulink is the graphics system of Matlab that can optimize all the results for further interaction.

**Application Areas for Matlab Developers**

Many job positions are available for Matlab Expertise. In general, they are hired by eduction institutes, scientist lab and research centres. Below are some of the Job positions for Matlab

Developers are:

* Research Associate
* Matlab Developer
* Matlab Expert
* Matlab Scientists.

**Skills for Matlab Programmer**

In order to be a certified Matlab programmer, one should have basic knowledge of Matlab syntax and object-oriented programming languages. He/She should have some experience of working with Graphic system, Simulink. Having a good understanding of mathematics, set of libraries and other IDE are building blocks of Matlab learning programme.

**Salary Outlook**

Salary for Matlab Developer varies based on expertise. It mainly varies between $57000 to $98000. At the beginning of Matlab developer career it might be a little less package but with great opportunities to make a better future. You don’t need any particular engineering degree to be Matlab Developer. Simple any graduate pass can become Matlab Developer.

**Future**

Matlab is an ideal statistical analysis tool that is widely used for image processing and computer vision industries as well. Its functionalities and list of toolboxes can be extended at the vast range. Nowadays it is used by many scientists for research application. A career in Matlab will offer you wonderful job opportunities.