Arduino Project Report

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2024 Spring - 224 Computer Architecture

Temperature and Humidity Sensor Detector

Plan

Code
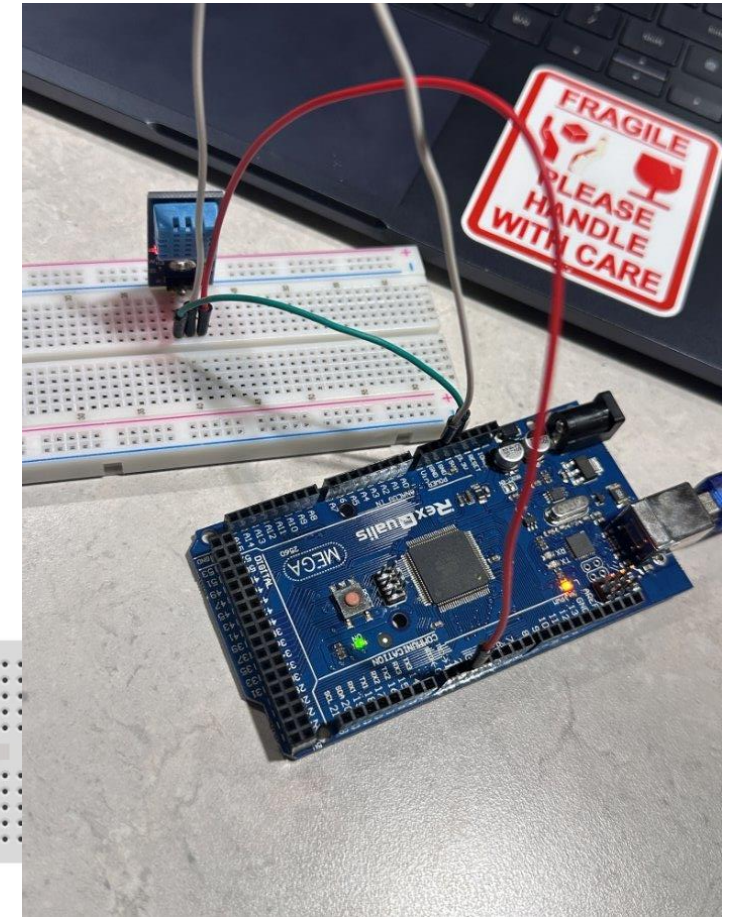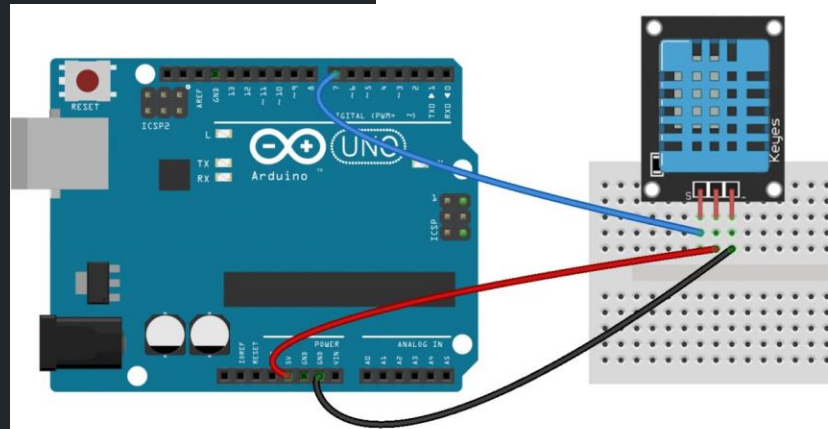
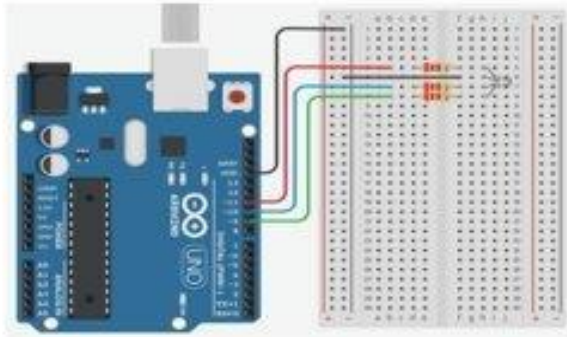# Implementation

2. **Mood lamp with Arduino kit**

This project aims to implement a mood lamp which we can see around everyday life using an Arduino kit. We will use RGB multicolor to show diverse color set for user.

By implementing basic lantern program, we can understand how Arduino works and how to code the Arduino programming for the stuff in real life.

- **Set up Arduino**
    - Download Arduino program and set environment for window 64.
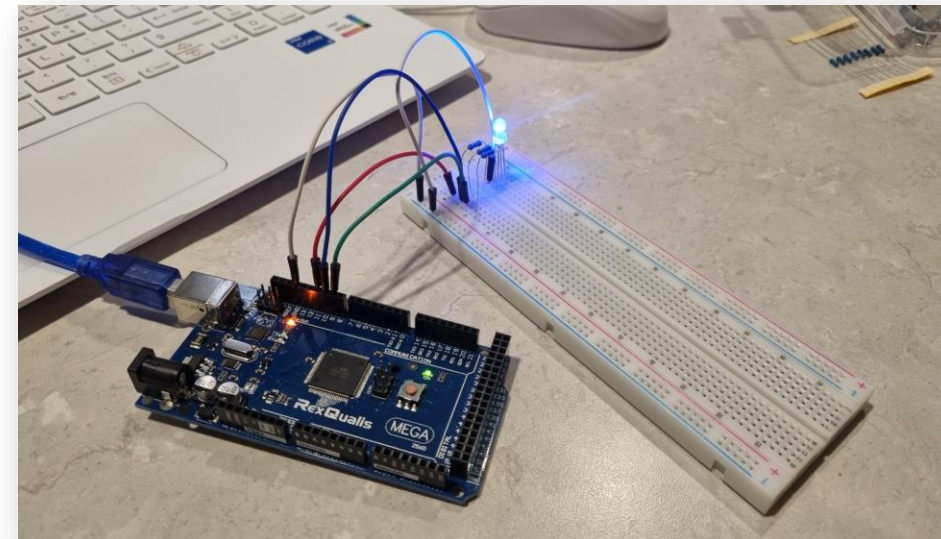- **Compose PCB (Printed Circuit Board)**

    - Compose the PCB (printed circuit board) as above.
    - Use one led lantern and three resistors to control RGB colors
- **Programming**
    - Program Arduino system
    - Use random function to implement diverse color visually
    - Check the color set and search how many colors Arduino can make.
    - Arduino will show random variables which it used for parameters
- **Test and review**
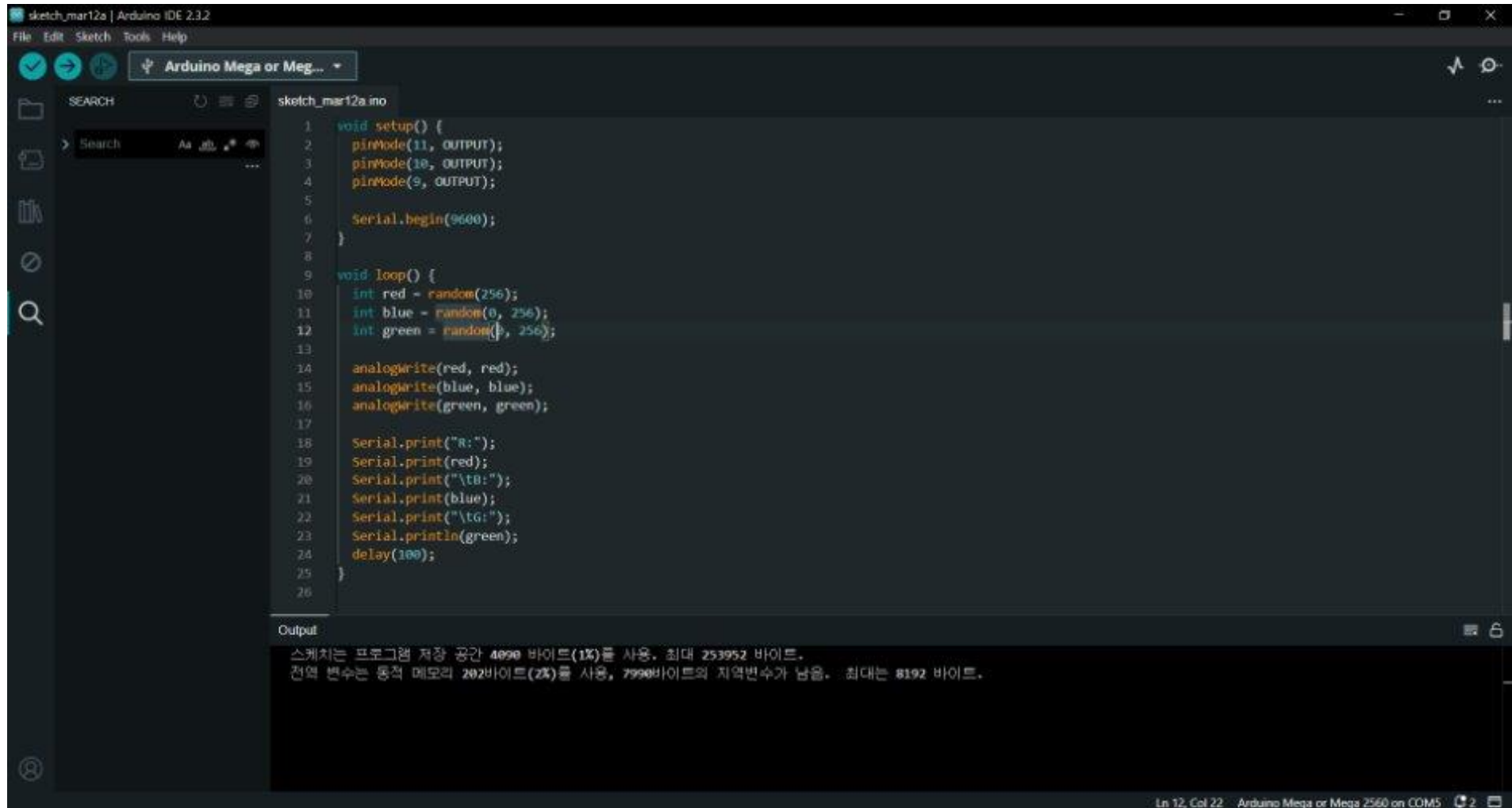   - Test Arduino program and check the colors
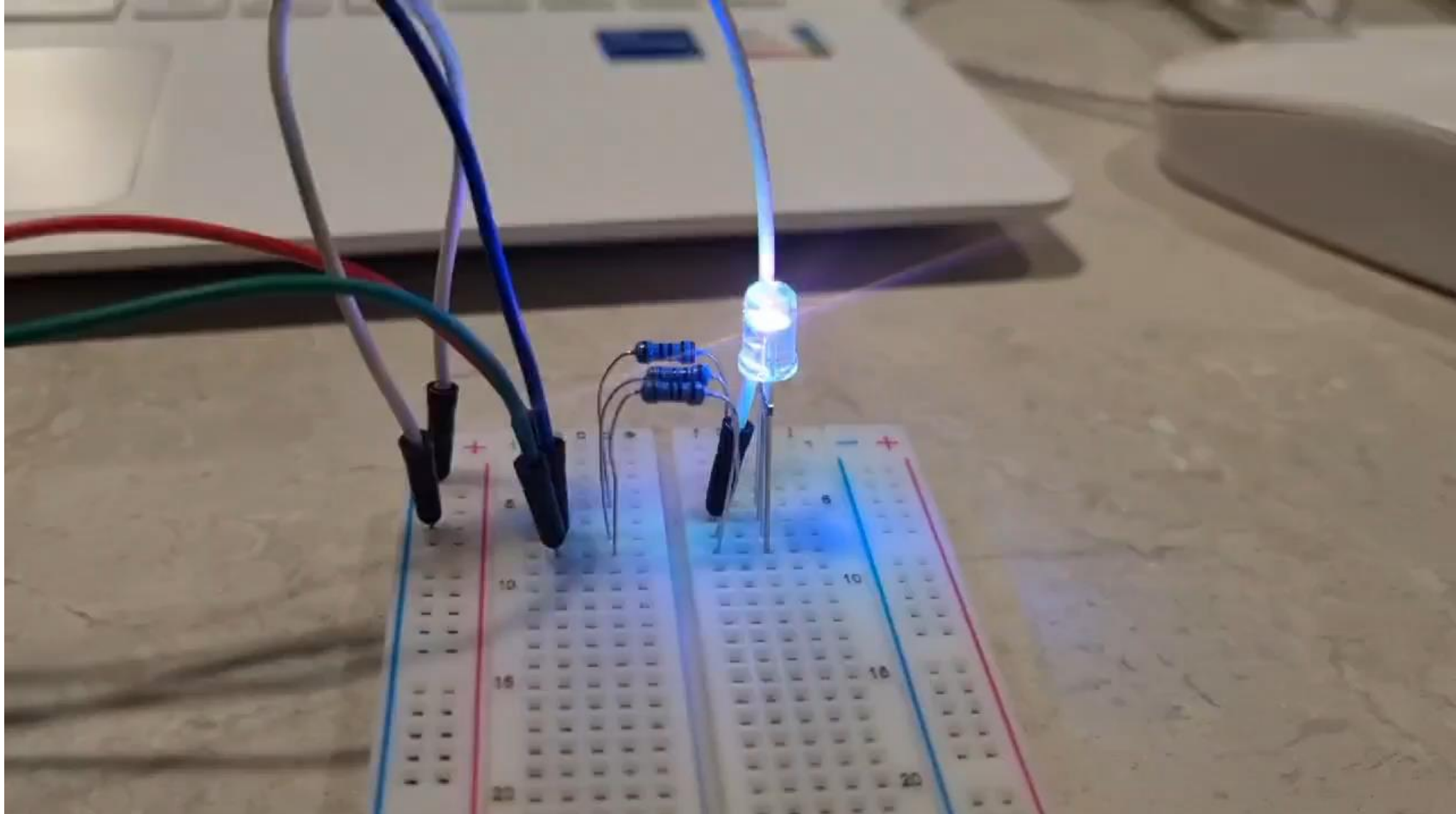
JaeJun Lee

Mood lamp with Arduino kit - Code

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Mood lamp with Arduino kit - motherboard
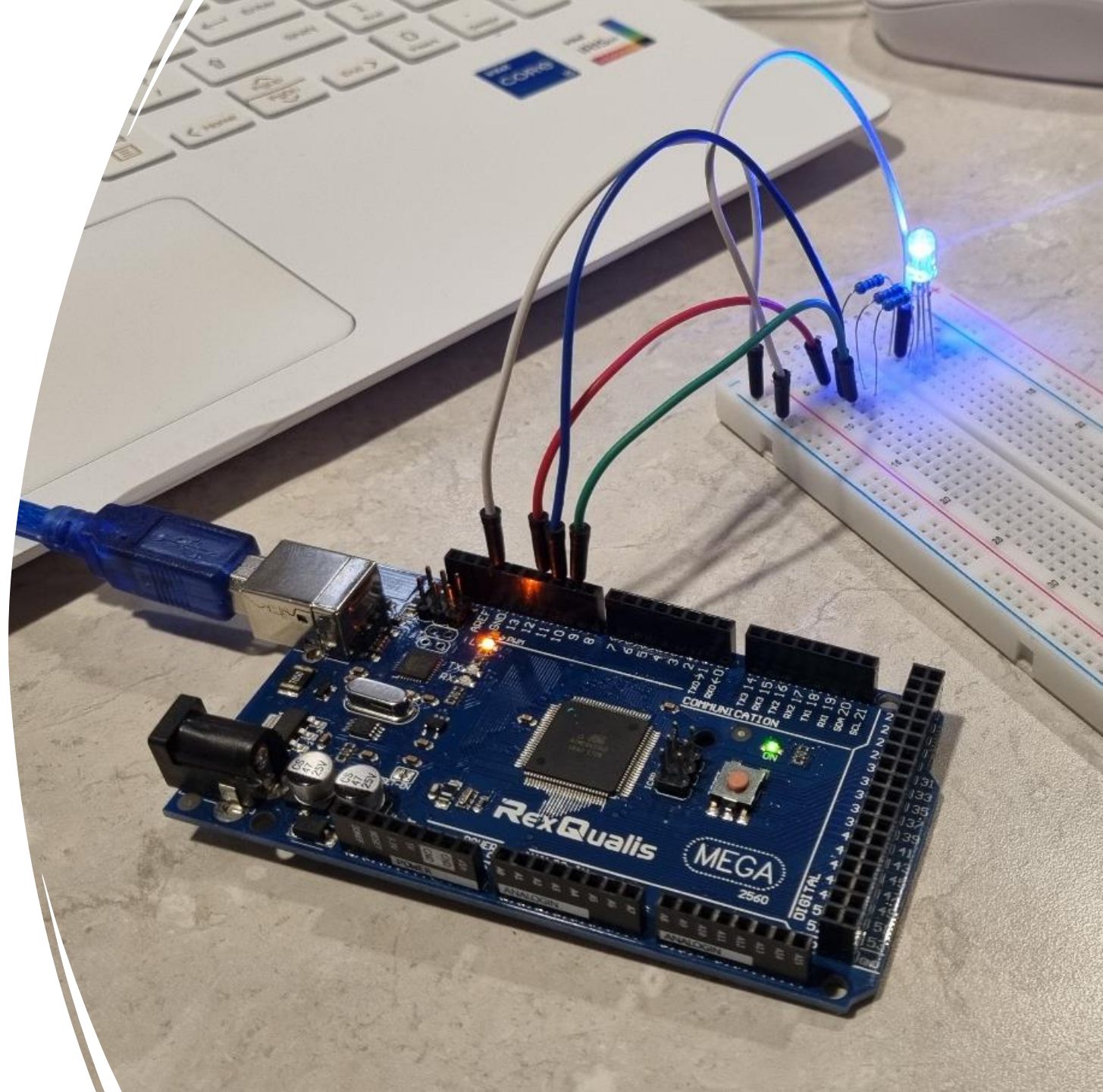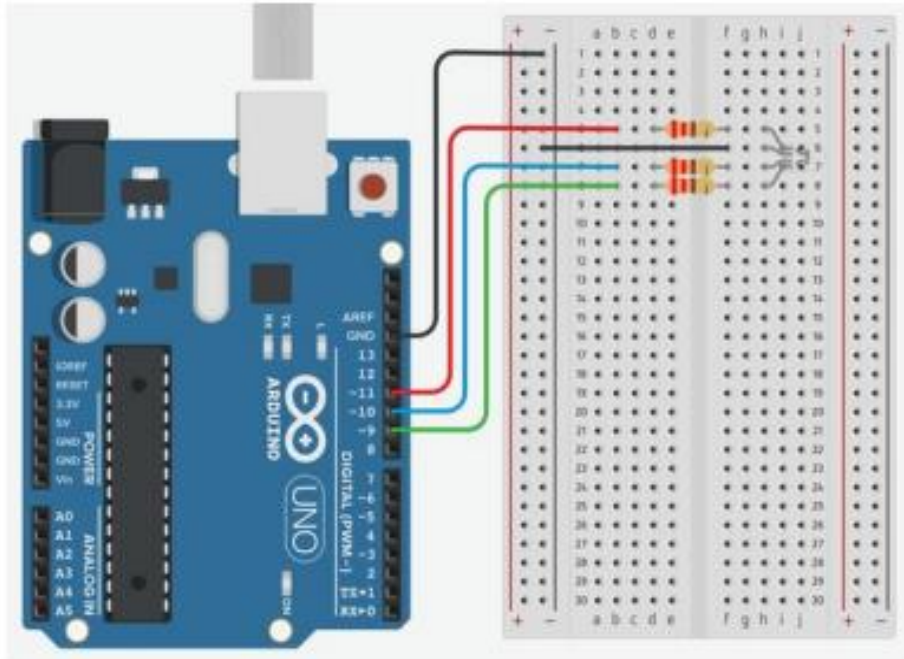
JaeJun Lee

Mood lamp with Arduino kit - video

Windows log in using Arduino RFID

- In this project, we are going to demonstrate how to login to Windows computer without typing in password manually by using Arduino RFID.

- First step is to set up Arduino and RFID reader.
  - Connect the RFID reader module to Arduino according to circuit diagram.
  - Install the necessary libraries in Arduino IDE to communicate with the RFID reader.

- Second step is to program Arduino.
  - Write a program for Arduino that listens for RFID tag scans.
  - When a tag is scanned, Arduino reads its unique identifier.
 - Store the RFID tag identifiers that correspond to authorized users in the Arduino code.
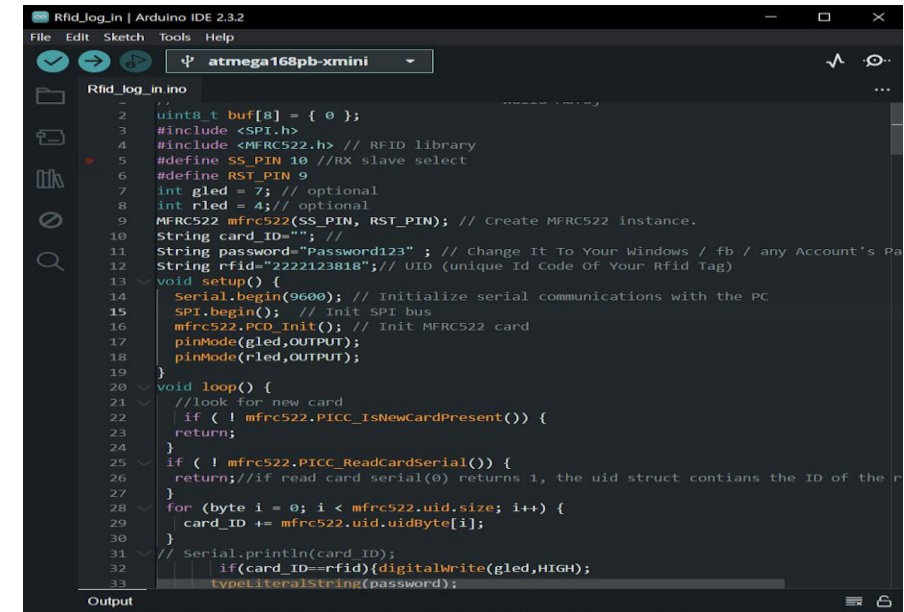
Setting up Arduino and RFID Reader
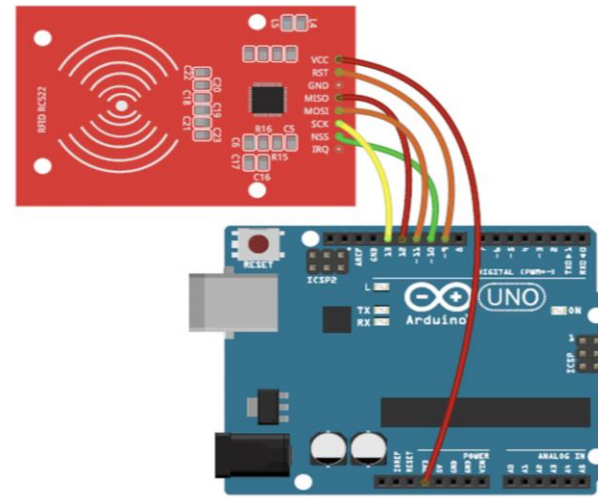
RFID RC522	ARDUINO
V_{CC}	3.3V
GND	GND
RST	D9
MISO	D12
MOSI	D11
SCK	D13

- To connect RFID reader and Arduino UNO, I referenced both the diagram and the connection details.

- I have connected MISO,MOSI,SCK and NSS pin to the SPI pins of the Arduino Uno board since RFID module use SPI communication.
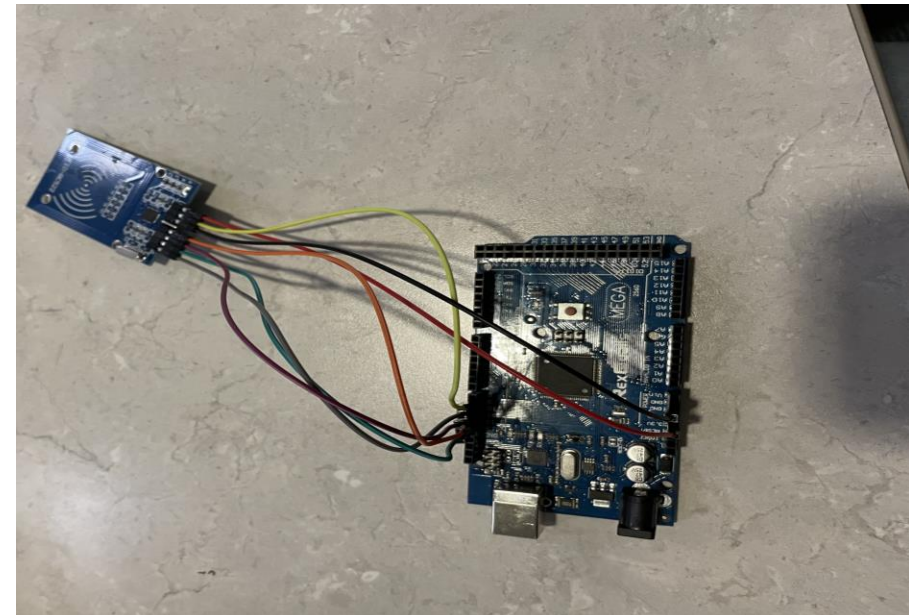
Program Arduino

- For this step, I utilized pre-built RFID login library.

- If you opened the library, there are some changes you need to make such as card_id and password.

- The screenshot below shows that RFID reader module is ready to be scanned and conduct log-in to Windows device.