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Controller >

DFR0182 Wirless GamePad V2.0

DFR0100 DFRduino Beginner Kit For Arduino V3

DFR0267 Bluno

DFR0282 Beetle

DFR0283 Dreamer Maple V1.0

DFR0296 Bluno Nano

DFR0302 MiniQ 2WD Plus

DFR0304 BLE Wireless Gamepad V2

DFR0305 RoMeo BLE

DFR0351 Romeo BLE mini V2.0

DFR0306 Bluno Mega 1280

DFR0321 Wido-WIFI IoT Node

DFR0323 Bluno Mega 2560

DFR0329 Bluno M3

DFR0339 Bluno Beetle

DFR0343 UHex Low-power Controller

DFR0355 SIM808 with Leonardo mainboard

DFR0392 DFRduino M0 Mainboard Arduino Compatible

DFR0398 Romeo BLE Quad Robot Controller

DFR0416 Bluno M0 Mainboard

DFR0575 Beetle ESP32

DFR0133 X-Board

DFR0162 X-Board V2

DFR0428 3.5 inches TFT Touchscreen for Raspberry Pi

DFR0494 Raspberry Pi UPS HAT

DFR0514 DFR0603 IIC 16X2 RGB LCD KeyPad HAT V1.0

DFR0524 5.5 HDMI OLED-Display with Capacitive Touchscreen V2.0

DFR0550 5" TFT-Display with Touchscreen V1.0

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SKU:DFR0888



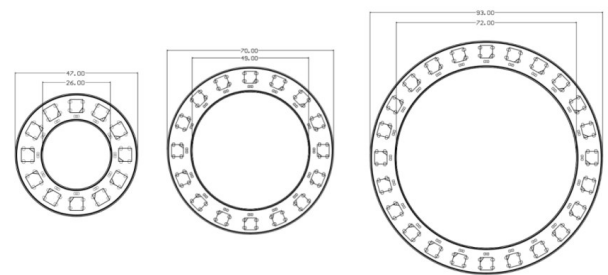
Introduction

Shine like rainbows, this full-color RGB LED Ring with an exquisite and cool appearance could be a great partner for your interactive applications. Add it to your project to brighten your creativity! Combining with sensors, it could turn into a compass that tells direction, a cool clock, a tomato timer, a countdown timer... It could also be a turntable lottery machine used in games, colorful decoration for robots, etc. Come and unlock more fun ways to play with this colorful RGB LED ring by cascading it.

Specification

- Supply voltage: 3.3-5V
- Interface type: PH2.0-3P
- Interface function: cascade multiple lamp rings through the interface

Dimension



Pinout

RGB LED ring pinout diagram:

Num	Label	Description
1	D	Digital signal port
2	+	VCC
3	-	GND

Note: For the silkscreen of the port, IN and OUT represents input and output terminals respectively.

1. Mind+ Programming

DFR0591 raspberry pi e-ink display module V1.0

DFR0592 DC Motor Driver HAT

DFR0604 I O Expansion HAT for Pi zero V1.0

DFR0566 IO Expansion HAT for Raspberry Pi

DFR0528 UPS HAT for Raspberry Pi Zero

DFR0331 Romeo for Edison Controller

DFR0453 DFRobot CurieNano - A mini Genuino Arduino 101 Board

TEL0110 CurieCore intel® Curie Neuron Module

DFR0478 FireBeetle ESP32 IOT Microcontroller(V3.0) Supports Wi-Fi & Bluetooth

DFR0483 FireBeetle Covers-Gravity I O Expansion Shield

FireBeetle Covers-24×8 LED Matrix

TEL0121 FireBeetle Covers-LoRa Radio 433MHz

TEL0122 FireBeetle Covers-LoRa Radio 915MHz

TEL0125 FireBeetle Covers LoRa Radio 868MHz

DFR0489 FireBeetle ESP8266 IOT Microcontroller

DFR0492 FireBeetle Board-328P with BLE4.1

DFR0498 FireBeetle Covers-Camera&Audio Media Board

DFR0507 FireBeetle Covers-OLED12864 Display

DFR0508 FireBeetle Covers-DC Motor & Stepper Driver

DFR0511 FireBeetle Covers-ePaper Black&White Display Module

DFR0531 FireBeetle Covers-ePaper Black&White&Red Display Module

DFR0536 Micro bit Gamepad Expansion Board

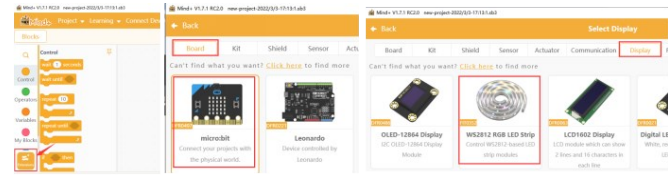
DFR0548 Micro bit Driver Expansion Board

ROB0148 micro: Maqueen for micro:bit

ROB0150 Micro bit Circular RGB LED Expansion Board

User Guide

The extension library of the RGB LED command needs to be added before using the RGB LED ring. Open Mind+ platform, click "Extensions" in the bottom right corner, and in the "MCU" menu bar, select "micro:bit", the MCU to be used. Then find "WS2812 RGB LED" in the "Display" menu bar and click it to add the RGB LED extension library, then the display module will appear in the command area.



Application Sample (RGB LED Ring - 12)

Project 1: Dazzling Neon Light

Project Introduction

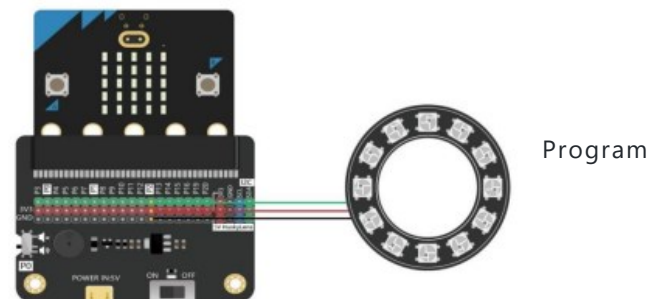
Display color gradients of the 12 LED beads. The color of the lamp bead changes by one level successively around the circle to form a rotating effect as if it's a dynamic rainbow.



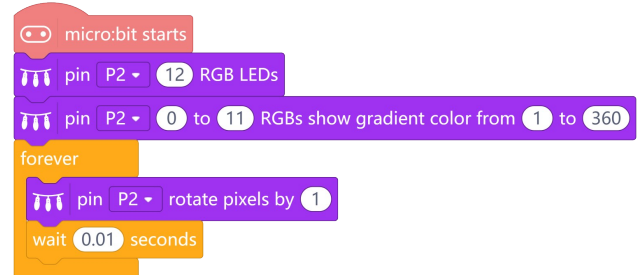
Hardware Preparation

- micro:bit × 1
- IO Expansion Board × 1
- RGB LED Ring- 12 LED Beads × 1

Hardware Connection



Screenshot



MBT0005 micro IO-BOX

SEN0159 CO2 Sensor

DFR0049 DFRobot Gas Sensor

TOY0058 Barometric Pressure Sensor

SEN0220 Infrared CO2 Sensor 0-50000ppm

SEN0219 Gravity Infrared CO2 Sensor For Arduino

SEN0226 Gravity I2C BMP280 Barometer Sensor

SEN0231 Gravity HCHO Sensor

SEN0251 Gravity BMP280 Barometric Pressure Sensors

SEN0132 Carbon Monoxide Gas Sensor MQ7

SEN0032 Triple Axis Accelerometer Breakout - ADXL345

DFR0143 Triple Axis Accelerometer MMA7361

Triple Axis Accelerometer FXLN83XX Series

SEN0072 CMPS09 - Tilt Compensated Magnetic Compass

SEN0073 9 Degrees of Freedom - Razor IMU

DFR0188 Flymaple V1.1

SEN0224 Gravity I2C Triple Axis Accelerometer - LIS2DH

SEN0140 10 DOF Mems IMU Sensor V2.0

SEN0250 Gravity BMI160 6-Axis Inertial Motion Sensor

SEN0253 Gravity BNO055 + BMP280 intelligent 10DOF AHRS

SEN0001 URM37 V5.0 Ultrasonic Sensor

SEN0002 URM04 V2.0

SEN0004 SRF01 Ultrasonic sensor

SEN0005 SRF02 Ultrasonic sensor

SEN0006 SRF05 Ultrasonic sensor

SEN0007 SRF08 Ultrasonic Sensor

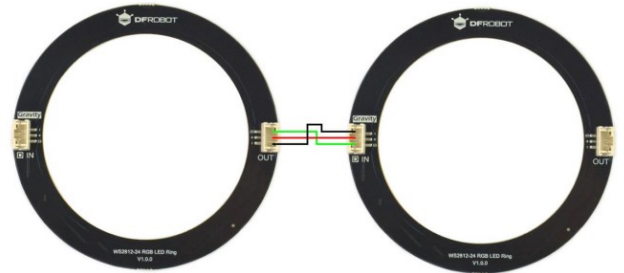
SEN0008 SRF10 Ultrasonic sensor

SEN0149 URM06-RS485 Ultrasonic

Project 2: LED Ring Cascade

Method to cascade LED ring

It's easy to cascade the LED ring. Just connect the OUT port of the first lamp ring to the IN port of the second lamp ring through the PH2.0-3P male-to-male cable.



Note: When using the cascaded lamp ring, the power supply may be unstable due to excessive beads, which can be resolved by using a 5V or external power supply.

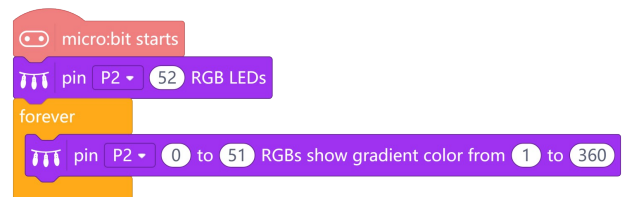
Product Introduction

To achieve a dazzling neon light effect similar to project 1 by cascading three types of LED rings.

Hardware Preparation

- micro:bit × 1
- IO Expansion Board × 1
- RGB LED ring- 12 LED beads × 1
- RGB LED ring- 16 LED beads × 1
- RGB LED ring- 24 LED beads × 1
- PH2.0-3P digital cable × 1
- PH2.0-3P male-to-male cable × 1

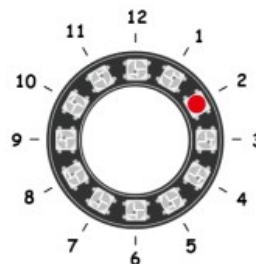
Program Screenshot



Project 3: LED Ring Clock

Product Introduction

Clocks serve as timers in our daily routine. The most general clocks are electronic and quartz clocks. Let's use the LED ring module to design a unique clock.



Hardware preparation

- micro:bit × 1
- IO Expansion Board × 1

SEN0150 URM06-UART Ultrasonic

SEN0151 URM06-PULSE Ultrasonic

SEN0152 URM06-ANALOG Ultrasonic

SEN0153 URM07-UART Ultrasonic Sensor

SEN0246 URM08-RS485 Waterproof Sonar Range Finder

SEN0304 URM09 Ultrasonic Sensor (Gravity-I2C) (V1.0)

SEN0304 URM09 Ultrasonic Sensor (Gravity-I2C) (V1.0)

SEN0300 Water-proof Ultrasonic Sensor ULS

SEN0301 Water-proof Ultrasonic Sensor ULA

SEN0307 URM09 Ultrasonic Sensor Gravity Analog

SEN0311 A02YYUW Waterproof Ultrasonic Sensor

SEN0312 ME007YS Waterproof Ultrasonic Sensor

SEN0313 A01NYUB Waterproof Ultrasonic Sensor

DFR0066 SHT1x Humidity and Temperature Sensor

DFR0067 DHT11 Temperature and Humidity Sensor

SEN0137 DHT22 Temperature and humidity module

DFR0023 DFRobot LM35 Linear Temperature Sensor

DFR0024 Gravity DS18B20 Temperature Sensor Arduino Compatible V2

DFR0024 Gravity DS18B20 Temperature Sensor Arduino Compatible V2

SEN0114 Moisture Sensor

TOY0045 TMP100 Temperature Sensor

TOY0054 SI7021 Temperature and humidity sensor

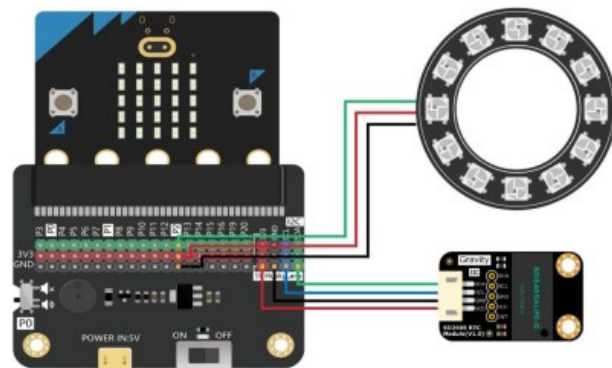
SEN0206 IR Thermometer Sensor MLX90614

SEN0227 SHT20 I2C Temperature & Humidity Sensor Waterproof Probe

SEN0236 Gravity I2C BME280

- RGB LED ring- 12 LED beads × 1
- RTC real-time clock module × 1

Hardware Connection



Program Screenshot



Application Sample (RGB LED Ring-24)

Project 4: LED Ring Compass

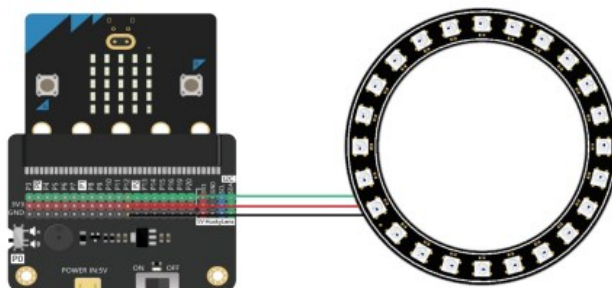
Project Introduction

The compass is designed to tell the direction, and nowadays smartphones commonly are equipped with a compass software to help us determine the North Pole based on the geomagnetic field. Let's do a compass project using RGB LED ring with micro:bit, thus explore the connection between it and us.

Hardware Preparation

- micro:bit × 1
- IO Expansion Board × 1
- RGB LED Ring- 24 LED beads × 1

Hardware Connection



Environmental Sensor Temperature, Humidity, Barometer

SEN0248 Gravity I2C BME680 Environmental Sensor VOC, Temperature, Humidity, Barometer

DFR0558 Gravity Digital High Temperature Sensor K-type

SEN0308 Waterproof Capacitive Soil Moisture Sensor

SEN0019 Adjustable Infrared Sensor Switch

SEN0042 DFRobot Infrared sensor breakout

SEN0143 SHARP GP2Y0A41SK0F IR ranger sensor 4-30cm

SEN0013 Sharp GP2Y0A02YK IR ranger sensor 150cm

SEN0014 Sharp GP2Y0A21 Distance Sensor 10-80cm

SEN0085 Sharp GP2Y0A710K Distance Sensor 100-550cm

DFR0094 Digital IR Receiver Module

DFR0095 DIGITAL IR Transmitter Module

SEN0018 Digital Infrared motion sensor

DFR0107 IR Kit

SEN0264 TS01 IR Thermal Sensor (4-20mA)

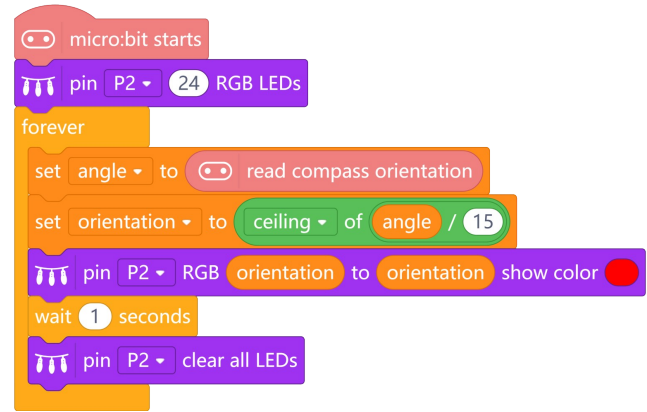
SEN0169 Analog pH Meter Pro

DFR0300-H Gravity: Analog Electrical Conductivity Sensor(K=10)

DFR0300 Gravity Analog Electrical Conductivity Sensor Meter V2 K=1



Program Screenshot



Project 5: Rainbow Breathing LED Ring

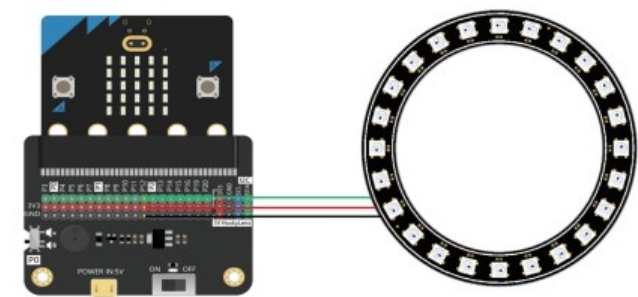
Project Introduction

The breathing light is the light controlled to gradually change from bright to dark and then from dark to bright, which feels like breathing at a certain tempo. We will employ the RGB LED ring to make a rainbow breathing ring feasting your eyes.

Hardware Preparation

- micro:bit × 1
- IO Expansion Board × 1
- RGB LED Ring- 12 LED beads × 1

Hardware connection



Program Screenshot

SEN0165 Analog ORP Meter

SEN0161-V2 Gravity Analog pH Sensor Meter Kit V2

SEN0161 PH meter

SEN0237 Gravity Analog Dissolved Oxygen Sensor

SEN0204 Non-contact Liquid Level Sensor XKC-Y25-T12V

SEN0205 Liquid Level Sensor-FS-IR02

SEN0244 Gravity Analog TDS Sensor Meter For Arduino

SEN0249 Gravity Analog Spear Tip pH Sensor Meter Kit For Soil And Food Applications

SEN0121 Steam Sensor

SEN0097 Light Sensor

DFR0026 DFRobot Ambient Light Sensor

TOY0044 UV Sensor

SEN0172 LX1972 ambient light sensor

SEN0043 TEMENT6000 ambient light sensor

SEN0175 UV Sensor v1.0-ML8511

SEN0228 Gravity I2C VEML7700 Ambient Light Sensor

SEN0101 TCS3200 Color Sensor

DFR0022 DFRobot Grayscale Sensor

SEN0017 Line Tracking Sensor for Arduino V4

SEN0147 Smart Grayscale sensor

SEN0212 TCS34725 I2C Color Sensor For Arduino

SEN0245 Gravity VL53L0X ToF Laser Range Finder

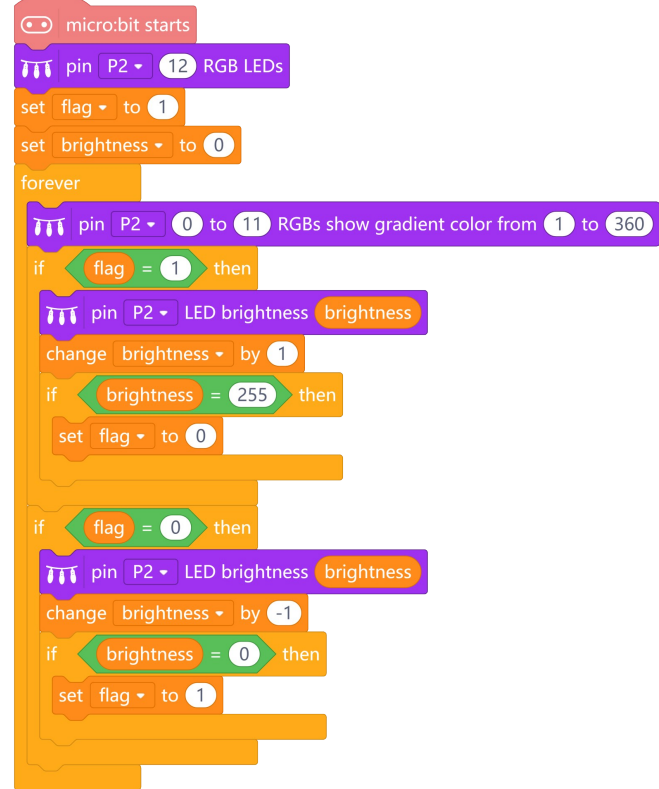
SEN0259 TF Mini LiDAR ToF Laser Range Sensor

SEN0214 20A Current Sensor

SEN0262 Gravity Analog Current to Voltage Converter for 4~20mA Application

SEN0291 Gravity: I2C Digital Wattmeter

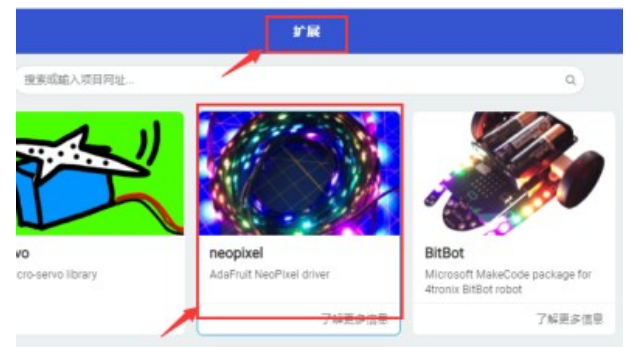
DFR0027 DFRobot Digital Vibration



2. Makecode Programming

User Guide

Click the extensions in MakeCode and add the lamp strip library into the extensions.



Project 1: RGB Palette

Project Introduction

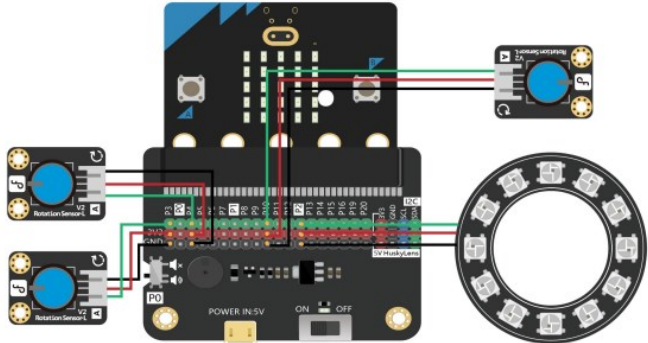
We are all familiar with RGB and know that mixing blue with green will turn into yellow. RGB color model is based on the principle of getting 16 million different colors by mixing three colors. Let the RGB ring serve as our color palette and mix the color that satisfies us the most.

Hardware Preparation

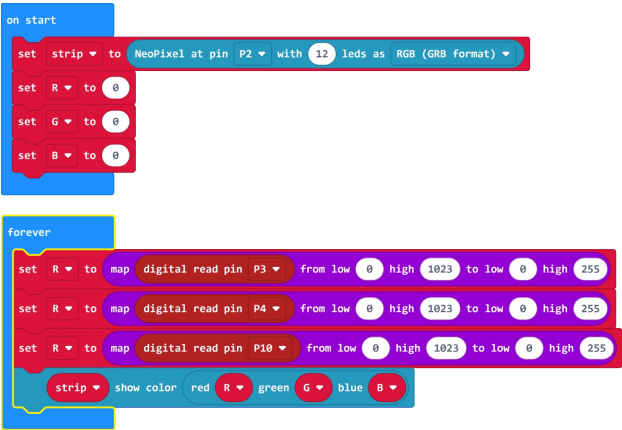
- micro:bit × 1
- IO Expansion Board × 1
- RGB LED Ring- 12 LED beads × 1
- Analog Rotation Sensor × 3

Hardware Connection

- Sensor V2
- DFR0028 DFRobot Tilt Sensor
- DFR0029 DFRobot Digital Push Button
- DFR0030 DFRobot Capacitive Touch Sensor
- DFR0032 Digital Buzzer Module
- DFR0033 Digital magnetic sensor
- DFR0034 Analog Sound Sensor
- SEN0038 Wheel Encoders for DFRobot 3PA and 4WD Rovers
- DFR0051 Analog Voltage Divider
- DFR0052 Analog Piezo Disk Vibration Sensor
- DFR0076 Flame sensor
- DFR0053 Analog Slide Position Sensor
- DFR0054 Analog Rotation Sensor V1
- DFR0058 Analog Rotation Sensor V2
- DFR0061 Joystick Module For Arduino
- DFR0075 ADKeyboard Module
- DFR0332 Fan Module
- SEN0177 PM2.5 laser dust sensor
- SEN0160 Weight Sensor Module
- SEN0170 Wind Speed Sensor Voltage Type 0-5V
- TOY0048 High Accuracy Dual Axis Inclinator Sensor Arduino Gadgeteer Compatible
- SEN0187 RGB and Gesture Sensor
- SEN0186 Weather Station with Anemometer Wind vane Rain bucket
- SEN0192 MicroWave Sensor
- SEN0185 Hall sensor
- FIT0449 DFRobot Speaker v1.0
- SEN0203 Heart Rate Sensor
- DFR0423 Self-Locking Switth



Program Screenshot



Project 2: Tomato Timer

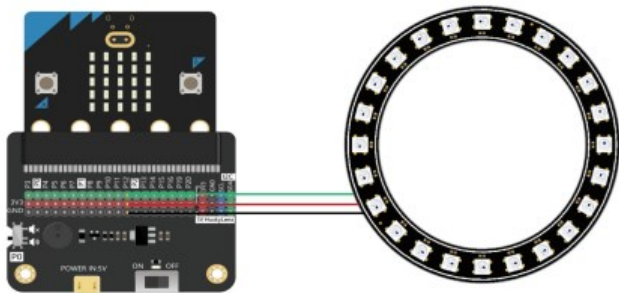
Project Introduction

Pomodoro Technique is a easy way to manage your time. The time can be set to 25 minutes, during which you focus on one thing until the clock goes off, and then take a five-minute break. This is actually a 25-minute timer. Press button A: the buzzer turns off and stops the timer.

Hardware Preparation

- micro:bit × 1
- IO Expansion Board × 1
- RGB LED Ring- 24 LED beads × 1

Hardware Connection



Program Screenshot

SEN0213 Heart Rate Monitor Sensor

SEN0221 Gravity Hall Angle Sensor

SEN0223 Conductivity Switch Sensor

SEN0230 Incremental Photoelectric Rotary Encoder - 400P R

SEN0235 EC11 Rotary Encoder Module

SEN0240 Analog EMG Sensor by OYMotion

SEN0232 Gravity Analog Sound Level Meter

SEN0233 Air Quality Monitor PM 2.5, Formaldehyde, Temperature & Humidity Sensor

DFR0515 FireBeetle Covers-OSD Character Overlay Module

SEN0257 Gravity Water Pressure Sensor

SEN0289 Gravity: Digital Shake Sensor

SEN0290 Gravity: Lightning Sensor

DFR0271 GMR Board

ROB0003 Pirate 4WD Mobile Platform

ROB0005 Turtle 2WD Mobile Platform

ROB0025 NEW A4WD Mobile Robot with encoder

ROB0050 4WD MiniQ Complete Kit

ROB0111 4WD MiniQ Cherokee

ROB0036 6 DOF Robotic Arm Kit

FIT0045 DF05BB Tilt Pan Kit

ROB0102 Cherokee 4WD Mobile Platform

ROB0117 Basic Kit for Cherokee 4WD

ROB0022 4WD Mobile Platform

ROB0118 Basic Kit for Turtle 2WD

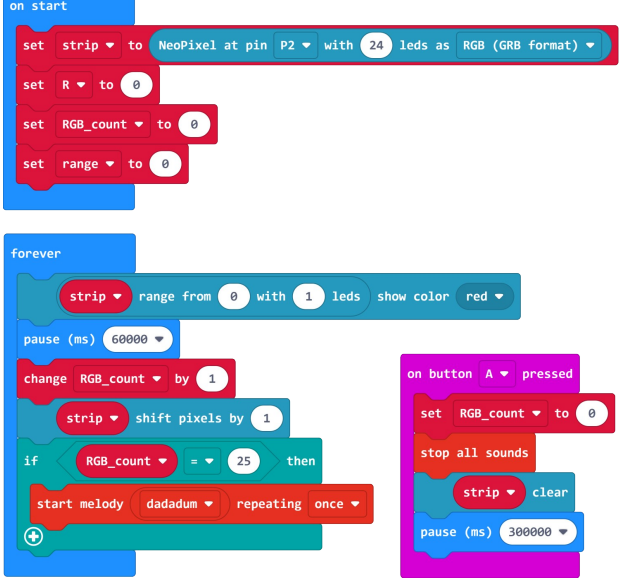
ROB0080 Hexapod Robot Kit

ROB0112 Devastator Tank Mobile Platform

ROB0114 Devastator Tank Mobile Platform

ROB0124 HCR Mobile Platform with Omni Wheels

ROB0128 Devastator Tank Mobile Platform Metal DC Gear Motor

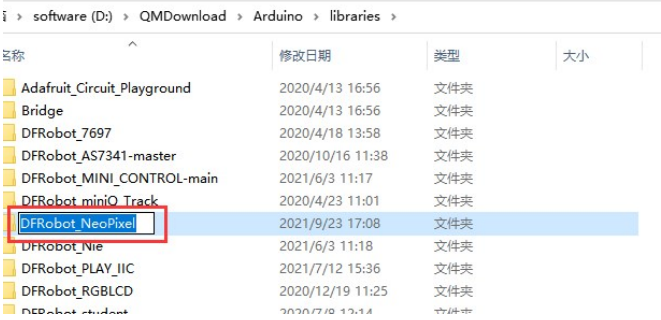


3. Arduino Programming

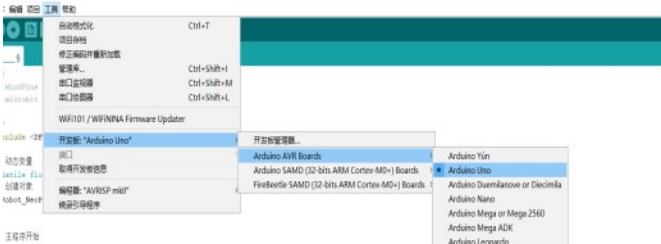
User Guide

(1) Import the library file of RGB LED into Arduino library first, find the installation location of Arduino, and put the file of RGB LED ring into the libraries of Arduino.

[DFRobot_NeoPixel.zip](#)



(2) Before using the RGB LED ring, enter Arduino and click "Toolbar- Development Board" (as shown in the picture)



Project 1: LED Brightness Adjustment

Project Introduction

The brightness of the RGB LED ring can be adjusted from 0 to 255. Let's employ the analog rotation sensor to adjust the brightness in the way of mapping the analog value of the sensor into the brightness of the RGB LED ring.

Hardware Preparation

- Analog Rotation Sensor × 1
- RGB LED ring- 12 LED beads × 1
- Arduino uno × 1

ROB0137 Explorer MAX Robot

ROB0139 FlameWheel Robot

DFR0270 Accessory Shield for Arduino

DFR0019 Prototyping Shield For Arduino

DFR0265 IO Expansion Shield for Arduino V7

DFR0210 Bees Shield

DFR0165 Mega IO Expansion Shield V2.3

DFR0312 Raspberry Pi GPIO Extension Board

DFR0311 Raspberry Pi Meet Arduino Shield

DFR0327 Arduino Shield for Raspberry Pi 2B and 3B

DFR0371 IO Expansion Shield for Bluno M3

DFR0356 Bluno Beetle Shield

DFR0412 Gravity IO Expansion Shield For DFRduino M0

DFR0375 Cookie I O Expansion Shield V2

DFR0334 GPIO Shield for Arduino V1.0

DFR0502 Gravity IO Expansion & Motor Driver Shield V1.1

DFR0518 Micro Mate- A Mini Expansion Board for micro bit

DFR0578 Gravity I O Expansion Shield for OpenMV Cam M7

DFR0577 Gravity I O Expansion Shield for Pyboard

DFR0626 MCP23017 IIC to 16 digital IO expansion module

DFR0287 LCD12864 Shield

DFR0009 LCD KeyPad Shield For Arduino

DFR0063 I2C TWI LCD1602 Module Gadgeteer Compatible

DFR0154 I2C TWI LCD2004 Module Arduino Gadgeteer Compatible

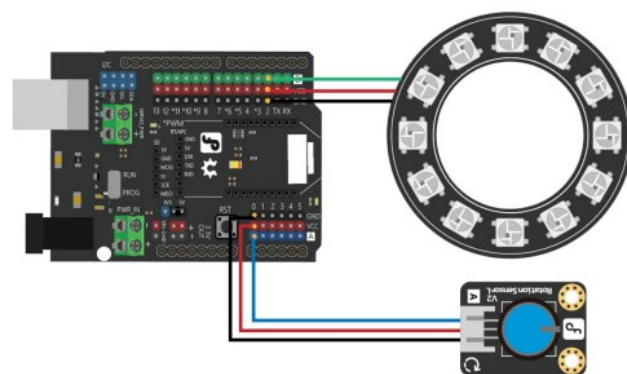
DFR0202 RGB LED Matrix

DFR0090 3-Wire LED Module

TOY0005 OLED 2828 color display

- IO Expansion Board × 1

Hardware Connection



Sample Code

```
/*!
 * @file      RGB ring.ino
 * @brief     The colors of the 12 lamp beads are
 * @copyright Copyright (c) 2010 DFRobot Co.Ltd (
 * @licence   The MIT License (MIT)
 * @author    [qsjhyy](fengying.nie@dfrobot.com)
 * @version   V0.1
 * @date      2021-09-24
 * @get from  https://www.dfrobot.com
 * @url
 */

#include <DFRobot_NeoPixel.h>

// Dynamic variable
volatile float brightness;
// Create an Object
DFRobot_NeoPixel neoPixel_2;

// Main program start
void setup() {
  neoPixel_2.begin(2, 24);
  brightness = 0;
}
void loop() {
  neoPixel_2.setBrightness((map(brightness, 0, 749,
  neoPixel_2.showRainbow(0, 23, 1, 360);
  brightness = analogRead(A0);
}
```

Project 2: Dazzling Neon Light

Project Introduction

The colors of the 24 lamp beads are displayed in gradients and change by levels successively around the circle every 0.1s to form a rotating effect as if it's a dynamic rainbow.

Hardware Preparation

- RGB LED ring- 24 LED beads × 1
- Arduino uno × 1
- IO Expansion Board × 1

Hardware Connection

module .NET Gadgeteer Compatible

TOY0006 OLED 9664 RGB Display module

TOY0007 OLED 2864 display module

FIT0328 2.7 OLED 12864 display module

DFR0091 3-wire Serial LCD Module Arduino Compatible

DFR0347 2.8 TFT Touch Shield with 4MB Flash for Arduino and mbed

DFR0348 3.5 TFT Touch Shield with 4MB Flash for Arduino and mbed

DFR0374 LCD Keypad Shield V2.0

DFR0382 LED Keypad Shield V1.0

DFR0387 TELEMATICS 3.5 TFT Touch LCD Shield

DFR0459 8x8 RGB LED Matrix

DFR0460 64x32 RGB LED Matrix - 4mm Pitch/64x32 Flexible RGB LED Matrix-4mm Pitch/64x32 Flexible RGB LED Matrix-5mm Pitch

DFR0461 Gravity Flexible 8x8 RGB LED Matrix

DFR0462 Gravity Flexible 8x32 RGB LED Matrix

DFR0463 Gravity Flexible 16x16 RGB LED Matrix

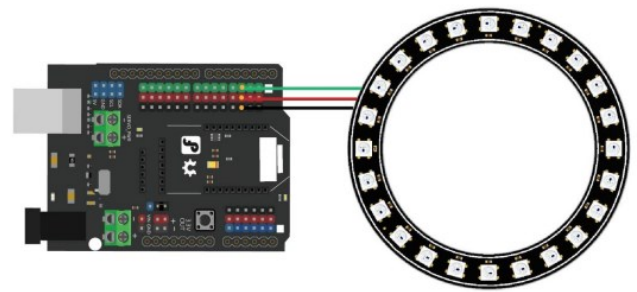
DFR0471 32x16 RGB LED Matrix - 6mm pitch

DFR0472 32x32 RGB LED Matrix - 4mm pitch

DFR0464 Gravity I2C 16x2 Arduino LCD with RGB Backlight Display

DFR0499 64x64 RGB LED Matrix - 3mm pitch

DFR0506 7" HDMI Display with



Sample Code

```
/*!
 * @file      RGB ring.ino
 * @brief     The colors of the 24 lamp beads are
 * @copyright Copyright (c) 2010 DFRobot Co.Ltd (
 * @licence   The MIT License (MIT)
 * @author    [qsjhyy](fengying.nie@dfrobot.com)
 * @version   V0.1
 * @date      2021-09-24
 * @get from  https://www.dfrobot.com
 * @url
 */
#include <DFRobot_NeoPixel.h>
// Create a object
DFRobot_NeoPixel neoPixel_2;

// Main program start
void setup() {
  neoPixel_2.begin(2, 24);
  neoPixel_2.showRainbow(0, 24, 1, 360);
}
void loop() {
  delay(10);
  neoPixel_2.rotate(1);
}
```

FAQ

For any questions, advice or cool ideas to share, please visit the [DFRobot Forum](#).

More Documents

 Get [RGB LED Ring](#) from DFRobot Store or [DFRobot Distributor](#).

[Turn to the Top](#)