

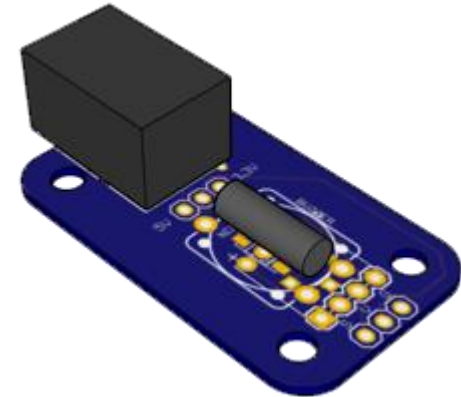
TScratch Basics

Coding with Arduino IDE (Software)

Learning Objective

In this lesson you will learn:

TScratch (Vibration)



- Include a vibration-sensitive sensor to your project!
- Coding another Digital input with Arduino

What is Vibration?

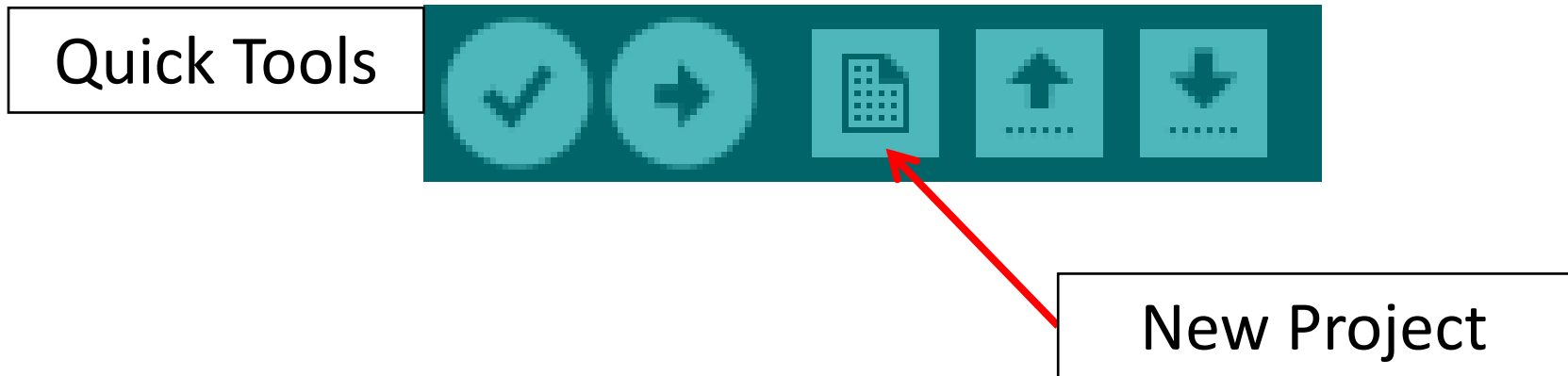
- Vibration is also known as **periodic oscillation**.
- Vibration sensor is a “**switch**” that works on a vibrating input.
- Not Vibrating → Low Resistance (not working)
- Vibrating → High Resistance (working)
- They are used commonly in medical industries automobiles industries.

Code TSense(Vibration)

Write a lighting control with TScratch!

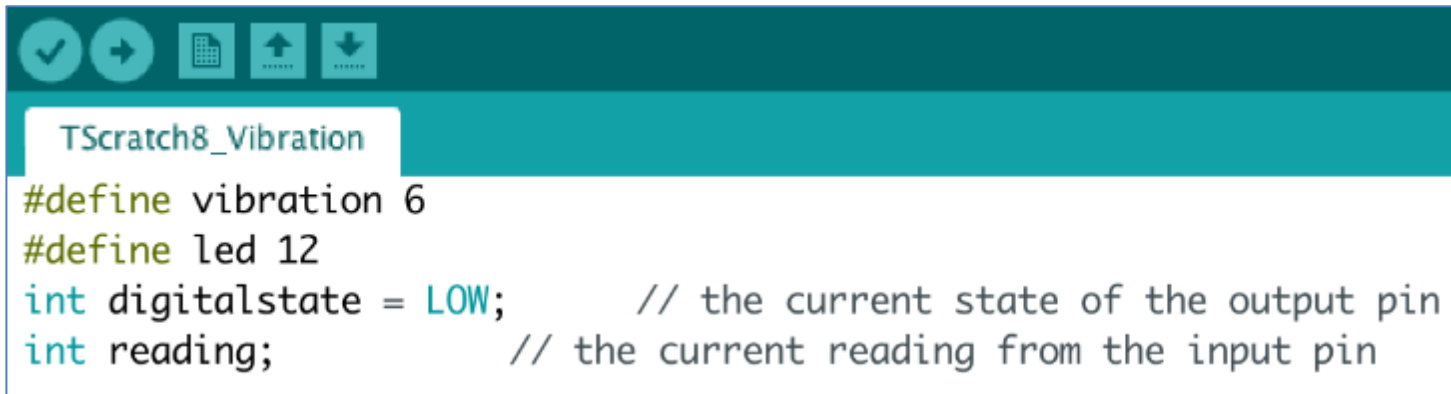
In a simple step, connect the TScratch with TSense(LED) and TSense(Vibration)

- Create a new project on the QUICK TOOLS



Code TSense(Vibration)

- Declare the following in the declaration space
 1. Declare vibration as digital pin 6
 2. Declare led as digital pin 12
 3. variables named “digitalstate”, “reading” to store the sensed value(s)



```
TScratch8_Vibration
#define vibration 6
#define led 12
int digitalstate = LOW; // the current state of the output pin
int reading; // the current reading from the input pin
```

Code TSense(Vibration)

- Declare the type of input in the setup
 1. vibration as an input
 2. led as an output

```
void setup()
{
  pinMode(vibration, INPUT);
  pinMode(led, OUTPUT);
}
```

Code TSense(Vibration)

- Lastly using condition programming, in the loop() function
if vibration is activated (at >0) , the LED will turn on for 1 second

```
void loop() {  
  reading = digitalRead(vibration);  
  if (reading == HIGH) {  
    if (digitalstate == HIGH) {  
      digitalWrite(led, HIGH); //turn the led on  
      delay(1000);             //wait for 1 seconds  
    }  
    else  
      digitalWrite(led, LOW); //turn the led off  
  }  
}
```

Complete Program

```
TScratch8_Vibration
#define vibration 6
#define led 12
int digitalstate = LOW; // the current state of the output pin
int reading; // the current reading from the input pin

void setup()
{
  pinMode(vibration, INPUT);
  pinMode(led, OUTPUT);
}

void loop() {
  reading = digitalRead(vibration);
  if (reading == HIGH) {
    if (digitalstate == HIGH) {
      digitalWrite(led, HIGH); //turn the led on
      delay(1000); //wait for 1 seconds
    }
    else
      digitalWrite(led, LOW); //turn the led off
  }
}
```


Try it yourself!

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

- Connect and declare TSense (buzzer).
- Use pin13 for buzzer
- Turn on the buzzer and LED when the vibration sensor is activated

Solution – TSense(Vib, buzzer, LED)

```
#define VIBRATION_PIN 6
#define LED_PIN 12
#define BUZZER_PIN 13
int vibstate;
void setup()
{
  pinMode(VIBRATION_PIN, INPUT);
  pinMode(LED_PIN, OUTPUT);
  pinMode(BUZZER_PIN, OUTPUT);
}

void loop() {
  vibstate = digitalRead(VIBRATION_PIN);
  if (vibstate == HIGH) {
    if (digitalstate == HIGH) {
      digitalWrite(LED_PIN, HIGH);
      tone(BUZZER_PIN, 2000);
      delay(1000);
    }
  }
  else {
    digitalWrite(LED_PIN, LOW);
    noTone(BUZZER_PIN);
  }
}
}
```

Stores the state of the vibration sensor

Makes sure that the led and buzzer turns on for at least 1 second