

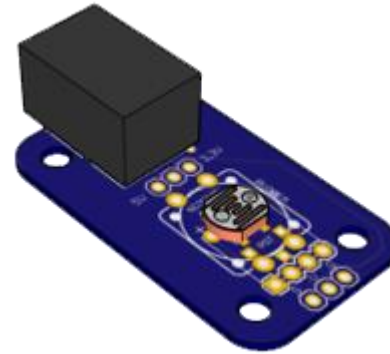
TScratch Basics

Coding with Arduino IDE (Software)

Learning Objective

In this lesson you will learn:

TScratch (TSense LDR)



- Include a light-sensitive sensor to your project!
- Coding another Analog input with Arduino

What is a LDR?

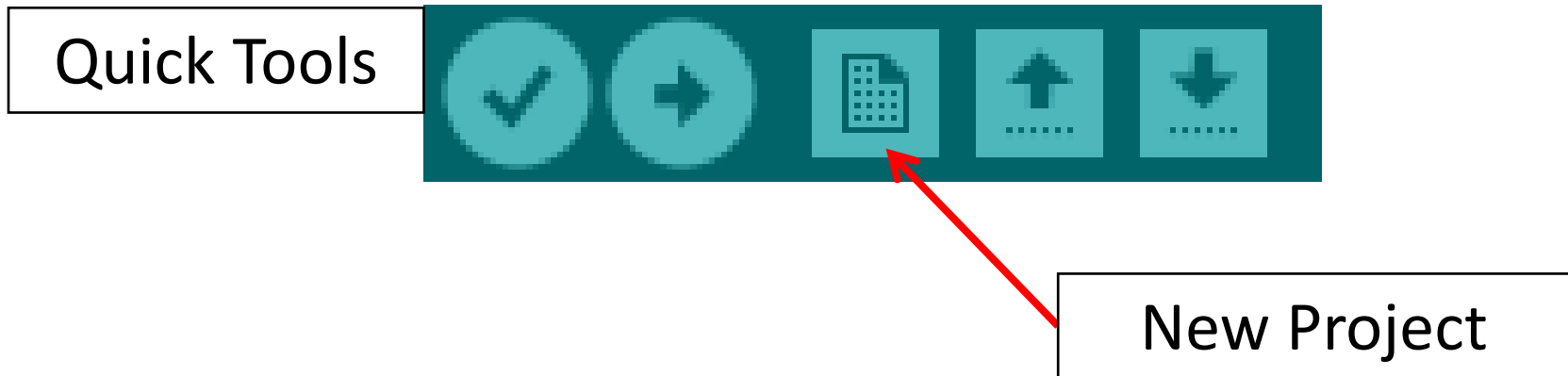
- LDR is also known as the Light Dependent Resistors.
- It is a “switch” that works based on the intensity of light detected.
- Bright → Low Resistance (not working)
- Dark → High Resistance (working)
- They are used commonly in street lamps, dark places, etc.

Code TSense(LDR)

Write a lighting control with TScratch!

In a simple step, connect the TScratch with TSense(LED) and TSense(LDR)

- Create a new project on the QUICK TOOLS



Code TSense(LDR)

- Declare the following in the declaration space
 1. Define LDR as pin A1
 2. Define LED as pin 12
 3. A variable named “ldrvalue” to store the value of the LDR

Note: Comments appear after // or within /**/

```
TScratch6_LDR
/**
 * Program name : TScratch6_LDR
 * Description  : This program turns the led on when there is no light on the ldr and turns off
 *               when there is light on the ldr
 */

#define LDR_PIN A1
#define LED_PIN 12
int ldrvalue = 0;
```

Code TSense(LDR)

- Declare the input/output in the setup
 1. LDR → INPUT
 2. LED → OUTPUT
 3. Serial.begin(9600) to use the monitor screen

```
void setup() {  
  pinMode(LDR_PIN, INPUT);           //Initializes the light dependent resistor as an INPUT  
  pinMode(LED_PIN, OUTPUT);          //Initializes the led as an OUTPUT  
  Serial.begin(9600);  
}
```

Code TSense(LDR)

- Lastly using conditional programming, in the loop() function
if the LDR is activated (at <150) , the LED will turn on,
else the LED will turn off

```
void loop() {  
  ldrvalue = analogRead(LDR_PIN); //Reads ldr and stores its value in the ldrstate variable  
  Serial.println(ldrvalue); //Writes the value of ldrvalue to the serial monitor  
  if (ldrvalue <= 150) { //If the value of ldrvalue is smaller than or equals to 150  
    digitalWrite(LED_PIN, HIGH); //Turns the led on  
  }  
  else { //If the value of potvalue is greater than 150  
    digitalWrite(LED_PIN, LOW); //Turns the led off  
  }  
}
```

Complete Program

```
#define LDR_PIN A1
#define LED_PIN 12
int ldrvalue = 0;

void setup() {
  pinMode(LDR_PIN, INPUT);           //Initializes the light dependent resistor as an INPUT
  pinMode(LED_PIN, OUTPUT);         //Initializes the led as an OUTPUT
  Serial.begin(9600);
}

void loop() {
  ldrvalue = analogRead(LDR_PIN);    //Reads ldr and stores its value in the ldrstate variable
  Serial.println(ldrvalue);          //Writes the value of ldrvalue to the serial monitor
  if (ldrvalue <= 150) {             //If the value of ldrvalue is smaller than or equals to 150
    digitalWrite(LED_PIN, HIGH);    //Turns the led on
  }
  else {                              //If the value of potvalue is greater than 150
    digitalWrite(LED_PIN, LOW);     //Turns the led off
  }
}
```


Try it yourself!

Use TSense(LDR) to control both the buzzer and LED!

- Connect and declare TSense (buzzer).
- Use pin13 for buzzer
- Turn on the buzzer and LED when the place is dark.

Solution – TSense(LDR, buzzer, LED)

```
#define LDR_PIN A1
#define LED_PIN 12
#define BUZZER_PIN 13
int analogvalue = 0;

void setup() {
  pinMode(LDR_PIN, INPUT);          // Initializes the ldr as an input
  pinMode(LED_PIN, OUTPUT);         // Initializes the led and buzzer as an output
  pinMode(BUZZER_PIN, OUTPUT);
  Serial.begin(9600);
}

void loop() {
  Serial.println(analogvalue);
  analogvalue = analogRead(LDR_PIN);
  if (analogvalue <= 150) {
    digitalWrite(LED_PIN, HIGH);    // Turns the led on
    tone(BUZZER_PIN, 2000);         // Turns the buzzer on at frequency of 2000
  }
  else {
    digitalWrite(LED_PIN, LOW);     // Turns the led off
    noTone(BUZZER_PIN);             // Turns the buzzer off
  }
}
```