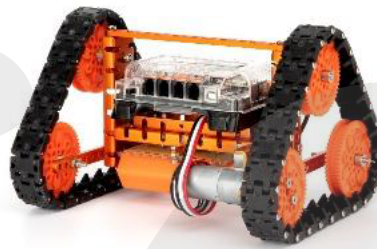# B.   Rolling Tank

Material

1. Rolling Tank
2. Computer

Project #1 Light-driven Robot

Task: Make a robot moving per the light value in environment.

The light intensity in the environment is detected by the light sensor. If in normal environment, the light detected value is 300, and the value change to 100 while covering the light sensor with hand, we can take the mid-value 200 as the judgment value. When the value is greater than 200, the robot would go forward. When the value is less than 200, the robot stops.

Program Idea
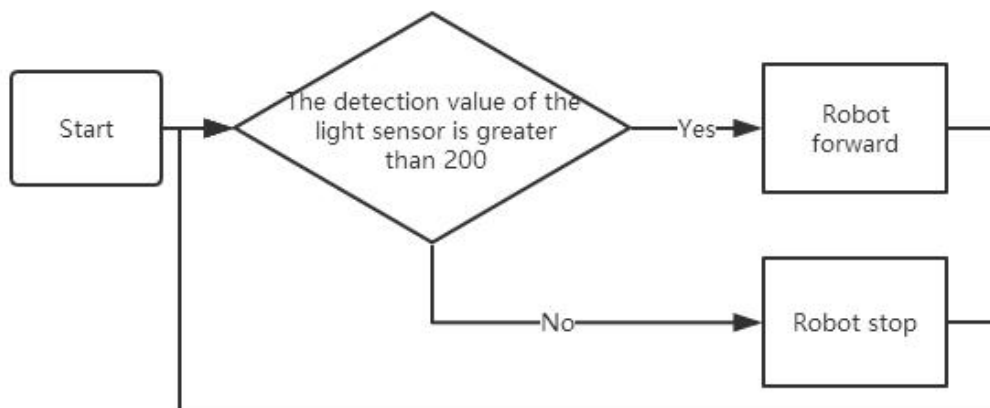
Reference Code

if ◆ then else	The block will check its boolean condition. If the condition is true, the code held inside the first C (space) will activate, and then the script will continue; if the condition is false, the code inside the second C will activate
light sensor Port1 ▾	The block reports the value of light intensity detected by light sensor.

Make a Variable

|	
☑ a	The block simply holds its variable. Whenever a variable is created, a version of the block appears with the variable's given name on it this results in a version of this block for every variable. Each version of the block holds its 'assigned' variable.
set a ▾ to 0	The block defines the specified variable to the given value: a string or number.
change a ▾ by 1	The block will change the specified variable by a given amount. If the variable is a string and not a number, it is set to the quantity the variable was to be changed by (casting the string to 0).
show variable a ▾	The block shows the specified Variable's Stage monitor.
hide variable a ▾	The block hides the specified variable's Stage monitor.
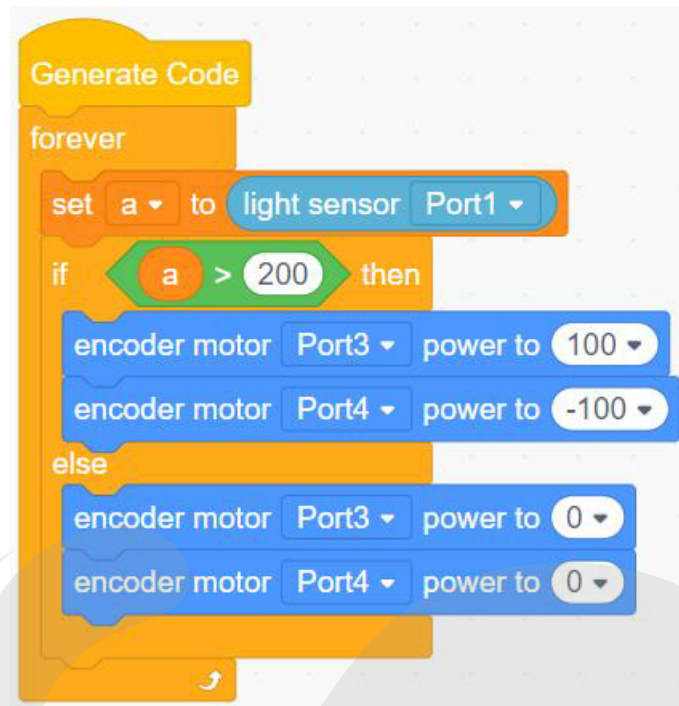
Project #2: Sound-driven Robot

Task: Make a robot moving per the sound value in environment.

The sound intensity in the environment is detected by the sound sensor. If in normal environment, the sound detected value is 100, and then change to 400 while the environment is noisy, we can take the mid-value 250 as the judgment value. When the value is greater than 250, the robot would go forward. When the value is less than 250, the robot stops.
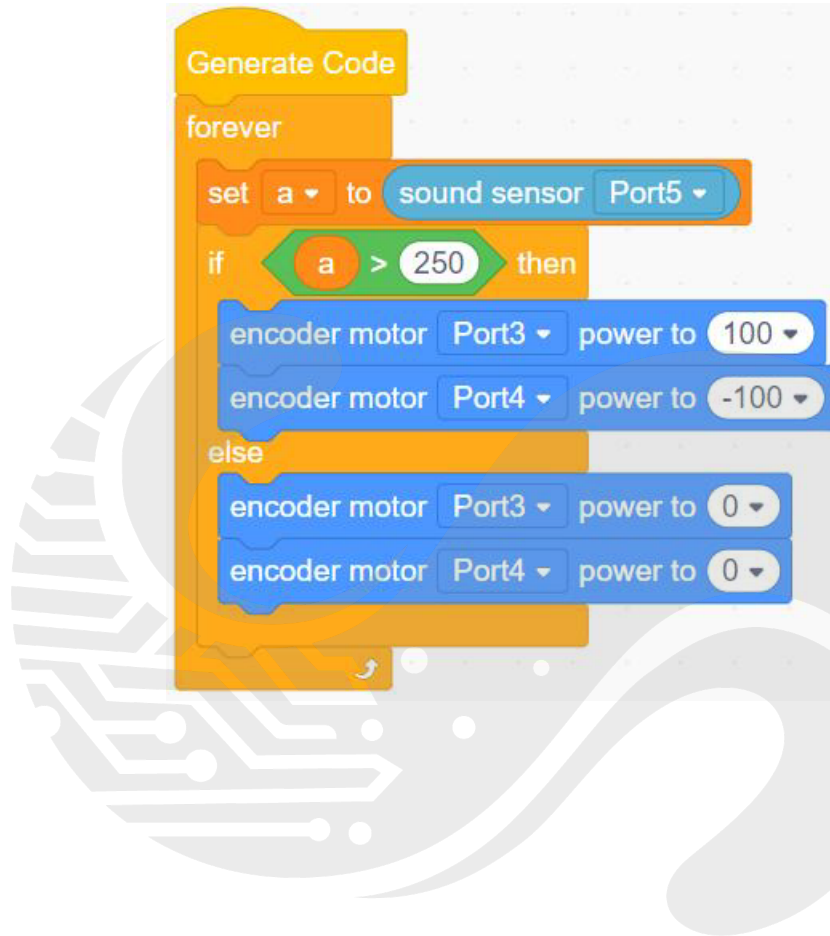
Program Idea
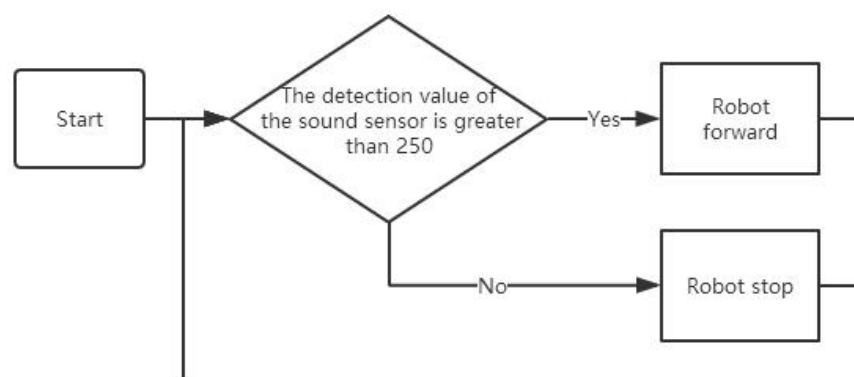
Reference Code 1

sound sensor Port3 ▾	The block reports the value of volume detected by sound sensor.

```
Generate Code
forever
    set a ▾ to sound sensor Port5 ▾
    if       a > 250       then
        encoder motor Port3 ▾ power to 100 ▾
        encoder motor Port4 ▾ power to -100 ▾
    else
        encoder motor Port3 ▾ power to 0 ▾
        encoder motor Port4 ▾ power to 0 ▾
```

Reference Code 2

Note: Before re-judging the detection of the sound sensor, the robot should be allowed to stop firstly, to avoid the noise during the movement of the robot interferes with the detected value of the sound sensor.

Expansion: You can try to make a "coward" robot by combining light sensor with sound sensor, it will only move when there is no one at night.

ARDUINO

Project #1 Light-driven Robot Arduino

Task: Make a robot moving per the light value in environment.

The light intensity in the environment is detected by the light sensor. If in normal environment, the light detected value is 300, and the value change to 100 while covering the light sensor with hand, we can take the mid-value 200 as the judgment value. When the value is greater than 200, the robot would go forward. When the value is less than 200, the robot stops.
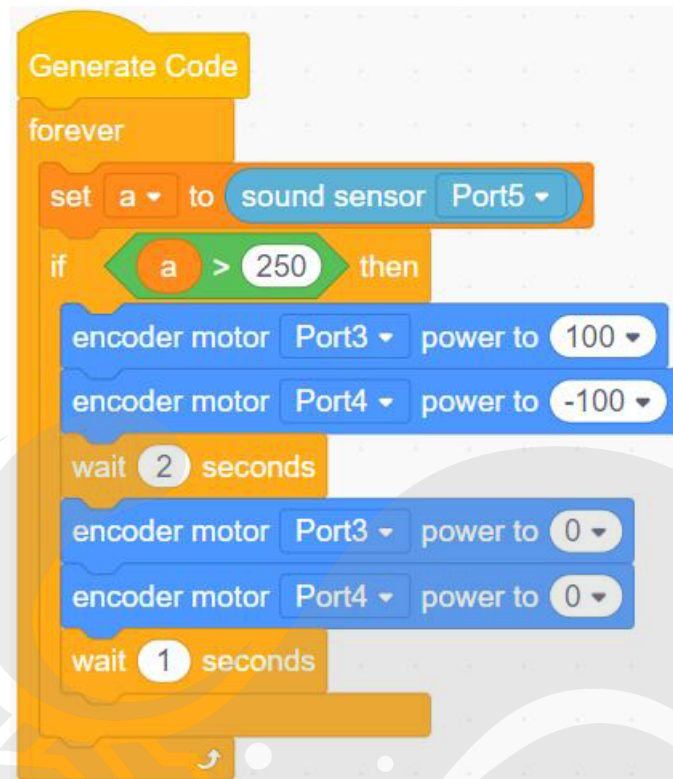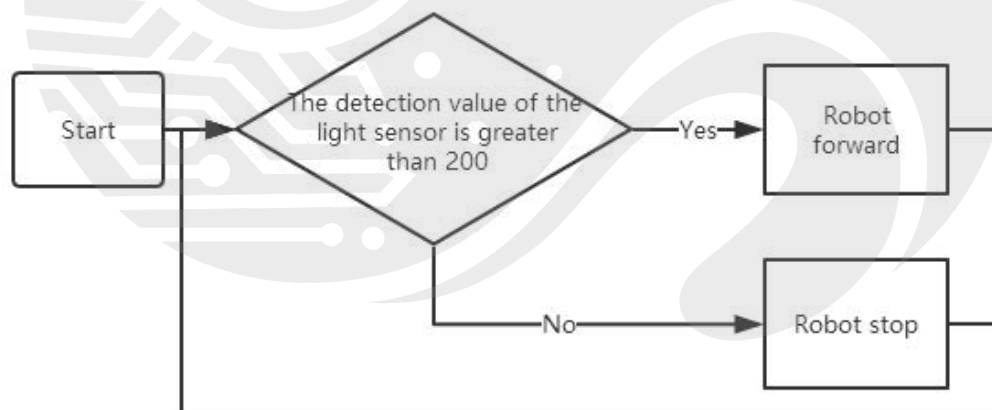
Program Idea

Reference Code

```
#include<WeELF328P.h>

WeEncoderMotor encoder_3(PORT_3);
WeEncoderMotor encoder_4(PORT_4);
double v_a; //a;

void setup(){
            pinMode(PORT_1, INPUT);
}

void loop(){
            v_a = analogRead(PORT_1);
            if(v_a > 200){
                        encoder_3.run(100);
                        encoder_4.run(-100);
            }else{
                        encoder_3.run(0);
                        encoder_4.run(0);
            }
}
```

Project #2: Sound-driven Robot Arduino

Task: Make a robot moving per the sound value in environment.

The sound intensity in the environment is detected by the sound sensor. If in normal environment, the sound detected value is 100, and then change to 400 while the environment is noisy, we can take the mid-value 250 as the judgment value. When the value is greater than 250, the robot would go forward. When the value is less than 250, the robot stops.

Program Idea
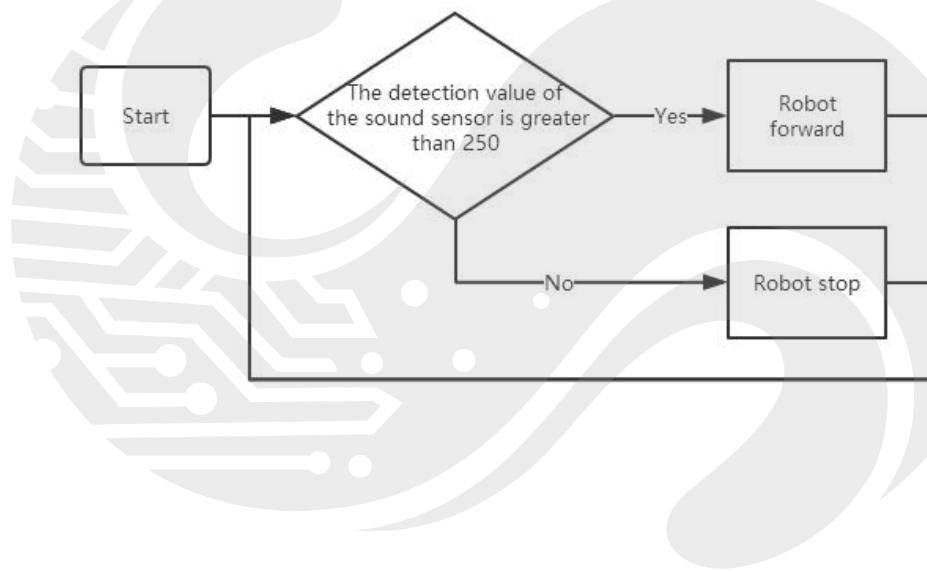
Reference Code 1

```
#include<WeELF328P.h>

WeEncoderMotor encoder_3(PORT_3);
WeEncoderMotor encoder_4(PORT_4);
double v_a; //a;

void setup(){
        pinMode(PORT_5, INPUT);
}

void loop(){
        v_a = analogRead(PORT_5);
        if(v_a > 250){
                encoder_3.run(100);
                encoder_4.run(-100);
        }else{
                encoder_3.run(0);
                encoder_4.run(0);
        }
}
```

Reference Code 2

```
#include<WeELF328P.h>

WeEncoderMotor encoder_3(PORT_3);
WeEncoderMotor encoder_4(PORT_4);
double v_a; //a;

void setup(){
            pinMode(PORT_5, INPUT);
}

void loop(){
            v_a = analogRead(PORT_5);
            if(v_a > 250){
                        encoder_3.run(100);
                        encoder_4.run(-100);
                        delay(2000);
                        encoder_3.run(0);
                        encoder_4.run(0);
                        delay(1000);
            }
}
```