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```
PEO Scarborough Chapter
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```
Mechatronics 2018
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Ontario, Canada
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```
//Declaration of all constants and variables
```

```
const byte interruptPin = 2;
```

```
const byte LED1 = 4;
```

```
const byte LED2 = 5;
```

```
const byte LED3 = 6;
```

```
const byte LED4 = 7;
```

```
const byte LED5 = 8;
```

```
const byte LED6 = 9;
```

```
const byte LED7 = 10;
```

```
const byte LED8 = 11;
```

```
const byte motor_pin = 3;
```

```
const int duty_cycle = 80;
```

```
volatile bool state = false;
```

```
//Initialization and definition of ports and interrupt
```

```
void setup()
```

```
{
```

```
  pinMode(interruptPin, INPUT_PULLUP);
```

```
  pinMode(motor_pin, OUTPUT);
```

```
  pinMode(LED_BUILTIN, OUTPUT);
```

```
  pinMode(LED1, OUTPUT);
```

```
  pinMode(LED2, OUTPUT);
```

```
  pinMode(LED3, OUTPUT);
```

```
  pinMode(LED4, OUTPUT);
```

```
  pinMode(LED5, OUTPUT);
```

```
  pinMode(LED6, OUTPUT);
```

```
  pinMode(LED7, OUTPUT);
```

```
  pinMode(LED8, OUTPUT);
```

```
  //DDRD = DDRD | B11111000;
```

```
  //DDRB = DDRB | B00111111;
```

```
  attachInterrupt(digitalPinToInterrupt(interruptPin), start_race, LOW);
```

```
}
```

```
//Interrupt Service Routine
```

```
void start_race()
```

```
{
```

```
  state = !state;
```

```
}
```

```
//Start of Main Program
void loop()
{
  //Turn off built-in LED and Motor
  digitalWrite(LED_BUILTIN, LOW);
  analogWrite(motor_pin, 0);

  //Enter loop once interrupt is triggered
  while(state){
    //Disable interrupt once in the loop, enable the built-in LED and motor
    detachInterrupt(digitalPinToInterrupt(interruptPin));
    analogWrite(motor_pin, duty_cycle);
    digitalWrite(LED_BUILTIN, HIGH);

    //Example program of external LEDs
    //PORTD = B00000000;
    //PORTB = B00000000;
    digitalWrite(LED1, LOW);
    digitalWrite(LED2, LOW);
    delay(1000);
    digitalWrite(LED1, LOW);
    digitalWrite(LED2, HIGH);
    delay(1000);
    digitalWrite(LED1, HIGH);
    digitalWrite(LED2, LOW);
    delay(1000);
    digitalWrite(LED1, HIGH);
    digitalWrite(LED2, HIGH);
    delay(1000);
  }
}
```