MT-101 Lesson 2-1: A Getting Started Tour of the ModusToolbox IDE

Welcome back to Cypress Academy. This is ModusToolbox 101. In the last chapter I showed you a few quick getting started demonstrations. In this chapter we will dig into some more details of how to use ModusToolbox to speed up and to simplify your development process. First off, I'll give you a tour of Cypress's Eclipse-based IDE.

Let's start up the IDE and select a workspace. I'll just use the Blinky LED workspace that we created in the last chapter. If you are familiar with other Eclipse-based applications, this will look pretty familiar to you.

What you are looking at now is the ModusToolbox Eclipse perspective. An Eclipse perspective is basically a collection and arrangement of several views as well as an editor designed to ease your design flow.

Let me give you two quick hints that will for sure help you at some point – first, if you have changed to a different perspective, a quick way to get back to the ModusToolbox perspective is to click on the little ModusToolbox icon in the top-right corner OR you can go to Window > Perspective > Open Perspective > Other and choose ModusToolbox.

Second, if you change the ModusToolbox perspective – for example by accidentally closing a window - and you want to get back to the default windows and views, use Window > Perspective > Reset Perspective. That operation will restore your view to something sensible – or at least or view of what's sensible. Of course, you can always save your own custom perspectives, in other words, your view of what you think is reasonable.

In the center is the code editor. Below the code editor is the console area where you can monitor and review the output of builds and programming operations. The console has a few different views that you can access – the default is the current project console but there is also a global build console that shows everything all concatenated together so you can see it in one place, as well as a ModusToolbox console that shows the top level IDE messages and these are the kinds of messages like maybe if you have a download problem, or it tells you what your index is.

Notice the top-left is the Eclipse Project Explorer. It will contain all of the Eclipse Projects which make up your ModusToolbox Application.

Remember, a ModusToolbox application is built up of 1, 2, 3, maybe 10, maybe 15 different projects that represent slices and features in our chip and they're assembled together into one big application. So, don't be confused when we say "project" versus when we say "application".

Since the _mainapp project is the one we chiefly are interested in, I'll select it now.

Notice that when I select _mainapp the area in the bottom left, which we have called the Quick Panel, gets populated. The Quick Panel is an area where we have set up several common actions that you can access with a single click instead of having to navigate the maze of Eclipse menus.

The Quick Panel has three main areas: the Start area; an application/device-specific area; and a Launches area.

The Start area has items that are independent of the device or application. There is a "New Application" link which launches the New Application wizard -amazing that, eh?, we called the new application link to launch the new application wizard - and a Search Online for Code Examples which sends you to the ModusToolbox code examples page on GitHub.

The application/device-specific area has links to build or clean your Application, adjust build settings for a project, configure a device, or select from the middleware library that's available to you to help you build your applications.

Let's look at the configure device link now. It has tabs for Peripherals, Pins, Platforms, Clock, and DMA. This lets you enable and configure those resources. For example, in the Peripherals tab you will see all of the chip resources grouped together into analog, communication, digital, and system. You can turn on a resource that you need or want to use by selecting the check box. Then you configure that resource using the window on the right.

For instance, if I select SCB5 – also known as the serial communication block 5 – I can configure it as a UART, give it an alias for use in the firmware, setup its baud rate, etc., select the pins, and configure its clock. SCB5 also happens to be the one that's connected to the USB-UART Kitprog3 bridge on our development kit.

When you click on the Pins tab you can see the two SCB pins are configured for you automatically, so you don't know that they have to be set up as strong drive – our tool gets them set for you automatically. We will cover additional details in these tabs and on the other tabs in this configurator in later videos.

When you save the configuration, it will generate source code to configure the chip and it will place it in the _config/GeneratedSource directory.

Next, let's take a quick look at the Middleware selector. The window that pops up allows you to add libraries for things like CapSense, Bluetooth, Cryptography, etc. When you select one, it will place the appropriate files in the psoc6sw-1.0 folder and will setup all of the necessary dependencies so that the projects will build.

The Launches area has the most common device program and debug configurations already set up for you. Obviously, more are available in the Eclipse menus and you can even create your own custom configurations.

Next to the Quick Panel tab is a tab labeled Documents. The Documents tab has frequently accessed documentation.

Let's select that tab. Notice there are also three regions here as well – General, IDE, and API.

The General region has a link to the Device datasheet, a clickable index of all of the documentation for ModusToolbox, and the ModusToolbox release notes.

The middle area, IDE, has a link to online help for the ModusToolbox IDE, a link to the Quick Start Guide, a link to the User Guide, and one of my favorite documents, the Eclipse IDE Survival Guide. Even if you are a seasoned Eclipse user, you will find handy tips here to make you more productive with the ModusToolbox.

The API Reference area has links to all the API documentation. No matter what family of parts you are using, you will be able to find all of the information about how to use our API.

You can also find documentation in the Help menu. This duplicates a number of items from the Quick Panel and Documents tabs, but there is some other good information here as well. It has documentation for all of the supported kits, where you'll find all of the kit guide information, it has an index to all of the ModusToolbox documentation, the IDE specific documentation, API references, etc. You can also check for updates to the tool as well as the SDK on this menu.

If you have any questions or general comments, by all means post them in the ModusToolbox community. I do, and certainly I answer questions there. If you have a personal note or just want to chat, please feel free to email me at alan_hawse@cypress.com or tweet me @askiotexpert. Once again, thank you for your time.