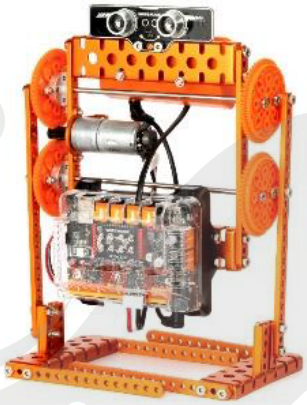
A. Walking robot

Material

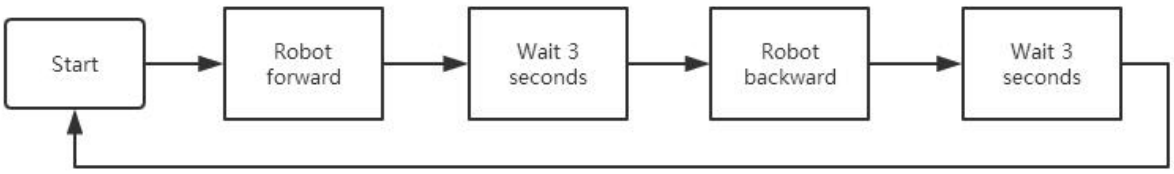
1. Walking robot
2. Computer



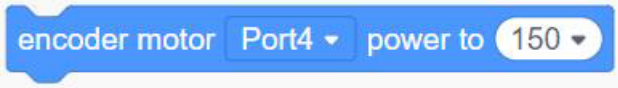
Project #1 Control Encoder DC Motor

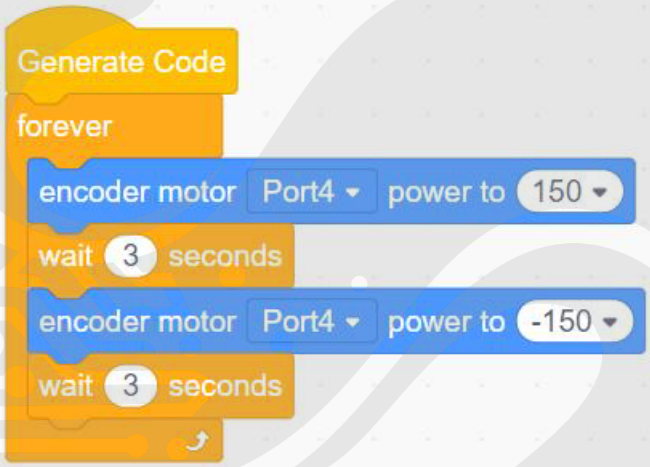
Target: Make the walking robot go forward for 3 seconds and backward for 3 seconds.

Program Idea



Reference Code

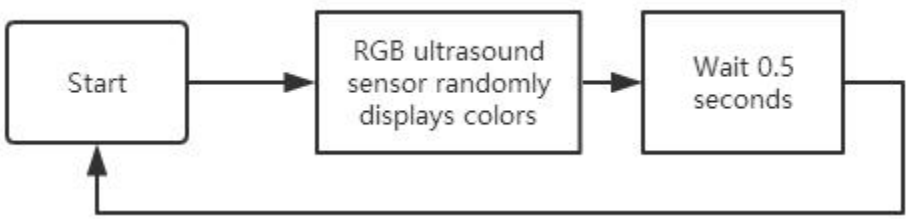
	Generate Arduino code of the program below, the Arduino code can be check on “code” window, and upload to board.
	The Forever block is a Control block. Blocks held inside this block will be repeated and the loop never ends (unless the stop sign is clicked, the Stop All block is activated, or the stop script block is activated within the loop).
	This block pauses its script for the specified amount of seconds the wait can also be a decimal number, it is used whenever a sprite must wait for another action.
	This block defines the speed and rotation direction of encoder DC motor. Range from -255 to 255.



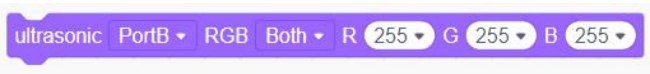
Project #2: Control RGB LED

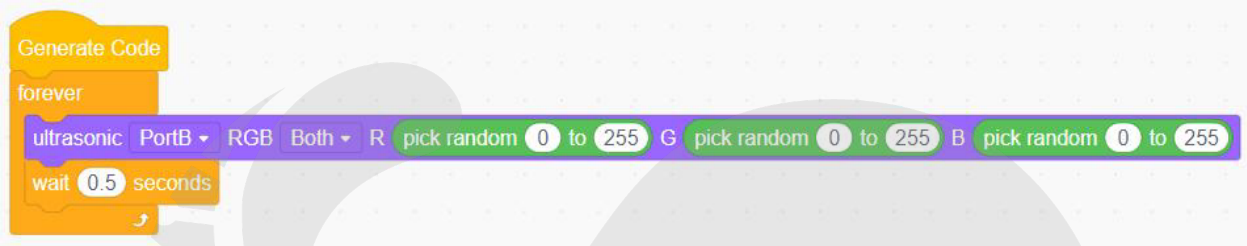
Target: Control RGB LED to randomly display one color every 0.5 seconds.

Program Idea



Reference Code

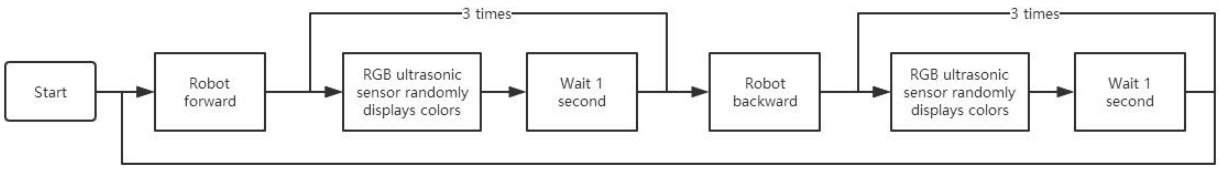
	This block defines the color of two RGB LEDs on ultrasonic sensor. Select RGB LED you want to control and set RGB values. R refers to red [0,255], G refers to green [0,255], B refers to blue [0,255].
	This block picks a pseudorandom number ranging from the first given number to the second, including both endpoints. If both numbers have no decimals, it will report a whole number.



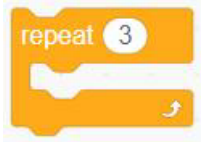
Project #3: Combine Encoder DC Motor with RGB LED

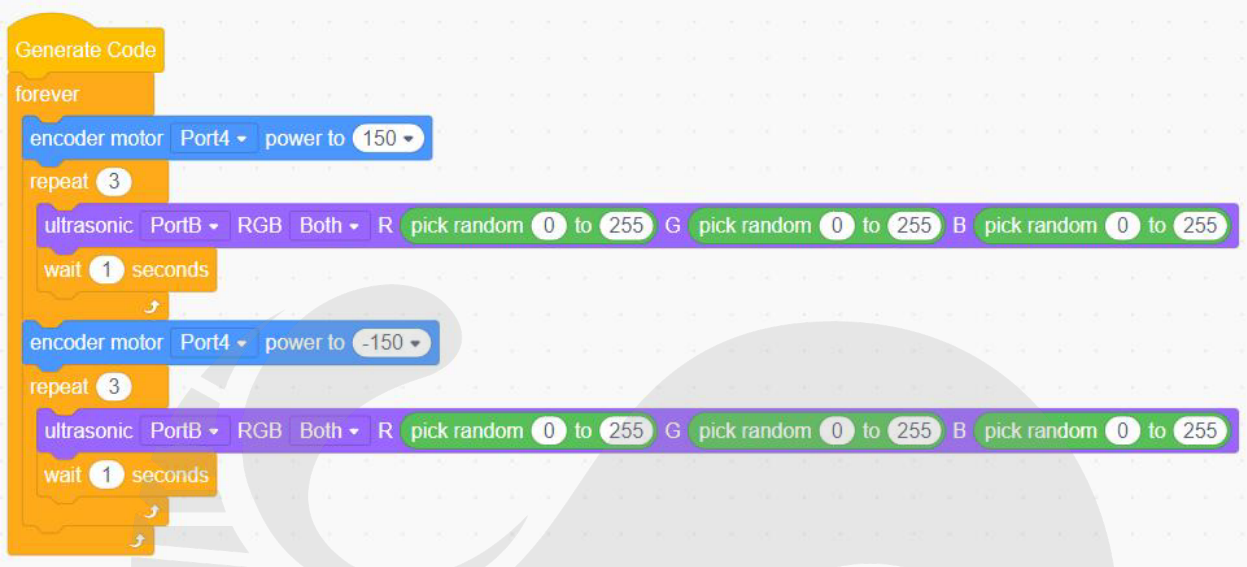
Based on the first project, we modified the block [wait (3) secs] to block [repeat (3)]. During the repeated execution, the RGB ultrasonic sensor can change colors, with an interval of 1 second for each color change. This is consistent with the time we waited for 3 seconds before, and the robot can change colors while walking.

Program Idea



Reference Code

	Blocks held inside this block will loop a given amount of times, before allowing the script to continue.If a decimal is put in, the number is rounded up. Furthermore, when a non-positive number is input, the loop does not run, and if "Infinity" is input, then the block runs forever.



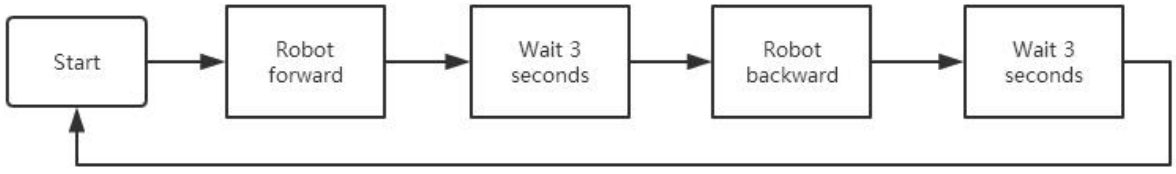
Expansion: You can try to program and control the robot's walking rhythm and light change to correspond to the song rhythm, so that the robot can dance with the music rhythm.

ARDUINO

Project #1 Control Encoder DC Motor Arduino

Target: Make the walking robot go forward for 3 seconds and backward for 3 seconds.

Program Idea



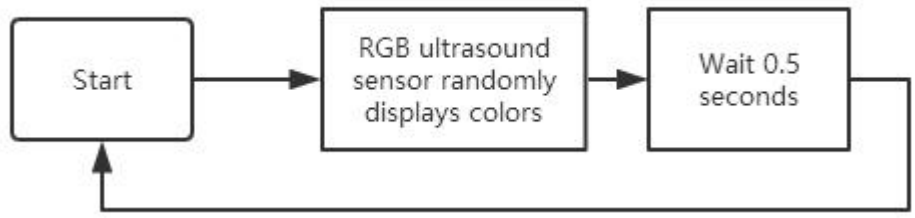
Reference Code

```
#include<WeELF328P.h>

WeEncoderMotor encoder_4(PORT_4);

void setup(){
}

void loop(){
        encoder_4.run(300);
        delay(3000);
        encoder_4.run(-300);
        delay(3000);
}
```

Project #2: Control RGB LED Arduino

Target: Control RGB LED to randomly display one color every 0.5 seconds.

Program Idea



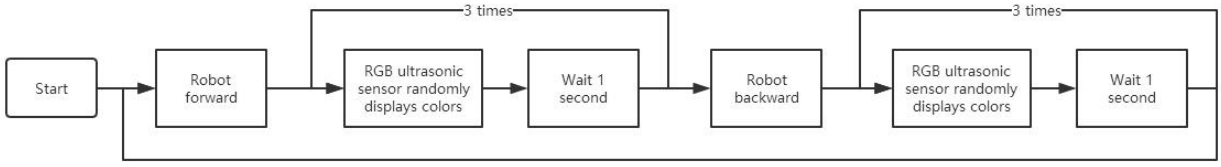
Reference Code

```
#include<WeELF328P.h>

WeUltrasonicSensor ultrasonic_B(PORT_B);

void setup(){
}

void loop(){
        ultrasonic_B.setColor(3, random(0, 255 + 1), random(0, 255 + 1), random(0, 255 + 1));
        delay(500);
}
```

Project #3: Combine Encoder DC Motor with RGB LED Arduino

Based on the first project, we modified the block [wait (3) secs] to block [repeat (3)]. During the repeated execution, the RGB ultrasonic sensor can change colors, with an interval of 1 second for each color change. This is consistent with the time we waited for 3 seconds before, and the robot can change colors while walking.

Program Idea



Reference Code

```
#include<WeELF328P.h>

WeEncoderMotor encoder_4(PORT_4);
WeUltrasonicSensor ultrasonic_B(PORT_B);

void setup(){
}

void loop(){
        encoder_4.run(300);
        for(int i=3; i>0; --i){
                ultrasonic_B.setColor(3, random(0, 255 + 1), random(0, 255 + 1), random(0, 255 + 1));
                delay(1000);
        }
        encoder_4.run(-300);
        for(int i=3; i>0; --i){
                ultrasonic_B.setColor(3, random(0, 255 + 1), random(0, 255 + 1), random(0, 255 + 1));
                delay(1000);
        }
}
```