Heavens' Light is Our Guide

Rajshahi University of Engineering & Technology

Department of Computer Science & Engineering

CSE 3106
Computer Interfacing & Embedded Systems

Turning on & Blinking a LED

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1 Turning on & Blinking a LED

1.1 Source Code

Listing 1: *Turning on a LED using Arduino Framework*

```
#include <Arduino.h>

#define LED_PIN PA15

void setup() {
  pinMode(LED_PIN, OUTPUT);
}

void loop() {
  digitalWrite(LED_PIN,HIGH);
}
```

Listing 2: *Blinking a LED with a interval of one second*

```
#include <Arduino.h>

#define LED_PIN PA15

void setup() {
  pinMode(LED_PIN, OUTPUT);
}

void loop() {
  digitalWrite(LED_PIN,HIGH);
  delay(1000);
  digitalWrite(LED_PIN,LOW);
  delay(1000);
}
```

1.2 Circuit Diagram

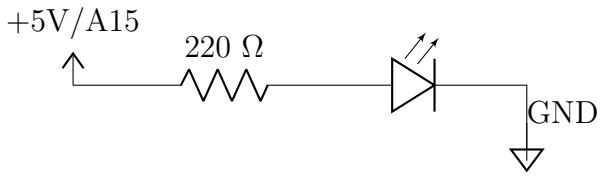

Figure 1: *Simple LED circuit diagarm*

1.3 Simulation in TinkerCAD

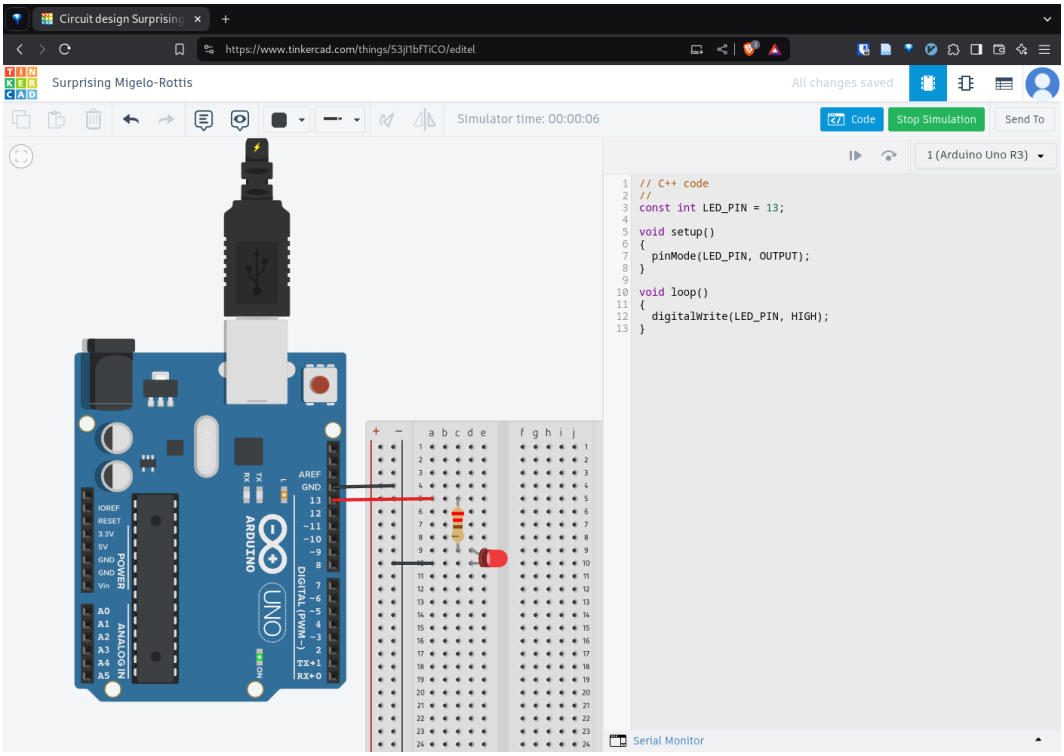

Figure 2: *Simulating the circuit using Arduino in TinkerCAD*

2 Discussion

I successfully implemented the circuit in fig. 1 using the STM32F103C8T6 microcontroller board. The STM32 has multiple GPIO pins that can be used as digital output pin. Among these pins, I chose the A15 pin which was referenced as `PA15` in listing 1 and listing 2.

The code was implemented using the Arduino framework which gives various built-in functions to interact with the microcontroller. Using `pinMode` function the PA15 pin was set as an ouptut pin inside the `setup` function. To turn on the LED the pin was set to HIGH using the function `digitalWrite`. In case of blinking, the pin was continuously set to HIGH and LOW with a delay of 1000ms or 1s using the `delay` function.

Finally, the code was uploaded to the microcontroller using stlink protocol. To simulate the same actions virtually, tinkerCAD platform was used. There I used the Arduino UNO R3 as the microcontroller board. And the digital pin 13 was used for the LED pin. Using the similar code, I ran the simulation, see fig. 2