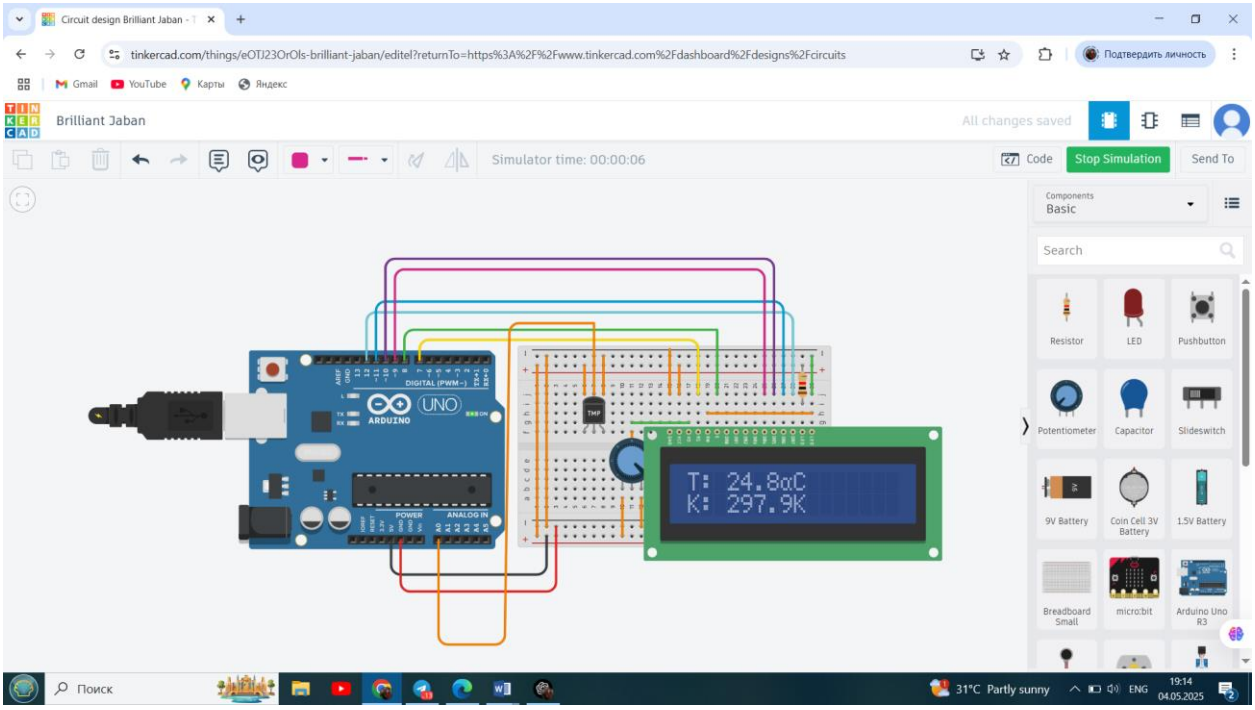
10 – Amaliyot ish

Mavzu: Harorat datchiklari ishlash tamoillarini o’rganish va ularni ishlatishga misollar: LM335 xarorat datchigi (uzuluksiz).

Ishning maqsadi: LM335 analog xarorat datchigi haqida umumiy ma’lumotlarni olish va uning ishlash tamoilllari, datchikni ishlatish bo’yicha amaliy ko’nikmalarga ega bo’lish.

Turli xil harf ko'rsatkichlari bo'lgan LM135, LM235, LM335 datchiklari stabilizatsiya kuchlanishining haroratga chiziqli bog'liq bo’lgan parallel kuchlanish stabilizatorlari hisoblanadi. Ya'ni, agar siz oddiy diod kabi sensorni yoqsangiz, u holda kuchlanish u joylashgan muhitning haroratiga mutanosib bo'ladi. 25 ° C haroratda kuchlanish taxminan 3V ni tashkil qiladi. Haroratning bir darajali o'zgarishi 10 mV kuchlanish o'zgarishiga olib keladi.



Kod

```
#include <LiquidCrystal.h>

LiquidCrystal lcd(7, 8, 9, 10, 11, 12);
```

```
const int tmp36Pin = A0;
float voltage = 0;
```

```
float celsius = 0;
float kelvin = 0;

void setup() {
  pinMode(tmp36Pin, INPUT);
  Serial.begin(9600);
  lcd.begin(16, 2);
  lcd.print("TMP36 Sensor");
  delay(2000);
  lcd.clear();
}

void loop() {
  int raw = analogRead(tmp36Pin);

  // Перевод в напряжение (при 5В питании)
  voltage = raw * (5.0 / 1023.0);

  // TMP36: 10 мВ/°C с оффсетом 0.5 В при 0°C
  celsius = (voltage - 0.5) * 100.0;
  kelvin = celsius + 273.15;

  // Отладка
  Serial.print("Voltage: ");
  Serial.print(voltage, 3);
  Serial.print(" V | Celsius: ");
  Serial.print(celsius, 2);
  Serial.print(" C | Kelvin: ");
  Serial.println(kelvin, 2);

  // LCD вывод
  lcd.clear();
  lcd.setCursor(0, 0);
  lcd.print("T: ");
  lcd.print(celsius, 1);
  lcd.write(223); // градус
  lcd.print("C");

  lcd.setCursor(0, 1);
  lcd.print("K: ");
  lcd.print(kelvin, 1);
  lcd.print("K");

  delay(1000);
}
```