Some Notes

On

Day 2: Arduino UNO theory and some practicals

By

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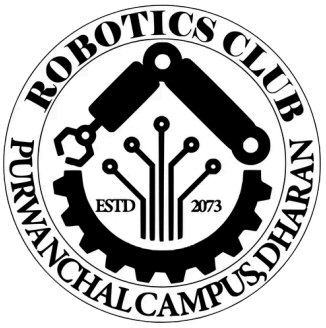
To

ROBOTICS CLUB



Tribhuwan University

Institute of Engineering

Robotics Club

Purwanchal Campus

Dharan, Nepal

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1 DAY 2

1.1 What We Learnt

The second day of 8-day interactive learning event organized by Robotics Club of Purwanchal Campus—>TECHNOMORPH got more interesting and even more productive. This day gave us one more reason to hang up with robotics training, as it ended with queries in mind and curiosities.

1.2 What we learnt

We got to visualize Auduini UNO, ESP32, sensors, robotic arm made by our fellow friends, STM. The session was more aligned toward Arduino. We did the basic circuit design, wrote codes for the respective work using "tinkercad"-online.

Tinkercad was really an interestingly interactive platform and for beginners like us, it was so comforting. It allowed us to build and test circuits with the in-built virtual simulation. Session was great and handful experience, hopping to learn more in upcoming sessions.

1.3 Assignment Question

"Is it possible to create a simulation in Tinkercad where an LED is dimmed and brightened using PWM with an Arduino? If yes, explain how you would implement this simulation step by step, including the circuit setup and example code. If not, explain why it is not possible."

1.4 My view on query

Yes it is possible. To implement so: Components Used: Arduino UNO, 220 Ohm resistor, LED, Breadboard, Wires

Algorithm

1) Got an Arduino UNO, a breadboard in parallel to Arduino

2) Got LED in breadboard and resistor in series with LED

3) Cathode of LED was connected to terminal 2 of resistor and remaining end was of resistor was grounded

4) Anode of LED was connected to Arduino pin 9

In Code

SetUp and loop, two functions were made.

SetUp() to set up the working environment

loop() to run the main program logic, fading and glowing LED time and again repeatedly

220 Ohm resistor is used to prevent LED from burning due to over voltage

We used pin 9 so ledPin is initialized by 9

Brightness will be off first, mean LED light will first be turned off

Fade is for undisturbed and smooth fading

"for" loops are written twice, one to glow and another to fade

1.5 This is an assignment Code

```
# This is an assignment code.
int ledPin=9;
int brightness=0;
int fade=6;
int time=15;
void setup()
{
  pinMode(9,OUTPUT);
  digitalWrite(9,HIGH);
}

void loop()
{
  for(brightness=0;brightness<=255;brightness=brightness+fade)
  {
  analogWrite(ledPin, brightness);
  delay(time);
  }

  delay(300);
  for(brightness=255;brightness>=0; brightness=brightness-fade)
  {

    analogWrite(ledPin, brightness);
    delay(time);
  }
  delay(300);
}
```

1.5.1 Devices used to implement code:

1. Arduino UNO
2. Resistor
3. LED
4. Breadboard
5. Wires

Figure 1: Logo of Tribhuvan University.