

## Qoopers series course

Section 13

《The Voyager B》

# Curriculum objectives

## **Knowledge and skill**

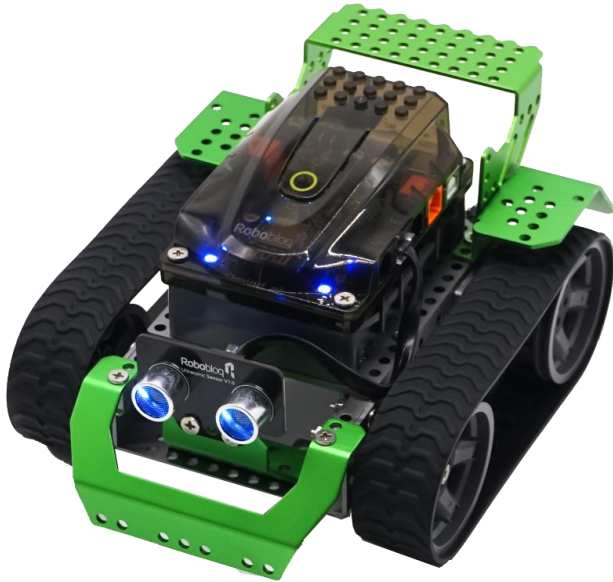
- 1.Learned to program with custom button;
- 2.Complete obstacle avoidance task with branch thinking of multiple conditions;

## **Process and methods**

- 1.Improve students' ability of logical judgment and analysing problem through learning custom button programming;

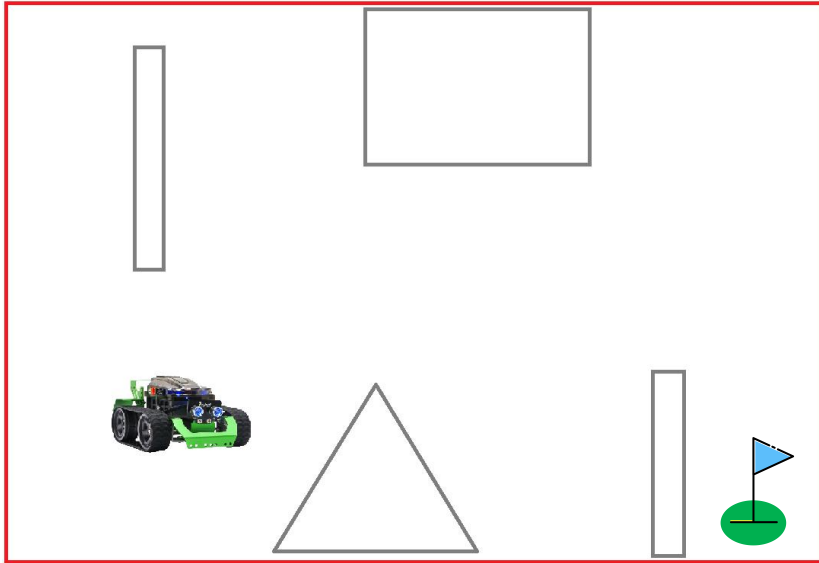
## **Emotional attitude and values**

- 1.Train students' responsibility of undertaking obligation and improve self-recognition by finishing obstacle avoidance task.



The task of collecting data more likely completed by the Voyager, and it accept that task bravely.

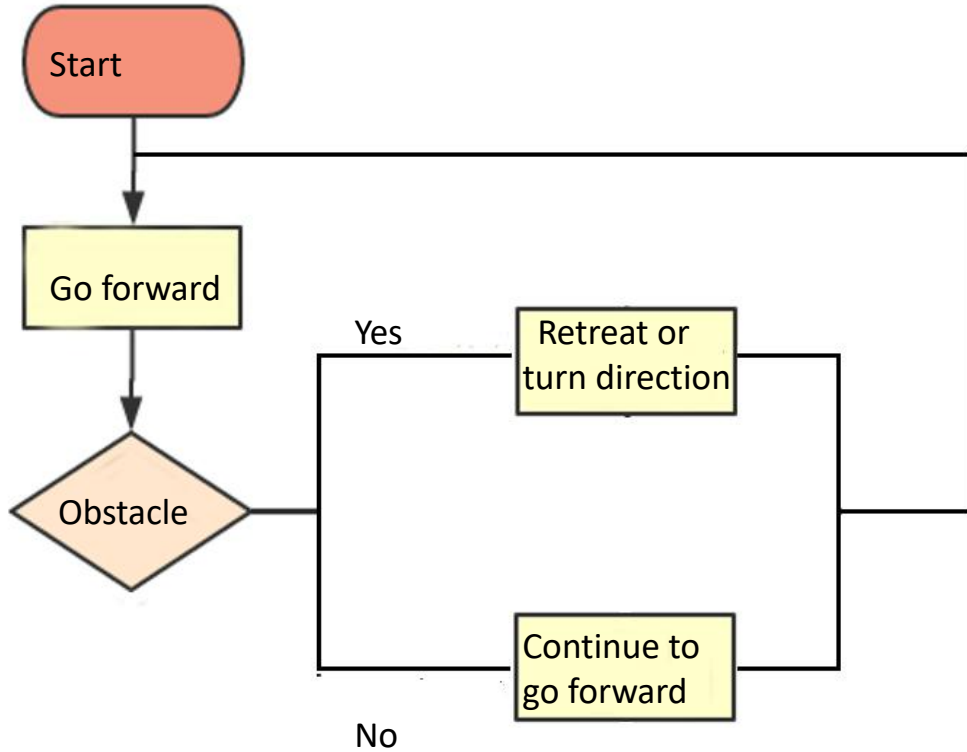
The next difficulties need to be solved by itself.



How the Voyager avoid obstacle that it meet and reach the destination?

We have learned ultrasonic sensor will stop when encountered obstacle at before lessons, but if we want to avoid, just need to turn and left as we meet obstacle to achieve avoidance.

# Knowledge explanation



In actual programming applying, we need to left enough space for the Voyager to retreat a certain distance first and then turn in performing turning.



```
when program begin
  forever
    run forward at speed 45
    set onboard double light to color green
    if read ultrasonic sensor port6 < 30 then
      set onboard double light to color red
      run backward at speed 60
      wait 0.5 secs
      run turn left at speed 60
      wait 1 secs
```

Write program:

1. Setting suitable distance of ultrasonic sensor, notice that sensor must correspond to their port;
2. If the Voyager meet obstacle, it need to retreat and then turn to achieve obstacle avoidance action.

Custom button is a touch sensor, which will output signal when press it, otherwise, no signal will be outputted. Its main use is to feel whether it was pressed.

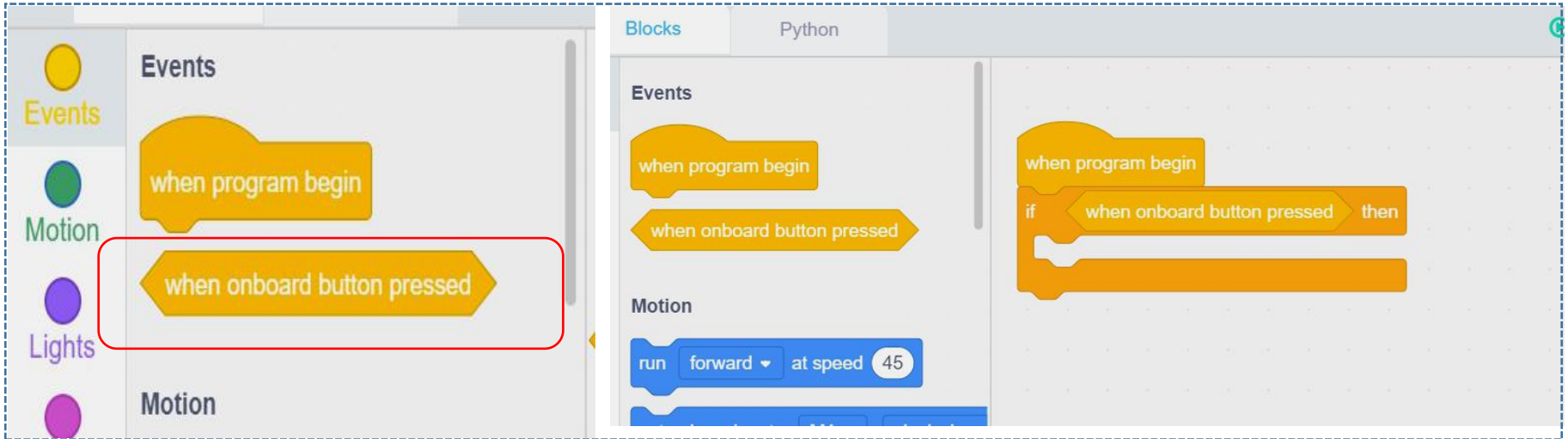


自定义按钮

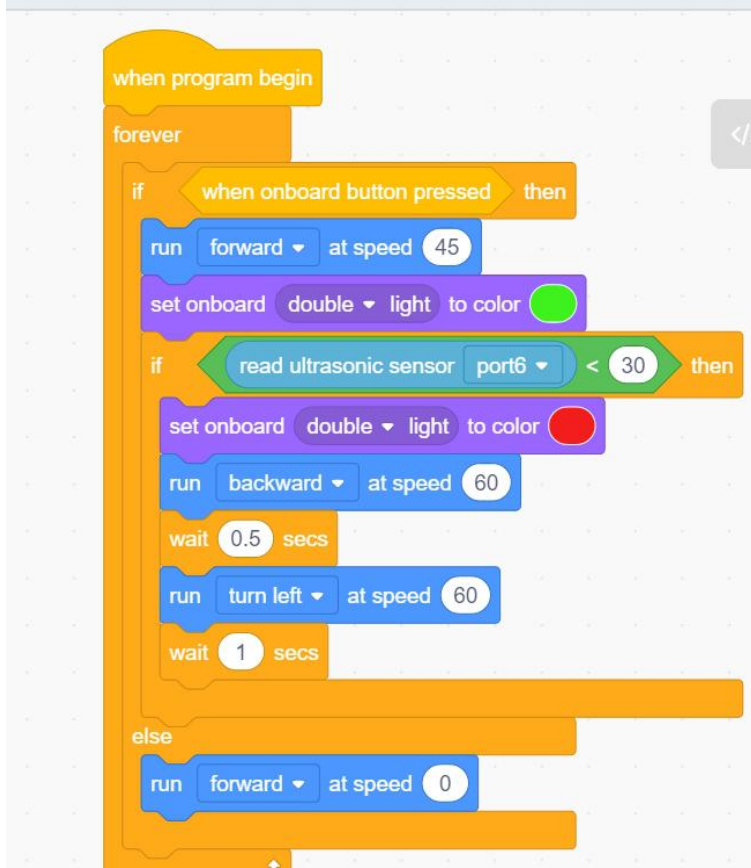
custom button

# Programming

When using custom button programming, choose "when main control board was pressed" icon in the "event" module as condition for using, then drag it to conditional judgment statement.



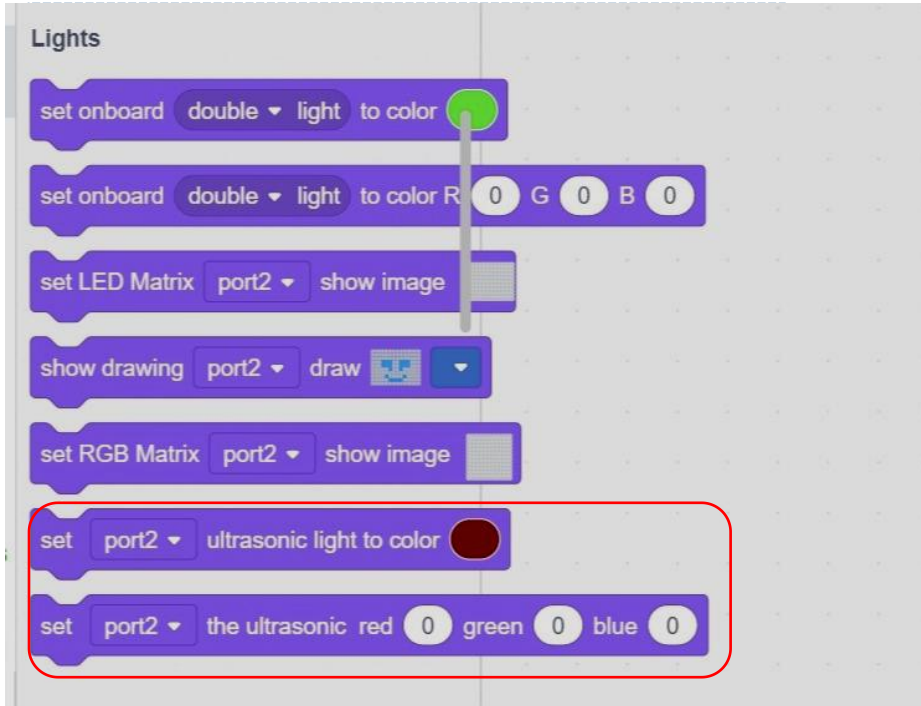




```
when program begin
  forever
    if when onboard button pressed then
      run forward at speed 45
      set onboard double light to color green
    if read ultrasonic sensor port6 < 30 then
      set onboard double light to color red
      run backward at speed 60
      wait 0.5 secs
      run turn left at speed 60
      wait 1 secs
    else
      run forward at speed 0
```

Adding custom button program in use on the basis of achieving obstacle avoidance program, make the Voyager start to perform obstacle avoidance action after press button.

# Extends

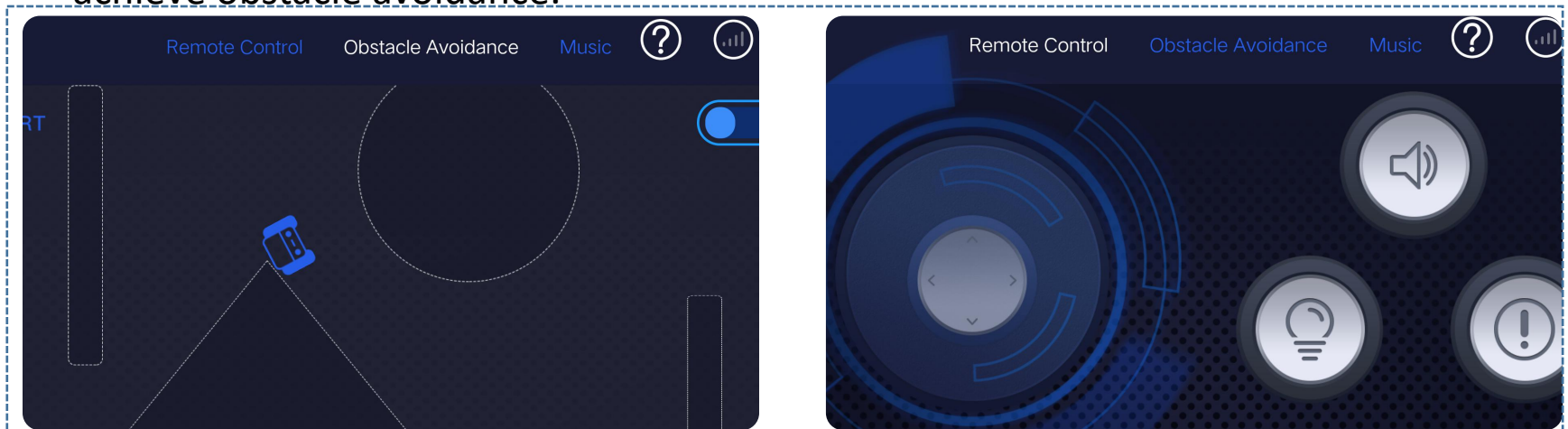


We have learned that ultrasonic sensor's probe installed a loop of RGB lights at before lessons.

Try to write ultrasonic color change program in the light module of programming.

# Extends

After upload program, the Voyager reached destination successfully? Actually, the Voyager has obstacle avoidance mode in mobile phone application, so it can finish obstacle avoidance action automatically; under remote control mode, operating the Voyager with hands also is a kind of way to achieve obstacle avoidance.



1. What are you gain after comparing program wrote by us and automatical obstacle avoidance mode?



The copyright of this material belongs to our company. Unauthorized dissemination or plagiarism will be investigated and legal responsibility will be affixed. The company has the final right of interpretation.

**Company:** Robobloq Co., Ltd

**Address:** Room 208, Building B53, Zhongchuang Industrial Park, Liuxian Avenue, Taoyuan Street, Nanshan District of Shenzhen

**E-mail:** [hello@robobloq.com](mailto:hello@robobloq.com)

**Telephone:** + 86-0755 -26926929

**Website:** <http://www.robobloq.com>