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EC 450

Homework #3, One Button Echo Light

The way I broke up this project was in four parts as follows:

|  |  |
| --- | --- |
| Record Mode | r |
| Transition to Playback | a |
| Playback | p |
| Transition to Record | b |

The following variables were also declared for this assignment:

//Initializing variables

counter = 0;

transition\_counter = 0;

prev\_button = BUTTON;

mode = 'r';

**Record Mode:**

The first thing that was checked during the record mode were 3 limits:

* The recording time exceeded the max time that was set up
* The recording exceeded the memory allocated
* The button had not been pressed in a while

When any of these things were true, the MSP430 would transition to the playback Mode. In addition to that, both LEDs were shut off and all counters were initialized back to 0.

The recoding was essentially done by filling an array with interrupts since time 0. current\_button was a variable used to monitor the current input of the button and whenever an XOR between prev\_button and current\_button was true, that value was stored in an array called trans. The green LED was also instructed to turn on with every button push and shut off when released.

**Transition to Playback:**

If any of the limits during the record mode were hit, the state would transition to ‘a’ which was essentially was the transition between recording and play back. During this time, the red LED was instructed to blink 3 times in order to notify the user that the state was changed and then both LEDs would shut off. The transition counter was also set back to 0 in order to start the array from the beginning again as well as set the state to ‘p’ for playback.

**Playback Mode:**

The first thing that was checked during the playback mode were 3 limits:

* The counter was equal to the Max time allotted
* The last element in the array was equal to the last memory space alloted
* The array was empty

If any of these cases were true, the counters would be reset, the LEDs both turned off and the state would change to the transition from playback to Record. If none of those were true, the array would be ran through again except for each time a value was stored, the green LED would be XOR’ed.

**Transition to Record:**

Essentially did the same thing as the transition to playback except the state was now set to record.