LAB-02

CSE2020

INTRODUCTION TO CPS LAB

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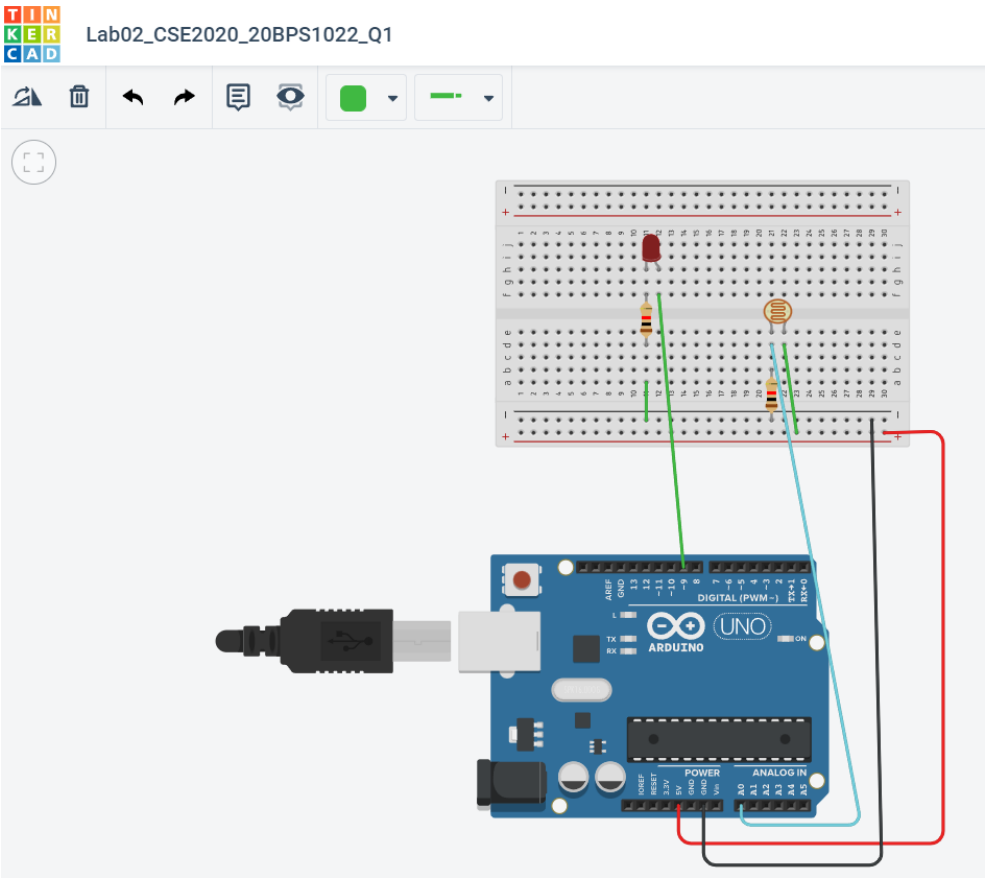
Reg No.: 20BPS1022 **Date: January 17, 2022**

Task 1: **Connect Arduino with photo resistor n resistor and regulate it supply n make single LED to glow accordingly.**

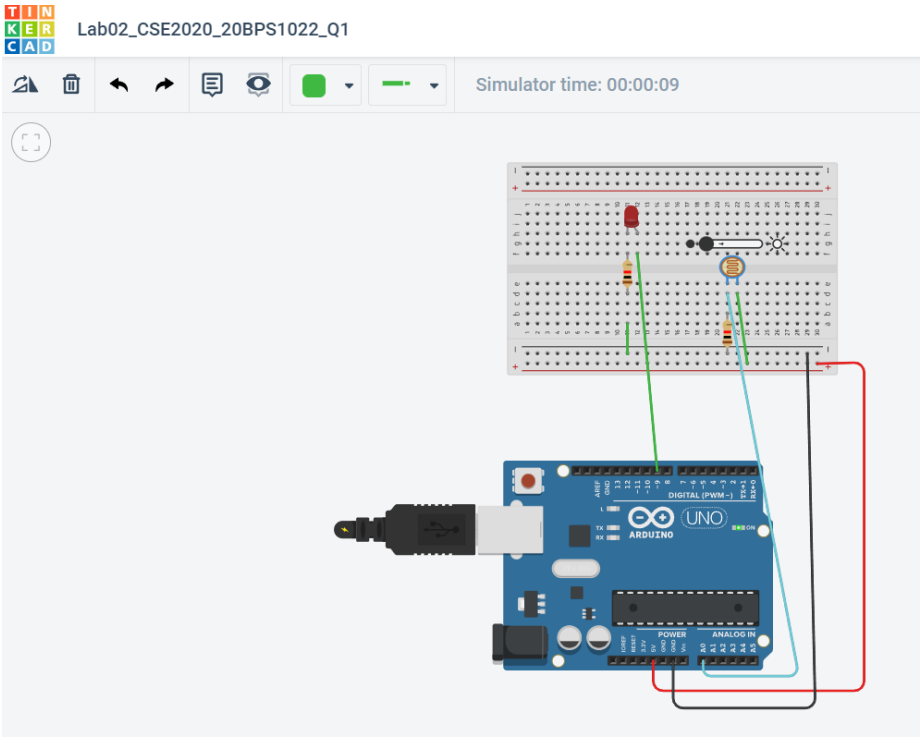
Circuit:

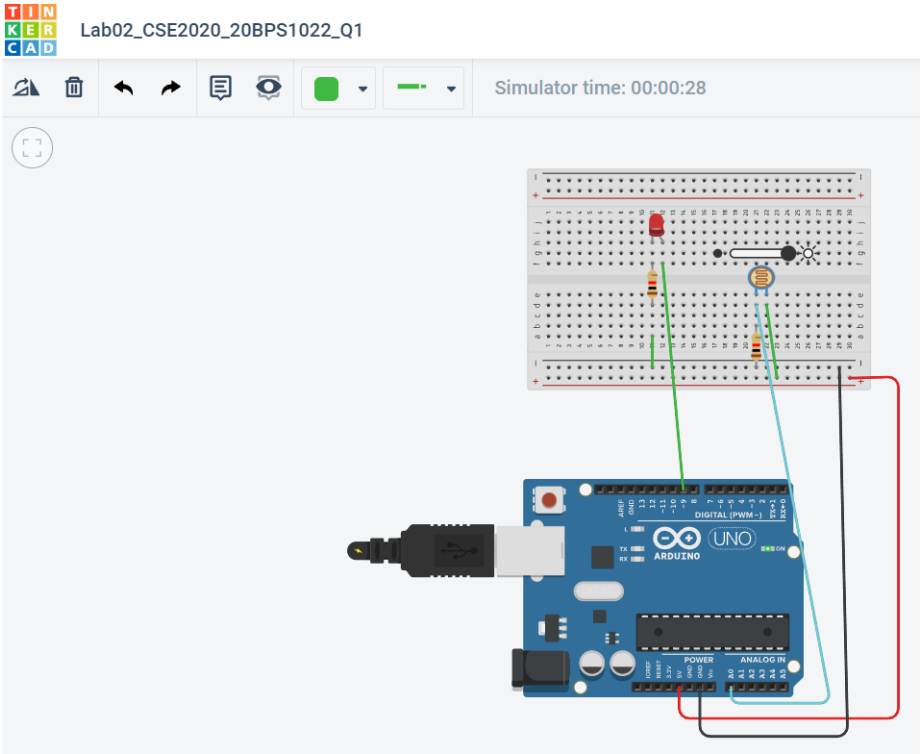


Code:

```
// C++ code
int sensorValue = 0;
void setup()
{
pinMode(A0, INPUT);
Serial.begin(9600);
pinMode(9, OUTPUT);
}
void loop()
{
sensorValue = analogRead(A0);
Serial.println(sensorValue);
analogWrite(9, map(sensorValue, 0, 1023, 0, 255));
delay(100);
}
```

Output:

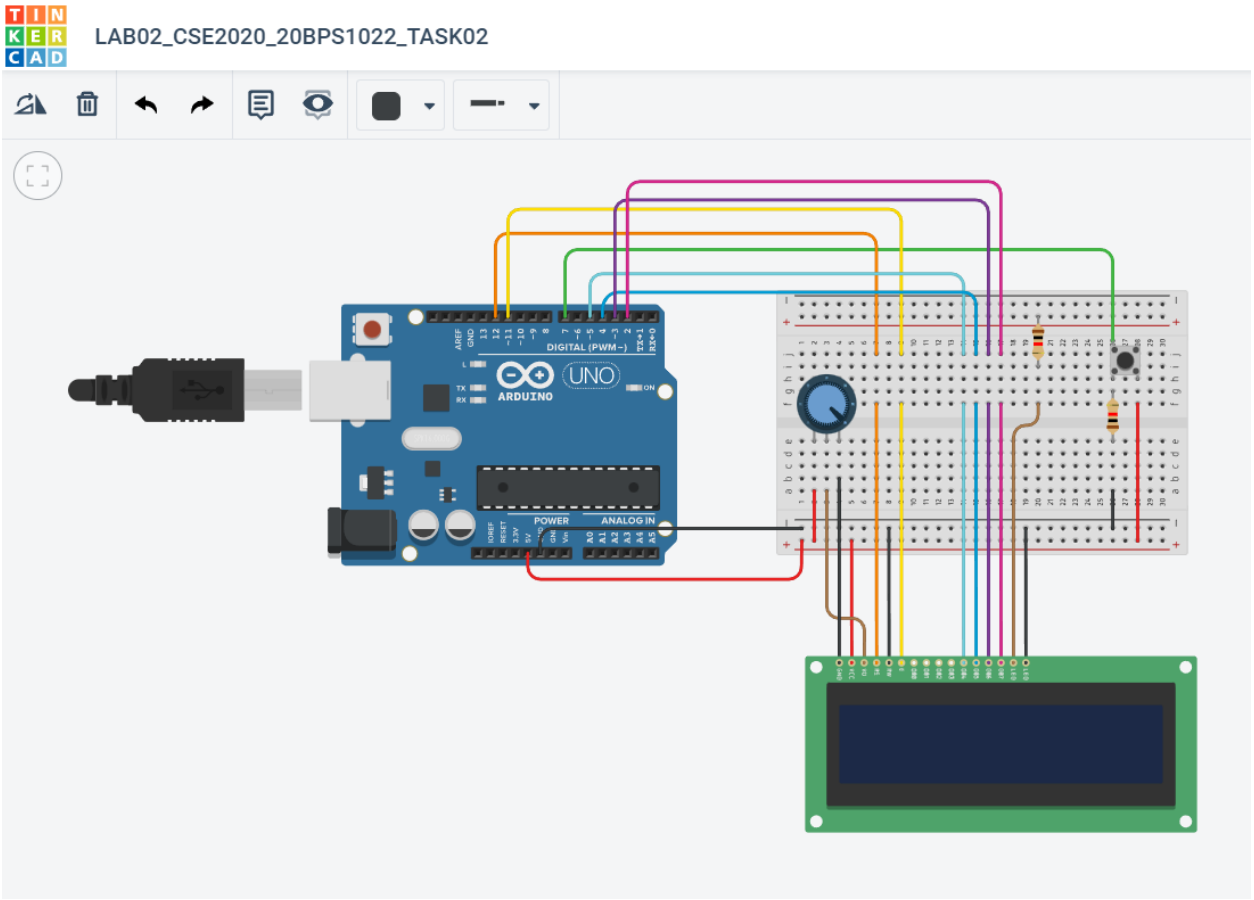




Link: https://www.tinkercad.com/things/aNpWyNrjSaT-lab02cse202020bps1022q1/editel

Task 2: **Connect Arduino with 16x2 LCD display and a button option. When you press the button, it should display "Hello, Your name" in LCD.**

Circuit:

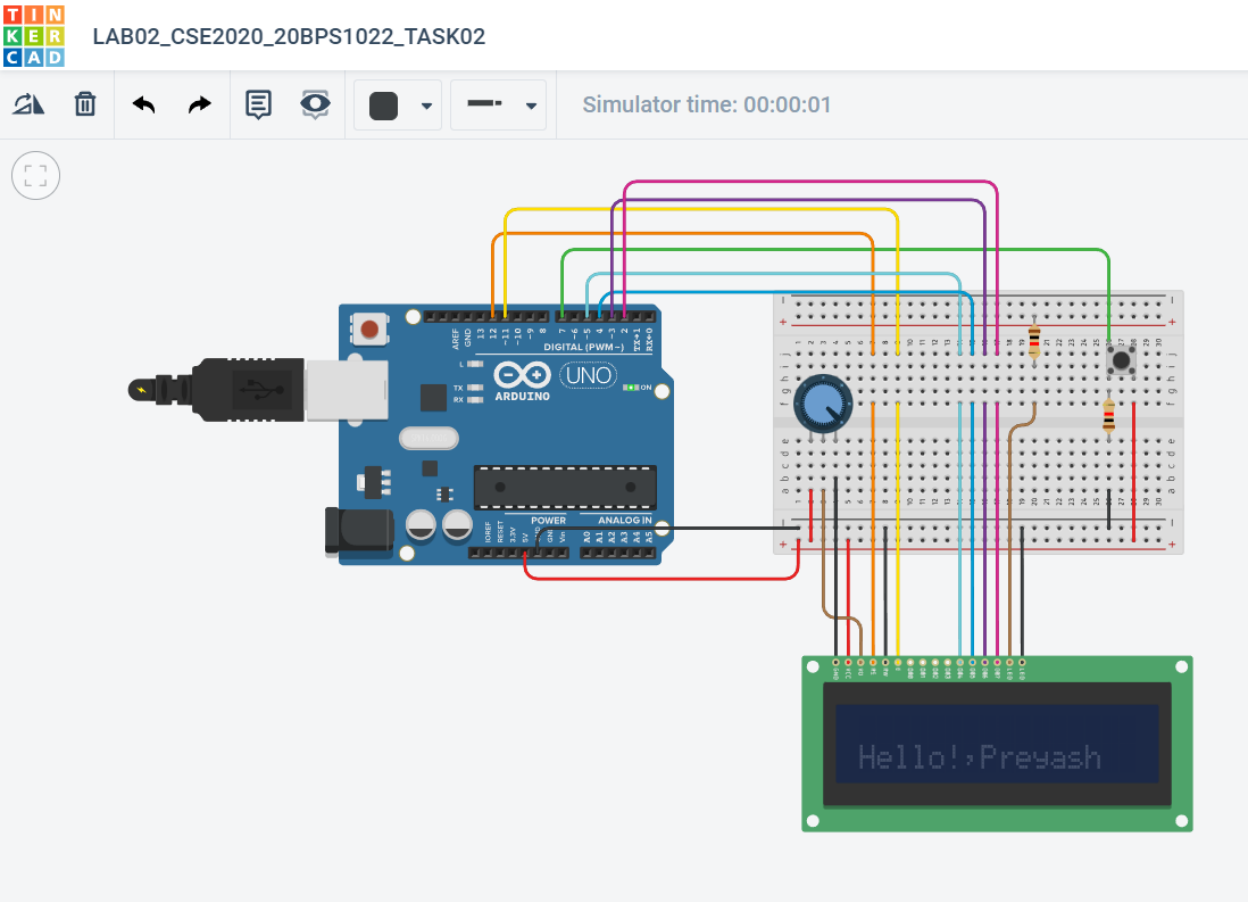


Code:

```
#include <LiquidCrystal.h>

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

void setup() {

lcd.begin(16, 2);

pinMode(7, INPUT);

}
```

```
void loop() {

lcd.setCursor(0, 1);

if(digitalRead(7)==HIGH){

lcd.print("Hello!,Preyash");

}

}
```

Output:

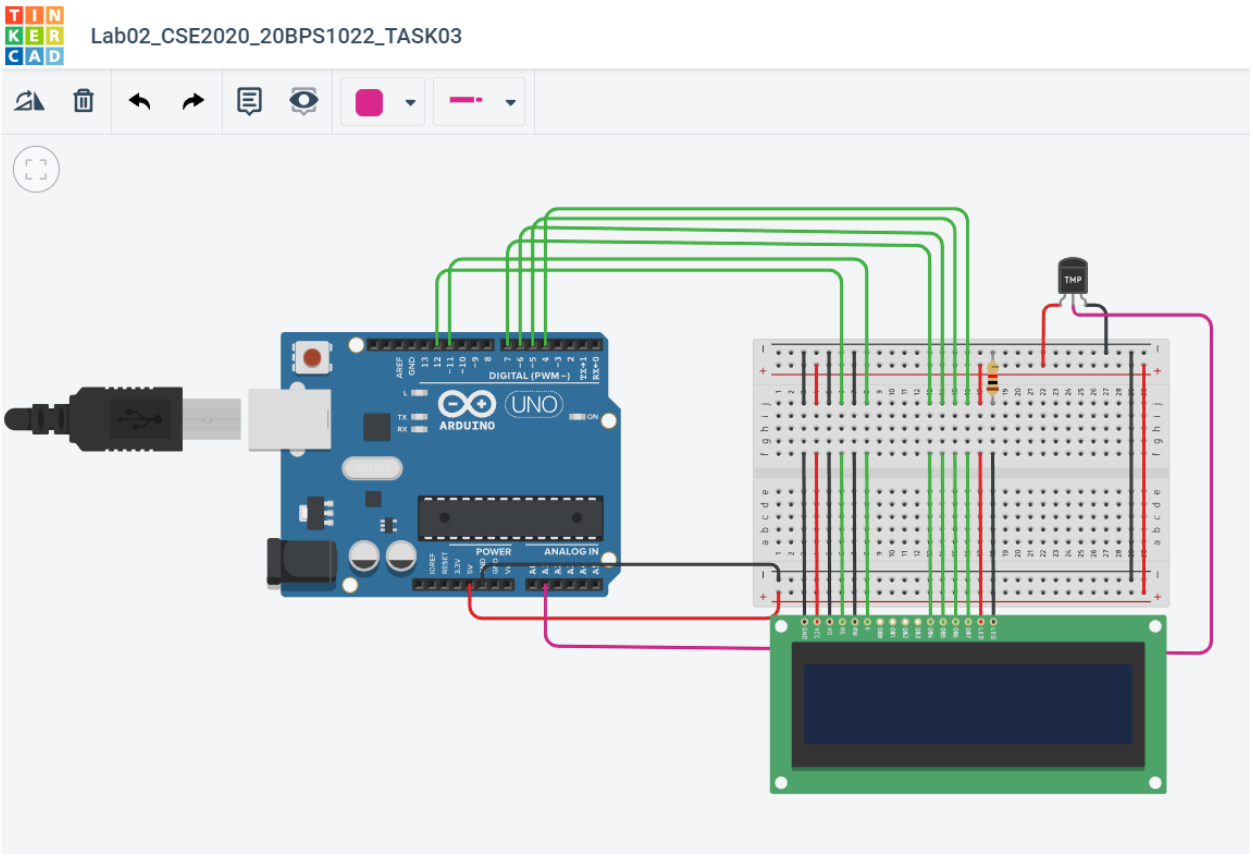


Link:

https://www.tinkercad.com/things/6AcHmIDx6v3-lab02cse202020bps1022task02/editel

Task 3: **Connect Arduino with 16x2 LCD display and connect a temperature sensor. The temperature reading must be displayed in the LCD and serial monitor.**

Circuit:

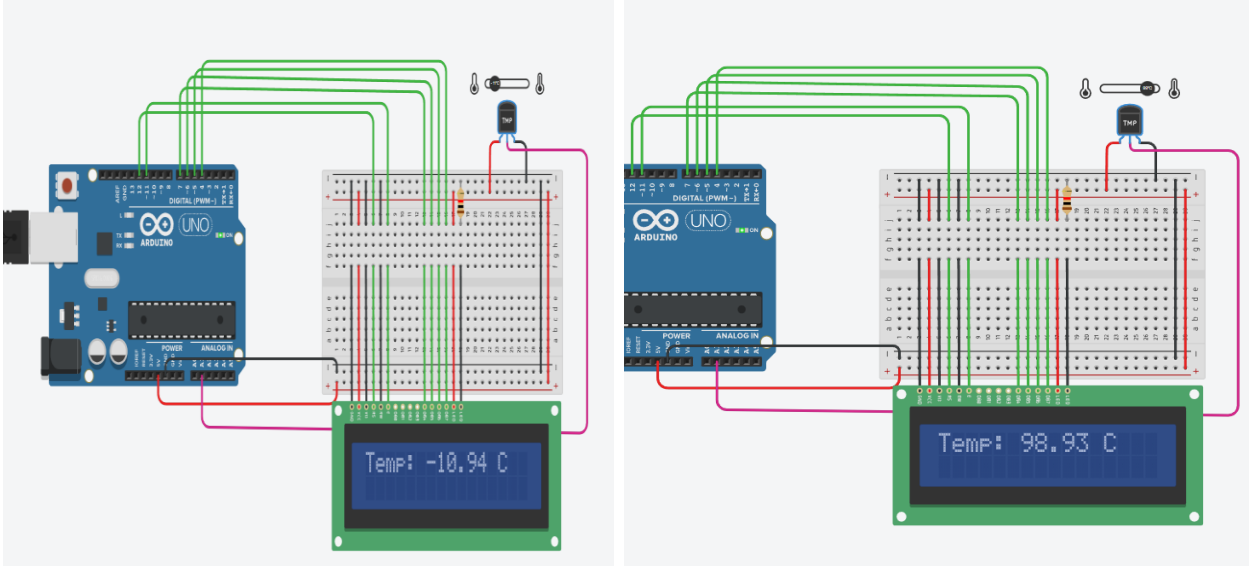


Code:

```
#include<LiquidCrystal.h>

LiquidCrystal lcd(12, 11, 7, 6,5,4);

float celsius;

int temp = A1;

void setup(){

pinMode(temp,INPUT);

}
```

```
void loop(){
celsius = analogRead(temp)*0.004882814;
celsius = (celsius - 0.5) * 100.0;
lcd.setCursor(0,1);
lcd.print("Temp: ");
lcd.print(celsius);
lcd.print(" C");
delay(1000);
lcd.clear();
}
```

Output:

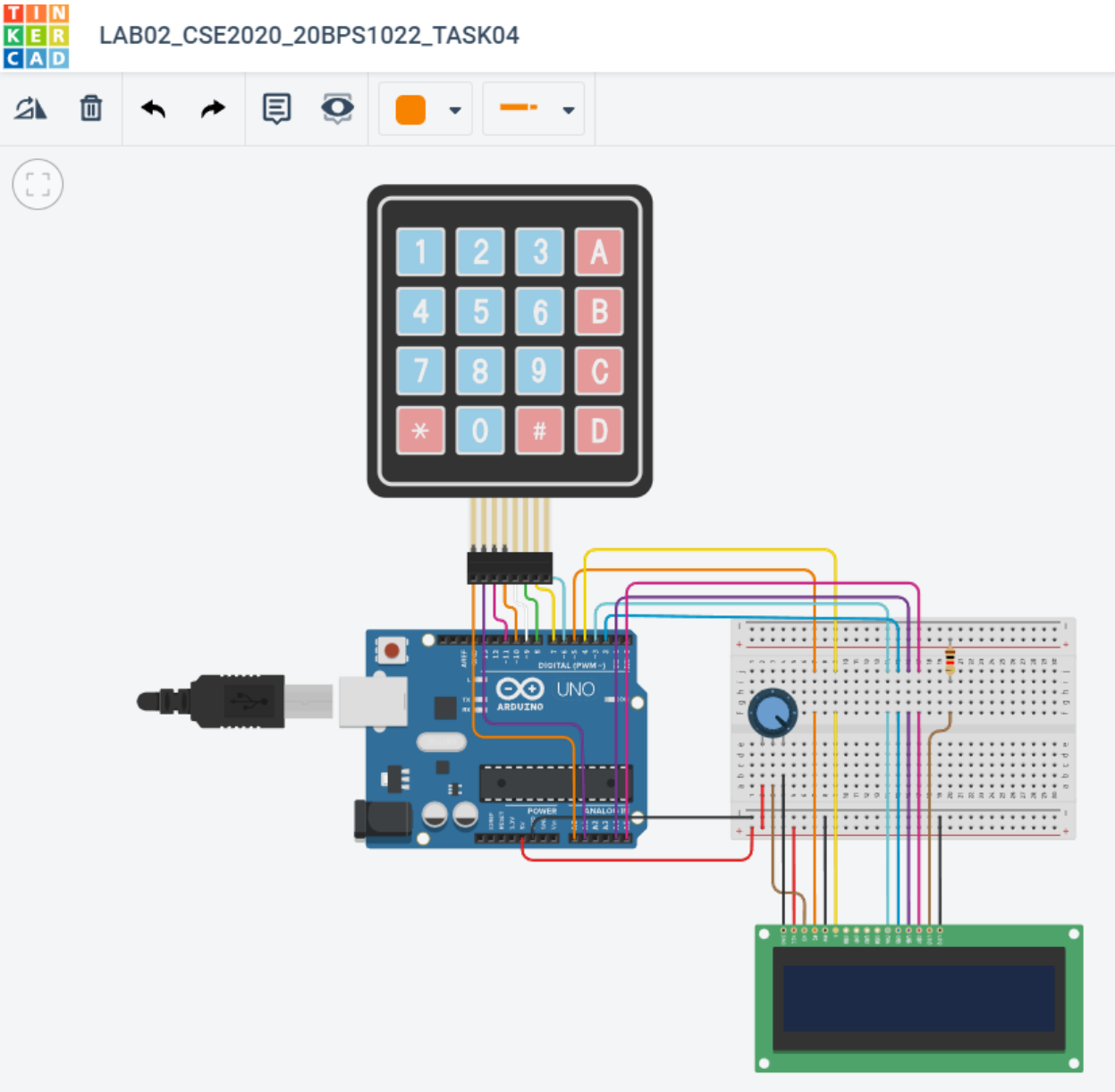


Link:

https://www.tinkercad.com/things/ipgeSRCLnxD-lab02cse202020bps1022task03/editel

Task 4: Design a 4x4 keypad display in tinker cad and connect Arduino with 16x2 LCD display. When the user presses the values, it will display in the LCD display.

Circuit:

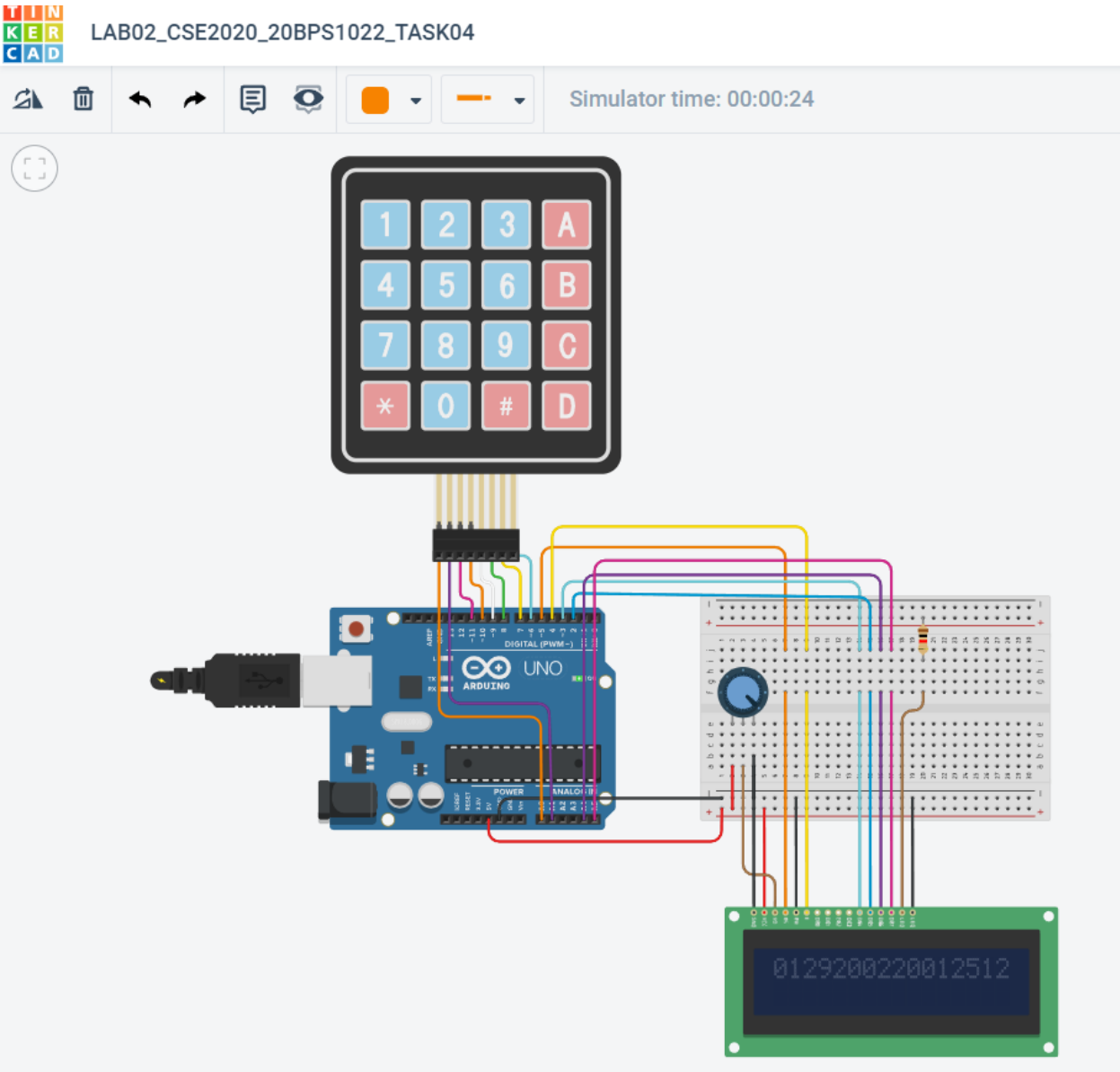


Code:

```
#include <Keypad.h>
#include <LiquidCrystal.h>
LiquidCrystal lcd(5, 4, 3, 2, A4, A5);
const byte ROWS = 4; //four rows
const byte COLS = 4; //three columns
char keys[ROWS][COLS] = {
{'1','2','3','A'},
{'4','5','6','B'},
{'7','8','9','C'},
{'*','0','#','D'}
};
byte rowPins[ROWS] = {A0, A1, 11, 10}; //connect to the row pinouts of the keypad
byte colPins[COLS] = {9, 8, 7, 6}; //connect to the column pinouts of the keypad
int LCDRow = 0;
Keypad keypad = Keypad( makeKeymap(keys), rowPins, colPins, ROWS, COLS );
void setup(){
Serial.begin(9600);
lcd.begin(16, 2);
lcd.setCursor(LCDRow, 0);
}
void loop(){
char key = keypad.getKey();
if (key){
```

```
Serial.println(key);
lcd.print(key);
lcd.setCursor (++LCDRow, 0);
}
}
```

Output:



Link:

https://www.tinkercad.com/things/h4243n8hVUS-lab02cse202020bps1022task04/editel

Result: We have successfully accustomed and made a few circuits using sensors in Tinker CAD