# Microbit Robotics Beginner Level 1

# Revision

Presented by Advanced Superlogic Team

# Today's Topic:

1. Final project theme - real life automation
2. Lesson 2-8 and mission
3. Preparation for final project

# Final project theme – real life automation

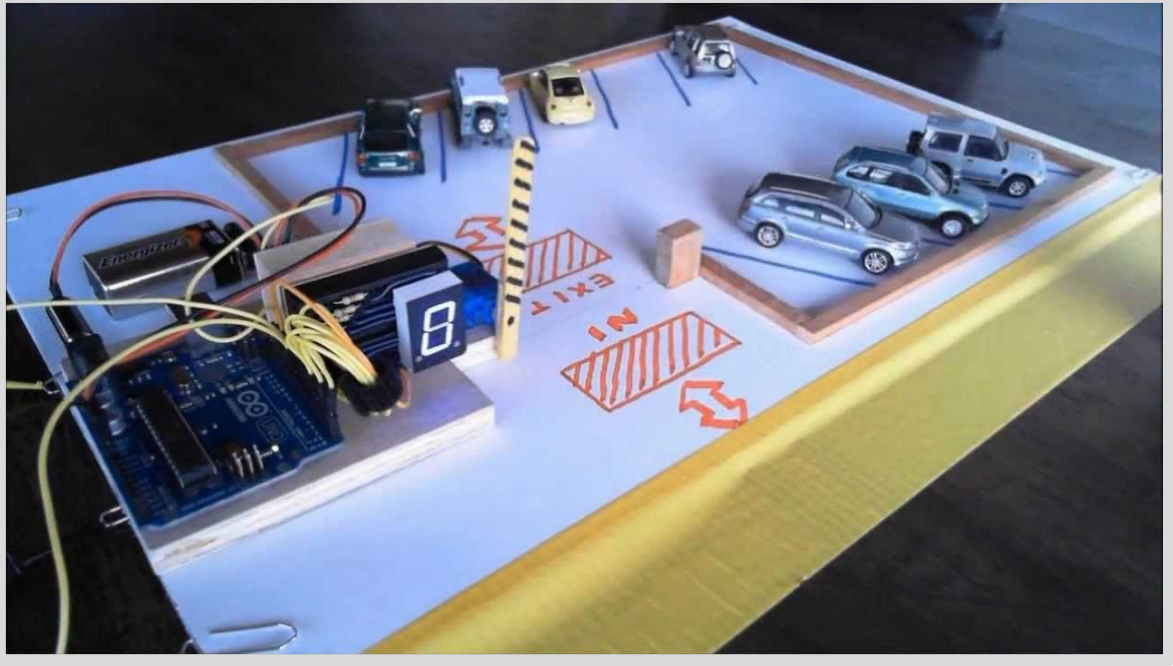
1. Traffic light for pedestrian
2. Car park smart barricade system
3. Color Sorting Machine
4. Smart street lights
5. Auto door slider system

# Traffic light for pedestrian

## Module: Infrared, RGB and Button

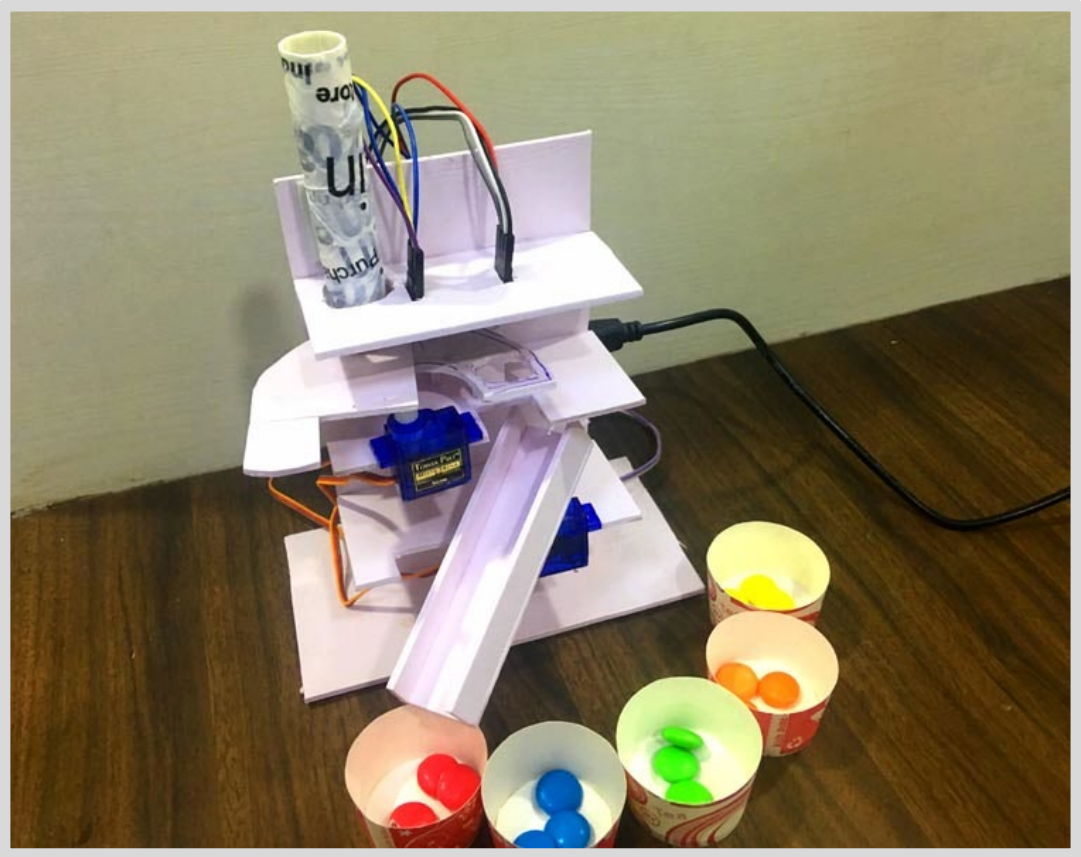
# Car park smart barricade system

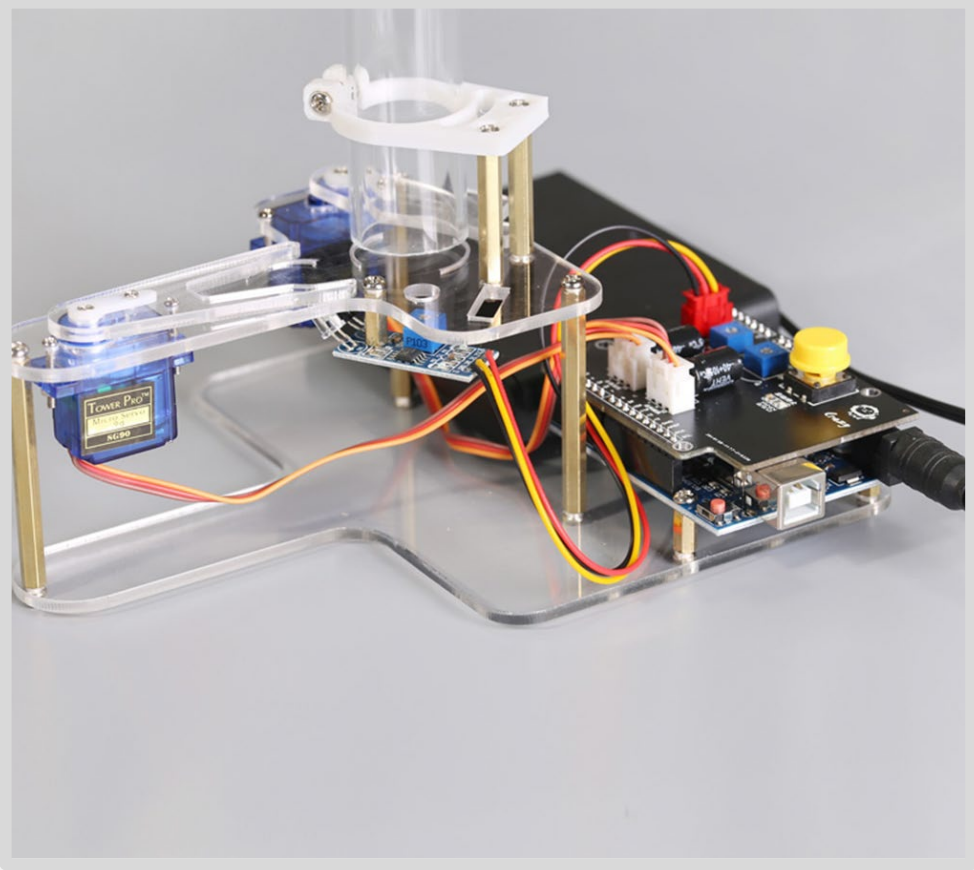
## Module: Ultrasonic, Button and Servo

# Color Sorting Machine

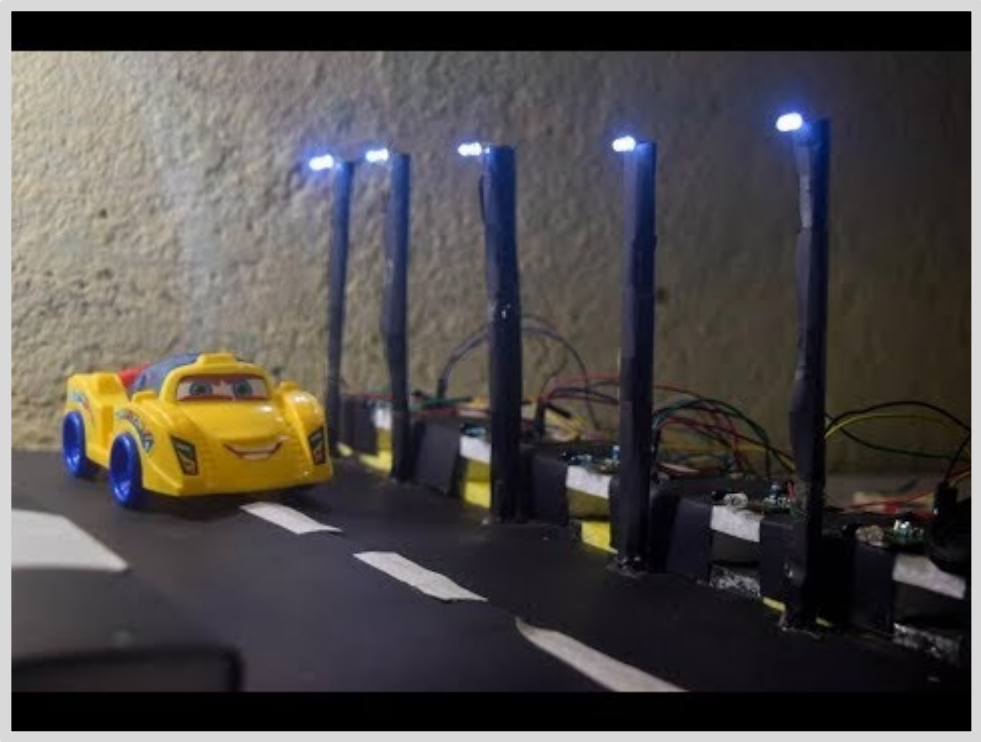
## Module: Color recognition, Button and Servo





# Smart street lights

## Module: Infrared / Photosensitive and Button

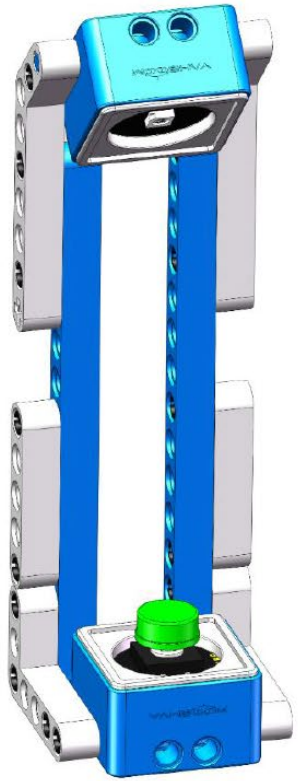


# Auto door slider system

## Module: Button and Servo

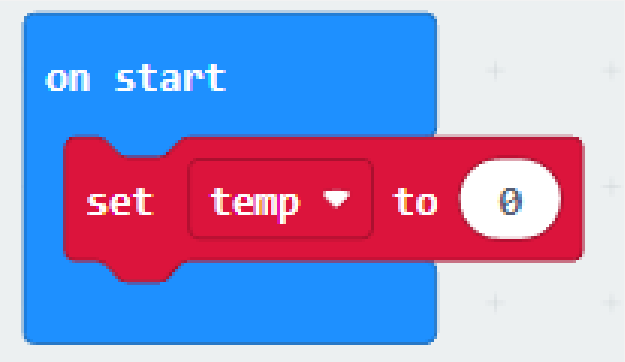
# Table Lamp

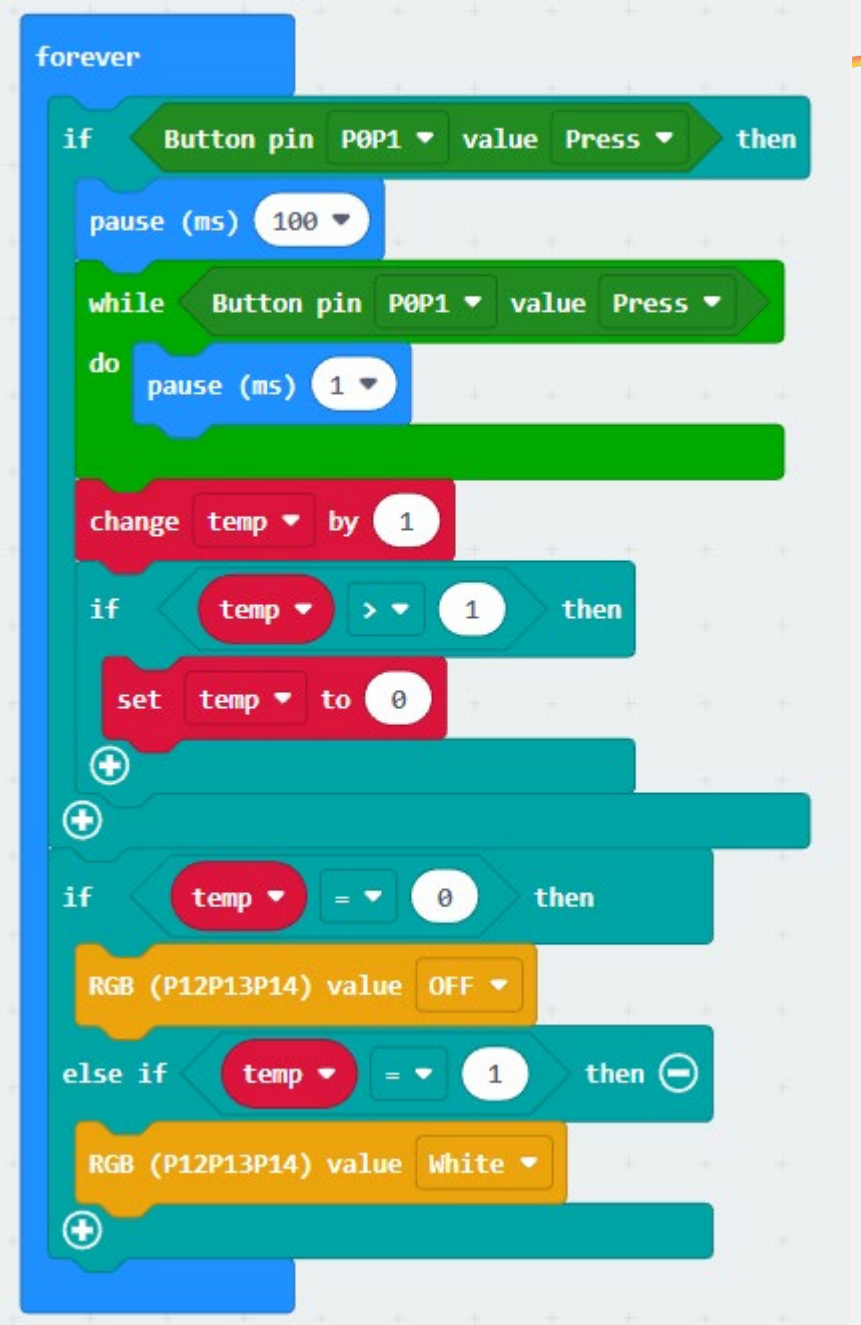
# Table Lamp



12

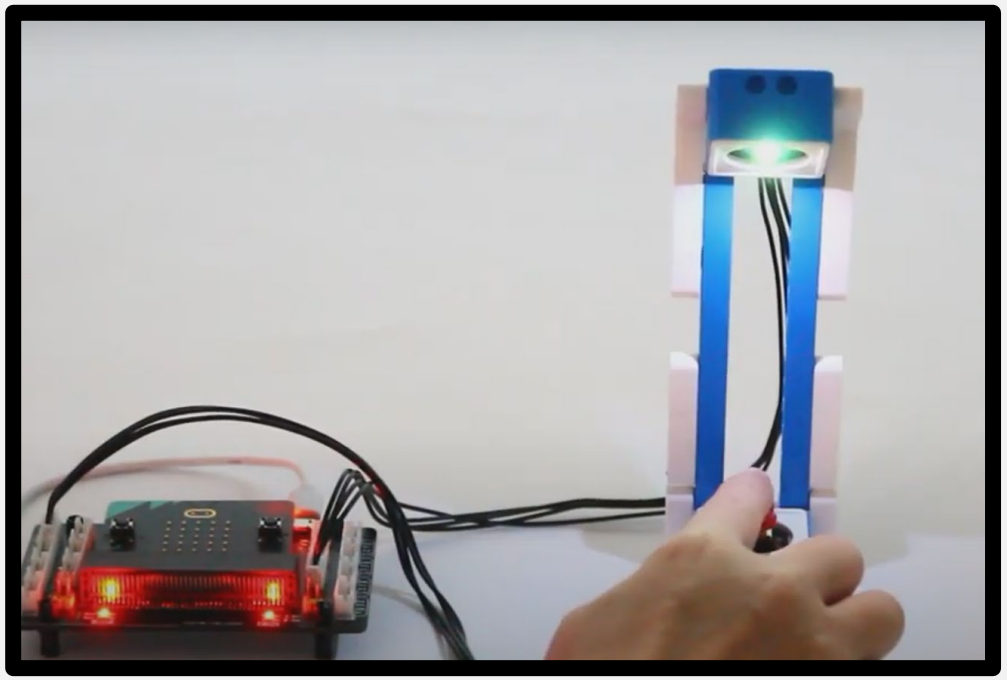
# Coding – Overview

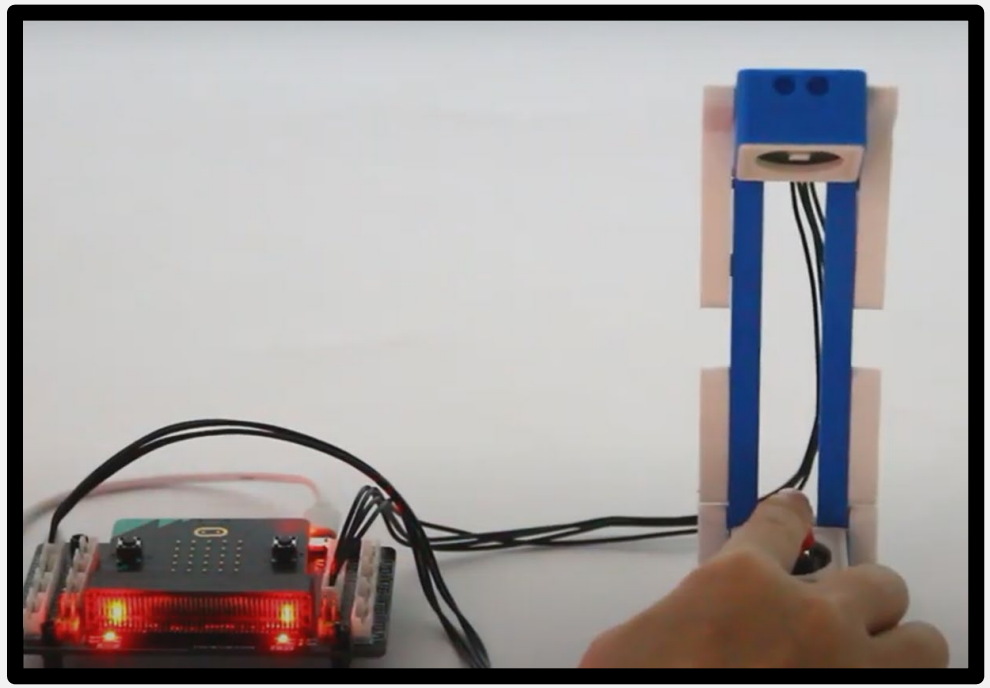


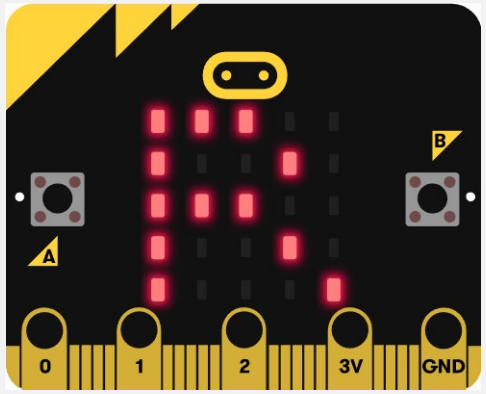



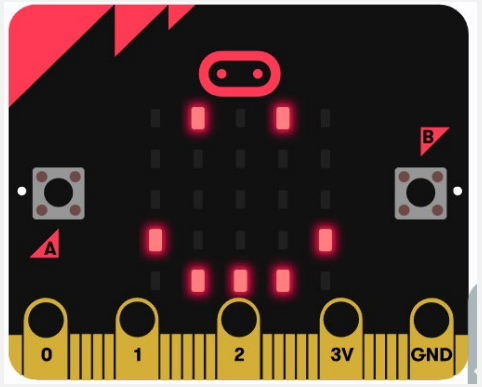
# Phenomenon

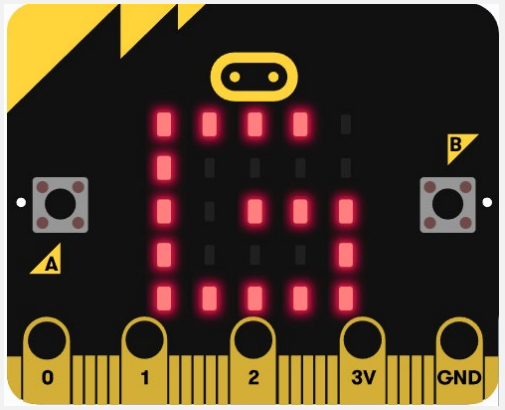
**After the program is downloaded successfully.**
**When we press button module at the first time,**
**RGB light will become white;**
**when we press button module at the second time,**
**RGB light will off.**







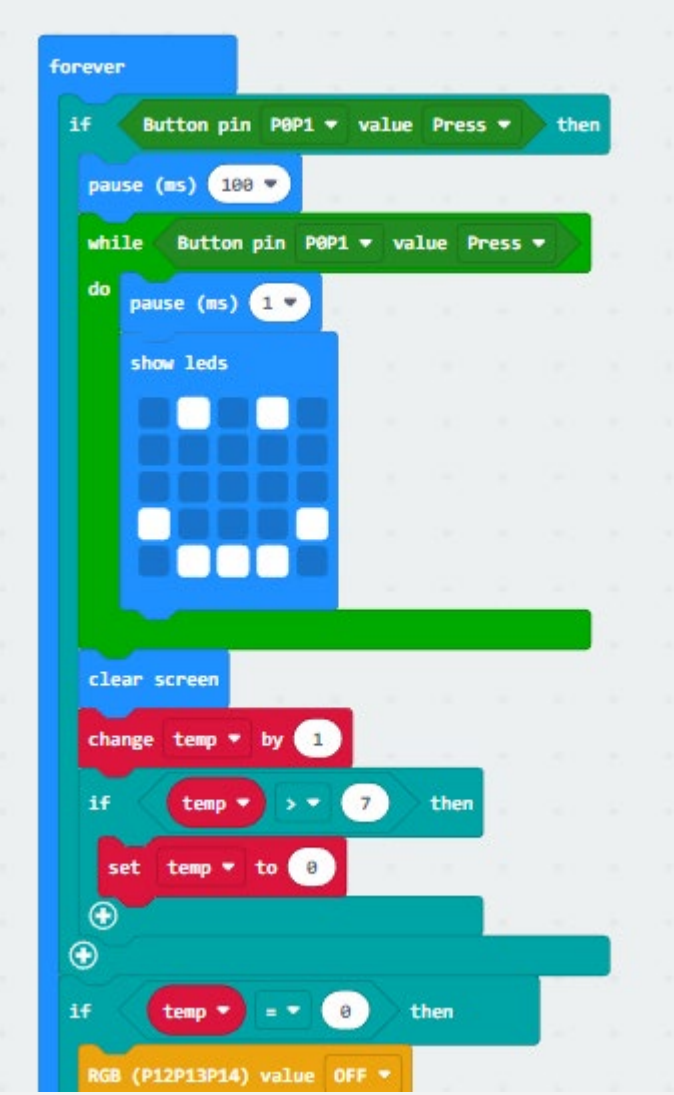

# L2 – Mission

Make the lamp changes to every color and off after the 7th color

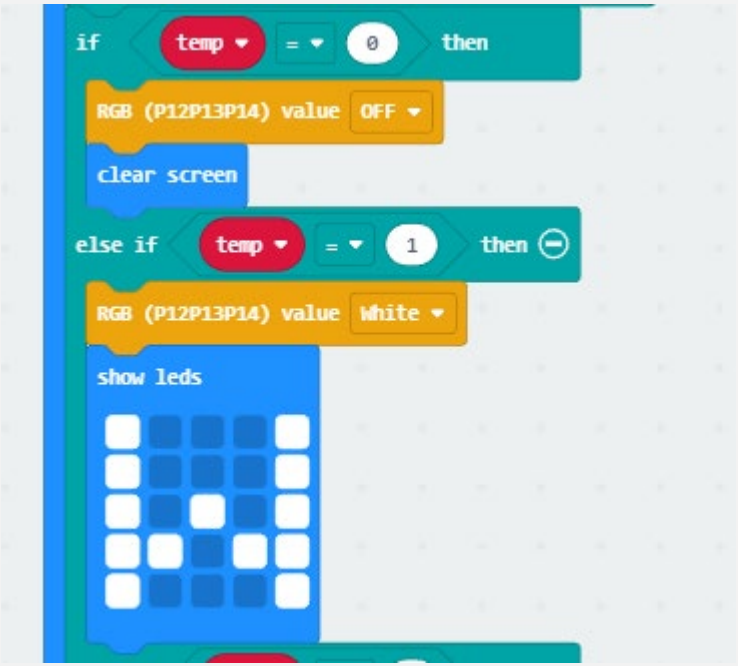
Every time when the light changes color, show what color it is on LED (Example - Red : "R").

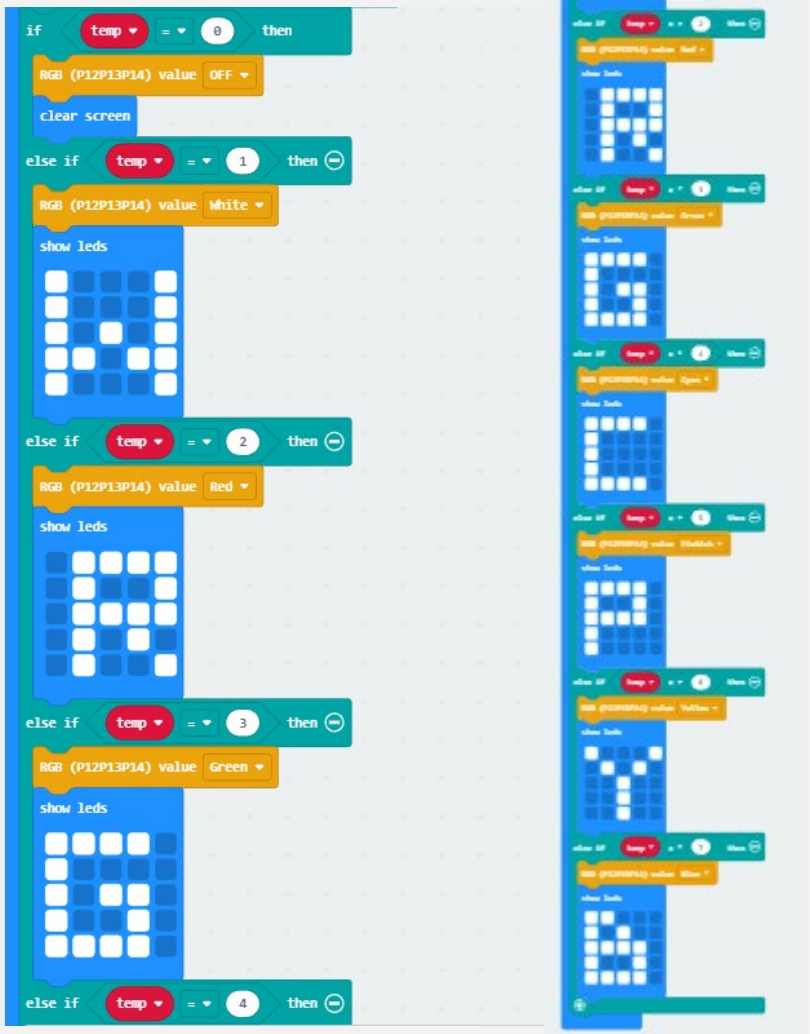
When Button pressed, smiley face appeared on LED before the color changes.

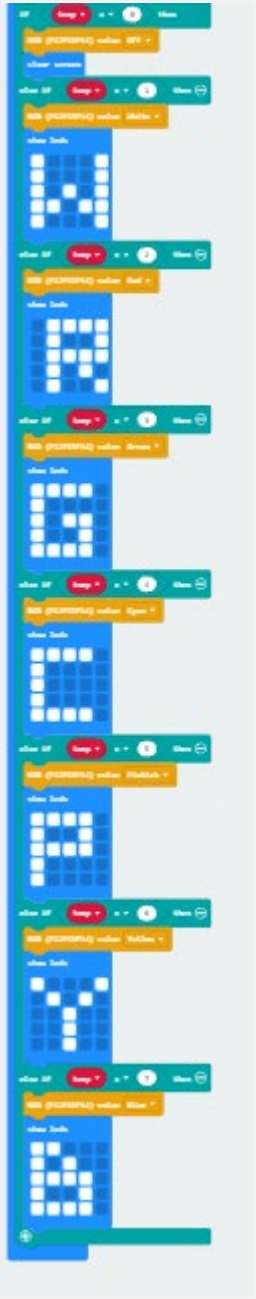
# Answers - Buttor



# Answers – RGB & LED

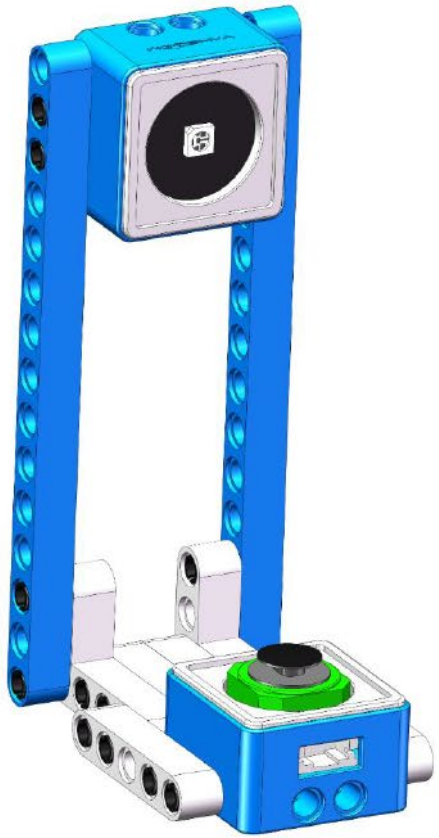


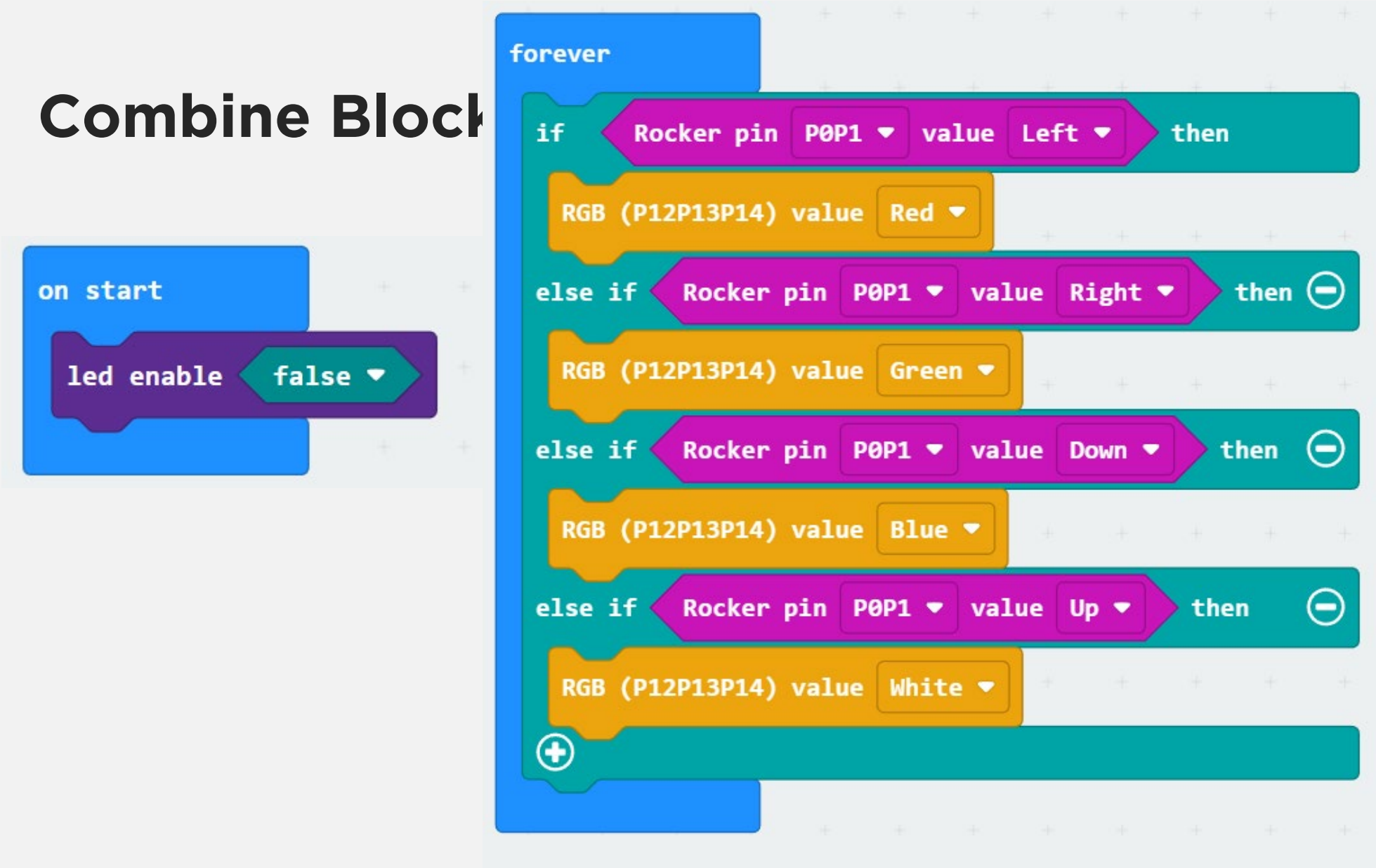
# Rocker Control Light

# Step 10



23

# Combine Block



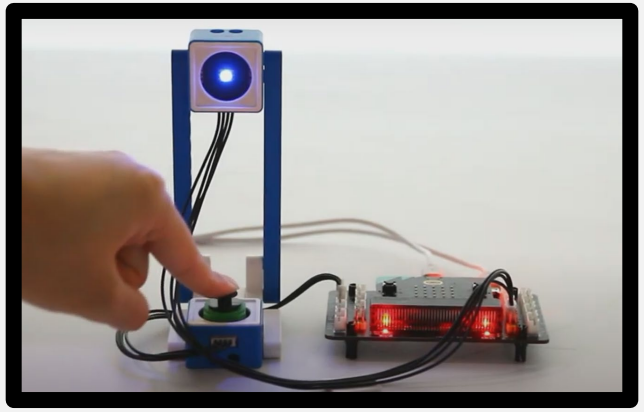
# Phenomenon

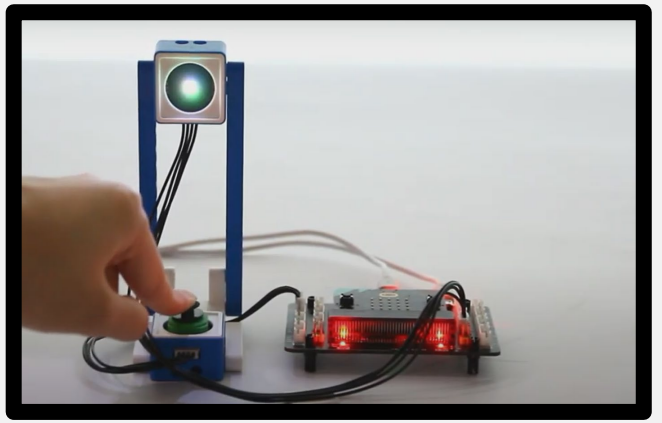
**After the program is downloaded successfully.**
**We can control the RGB light by shaking the rocker. If the rocker moves to the left-most in the X direction, the RGB light become red;**

**If the rocker moves to the right-most in the X direction, the RGB light become green;**

**If the rocker moves to the up-most in the Y direction, the RGB light become blue;**

**If the rocker moves to the down-most in the Y direction, the RGB light become white.**



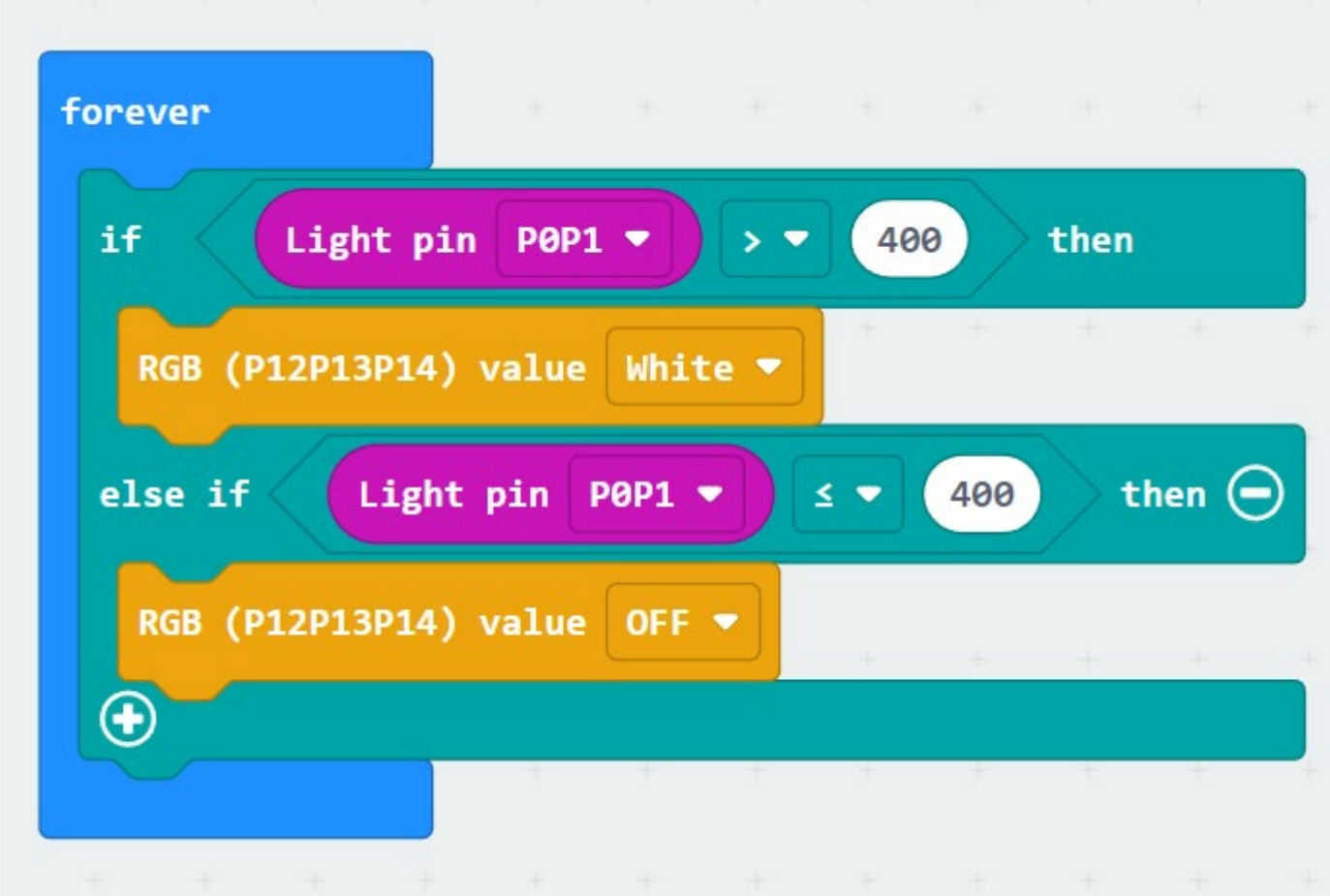


# Emergency Light

# Emergency Light

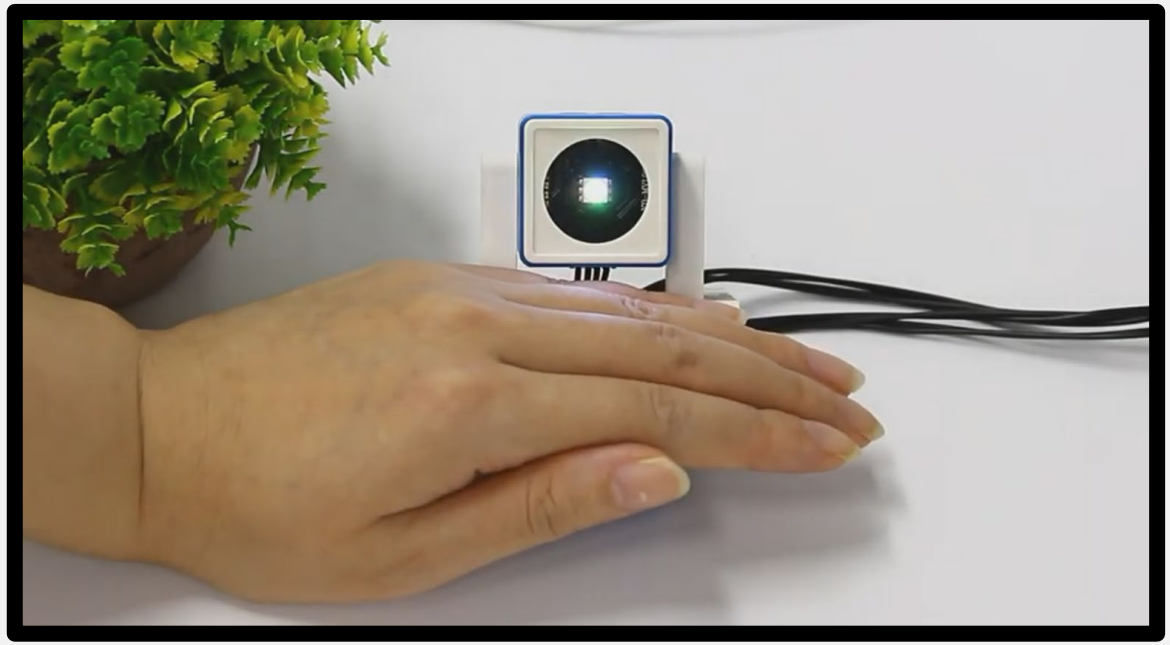
30

# Combine Blocks

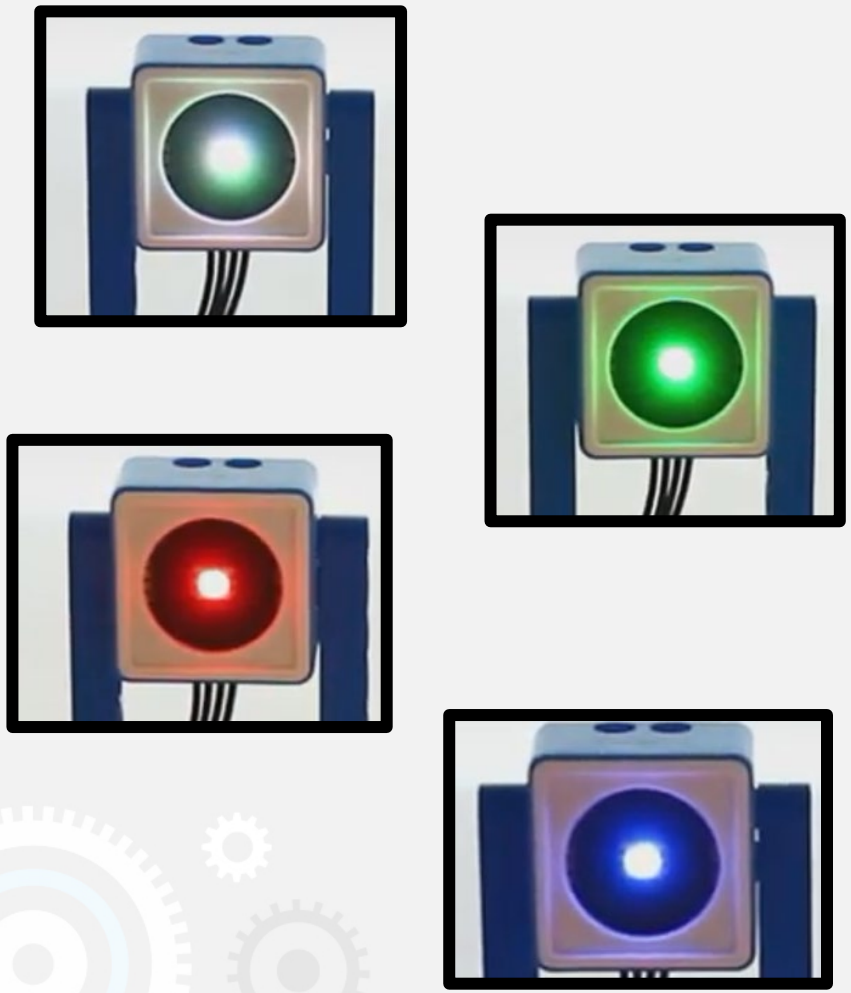


# Phenomenon

**After the program is downloaded successfully.**
**When we block the photosensitive module with our hands, the RGB light is on, otherwise the light is off.**



# L3 – Mission



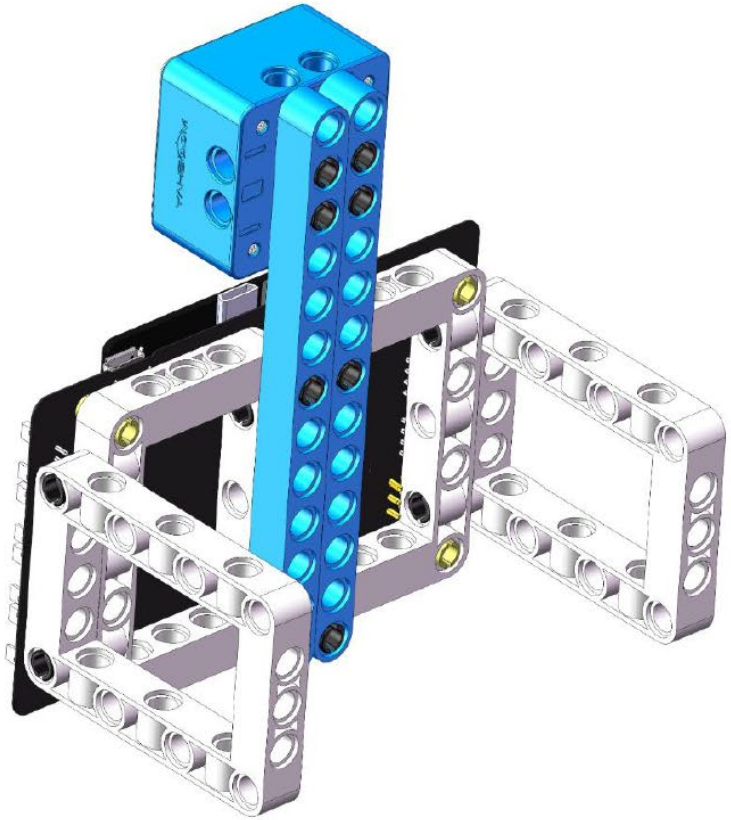
**Using 3 Modules, Rocker, Photosensitive and RGB:**

**Make an emergency light that can changes color when rocker is moved,**
**And without changing to the first color.**

**Condition: When there is no light, RGB will lights up automatically.**

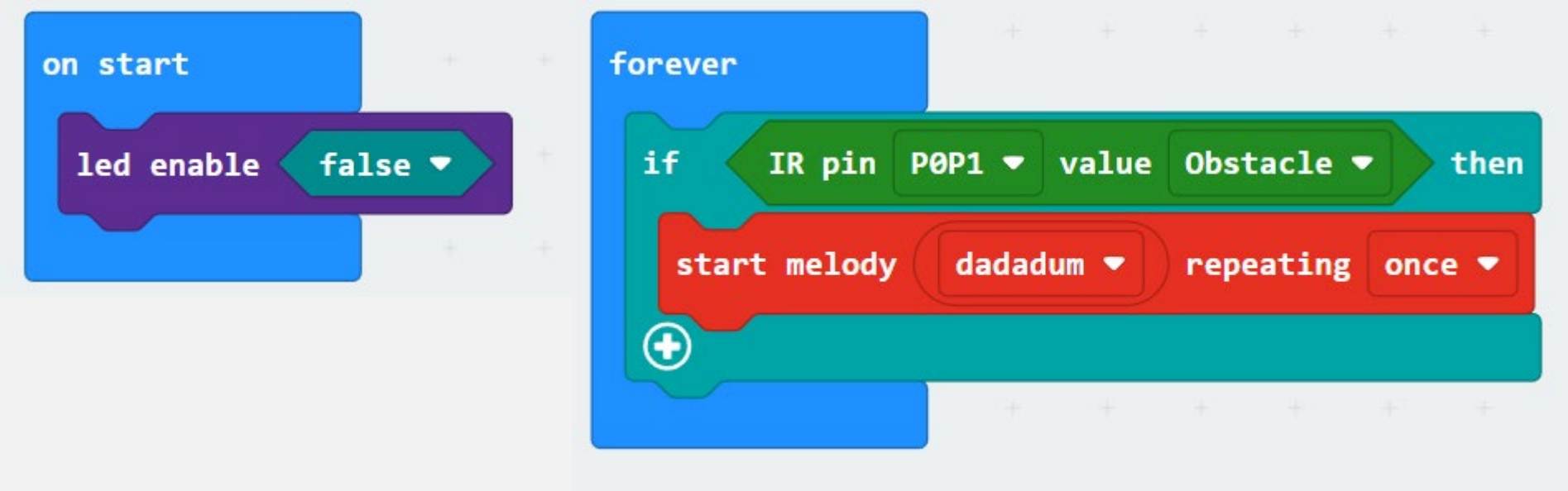
# Infrared Warning device

# Infrared Warning device



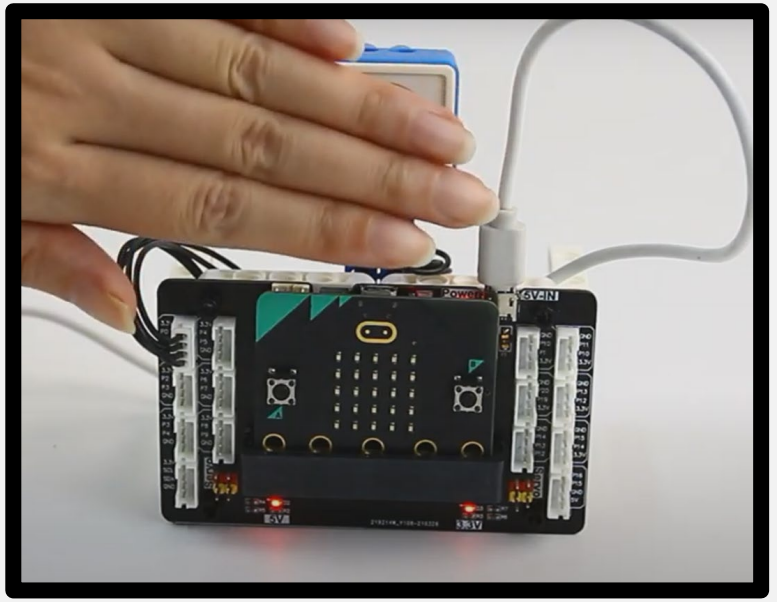
46

# Combine Blocks



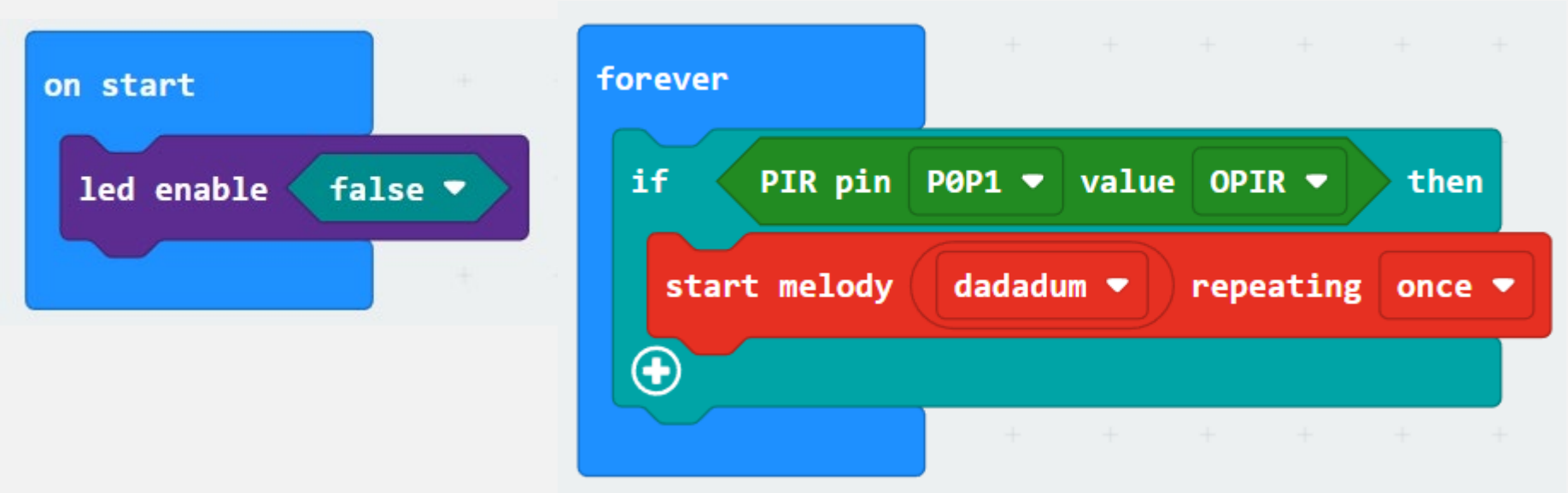
# Phenomenon

**After the program is downloaded successfully.**
**When the infrared sensor detects an obstacle, the buzzer will sound.**



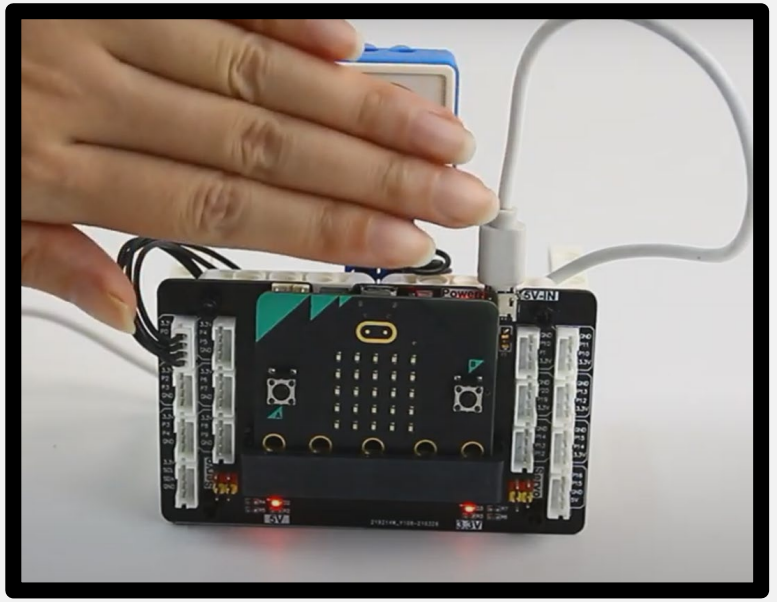
# Human body warning device

# Combine Blocks



# Phenomenon

**After the program is downloaded successfully. When a human body is detected, the buzzer will make a sound**



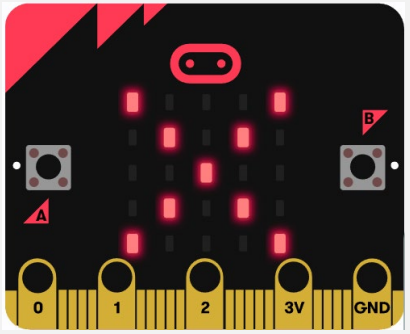
# L4 – Mission

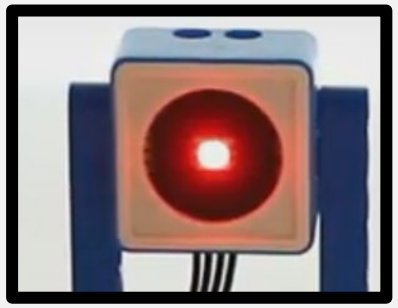
**Using 3 modules Infrared, Button, and RGB:**

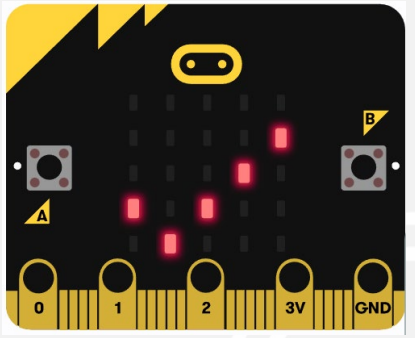
**Make a controlled pedestrian crossing light that changes red when button is pressed, pause for 10 seconds for pedestrian crossing, then changes to green.**

**Condition:**

1. **RGB will changes light to red when button is pressed and there is no obstacle. If button is pressed and there is obstacle, RGB will not turn to red.**
2. **Show LED for pedestrian. When green light, LED will show stop . When red light, LED will show safe to cross**

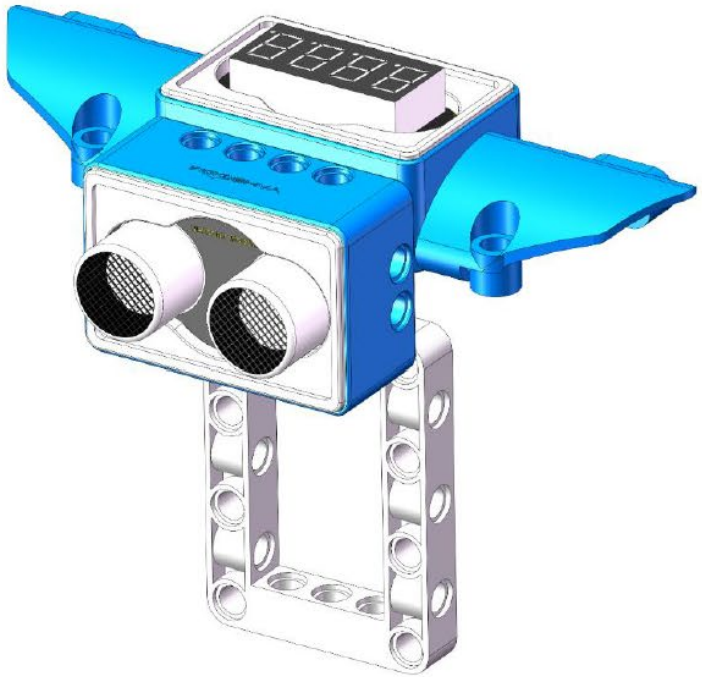




# Hand-held range Finder

# Hand-held range Finder

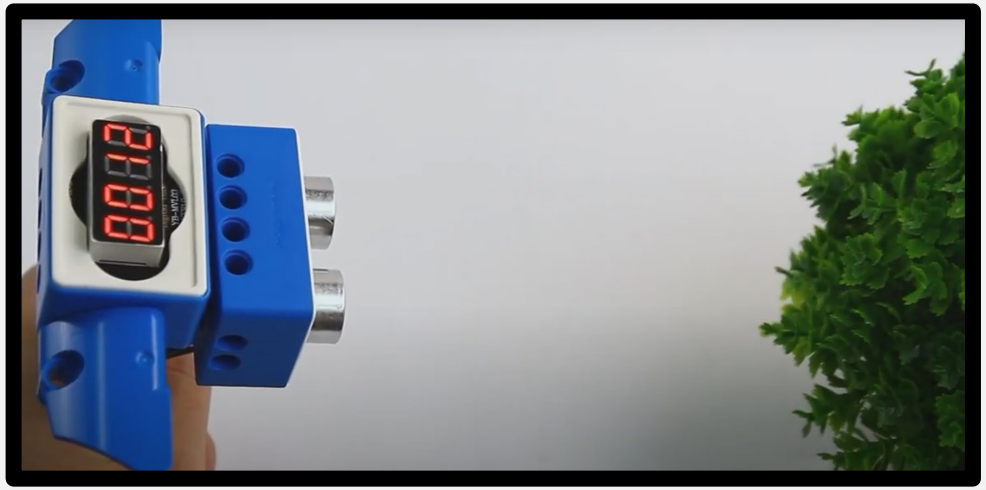


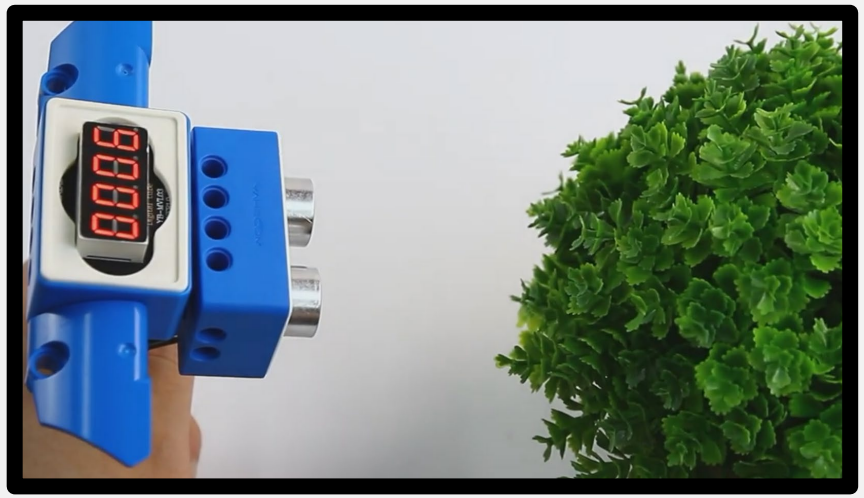
61

# Combine Blocks

# Phenomenon

**After the program is downloaded successfully.**
**The digital tube will display the distance.**



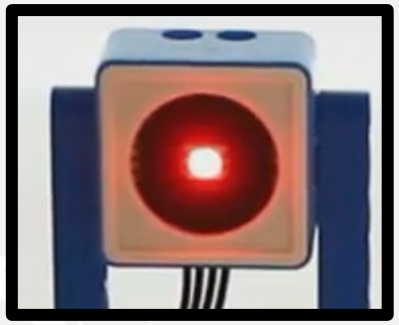


# L5 – Mission

**Using 3 modules Ultrasonic , Button, and RGB:**

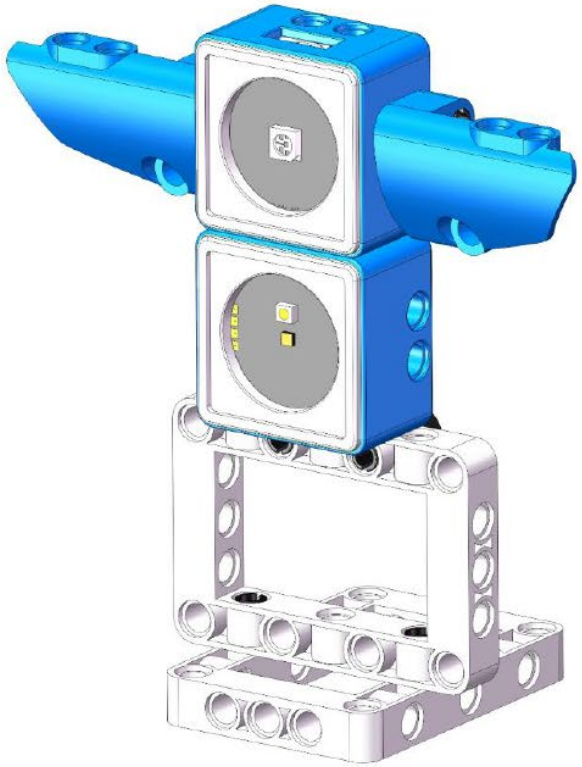
**Danger Lamp Sensor:**
**Make a remote for light switch that turns red and make a sound when an object is close to ultrasonic. When the object get far away, the light changes to white.**

**The button functions as an on/off switch.**



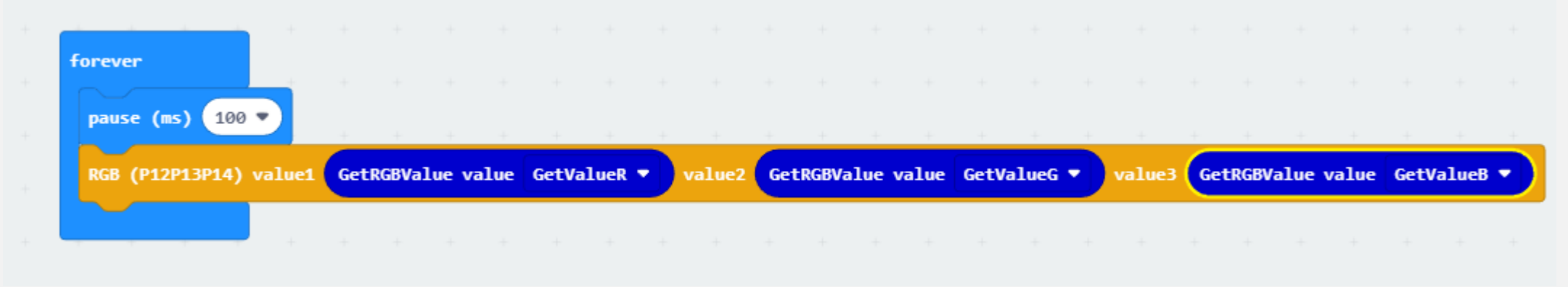
# Color recogniton

# Color recogniton



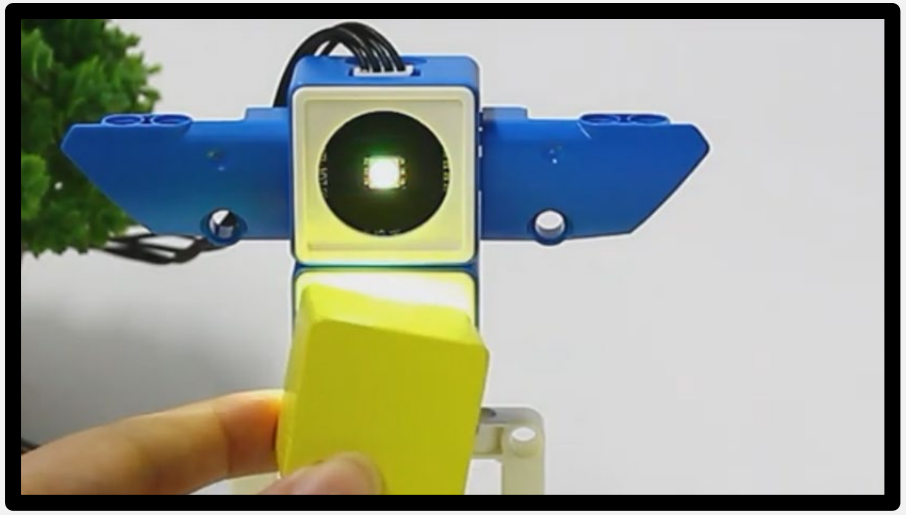
89

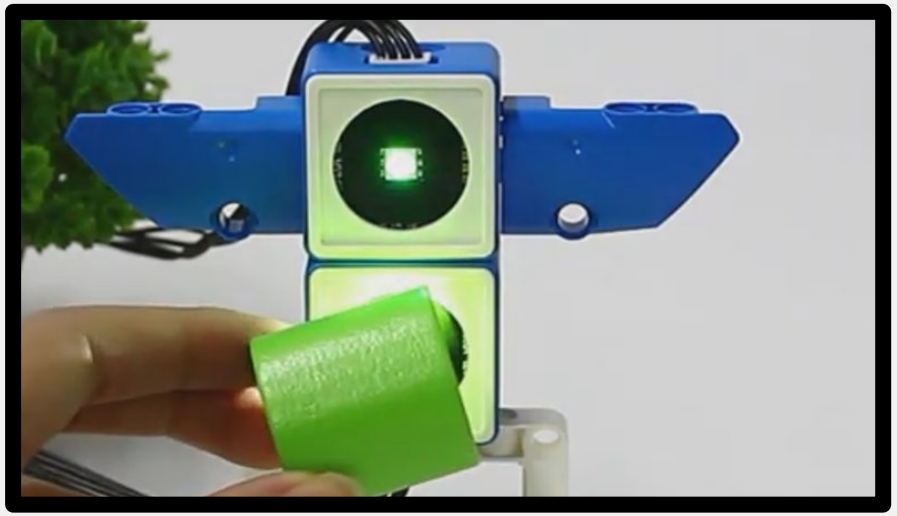
# Coding – Combine Bocks



# Phenomenon

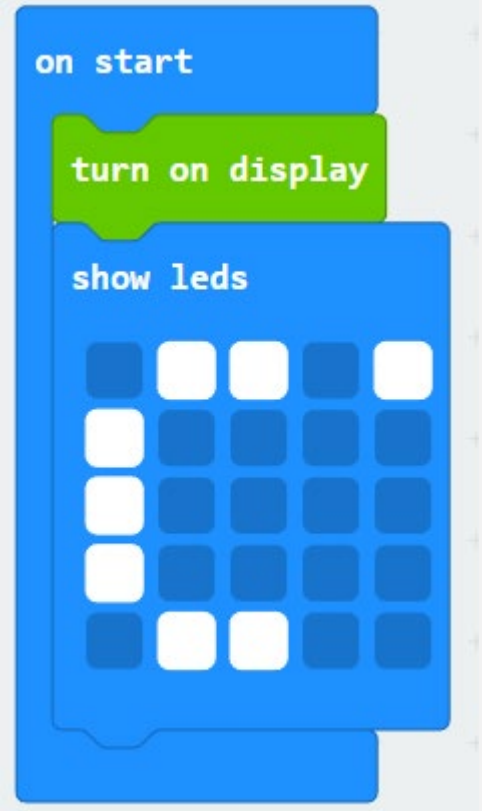
**After the program is downloaded successfully. When the color sensor recognizes different colors, the RGB lights display the corresponding colors.**





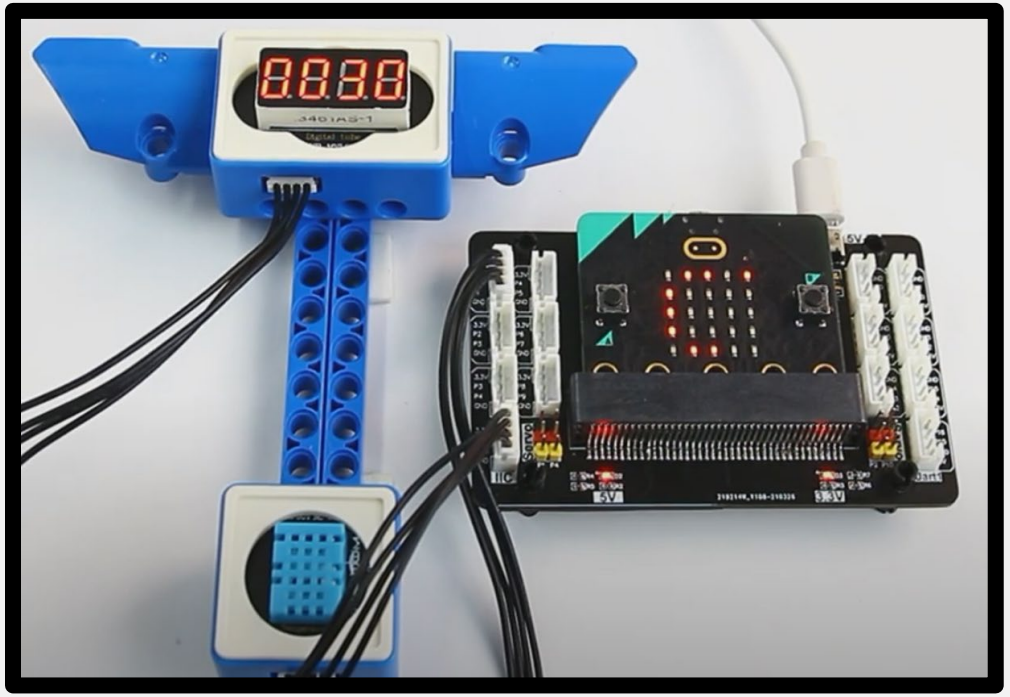
# Step 9

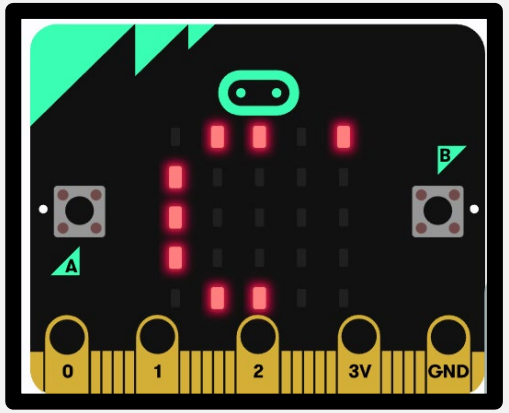
# Coding – Combine Bocks




# Phenomenon

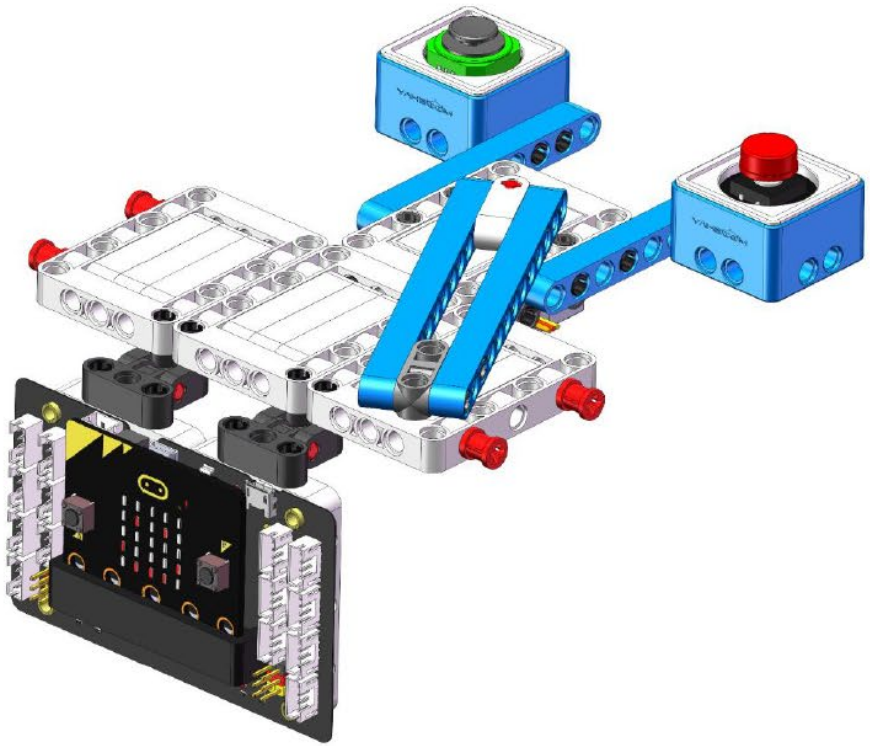
**After the program is downloaded successfully. The temperature and humidity of the current environment will be displayed on the digital tube module.**





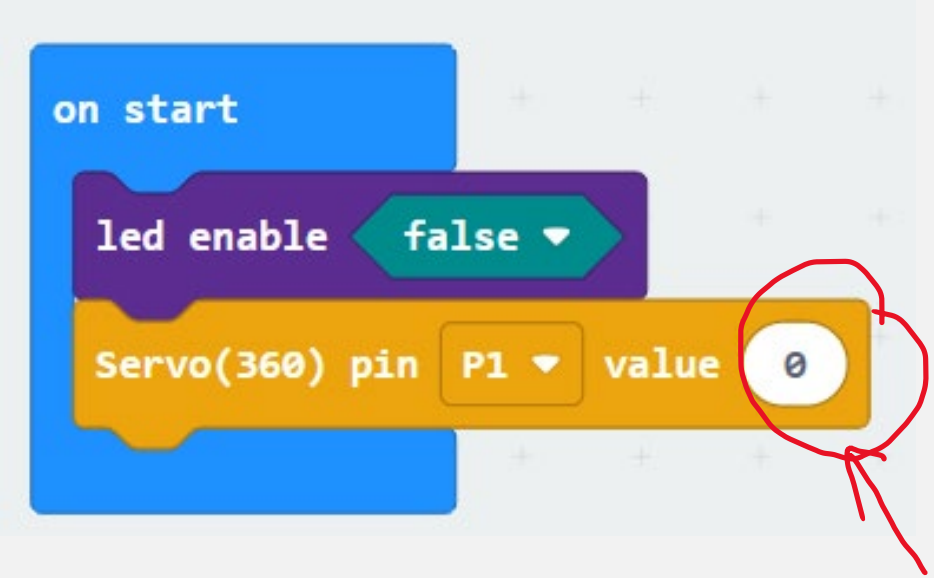
# Smart Wiper

# Step 41



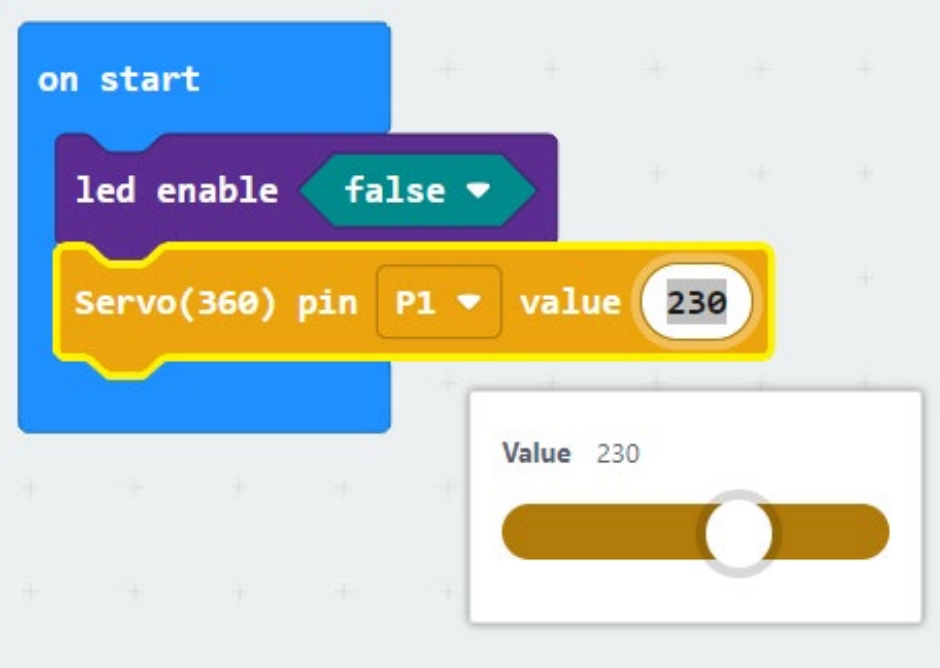
140

# Coding - Servo



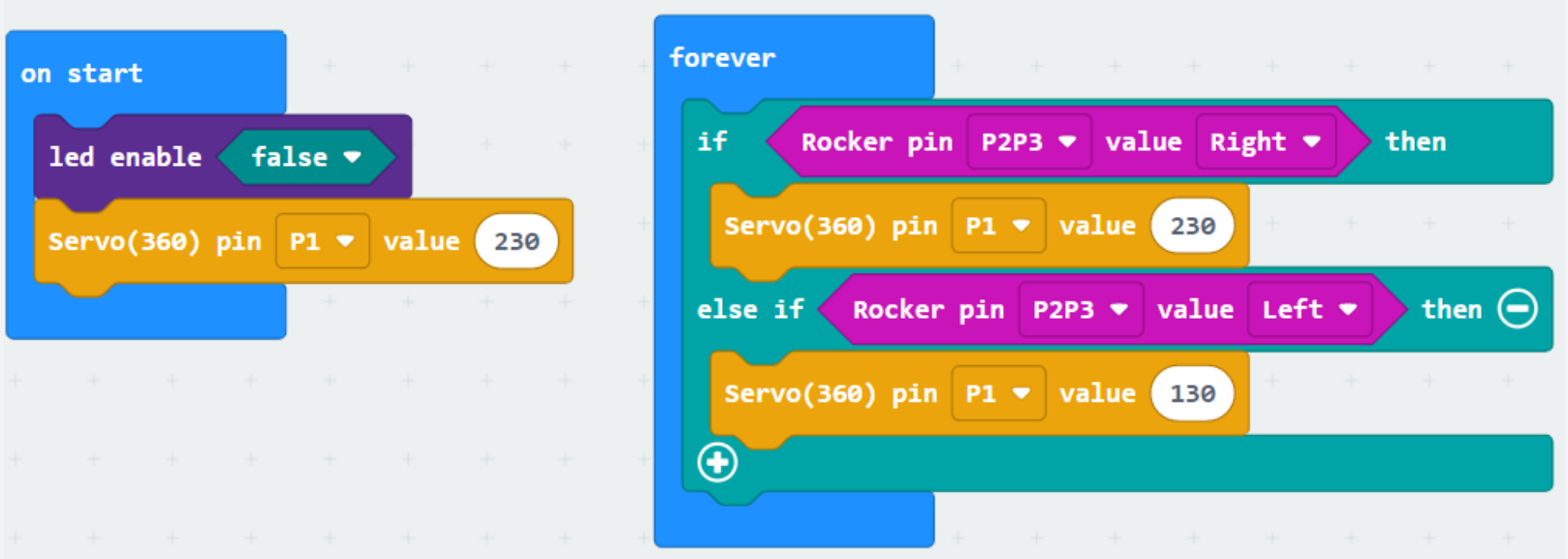

**Let's manipulate this value to make the servo run to different position**

# Coding - Servo




**The value of the servo range from 0 degree to 360 degrees.**

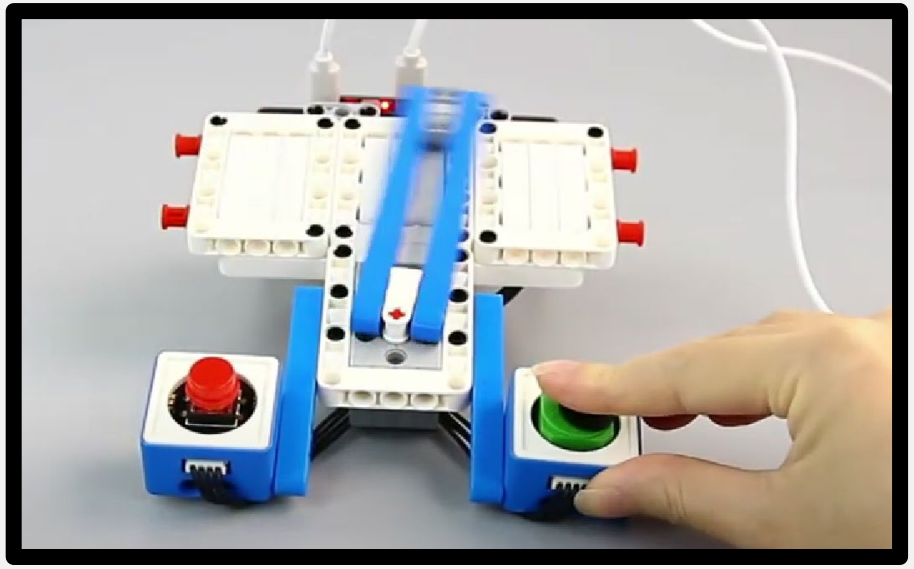
# Coding - Servo

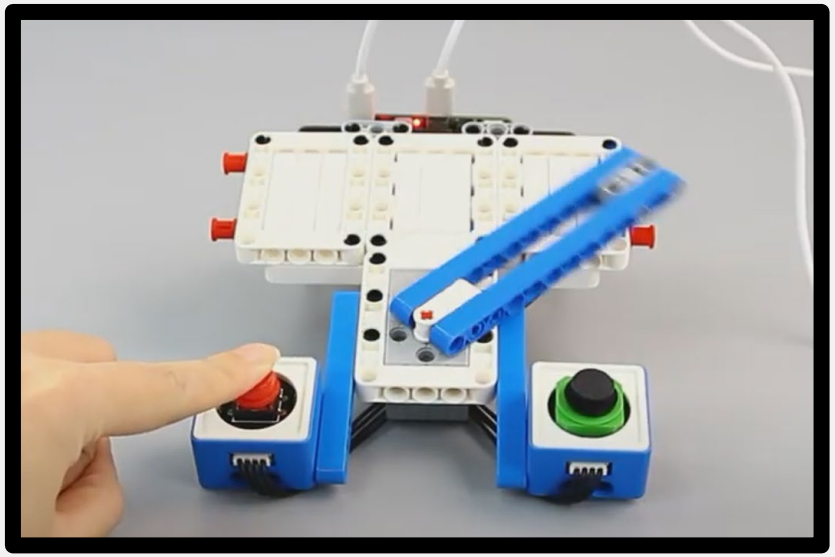



To run it with the rocker module, we can make it run to different position when rocker module is being pushed.

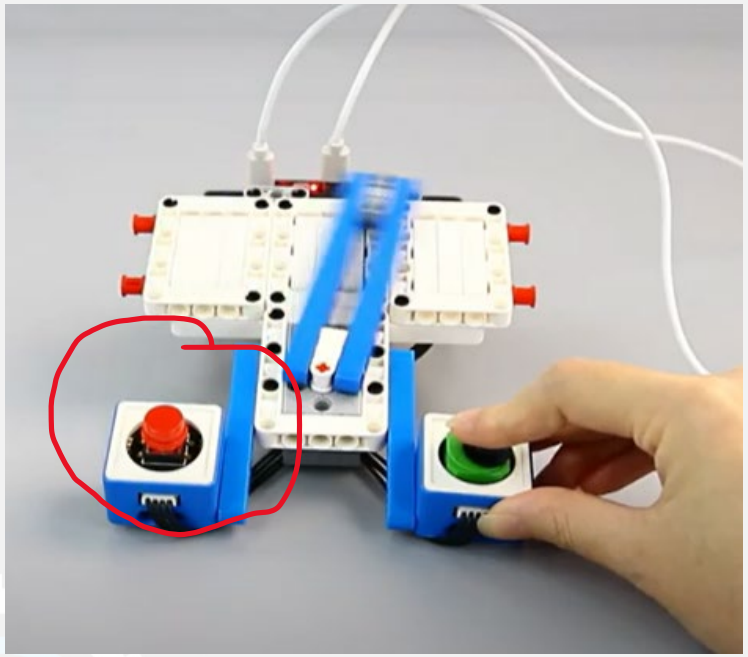
# Phenomenon

**After your program downloaded successfully, you can use the rocker module to turn your wiper to left or right**





# L8 – Challenge level 1

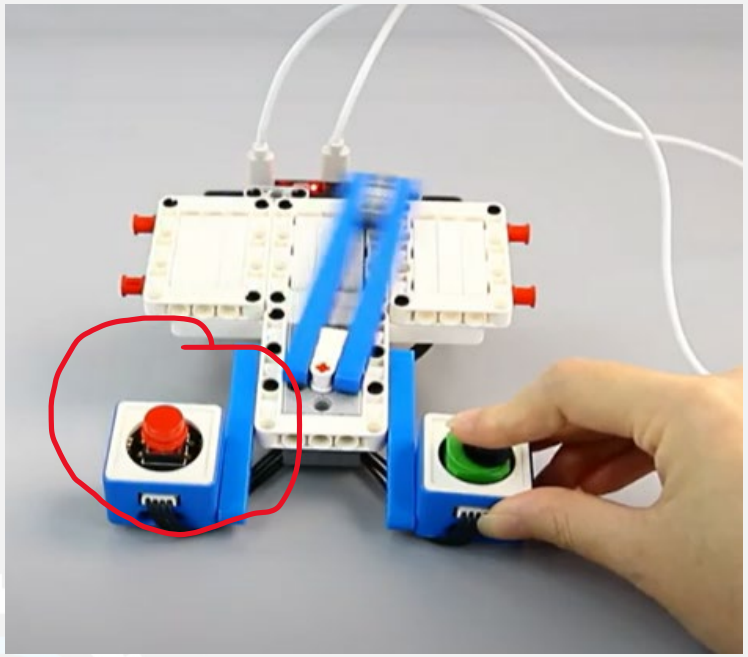


**Program your button module as a toggle switch to turn it on / off for the wiper.**

**If button is pressed first time, the wiper will go back to starting position and rocker module can't turn the wiper.**

**If button pressed another time, it will make the wiper go back to starting position and enable the rocker to control the wiper direction**

# L8 – Challenge level 2

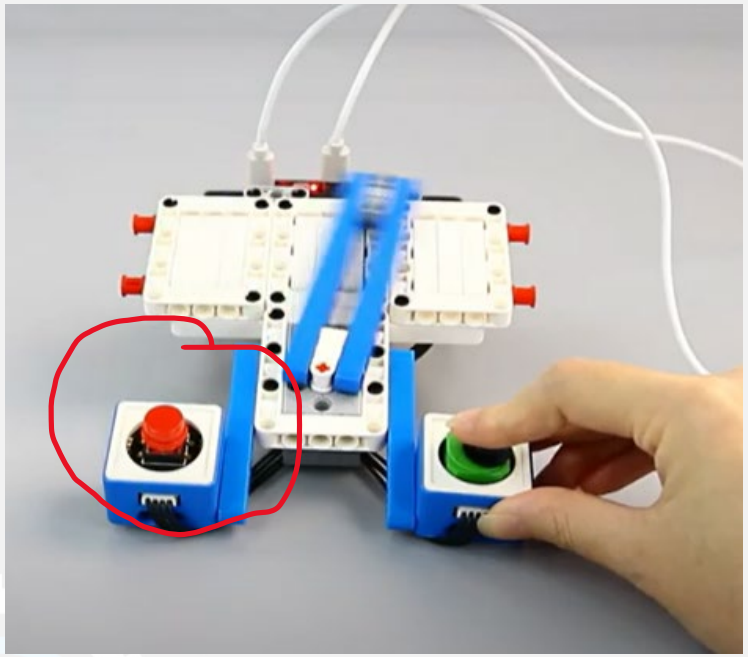


**Program your button module as a toggle switch to turn the wiper either to the left or to the right.**

**When button is pressed at first time, it will go to the right.**

**When the button is pressed for another time, it will go to left, so and so on.**

# L8 - Mission



**Can you make your rocker module to slowly turn the wiper instead of just going into 2 positions (left or right)?**

**Use the button module as a toggle switch to adjust the speed of the wiper.**

Any Questions?

# Thank you :)