

Memo

To: ECE 303

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CC: Other recipients

Arduino Mega 2650 Lab 2 Timers and interrupts

Task: To create a LED locking mechanism where you have 5 chances to guess the correct combination. If you are correct the LED turns off, each tries increases the LED blinking speed. If you fail after 5 tries, all failed LED's are lit

Equipment: Mega Arduino 2650 starter kit

330 ohm resistor

Jumper wires

4- 5v LED

Bread Board

CODE: Code is on the following pages and the Arduino sketch will be attached with the submission

```
int y=0;
```

```
int x1 = random(0, 9);
```

```
int x2 = random(0, 9);
```

```
int x3 = random(0, 9);
```

```
int x4 = random(0, 9);
```

```
int p1;
```

```
int p2;
```

```
int p3;
```

```
int p4;
```

```
int led1 = 11;
```

```
int led2 = 9;
```

```
int led3 = 5;
```

```
int led4 = 7;
```

```
// the setup routine runs once when you press reset:
```

```
void setup() {
```

```
  noInterrupts();
```

```
TCCR1A = 0;

TCCR1B = 0;

TIMSK1 = 0;

TCNT1 = 0;

OCR1A = 62500;

TCCR1B |= (1 << WGM12);

TCCR1B |= (1 << CS12) | (0 << CS11) | (0 << CS10);

TIMSK1 |= (1 << OCIE1A);
```

```
TCCR3A = 0;

TCCR3B = 0;

TIMSK3 = 0;

TCNT3 = 0;

OCR3A = 62500;

TCCR3B |= (1 << WGM32);

TCCR3B |= (1 << CS32) | (0 << CS31) | (0 << CS30);

TIMSK3 |= (1 << OCIE3A);
```

```
TCCR4A = 0;

TCCR4B = 0;
```

```

TIMSK4 = 0;

TCNT4 = 0;

OCR4A = 62500;

TCCR4B |=(1<<WGM42);

TCCR4B |=(1<<CS42) |(0<<CS41) |(0<<CS40);

TIMSK4 |=(1<<OCIE4A);


TCCR5A = 0;

TCCR5B = 0;

TIMSK5 = 0;

TCNT5 = 0;

OCR5A = 62500;

TCCR5B |=(1<<WGM52);

TCCR5B |=(1<<CS52) |(0<<CS51) |(0<<CS50);

TIMSK5 |=(1<<OCIE5A);

Serial.begin(9600);

pinMode(led1, OUTPUT);

pinMode(led2, OUTPUT);

pinMode(led3, OUTPUT);

pinMode(led4, OUTPUT);

interrupts();

```

```

}

// the loop routine runs over and over again forever:

void loop() {

if(Serial.available()>1 ){

    int q1 = Serial.parseInt();

    p1=q1/1000;

    p2=(q1/100)%10;

    p3=(q1/10)%10;

    p4=q1%10;

    Serial.println(p1);

    Serial.println(p2);

    Serial.println(p3);

    Serial.println(p4);

    Serial.print("x");

    Serial.println(x1);

    Serial.println(x2);

    Serial.println(x3);

    Serial.println(x4);

    y = y + 1;

    OCR1A = OCR1A/y;

```

```

OCR3A = OCR1A/y;

OCR4A = OCR1A/y;

OCR5A = OCR1A/y;

}

}

ISR(TIMER1_COMPA_vect){

digitalWrite(led1,!digitalRead(led1));

if(x1 == p1){

    digitalWrite(led1,LOW);

}

if(y >= 5){

    digitalWrite(led1,HIGH);

}

}

ISR(TIMER3_COMPA_vect){

digitalWrite(led3,!digitalRead(led3));

if(x3 == p3){

    digitalWrite(led3,LOW);

}

if(y >= 5){

    digitalWrite(led3,HIGH);

```

```

}

}

ISR(TIMER4_COMPA_vect){

digitalWrite(led4,!digitalRead(led4));

if(x4 ==p4){

    digitalWrite(led4,LOW);

}

if(y >= 5){

    digitalWrite(led4,HIGH);

}

}

ISR(TIMER5_COMPA_vect){

digitalWrite(led2,!digitalRead(led2));

if(x2 == p2){

    digitalWrite(led2,LOW);

}

if(y >= 5){

    digitalWrite(led2,HIGH);

}

}

```