Course Title:

Interfacing MATLAB with C Code

Course Purpose:

This one-day course focuses on interfacing MATLAB® with user-written C code. Through hands-on examples and exercises, the course explores generating MEX-files to incorporate external C code in MATLAB applications and calling MATLAB code from C applications. At the end of this course, attendees will be able to:

- Write and compile source MEX files
- Pass data between MATLAB and MEX files
- Call MATLAB code from C code using the engine interface
- Identify the proper approach for interfacing MATLAB with C code

Pre- requisites:

Familiarity with terminology and concepts related to programming in C (especially pointers). Experience with MATLAB is recommended

Course Duration

- ✓ 1 training day
- ✓ Hours: 09:00-17:00
- ✓ Total training hours: 8

Teaching method:

The course combines lectures, demonstrations and practical exercises in MATLAB, using original training books from MathWorks. The course is in Hebrew but the training materials are in English.

Training Center Systematics - Contact information:
Phone number: 03-7660111 Ext: 5 **Email:** training@systematics.co.il
Website: http://www.systematics.co.il/mathworks

Course Objective:

MEX-File Overview

 Objective: Identify required components of a MEX-file and set up the environment for producing MEX-files.

- Introduction to MEX-files
- Applications of MEX-files
- Components of a MEX-file
- Setting up MATLAB to compile MEX-files
- Building and running a MEX-file

MEX-Files with Inputs and Outputs

 Objective: Create MEX-files with inputs and outputs for interacting with MATLAB environment.

- Data flow in MEX-files
- MATLAB data
- The mxArray class
- Working with pointers
- Working with mxArray API functions
- Working with strings
- When to use MEX-files
- Handling data

MEX-File Interface Considerations

 Objective: Display diagnostic messages and manage memory in MEX-files.

- Displaying diagnostic messages
- Memory allocation and deallocation
- Preventing memory leaks
- Working with input and output memory
- Debugging MEX-files

Calling MATLAB from C Code

Objective: Call the MATLAB engine from a C application to evaluate MATLAB expressions and transfer data between the C application and the MATLAB engine.

- Introduction to the MATLAB engine
- Data flow in MATLAB engine applications
- Calling the MATLAB engine
- Compiling and running MATLAB engine applications

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