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[arduino-bootcamp](#) / [Simple_LED_Game](#) / **Simple_LED_Game.ino****Lee Assam** First commit **0** contributors

115 lines (100 sloc) | 2.78 KB

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```
1  /*
2  Arduino Bootcamp
3
4  - LED Reaction Game - Part 2
5
6  This project demonstrates a reaction game with LEDs. The objective is to push the switch when t
7
8  created 10/30/2016
9  modified 10/30/2016
10 by: Lee Assam
11
12 */
13
14
15 //Set the LED Pin constants globally
16 //The Green LED is connected to Pin 8 of the Arduino
17 #define greenLED 8
18 //The Red LED is connected to Pin 9 of the Arduino
19 #define redLED 9
20 //The Yellow LED is connected to Pin 10 of the Arduino
21 #define yellowLED 10
22 //random set of times for the LEDs to be lit
23 int timesOn[] = {100, 250, 400, 500};
24 //random delays between LEDs being lit
25 int delayTimes[] = {250, 500, 1000, 1500};
26
27 //Declaring volatile variables so they can be accessed/changed within the ISR
28 volatile boolean redLEDlit = false;
29 volatile boolean isWinner = false;
30
31 // the setup function runs once when you press reset or power the board
32 void setup() {
```

```
33 // initialize LEDs Pins as outputs.
34 pinMode(greenLED, OUTPUT);
35 pinMode(redLED, OUTPUT);
36 pinMode(yellowLED, OUTPUT);
37 //creating interrupt
38 attachInterrupt(0, checkWinner, FALLING);
39 //Turn off LEDs
40 turnOffLEDs();
41 }
42
43 // the loop function runs over and over again forever
44 void loop() {
45     //randomly determine which LED is to be lit
46     int LEDToLight = random(1,4);
47     //determine a random time the LED should be on
48     int periodLEDIsLit = timesOn[random(4)];
49     //light the respective LED
50     lightLED(LEDToLight, periodLEDIsLit);
51     //turn off the LEDs
52     turnOffLEDs();
53     //delay for a random time after LEDs are turned off - makes game unpredictable
54     int delayTime = delayTimes[random(4)];
55     delay(delayTime);
56     //check winner flag for a winner
57     if (isWinner) {
58         isWinner = false;
59         //there was a winner so display the winning LED light sequence
60         winner();
61     }
62 }
63
64 //Light an LED for a specified duration in millis
65 void lightLED(int led, int duration) {
66     switch (led) {
67         case 1: //green
68             digitalWrite(greenLED, HIGH);
69             break;
70         case 2: //red
71             redLEDLit = true;
72             digitalWrite(redLED, HIGH);
73             break;
74         case 3: //yellow
75             digitalWrite(yellowLED, HIGH);
76             break;
77         default:
78             break;
79     }
80     //wait the duration
81     delay(duration);
82     //reset redLEDLit flag
83     redLEDLit = false;
84 }
```

```
85
86 void turnOffLEDs() {
87     digitalWrite(greenLED, LOW);
88     digitalWrite(redLED, LOW);
89     digitalWrite(yellowLED, LOW);
90 }
91
92 //Flashes 3 times in succession to indicate a win
93 void winner() {
94     for (int i=0; i<3; i++) {
95         digitalWrite(greenLED, HIGH);
96         digitalWrite(redLED, HIGH);
97         digitalWrite(yellowLED, HIGH);
98         delay(250);
99         digitalWrite(greenLED, LOW);
100        digitalWrite(redLED, LOW);
101        digitalWrite(yellowLED, LOW);
102        delay(250);
103    }
104    delay(3000);
105 }
106
107 //ISR to determine if the button was pressed while the Red LED was lit
108 void checkWinner() {
109     if (redLEDlit) {
110         //set winner flag
111         isWinner = true;
112     }
113 }
114
115
```