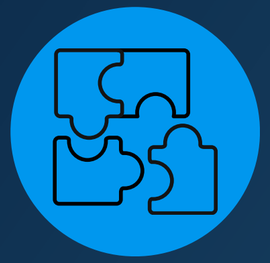
How Smart Gloves Help Us Communicate Better

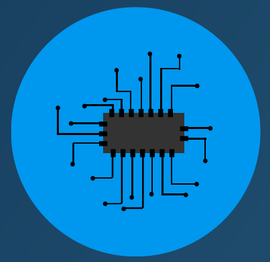
CONTENT

Introduction



components

Project Idea



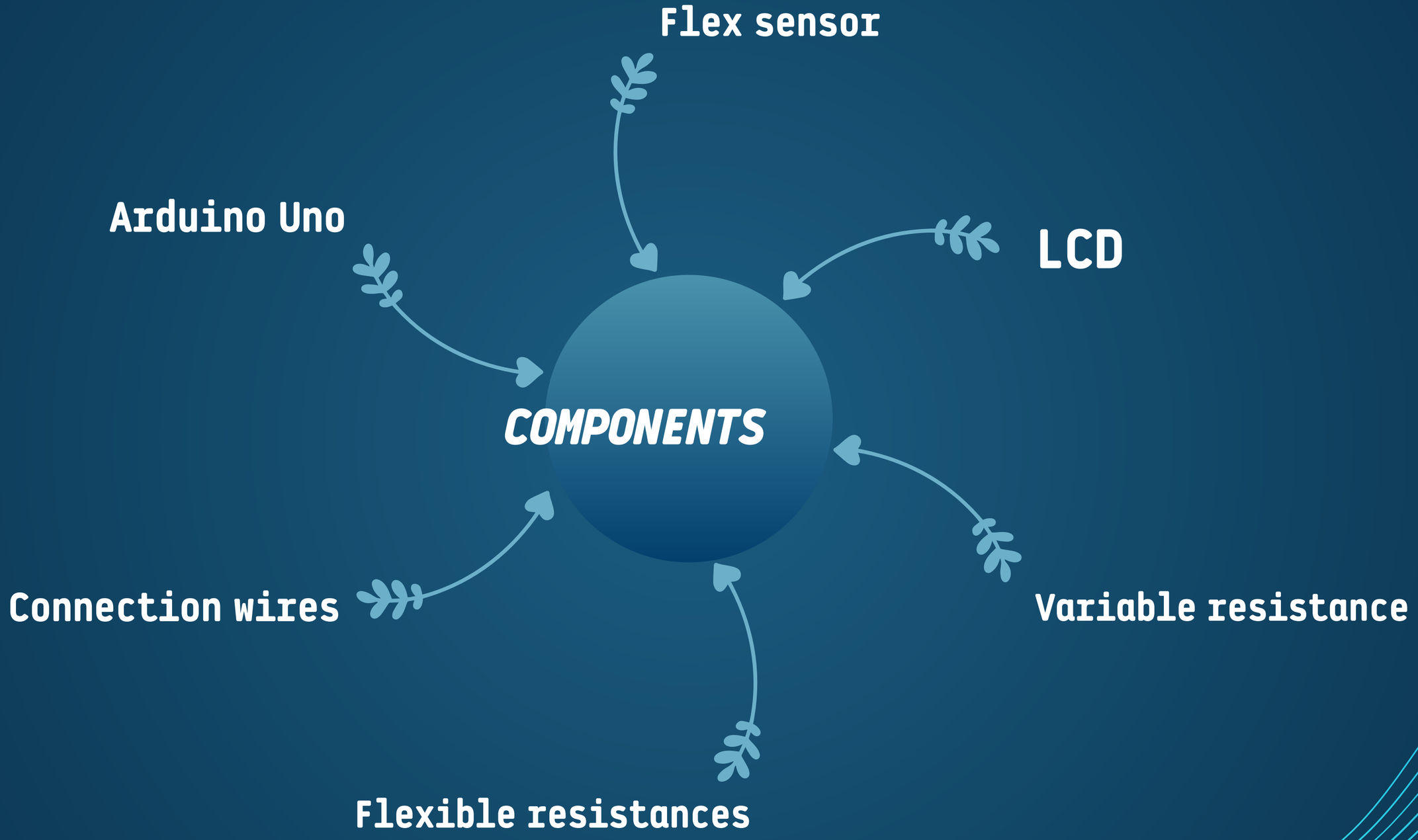
Project Circuit

code & simulation

Applications & Links

Introduction

Sign language is the primary means of communication for many people with hearing and talking disabilities, but it can be a challenge for those who do not understand it.
So we decided to make "Smart gloves" that translate sign language to text , a revolutionary technology that can help bridge this communication gap.

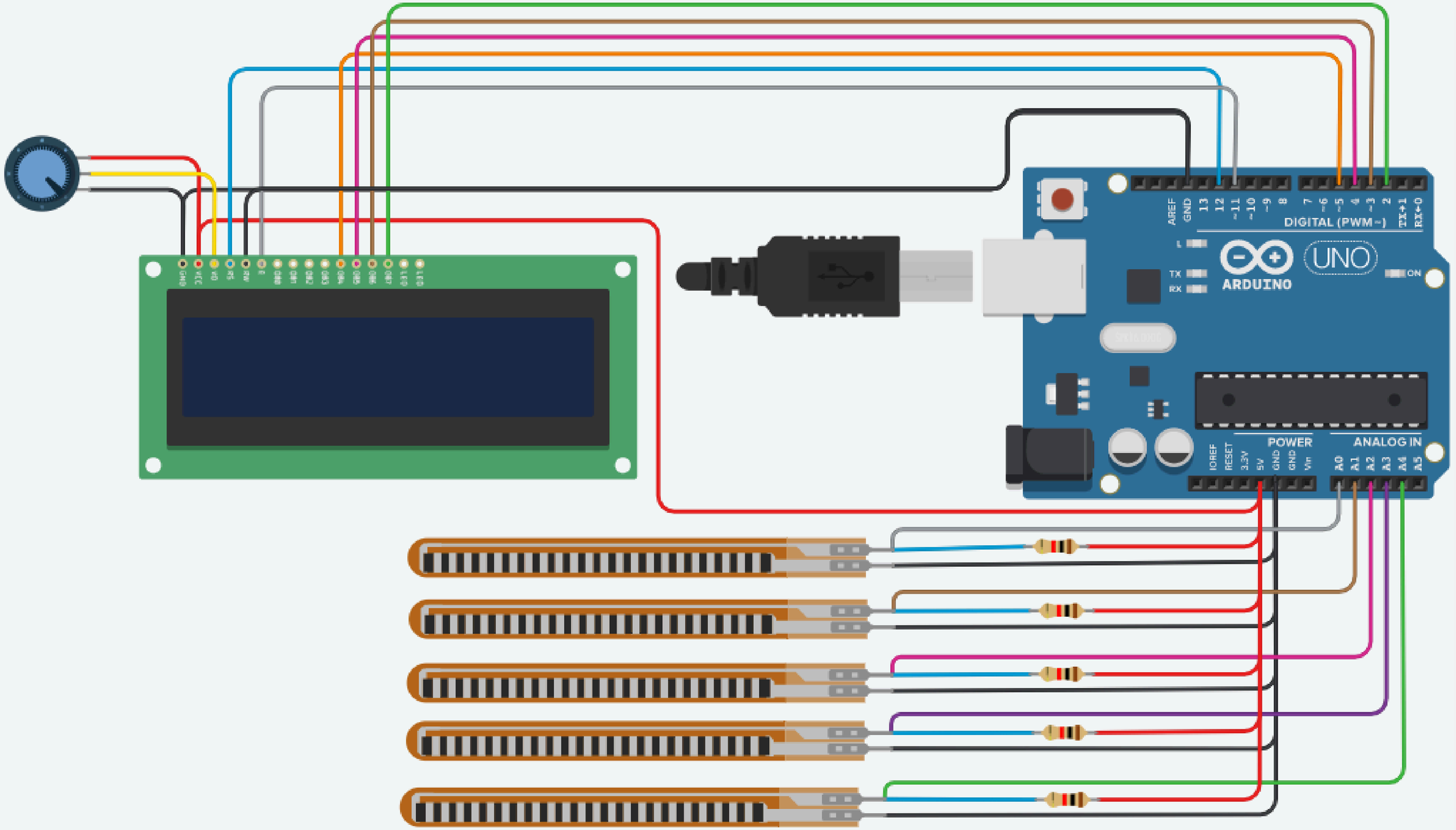

Flex sensor
Arduino Uno
LCD
COMPONENTS
Connection wires
Variable resistance
Flexible resistances

Project idea

The smart gloves use flex sensors to detect the movement of the wearer's fingers and hand. These sensors are attached to each finger and measure the degree of bend in real-time.

The data collected is then sent to the Arduino Uno microcontroller,
which processes the information and translates it into text.

The text is displayed on a LCD screen located on the back of the glove, making it easy for the user and others to read.


DIGITAL (PWM~)
ARDUINO
UNO
POWER
ANALOG IN

circuit connection

- **Flex sensor**
  includs two terminals one connected to the ground of arduino and the other connected to analog pins of arduino.
- **LCD**

-we connect its ground with the ground of arduino , vcc with 5v of arduino.

-Vout connected with a variable resistance to control the clarity of texts

-Rs is a register selector.

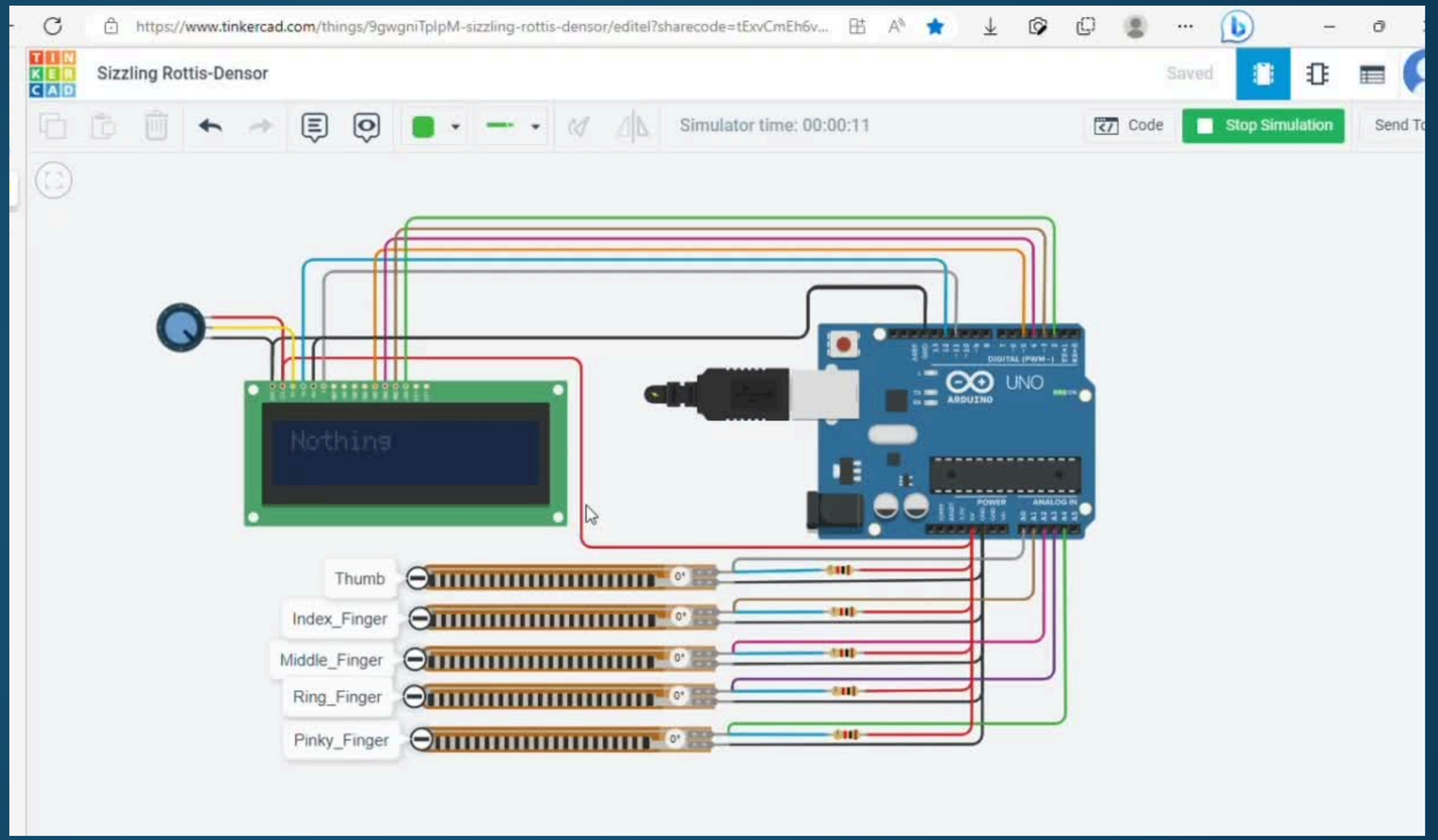
-Rw read or write from or on lcd .

-E enable , must be high so connected with any pin of digital arduino pins.

-DB0-DB7 terminals get data from arduino and reachs to microcontroller in lcd

-Led anode and cathode responsible for backlighting for lcd .

4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Sizzling Rottis-Densor
Saved
Simulator time: 00:00:11
Code
Stop Simulation
Nothing
UNO
ARDUINO
Thumb
Index_Finger
Middle_Finger
Ring_Finger
Pinky_Finger

```
#include <LiquidCrystal.h>

int Thumb;
int Index_Finger;
int Middle_Finger;
int Ring_Finger;
int Pinky_Finger;

LiquidCrystal lcd(12, 11, 5, 4, 3, 2);

void setup()
{
  pinMode(A0, INPUT);
  pinMode(A1, INPUT);
  pinMode(A2, INPUT);
  pinMode(A3, INPUT);
  pinMode(A4, INPUT);
  Serial.begin(9600);
  lcd.begin(16, 2);
}

void loop()
{
  int Thumb = analogRead(A0);
  int Index_Finger = analogRead(A1);
  int Middle_Finger = analogRead(A2);
  int Ring_Finger = analogRead(A3);
  int Pinky_Finger = analogRead(A4);

  Serial.print("Thumb = ");
  Serial.println(Thumb);
  Serial.print("\n");
  Serial.print("Index_Finger = ");
  Serial.println(Index_Finger);
  Serial.print("\n");
Serial.print(" Middle_Finger= ");
Serial.println(Middle_Finger);
Serial.print("\n");
Serial.print("Ring_Finger = ");
Serial.println(Ring_Finger);
Serial.print("\n");
Serial.print("Pinky_Finger = ");
Serial.println(Pinky_Finger);
Serial.print("\n");

if(Thumb == 1017 )
{
  lcd.clear();
  lcd.setCursor(1,0);
  lcd.print("4");
  delay(1000);
}

while(Thumb == 990 && Index_Finger ==990 &&  Middle_Finger ==990  && Ring_Finger == 990&& Pinky_Finger== 990 )
{
  lcd.clear();
  lcd.print("Nothing");
  delay(1000);
  Thumb = analogRead(A0);
  Index_Finger = analogRead(A1);
  Middle_Finger = analogRead(A2);
  Ring_Finger = analogRead(A3);
  Pinky_Finger = analogRead(A4);
}

while(Thumb == 1017 && Index_Finger== 990 && Middle_Finger == 1017&& Ring_Finger == 1017&& Pinky_Finger == 1017 )
{
  lcd.clear();
  lcd.setCursor(1,0);
  lcd.print("I Am");
  delay(1000);
```

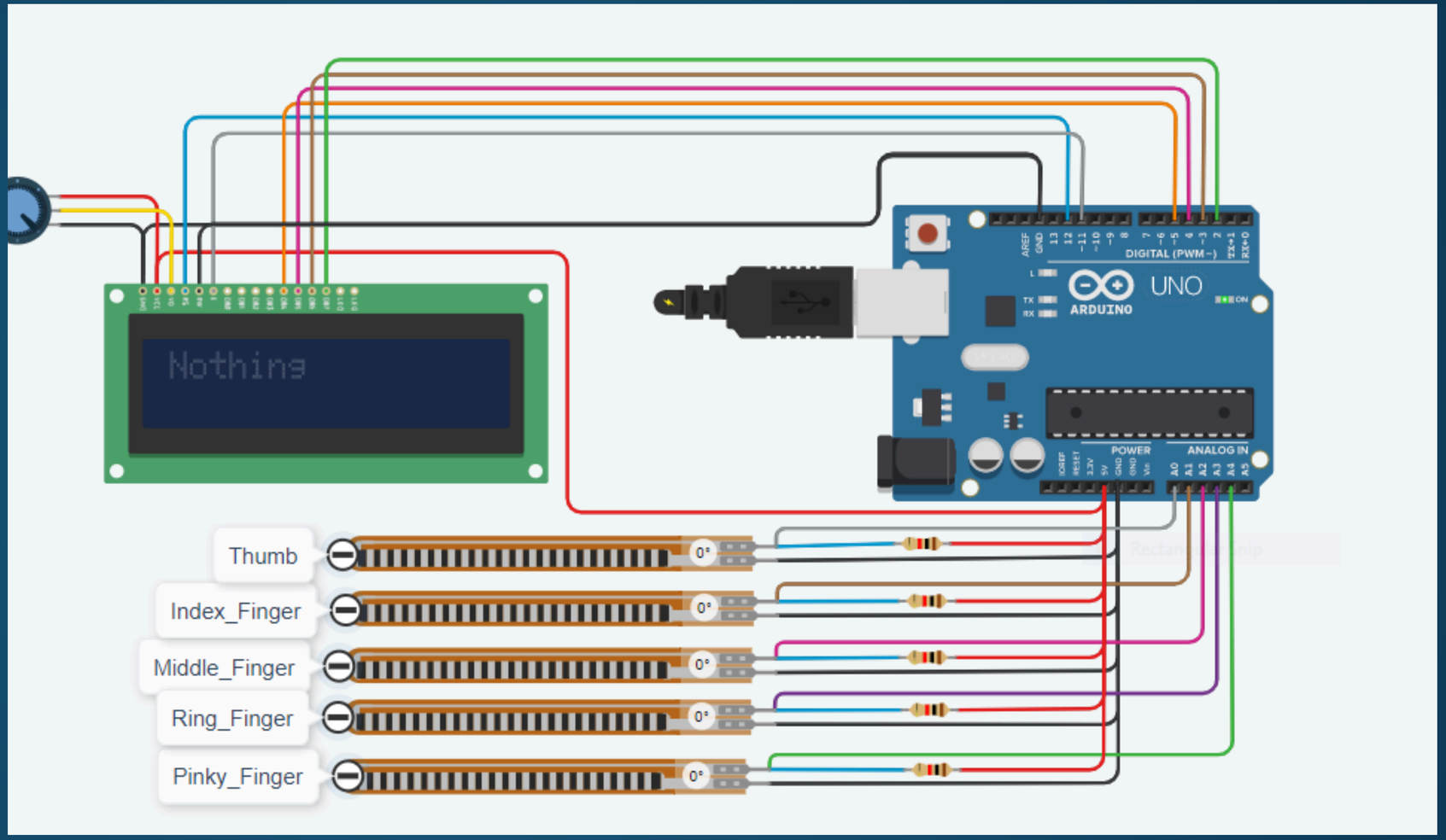
```
while(Thumb == 1017 && Index_Finger== 990 && Middle_Finger == 990&& Ring_Finger == 1017&& Pinky_Finger == 1017 )
{
  lcd.clear();
  lcd.setCursor(1,0);
  lcd.print("VICTORY");
  delay(1000);
  Thumb = analogRead(A0);
  Index_Finger = analogRead(A1);
  Middle_Finger = analogRead(A2);
  Ring_Finger = analogRead(A3);
  Pinky_Finger = analogRead(A4);
}

while(Thumb == 1017 && Index_Finger ==1017 && Middle_Finger ==1017  && Ring_Finger == 1017&& Pinky_Finger== 1017 )
{
  lcd.clear();
  lcd.setCursor(1,0);
  lcd.print("Yes");
  delay(1000);
  Thumb = analogRead(A0);
  Index_Finger = analogRead(A1);
  Middle_Finger = analogRead(A2);
  Ring_Finger = analogRead(A3);
  Pinky_Finger = analogRead(A4);
}
```

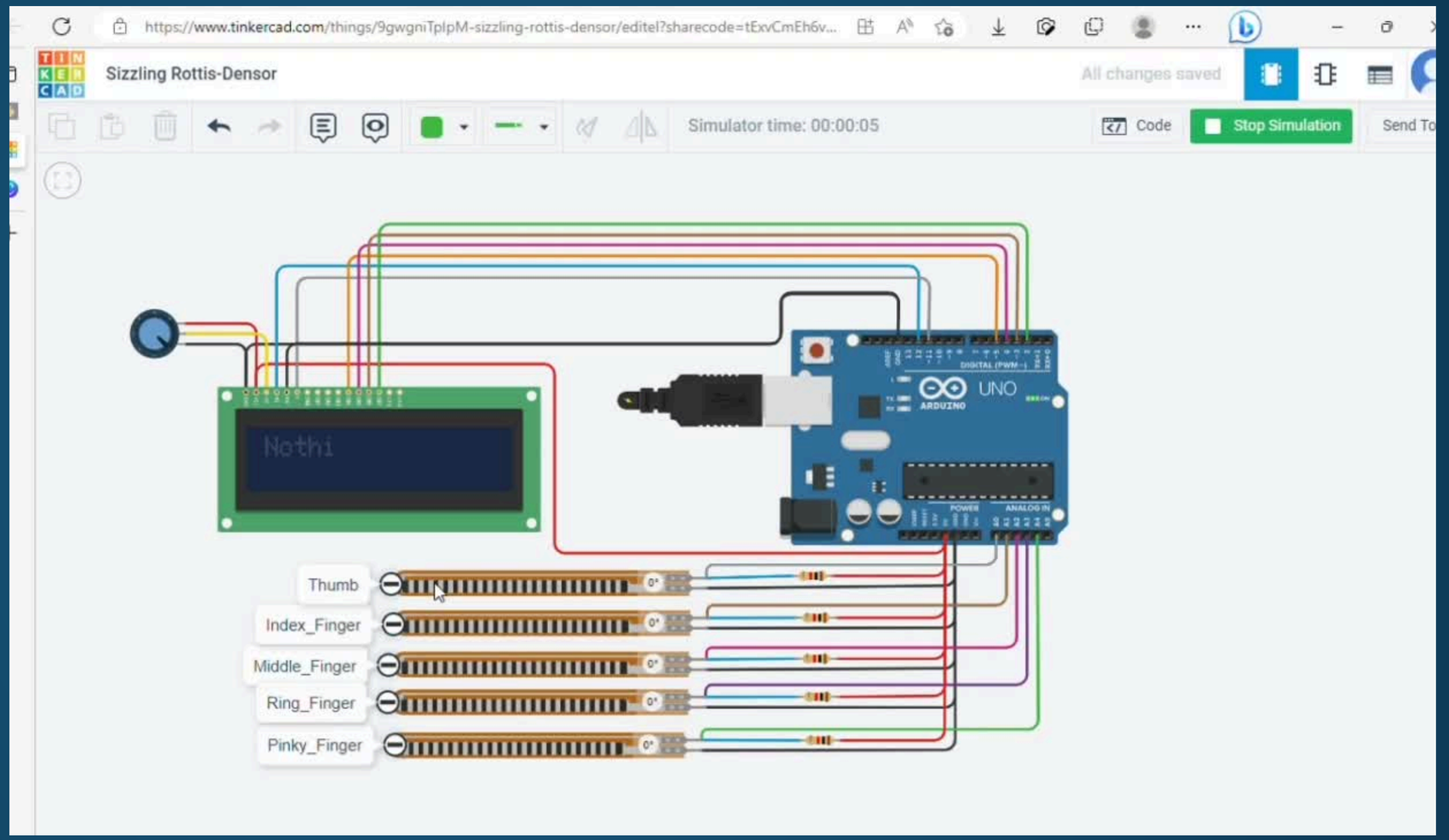
```
while(Thumb == 990 &&  Index_Finger ==990 &&  Middle_Finger ==1017  && Ring_Finger == 1017&& Pinky_Finger== 990 )
{
  lcd.clear();
  lcd.setCursor(1,0);
  lcd.print("Love U");
  delay(1000);
  Thumb = analogRead(A0);
  Index_Finger = analogRead(A1);
  Middle_Finger = analogRead(A2);
  Ring_Finger = analogRead(A3);
  Pinky_Finger = analogRead(A4);
}

while(Thumb == 1017 && Index_Finger ==1017 &&  Middle_Finger ==1017  && Ring_Finger == 1017 && Pinky_Finger== 990 )
{
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("Promise");
  delay(1000);
  Thumb = analogRead(A0);
  Index_Finger = analogRead(A1);
  Middle_Finger = analogRead(A2);
```

Nothing


Nothing
Thumb
Index_Finger
Middle_Finger
Ring_Finger
Pinky_Finger
0°
UNO
ARDUINO
DIGITAL (PWM~)
POWER
ANALOG IN

I am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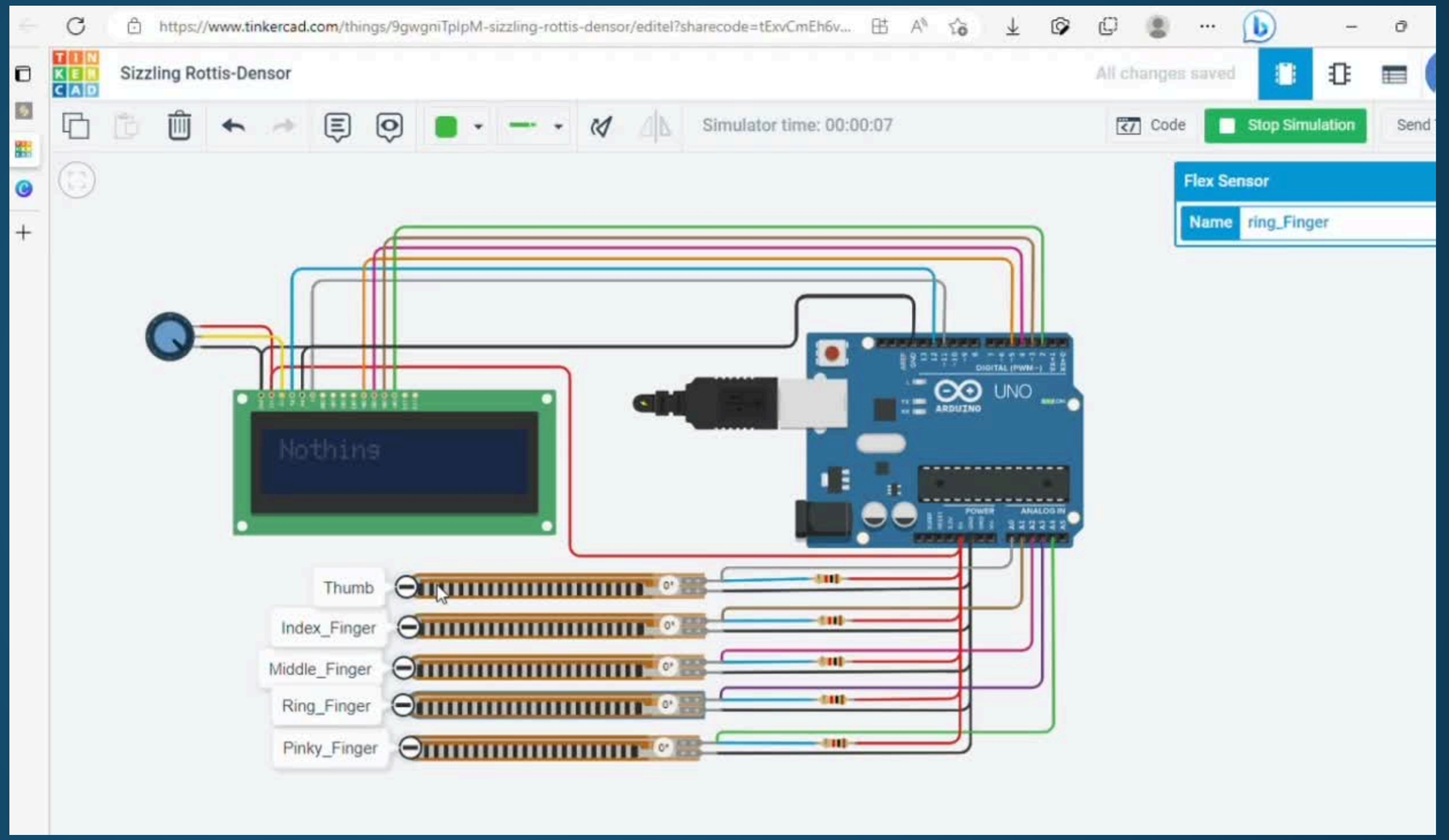
Sizzling Rottis-Densor
All changes saved
Simulator time: 00:00:05
Code
Stop Simulation
Send To
Nothi
UNO
ARDUINO
Thumb
Index_Finger
Middle_Finger
Ring_Finger
Pinky_Finger

Promise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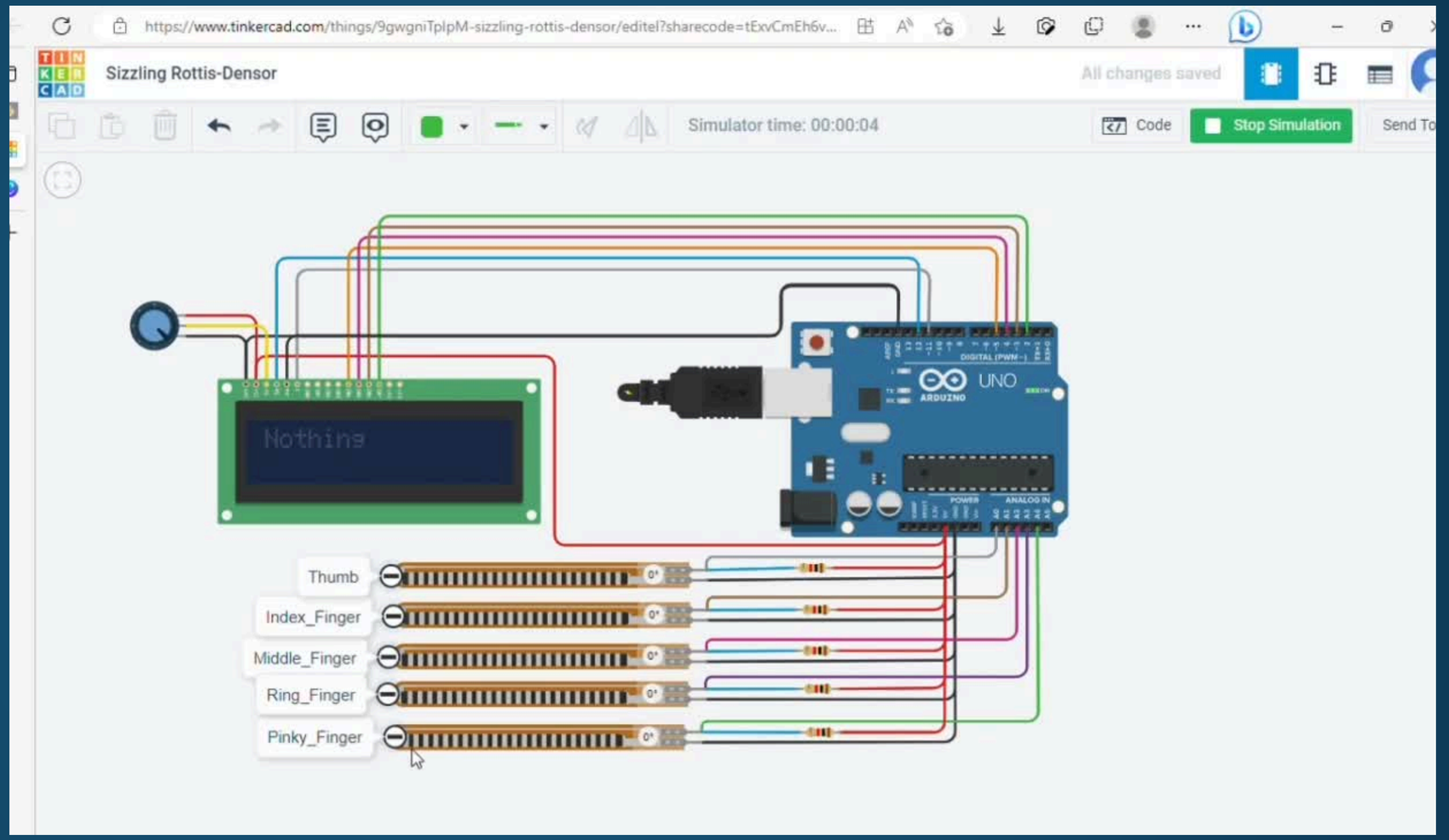
Sizzling Rottis-Densor
All changes saved
Simulator time: 00:00:07
Code
Stop Simulation
Send
Flex Sensor
Name
ring_Finger
Nothing
UNO
ARDUINO
Thumb
Index_Finger
Middle_Finger
Ring_Finger
Pinky_Finger

Yes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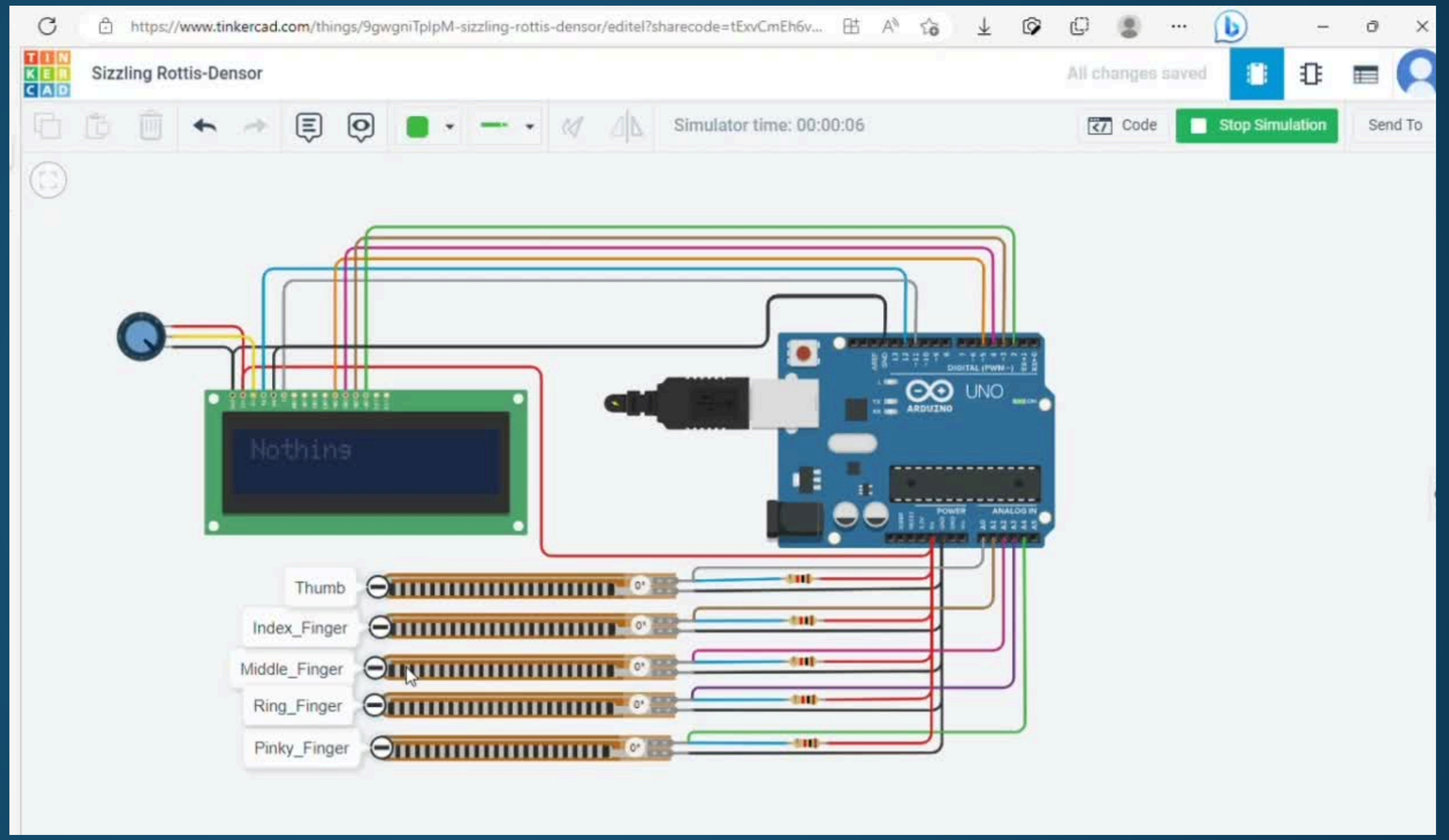
Sizzling Rottis-Densor
All changes saved
Simulator time: 00:00:04
Code
Stop Simulation
Send To
Nothing
UNO
ARDUINO
Thumb
Index_Finger
Middle_Finger
Ring_Finger
Pinky_Finger

love you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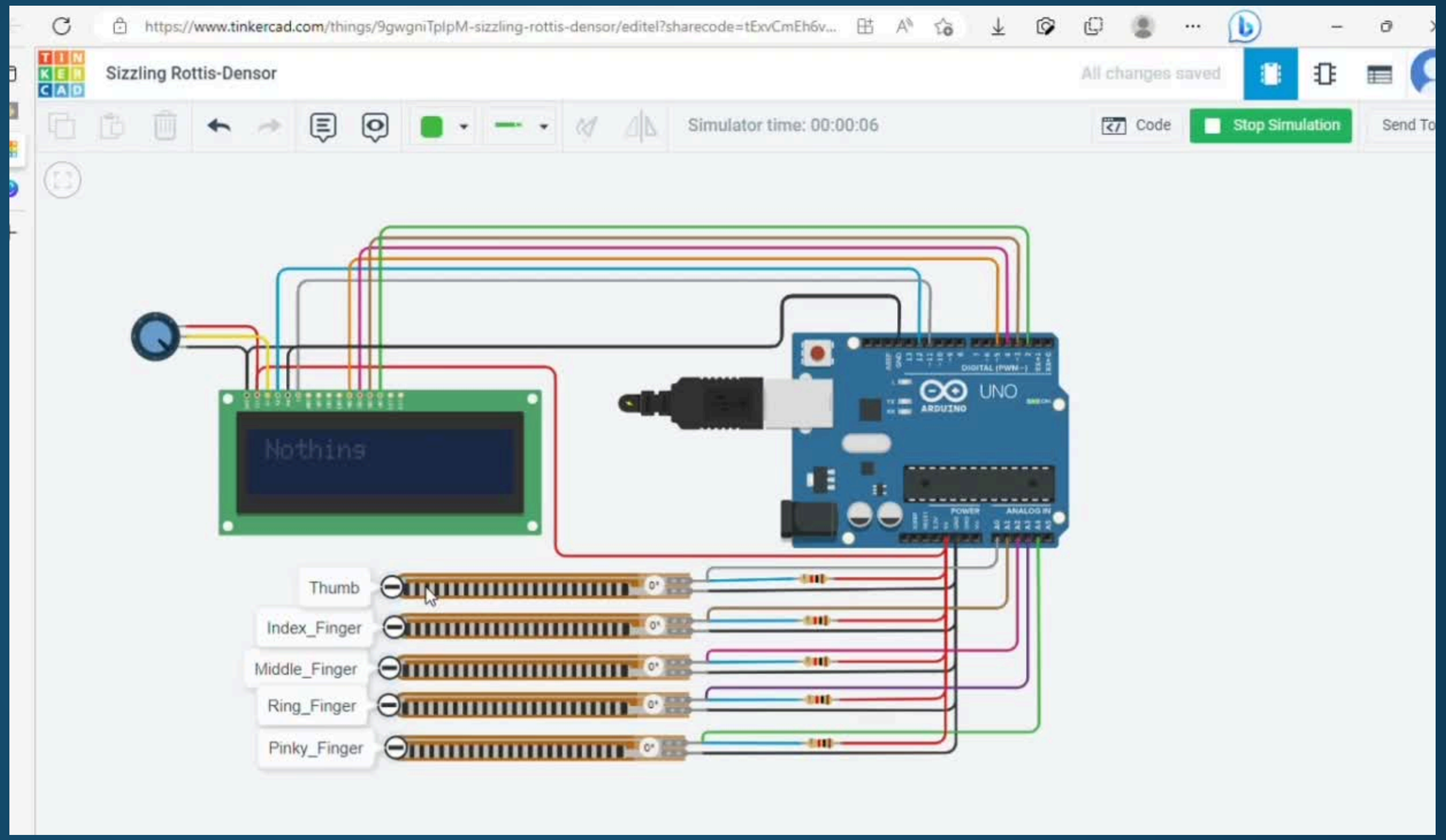
Sizzling Rottis-Densor
All changes saved
Simulator time: 00:00:06
Code
Stop Simulation
Send To
Nothing
UNO
ARDUINO
Thumb
Index_Finger
Middle_Finger
Ring_Finger
Pinky_Finger

victory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Sizzling Rottis-Densor
All changes saved
Simulator time: 00:00:06
Code
Stop Simulation
Send To
Nothing
UNO
ARDUINO
Thumb
Index_Finger
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Pinky_Finger

Applications

We can use the same idea for more applications such as a wireless mouse and keyboard and also in gaming filed like VR hands