Lesson 2-1 - The Platform Directory and Files

Welcome back to Cypress Academy, WICED WiFi 101. In this video I will talk about the platform directory and show you all of the important files that it holds. The word platform is our name for a develop kit or a development board. Each platform directory contains the board support package including the schematic, the WiFi radio firmware, the make files required to build the project, and finally, and most importantly, platform.h and platform.c. More on these files in just a minute.

I will start by browsing the platforms directory, and you can see a bunch of subdirectories including BCM943340WCD1, BCM943362WCD4 and so on. Each directory represents one of the development kits that we support. The BCM at the start of the name means the older development kits that came from Broadcomm. The CYW means the newer kits which are being developed at Cypress. The numbers, in general, start with "9" meaning the development kit plus the WiFi part number plus some letters and number representing the type of board.

Here are a few of examples.

BCM943807 WAE2_1 – This board was built to demonstrate streaming audio.

A BCM94343WCD1 an 802.11 b/g/n and Bluetooth combo radio board.

A BCM943362WCD1 an 802.11 b/g/n device as well.

Here's an Electric IMP board that Hugo Fiennes, the CEO of IMP, gave me. This kit isn't programmable in WICED, but it's still really cool anyway.

And finally, the Particle Photon, which you program in their development environment.

Now let's look in the CYW943907AEVAL1F directory - the Board support package for our kit: First you can see there is a directory called "schematics" which contains… guess what… the schematics as a pdf as well as pictures of the top and the bottom of the board.

Platform.h is a giant mapping / alias file. It provides you a standard set of names for you to interact with the hardware on the platform. All of the peripheral APIs in WICED take a name of the form wiced_ something. If, for instance, you want to talk to a GPIO, it will be named WICED_GPIO_Number. But what is it actually connected to?

Let's take an example. On the 943907AEVAL1 there is an LED .. right here … labeled "LED1". Where is it connected? Well, let's start with the schematic. Here on page 10 of the schematic I see the two user LEDs. The one at the top is labeled "LED_1" and it says that it is attached to a signal called PWM_3. Now, when I search for PWM_3, I see that it's attached to a RADIO module on Pin "A26" … OK, that makes sense.

Now let's follow all of that into the platform.h file. You can open this file by double clicking it. It's just a normal C header file. At the top of the file there is a big comment, which is just a table that shows you what is being mapped to what. A little ways down the table I see that WICED_GPIO_16 is connected to the PWM_3, and that it's SIP Module A26. OK, that is good as it matches what we saw on the schematic. The last column also tells us that it has the name WICED_LED1. Finally. when I search the file nearly to the bottom, I see that WICED_LED1 is just a #define for WICED_GPIO_16. That matches what we saw in the comment table at the top.

The platform.c contains the actual structure definitions that you use to interact with WICED. For instance, on this platform there are two I2C busses. If you search for I2C_1 in platform.c, you will find I2C_1 which you can see is connected to WICED_GPIO_48 and 49, and I2C_2 which you can see is connected to WICED_GPIO_50 and 51.

Then, when I trace those back into platform.h and search for I2C_1 I can see the same comments describing their connections.

The bottom line is that platform.c and platform.h are THE critical files for understanding how you interact with your development kit. They are your keys to the kingdom.

In the next video we will build your first real project - the blinking LED.

Remember, you can post your comments and questions in our WiFi developer community on cypress.com, or, as always, you are welcome to email me at alan_hawse@cypress.com or tweet me at @askiotexpert. Thank you.