e-Yantra Robotics Competition (eYRC 2019-20)

LED Testing

Hardware required:

1. LED strip and wires

This file contains instructions to test all the given LED strip.

1. Take the LED strip with 40 LEDs which is provided to you and connect a male JST connector to it and connect it to Arduino as shown in the Figure 1. Connect the 5V dc adaptor to the dc jack.

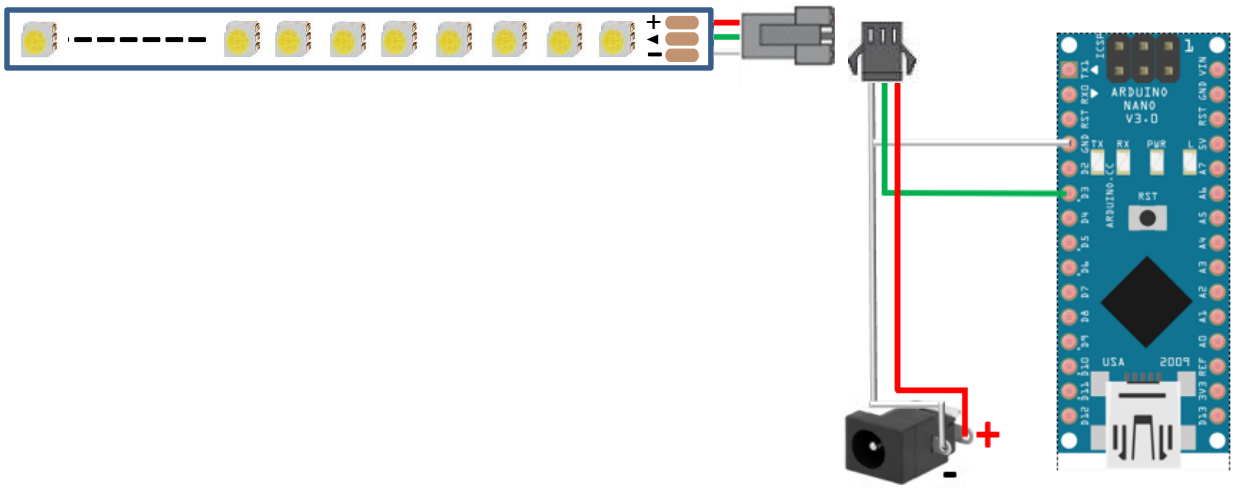

Figure1: Wiring Diagram

2. After this, you need to burn the ws2812b_led_strip_testing.hex file. To do this you need to install avrdude, run the following commands to install avrdude.

```
>>    sudo apt update

>>    sudo apt install avrdude
```

3. Now connect the Arduino Nano to your system using the cable provided. Open a new terminal in the folder where the hex file is placed and run this command to burn the hex file into the Arduino. (Type the following command or alternatively, after "*flash:w:"* You can enter the full path of the .hex file, or you can drag and drop the file on the Terminal, thus making its full path appear.)

```
>>    avrdude -p m328p -b 57600 -P /dev/ttyUSB0 -c stk500v1 -U
      flash:w:led_strip_testing.hex
```

You should get a similar output on your terminal as Figure 2.

```
e-yantra@e-yantra:~/Desktop/Hardware_Testing/LED_module
e-yantra@e-yantra: ~/Desktop/Hardware_Testing/LED_module 191x48

e-yantra@e-yantra:~$ cd ~/Desktop/Hardware_Testing/LED_module/
e-yantra@e-yantra:~/Desktop/Hardware_Testing/LED_module$ avrdude -p m328p -b 57600 -P /dev/ttyUSB0 -c stk500v1 -U flash:w:led_strip_testing.hex

avrdude: AVR device initialized and ready to accept instructions

Reading | ################################################## | 100% 0.01s

avrdude: Device signature = 0x1e950f (probably m328p)
avrdude: NOTE: "flash" memory has been specified, an erase cycle will be performed
         To disable this feature, specify the -D option.
avrdude: erasing chip
avrdude: reading input file "led_strip_testing.hex"
avrdude: input file led_strip_testing.hex auto detected as Intel Hex
avrdude: writing flash (3644 bytes):

Writing | ################################################## | 100% 0.84s

avrdude: 3644 bytes of flash written
avrdude: verifying flash memory against led_strip_testing.hex:
avrdude: load data flash data from input file led_strip_testing.hex:
avrdude: input file led_strip_testing.hex auto detected as Intel Hex
avrdude: input file led_strip_testing.hex contains 3644 bytes
avrdude: reading on-chip flash data:

Reading | ################################################## | 100% 0.83s

avrdude: verifying ...
avrdude: 3644 bytes of flash verified

avrdude: safemode: Fuses OK (E:00, H:00, L:00)

avrdude done.  Thank you.

e-yantra@e-yantra:~/Desktop/Hardware_Testing/LED_module$
```

Figure 2: Burning Hex File Output

4. If your connections are proper and the hex file is burnt successfully, you should see the LEDs glow as Figure 2.

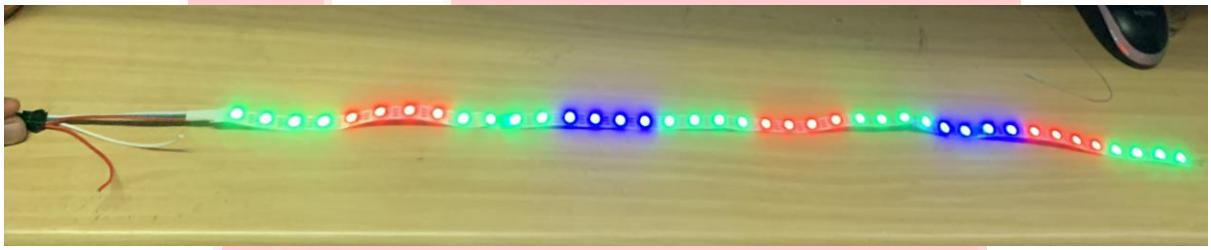

Figure 3: LED Glowing Pattern

Note: Take the photo of this output before cutting the strip and proceeding further to make modules.

5. Follow a demo video for LED strip testing here.
6. Follow the instructions given in the Making_LED_modules.pdf for making led modules.