PSoC Creator 101: CY8CKIT-049 Prototyping Kit CapSense Project

In this video I'm going to demonstrate using the PSoC CapSense feature on the 049 Prototyping Kit. On my kit, I soldered a female header to the kit which will give me access to the pins of the PSoC. The female header has little bits of metal embedded into the plastic that will serve very well for the CapSense slider electrodes. You will use the position of the slider to vary the intensity of the LED.

Start by creating a new application, then add and configure the bootloadable component as we discussed in the 049 bootloadable video. The next thing you will do is add the CapSense component. In the component customizer add a 5-segment slider widget. Leave the rest of the parameters at their defaults. Then in the design wide resources, assign the CapSense pins to port 1, pins 1-5 and assign the CMOD to port 4, pin 2.

Next add a PWM and set the PWM period to 100, set the compare value to 50, then add a clock component to drive the PWM. Leave the clock at its 12 MHz default value. Next, add a pin to drive the LED, then wire the output of the PWM to the LED pin. In the DWR, assign the LED pin to the 049 LED pin, which is port 1, pin 6.

Now you will need to write your firmware. First enable the global interrupts, then start the CapSense component, then call the API that initializes the baselines. This function will automatically compensate for the parasitic capacitance of your header. Then call the start function for the PWM.

In the main loop, if the CapSense isn't busy, read the position of the slider. If you're not touching the slider the GetCentroidPos API will return 0xFFFF. If you are touching the slider, it will return a value between 0 and 100 based on the position of your finger. Then take the value that came back from the GetCentroidPos API and write that value into the compare register to set the duty cycle of the pulse that's driving the LED. This will change the brightness of the LED as you change the duty cycle of the PWM. Then you will update the baselines and start another scan.

Now build the project and bootload it into your kit. You will be able to change the brightness of the LED by sliding your finger along the side of the female header on the top of the board. It's really just that simple. You can win with our CapSense and I encourage you to use the dev kit to experiment with it.