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EC 450

HW 3 Write Up

My design for this homework consists of an if-else statement to go between the major modes, record and playback mode. My design depends on frequent calls of the watchdog timer. Recording was implemented through a counter variable, an array to hold counter values, and an array incrementing variable. Every time the watchdog timer interrupt gets executed, we check the state of the button and what the button previously was. The counter variable counts up how many calls of the watchdog timer interrupt have been made while the button was in one state (pushed down or left up). When the button changes state, the value of the counter gets stored in an array and the array incrementing variable gets incremented. Counter is also reset to zero. There is also code in place to make sure that the first thing stored in the array is a button push.

If the button is not being pushed and the counter increments to a number greater than 675 (about five seconds passing), then the system transitions into playback mode. In playback mode, I simply iterate through the array created in record mode. A value from the array is taken and stored in a downCounter variable. When this counter gets decremented to zero, the LED is toggled, and we move on to the next spot in the array. Once all the values have been iterated through, and the message is done playing, we reset our variables to zero and return to record mode. The red LED indicated whether you are in record mode (LED on) or playback mode (LED off).

As far as limitations on my design go, the array of stored values is limited to 60, so more pushes than that would not be allowed. This is a relatively high value and usually is not reached in demos. If it is reached, the playback should truncate the message to the first 60 pushes in playback.