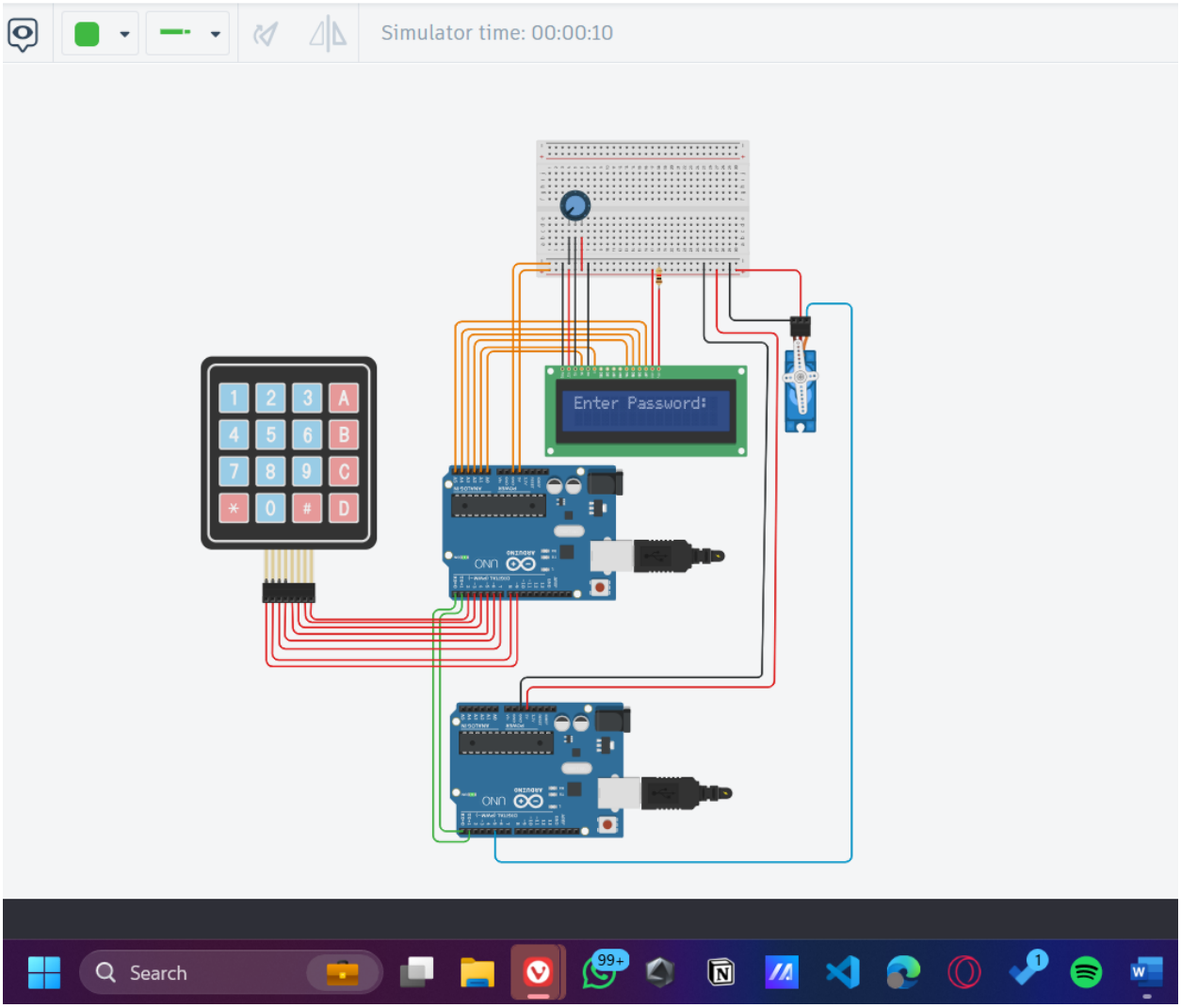



**Task 2: Basic Door Lock System Using Two Arduinos**

**1. Overview:** This project involves creating a basic door lock system using Arduino microcontrollers. The system is designed to control a servo motor (simulating a door lock) based on user input from a keypad. The functionality is divided between two Arduino boards, with one handling user input and password validation, and the other controlling the servo motor based on the validation results.

**2. System Components:**

- **Arduino 1 (Keypad Interface):**
    - **Setup:** A 4x4 keypad is connected to this Arduino. The keypad allows users to enter a 5-digit password.

    - **Functionality:** Arduino 1 reads the input from the keypad and checks if the entered password matches a predefined correct password.

- **Arduino 2 (Servo Motor Control):**
    - **Setup:** A servo motor is connected to this Arduino. The servo motor simulates the locking and unlocking of a door.
    - **Functionality:** Based on the signal received from Arduino 1, Arduino 2 moves the servo motor to unlock or keep the door locked.

**3. Communication Protocol:**

- **UART (Serial Communication):**
    - The two Arduinos communicate via the UART protocol. Arduino 1 sends a signal to Arduino 2 indicating whether the entered password is correct or incorrect. If the password is correct, Arduino 2 moves the servo to unlock the door. If incorrect, the door remains locked.

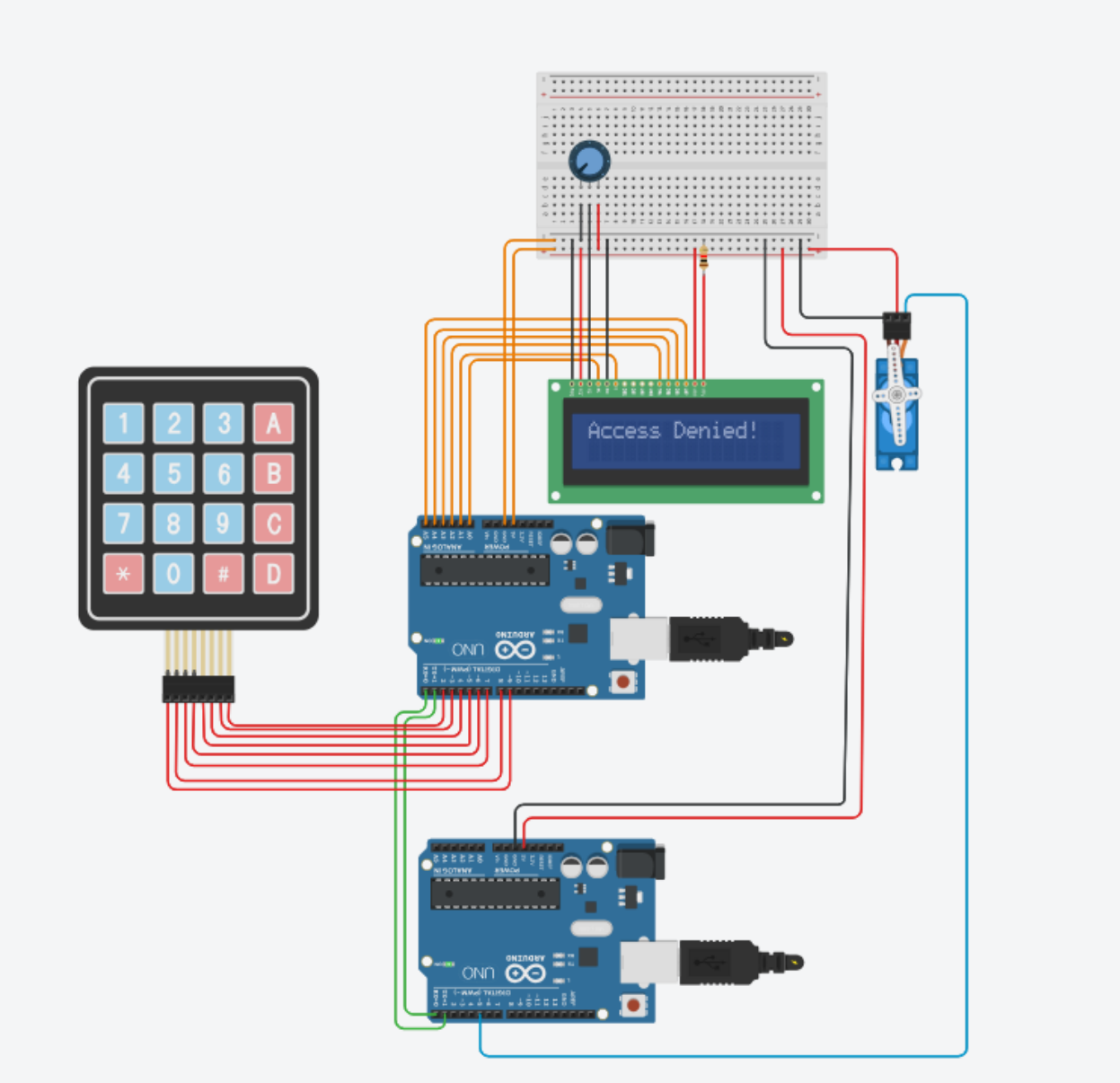
**4. Password Check:**

- **5-Digit Password System:**
    - The system uses a 5-digit password for authentication. When the correct password is entered, Arduino 1 sends a "correct" signal to Arduino 2, triggering the servo motor to unlock the door. If the password is incorrect, the system does not unlock the door.

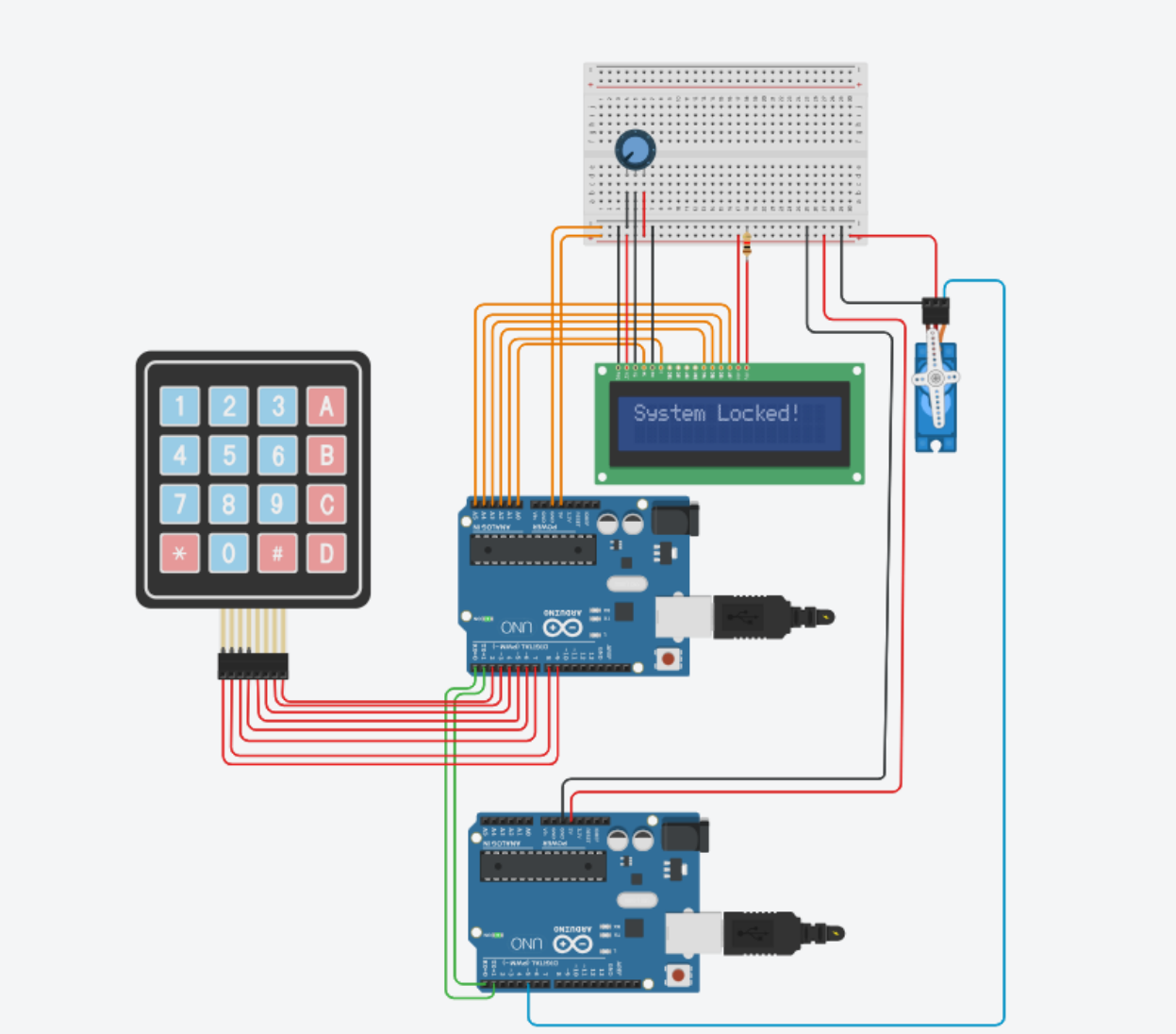
**5. Bonus Opportunities:**

- **Security Enhancements:**
    - You can add features like limiting the number of incorrect password attempts. If a user enters the wrong password too many times, the system could lock itself for a set period to prevent unauthorized access.
- **LCD Display:**
    - An LCD display is included to provide feedback to the user. Messages such as "Enter Password," "Access Granted," and "Access Denied" can be shown on the LCD to guide the user through the process and indicate the result of their input.

When writing wrong password:



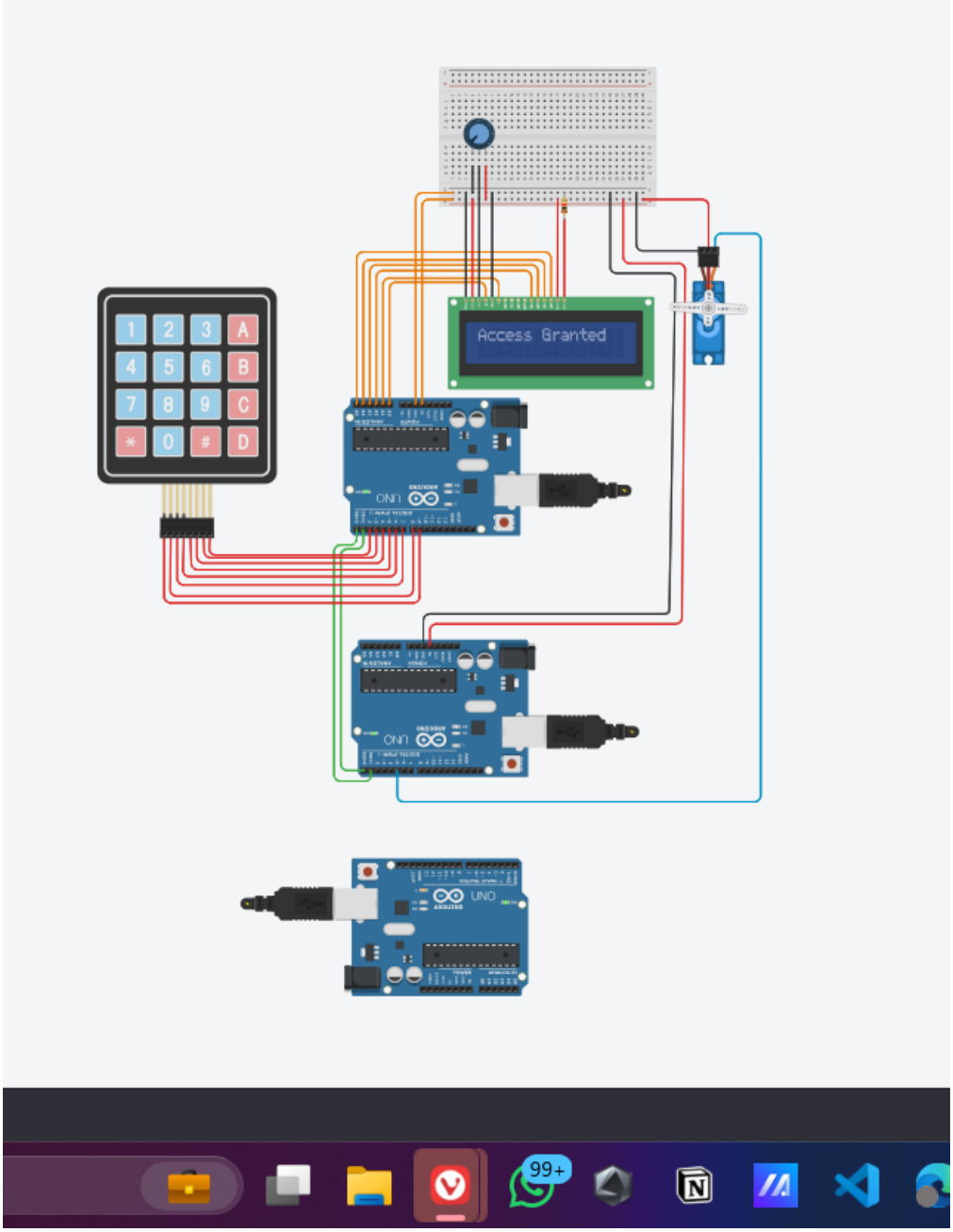
When writing wrong password 3 times:




System is locked for 6 seconds (6000 msec)

When writing Correct password:

Access Granted and the door opens




Link to tinkerCad project:

https://www.tinkercad.com/things/6CTbdWLzTyX-neat-duup-migelo/editel?sharecode=Nvl3vBI-q8-BuD_z4ZoToBERzvag0C_3G1RKhGQbSis