

# **MATLAB Job Interview Questions And Answers**



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## MATLAB Interview Questions And Answers Guide.

### Question - 1:

What is MEX in MATLAB?

#### Ans:

They are basically native C or C++ files which are linked directly into the MatLab application at runtime. MEX files have efficiency to crash the MatLab application

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### Question - 2:

Do you know what is Get and Set in Matlab?

#### Ans:

Get and Set are referred as getter and setter functions. For assigning properties, setter functions are used while for accessing properties getter functions are used.

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### Question - 3:

What common toolboxes present in Matlab?

#### Ans:

Some of the common toolboxes in Matlab are

- \* Control System
- \* Fuzzy Logic
- \* Image Processing
- \* LMI control
- \* Neural Networks
- \* Robust Control
- \* System Identification

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### Question - 4:

What are M-file?

#### Ans:

They are just a plain ASCII text that is interpreted at run time. They are like sub-programs stored in text files with .m extensions and are called M-files. For most of the MatLab, development M-files are used.

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### Question - 5:

What graphic system used in MatLab?

#### Ans:

Graphic system used in MatLab is known as handle graphics. It has a high level and low-level commands.

- \* High Level Commands: High level command performs image processing, data visualization and animation for 2D and 3D presentation graphics
- \* Low Level Commands: Full customization of the appearance of graphics and building of complete graphical user interface

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### Question - 6:

What are Xmath features?

#### Ans:

- \* Scripting language with OOP features
- \* Libraries that are LNX and C language compatible
- \* A debugging tools with GUI features
- \* Color graphics can be pointed and clickable



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**Question - 7:**

Do you know what are the four basic functions to solve Ordinary Differential Equations?

**Ans:**

The four basic functions that MatLab has to solve ODE's are

- \* Quad
- \* Quad8
- \* ODE23
- \* ODE45

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**Question - 8:**

Do you know what is Simulink?

**Ans:**

Simulink is an add-on product to MatLab, it provides an interactive, simulating, graphical environment for modeling and analyzing of dynamic systems.

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**Question - 9:**

What are the operators that MatLab allows?

**Ans:**

Matlab allows following Operators

- \* Arithmetic Operators
- \* Relational Operators
- \* Logical Operators
- \* Bitwise Operations
- \* Set Operations

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**Question - 10:**

Do you know what are the types of loops does Matlab provides?

**Ans:**

Matlab provides loops like

- \* While Loop
- \* For Loop
- \* Nested Loops

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**Question - 11:**

Do you know MatLab consist of what?

**Ans:**

MatLab consists of five main parts

- \* MatLab Language
- \* MatLab working environment
- \* Handle Graphics
- \* MatLab function library
- \* MatLab Application Program Interface (API)

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**Question - 12:**

What is Xmath?

**Ans:**

Xmath is an interactive scripting and graphics environment for Xwindow workstations.

- \* With its significant improvement features on MATLAB-type software, interactive mathematics, scripting functionalities are elaborated.
- \* Following are the Xmath features:
- \* Scripting languages with OOP features.
- \* Libraries that are LNX and C language compatible.
- \* A debugging tools with GUI features.
- \* Color graphics can be pointed and clickable.
- \* A special layer is available that is programmable for MOTIF GUI.

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**Question - 13:**

What is image arithmetic functions in MATLAB?

**Ans:**

Following is the list of image arithmetic functions and their usage.



- \* `Imabsdiff` - Returns absolute difference of two images.
- \* `Imadd` - Performs addition of two images or addition of constant to image.
- \* `Imapplymatrix` - Applies linear combination of color channels.
- \* `Imcomplement` - Complements an image.
- \* `Imdivide` - Divide one image into another or divide image by constant.
- \* `Imlincomb` - Linear combination of images.
- \* `Immultiply` - Multiplies two images or multiplies image by constant.
- \* `Imsubtract` - Subtracts one image from another or subtracts constant from image.

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### Question - 14:

Tell me can MATLAB run without graphics?

#### Ans:

At times scripts need to run without displaying the plots.

- \* By doing this, the script statement need not be commented.
- \* When working from home, running graphics over the network may be too slow.
- \* To perform the process, add the following lines of code:  
`%setenv DISPLAY /dev/null % MATLAB.`
- \* By using these simple tricks, we can run MATLAB without graphics.

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### Question - 15:

Do you know how to correctly apply the graphics patches in MATLAB?

#### Ans:

Following is the sequence of commands to apply graphic patches in MATLAB.

- \* Open the LOCAL MACHINE window.
- \* Type the command `xhost + ashland`.
- \* Add the following code sequence before the plot command.

Figure;

```
Set(gcf,'renderer','zbuffer');
```

```
[s,w] = unix('echo $DISPLAY');
```

```
Set(gcf, 'XDisplay',w);
```

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### Question - 16:

Do you know what is LaTeX in MATLAB?

#### Ans:

MATLAB allows Greek letters.

- \* These letters are to be encoded.
  - \* To encode these Greek letters, LaTeX is used.
- MATLAB already handles naturally simple LaTeX encodings that allow introducing Greek letters or modifying the font size and appearance in plots.

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### Question - 17:

Suppose if you know then tell me how to call MATLAB in batch mode?

#### Ans:

Batch mode execution of MATLAB can be done from command line or from makefile.

- \* A script is needed with extension `.m`.
- \* Specify all the commands that are to execute in sequential order in the script.
- \* The commands are placed in the script by using the command `makefile`
- \* To add the commands in command line mode, type all the commands at the command line in sequential order.
- \* The commands are executed soon after typing them at the command line.

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### Question - 18:

What is memory management functions in MATLAB?

#### Ans:

Below is the list of memory management functions.

- \* `Clear` - Removes variables from memory.
- \* `Pack` - Saves the existing variables to disk, and then reloads them contiguously.
- \* `Save` - Selectively persists variables to disk.
- \* `Load` - Reloads a data file saved with the `save` function.
- \* `Quit` - Exits MATLAB and returns all allocated memory to the system.

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### Question - 19:

Do you know how to Pre Allocate a Non Double matrix?

#### Ans:

Preallocating a block of memory for holding a non double matrix is memory efficient.



- \* It is faster to use the function 'repmat'.
- \* While allocating block of memory for a matrix, zeros are pre allocated to a matrix.
- \* The function to pre allocate memory is `int8()`.
- Ex: `matrix = int8(zeros(100));`
- \* `Repmat` function is used to create a single double matrix.
- \* Ex: `matrix2 = repmat(int8(0), 100, 100);`
- \* Thus non double matrix is pre allocated.

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### Question - 20:

What are the Basic Plots and Graphs of MATLAB?

**Ans:**

Following table describes basic plots and graphs.

- \* `Box` - Axis border
- \* `Errorbar` - Plots error bars along curve
- \* `Hold` - Retains current graph while adding new graphs
- \* `Line` - Creates line object
- \* `LineSpec` (Line Specification) - Syntax of Line Specification String
- \* `Loglog` - Log to log scale plot
- \* `Plot` - 2-D line plot
- \* `Plot3` - 3-D line plot
- \* `Plotyy` - 2-D line plots with y-axis on both left and right side
- \* `Polar` - Polar coordinate plot
- \* `Semilogx` - Semilogarithmic plot
- \* `Semilogy` - Semilogarithmic plot
- \* `Subplot` - Creates axis in tiled positions
- \* `Xlim` - Sets or queries x-axis limits
- \* `Ylim` - Sets or queries y-axis limits
- \* `Zlim` - Sets or queries z-axis limits

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### Question - 21:

What are 3D visualization elements in MATLAB?

**Ans:**

3D visualization elements allow MATLAB to deal with 3D graphics.

- \* `Surface` and `Mesh Plots` - It includes plot matrices, visualize functions, color maps.
- \* `View Control` - Used to control camera viewpoint, rotation, zooming, and aspect ratio and set axis limits.
- \* `Lighting` - Used for adding and controlling scene lighting.
- \* `Transparency` - Used to specify object transparency.
- \* `Volume Visualization` - Used for volume data grid.

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### Question - 22:

What is handle graphics in MATLAB?

**Ans:**

Handle Graphics is a subsystem of MATLAB that handles graphics.

- \* Handle Graphics has high level commands for 2D and 3D data visualization.
- \* Image processing, animation and presentation graphics can be generated using Handle Graphics.
- \* Low level commands allow customizing the graphics appearances.
- \* Handle Graphics allows to build customized Graphics User Interfaces

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### Question - 23:

What is stress analysis in MATLAB?

**Ans:**

MATLAB is used in aerospace engineering, space environment.

- \* MATLAB is suitable for flexible dynamics.
- \* These domain experts conduct stress analysis on various structures like metallic and composite structures.
- \* To analyze the stress, NASTRAN, IDEAD, Oracle and PATRAN levels of proficiency is needed.
- \* The tasks are also used on aircraft that is metallic structure.
- \* The stress analysis includes control surface stiffness understanding, loop calculations, finite element modeling and fatigue testing requirement and analysis.

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### Question - 24:

Explain briefly MATLAB mathematical function library?

**Ans:**

MATLAB mathematical functions include computational algorithms.

- \* The elementary computational functions are `sum`, `sine`, etc.
- \* Matrix functions are available including matrix inversion.
- \* Special functions like Bessel are available.
- \* MATLAB includes transformation functions, namely Fourier Transformation Functions.



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**Question - 25:**

What is MATLAB working environment?

**Ans:**

MATLAB working environment has various tools to work with MATLAB.

- \* It has facilities to manage variables.
- \* MATLAB supports export and import data across applications.
- \* Certain tools are available to develop and manage MATLAB files.
- \* Debugging and profiling of MATLAB applications are more flexible with MATLAB.

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**Question - 26:**

Explain briefly about MATLAB language?

**Ans:**

MATLAB language is a high-level matrix language.

- \* It has control structures, functions, data structures, I/O and OOP features.
- \* Allows rapid creation of throw-away programs.
- \* Allows creating large and complex application programs.
- \* MATLAB API allows to author C and FORTRAN programs to interact with MATLAB.

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**Question - 27:**

Do you know about MATLAB system parts?

**Ans:**

Following are the 5 main parts of MATLAB.

- \* MATLAB Language.
- \* MATLAB working environment.
- \* Graphics handler.
- \* MATLAB mathematical library.
- \* MATLAB Application Program Interface.

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**Question - 28:**

Explain about stress analysis in Matlab?

**Ans:**

People working on these areas as aerospace engineers should have familiarity and exposure to NASTRAN and MATLAB with knowledge on space environment and modeling of flexible dynamics. These aerospace engineers will be responsible to conduct stress analysis on metallic and composite structures. NASTRAN, IDEAS, Oracle and PATRAN proficiency level is required. Their duties also include on aircraft which are metallic and composite structures. This includes understanding of control surface stiffness and load calculations, finite element modeling (FEM), fatigue testing requirement and analysis.

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**Question - 29:**

How to call matlab in batch mode?

**Ans:**

This can be done from the command line or from a makefile. You need a script (filename.m). Just type at the command line, or include in the makefile: matlab<filename.m where filename.m can write to disk a figure, a binary, an ascii file, anything you want.

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**Question - 30:**

How to correctly apply the graphics patches in Matlab?

**Ans:**

Open a LOCAL MACHINE window and type: xhost +ashland # Add the following code sequence just before the plot command that was giving you problems: figure; set(gcf,'renderer','zbuffer'); [s,w] = unix('echo \$DISPLAY'); set(gcf,'XDisplay',w);

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**Question - 31:**

Can we run Matlab without graphics?

**Ans:**

Sometimes you may want to run scripts which contain plotting commands without displaying the plots and without going into the script to comment out the commands. An example: if you're working from home and it's too slow to run graphics over the network. You can play a simple UNIX trick: % setenv DISPLAY /dev/null % matlab

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**Question - 32:**



Explain LaTeX in Matlab?

**Ans:**  
Matlab already handles naturally simple LaTeX encodings that allow introducing Greek letters or modifying the font size and appearance in plots.

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**Question - 33:**

On what machines Matlab should be run?

**Ans:**  
We will run it from sthelens, and only if sthelens is down, from cher, orsay or tiree. It works on other machines too, but some of the other machines have older versions of the OS and core dump upon exiting from matlab. Some other local machines with new setups work fine. Try your local machine. Matlab is blocked from running on the servers

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**Question - 34:**

Vectorization What is that in Matlab? How to do it ?

**Ans:**  
Thinking in terms of full matrices/vectors and also some related functions for that \* Use of filter(), which works beautifully for some time series models

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**Question - 35:**

What can we use Matlab for?

**Ans:**  
Simple calculations 2. Plotting and analyzing mathematical relationships (2D and 3D) 3. List & Matrix Operations 4. Writing script files (a type of programming) 5. Symbolic manipulation of equations 6. Advanced visualization, animation and GUI interface tools

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**Question - 36:**

how to Add noise to an image in Matlab?

**Ans:**  
The function noise.m, now installed on ashland too, adds Gaussian, uniform, salt and pepper, additive or multiplicative noise to an image.

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**Question - 37:**

Explain The MATLAB Application Program Interface (API)?

**Ans:**  
This is a library that allows you to write C and Fortran programs that interact with MATLAB. It includes facilities for calling routines from MATLAB (dynamic linking), calling MATLAB as a computational engine, and for reading and writing MAT-files.

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**Question - 38:**

Explain The MATLAB mathematical function library?

**Ans:**  
This is a vast collection of computational algorithms ranging from elementary functions like sum, sine, cosine, and complex arithmetic, to more sophisticated functions like matrix inverse, matrix eigenvalues, Bessel functions, and fast Fourier transforms.

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**Question - 39:**

Explain Handle Graphics in Matlab?

**Ans:**  
This is the MATLAB graphics system. It includes high-level commands for two-dimensional and three-dimensional data visualization, image processing, animation, and presentation graphics. It also includes low-level commands that allow you to fully customize the appearance of graphics as well as to build complete Graphical User Interfaces on your MATLAB applications.

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**Question - 40:**

Explain The MATLAB working environment?

**Ans:**  
This is the set of tools and facilities that you work with as the MATLAB user or programmer. It includes facilities for managing the variables in your workspace and importing and exporting data. It also includes tools for developing, managing, debugging, and profiling M-files, MATLAB's applications.

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**Question - 41:**



Explain The MATLAB language?

**Ans:**

This is a high-level matrix/array language with control flow statements, functions, data structures, input/output, and object-oriented programming features. It allows both "programming in the small" to rapidly create quick and dirty throw-away programs, and "programming in the large" to create complete large and complex application programs.

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**Question - 42:**

What are the MATLAB System Parts?

**Ans:**

The MATLAB system consists of five main parts:

- \* The MATLAB language.
- \* The MATLAB working environment.
- \* Handle Graphics.
- \* The MATLAB mathematical function library.
- \* The MATLAB Application Program Interface (API).

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**Question - 43:**

What Is MATLAB?

**Ans:**

MATLAB is a high-performance language for technical computing. It integrates computation, visualization, and programming in an easy-to-use environment where problems and solutions are expressed in familiar mathematical notation. Typical uses include:

- \* Math and computation
- \* Algorithm development
- \* Modeling, simulation, and prototyping
- \* Data analysis, exploration, and visualization
- \* Scientific and engineering graphics
- \* Application development, including Graphical User Interface building

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