

```

#include <SimpleTimer.h>
#include <Servo.h>
SimpleTimer timerListen;

int tID; // timer id
int inputPin = A0; // pin for lazer input
int ledPin = 7; // pin for led output
int initial = 0; // initial ambient light
int bt = 0; // variable for pulse width
int st = 0; // state of device
int pad = 70; // how much increase in light for a signal
int btLow = 50; // short pulse width
int btHigh = 250; // long pulse width
int lamp = 0; // state of lamp
int tea = 0; // state of tea
//////////Shimon's code
Servo lampServo;
Servo teaServo;
void setup() {
  pinMode(inputPin, INPUT);
  pinMode(ledPin, OUTPUT);
  Serial.begin(9600);
  initial = analogRead(A0); // set initial ambient light
  tID = timerListen.setInterval(1, lstn); // listen once per millisecond
}

void loop() {
  timerListen.run();
}

void lstn() {
  if (st == 0 && analogRead(inputPin) > initial + pad) { // state 0 is wait for
lazer
    bt = millis();
    st = 1;
  } else if (st == 1 && analogRead(inputPin) < initial + pad) { // state 1 is wait
for lazer off
    bt = millis() - bt; // lazer pulse width
    if (bt < btLow + 50 && bt > btLow - 50) { // if pulse width is within 100 ms of
short burst
      //Turn on lamp
      lampServo.attach(8);
      if (lamp == 1) { // if on, then turn off
        lampServo.write(150);
        lamp = 0;
      } else { // if off, then turn on
        lampServo.write(35);
        lamp = 1;
      }
    }
  }
}

```

```

    delay(500);
    lampServo.detach();
    //Blink lamp pattern
    digitalWrite(ledPin, true);
    delay(50);
    digitalWrite(ledPin, false);
    delay(50);
    digitalWrite(ledPin, true);
    delay(50);
    digitalWrite(ledPin, false);
    delay(50);
    digitalWrite(ledPin, true);
    delay(50);
    digitalWrite(ledPin, false);
    delay(50);
    digitalWrite(ledPin, true);
    delay(50);
    digitalWrite(ledPin, false);
    } else if (bt > btHigh - 50 && bt < btHigh + 50) { // if pulse width is within
100 ms of long burst
    //Starting to boil water
    teaServo.attach(9);
    teaServo.write(80);
    delay(500);
    teaServo.write(35);
    delay(500);
    teaServo.detach();
    //display boil signal
    digitalWrite(ledPin, true);
    delay(500);
    digitalWrite(ledPin, false);
    }
    //restart state and pulse width
    bt = 0;
    st = 0;
  }
}

```