



Logic

Space



Coding



Focus



Classroom Discipline

01

Please sit down and keep quiet in class.

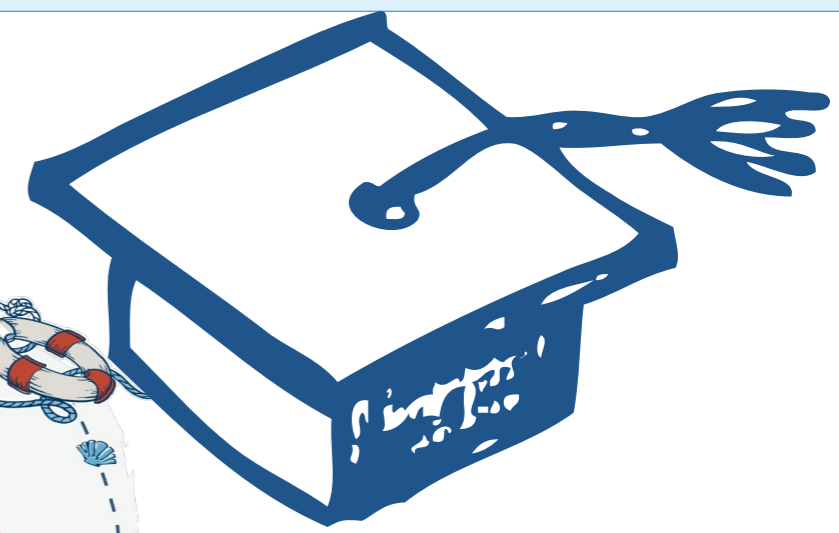
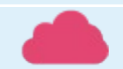
02

Please raise your hand if you have any questions.

03

Please observe carefully when the pictures are played.





Color Sorting Machine 01



Course Goals



Thinkidea

1

Learning goals

2

Project Discussion

3

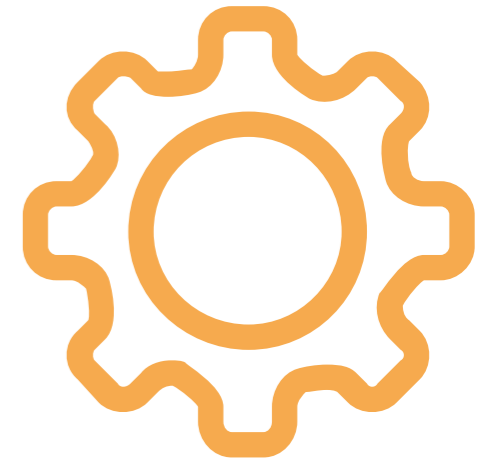
Logic Programming

4

Have a try

5

Consolidate and extend





1

Build a sorting machine and let it recognize different colors.

2

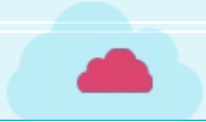
Consolidate the modules like "if...then..." 、 "Operators <" 、 "Sense" .

3

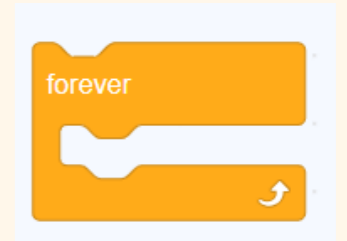
Learn new modules "light" 、 "motor move" .

4

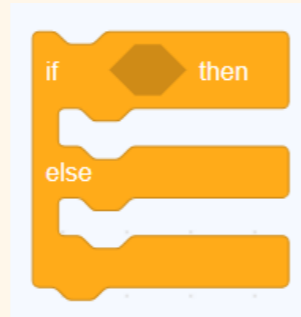
Comprehensively apply the learned modules to complete programming projects and expand.

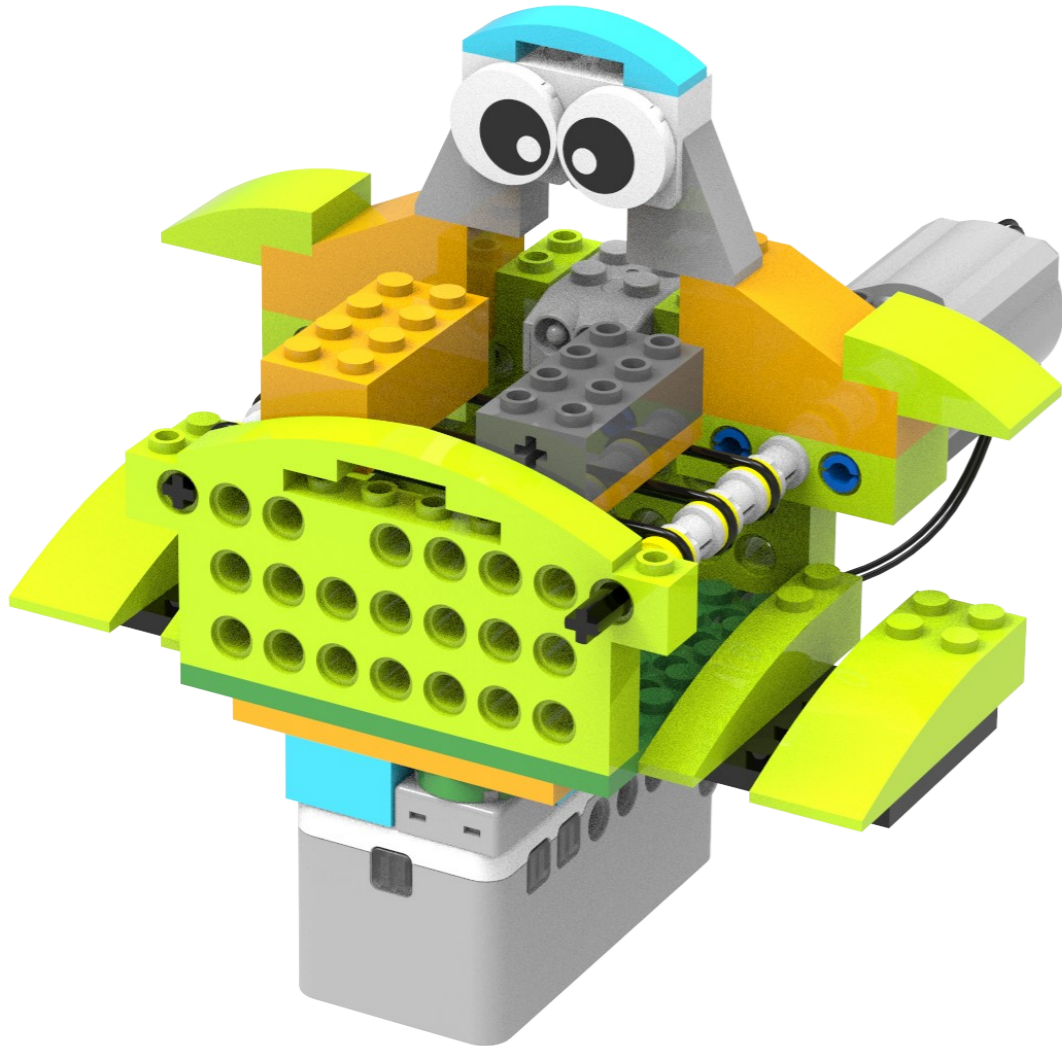


Consolidate
modules:



New
modules:



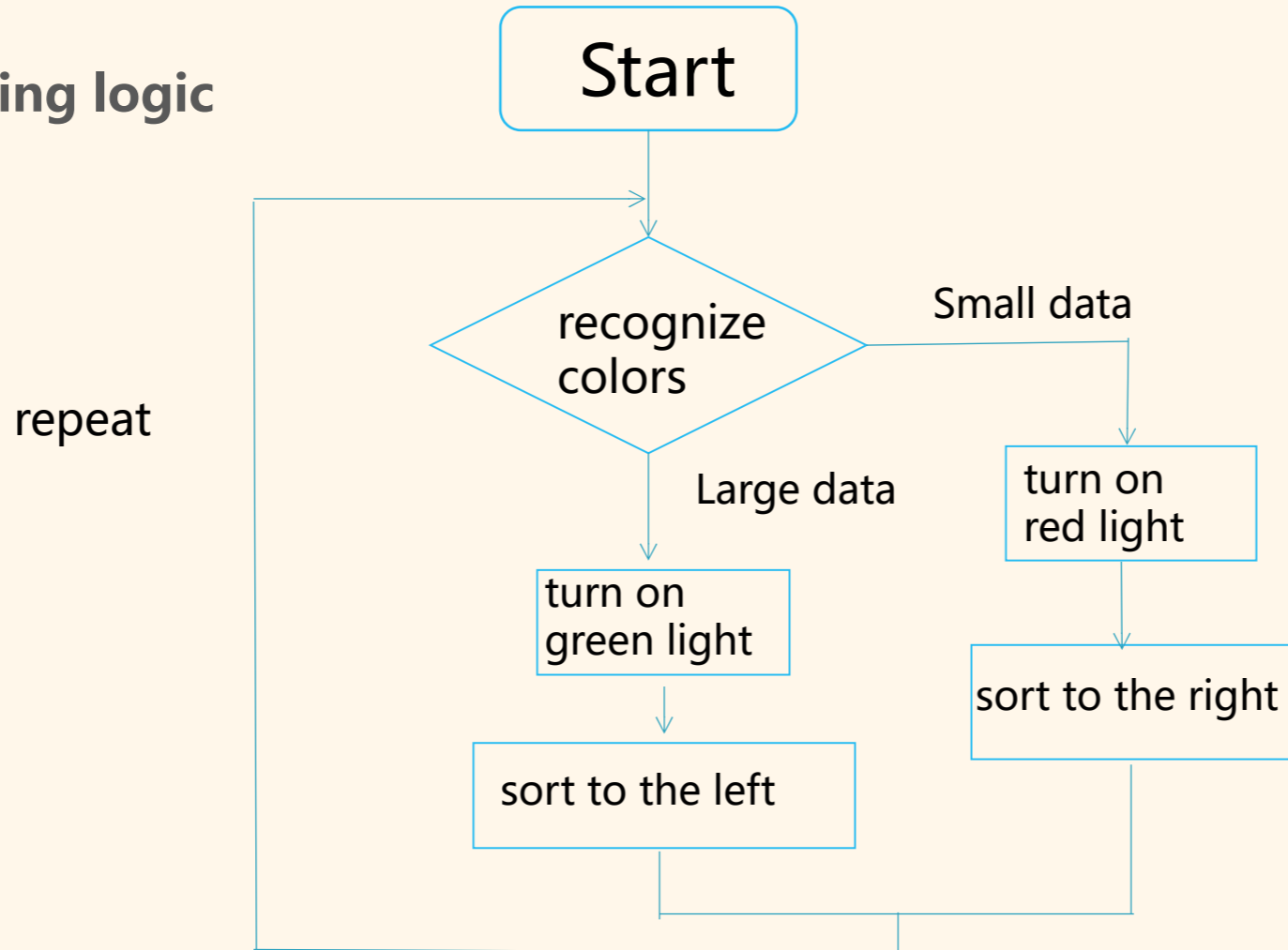


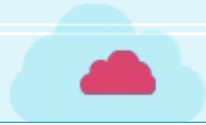
Project Discussion

- 1. The sorting machine will sort items by color.**
- 2. Light-colored items will turn on the green light.**
- 3. Sort to the left.**
- 4. Dark-colored items will turn on the red light.**
- 5. Sort to the right.**



1. Programming logic

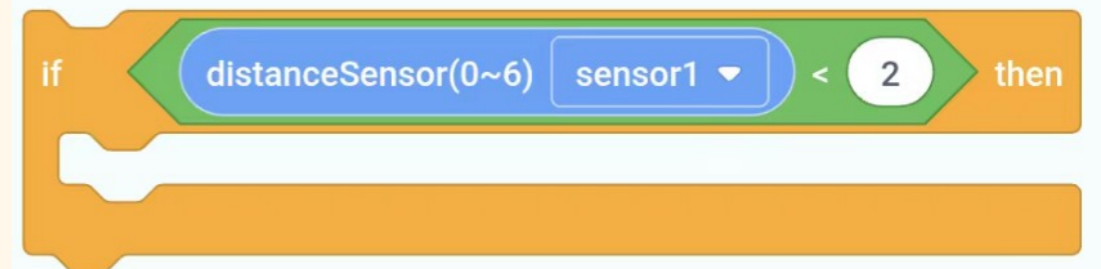


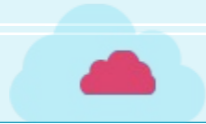


1. Programming logic

1. Recognize the color and write down the value!

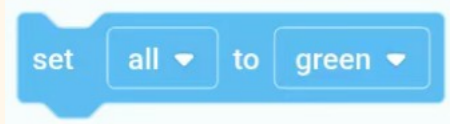
2. Start recognizing.



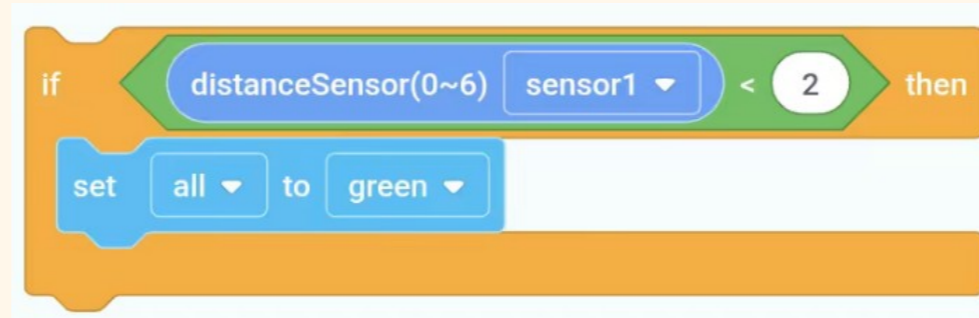


1. Programming logic

1. Light-colored items will turn on the green light.



```
set all to green
```

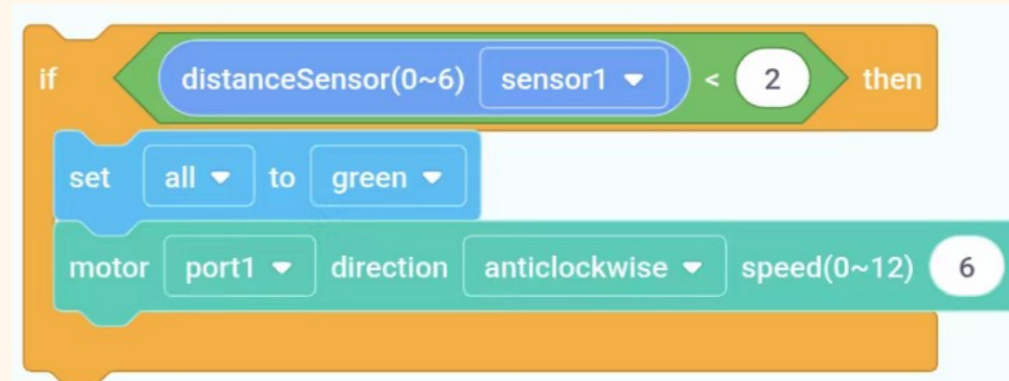


```
if distanceSensor(0~6) sensor1 < 2 then  
  set all to green
```

2. Light colors will turn on the green light and sort to the left.



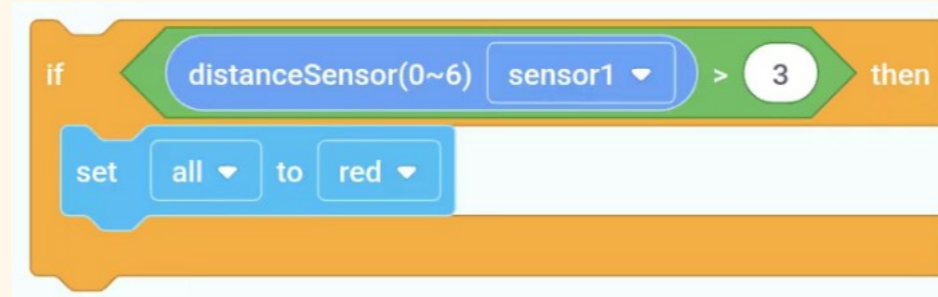
```
motor port1 direction anticlockwise speed(0~12) 6
```



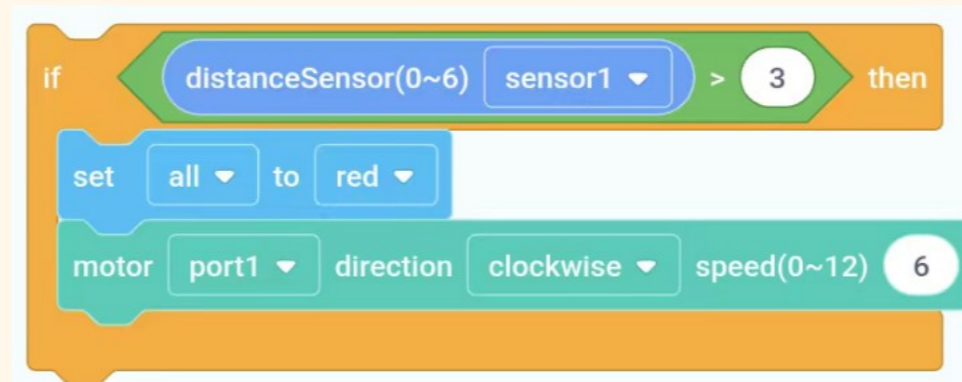
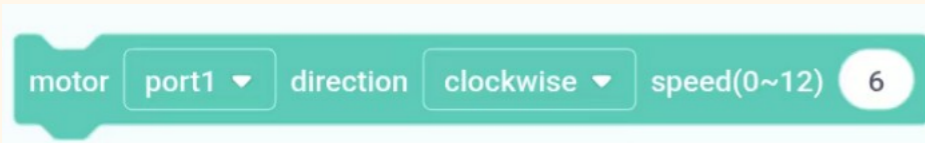
```
if distanceSensor(0~6) sensor1 < 2 then  
  set all to green  
  motor port1 direction anticlockwise speed(0~12) 6
```

1. Programming logic

1. Dark-colored items will turn on the red light.

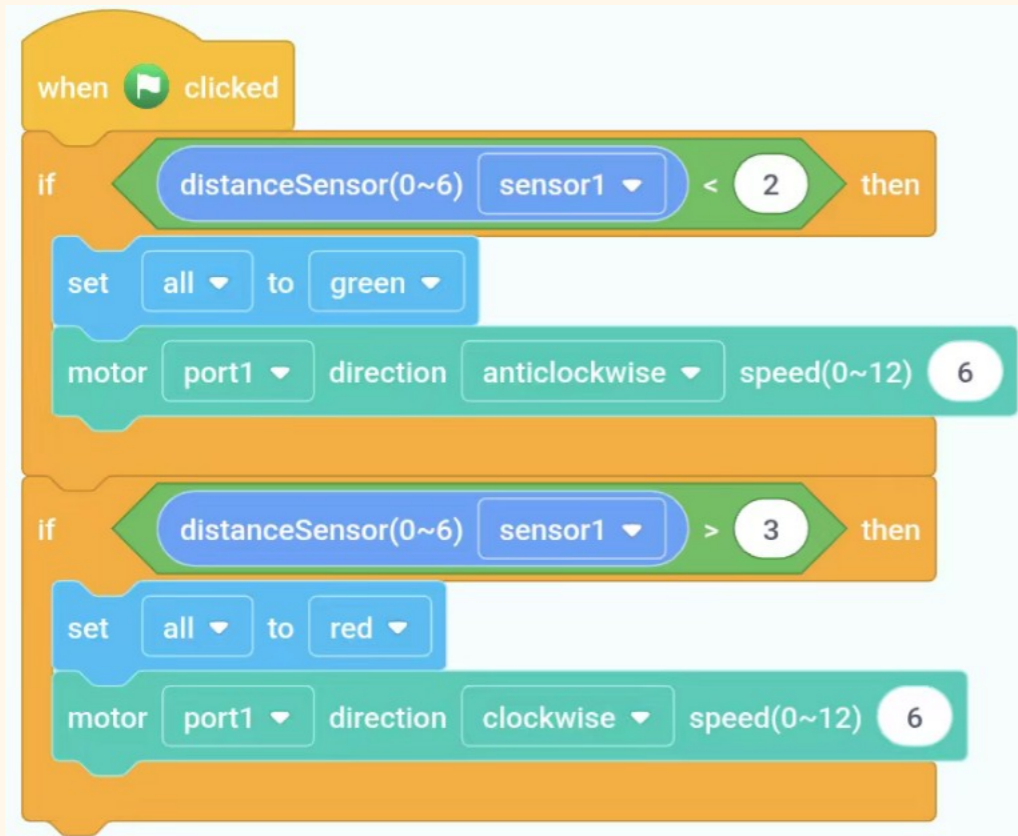


2. Dark colors will turn on the red light and sort to the right.



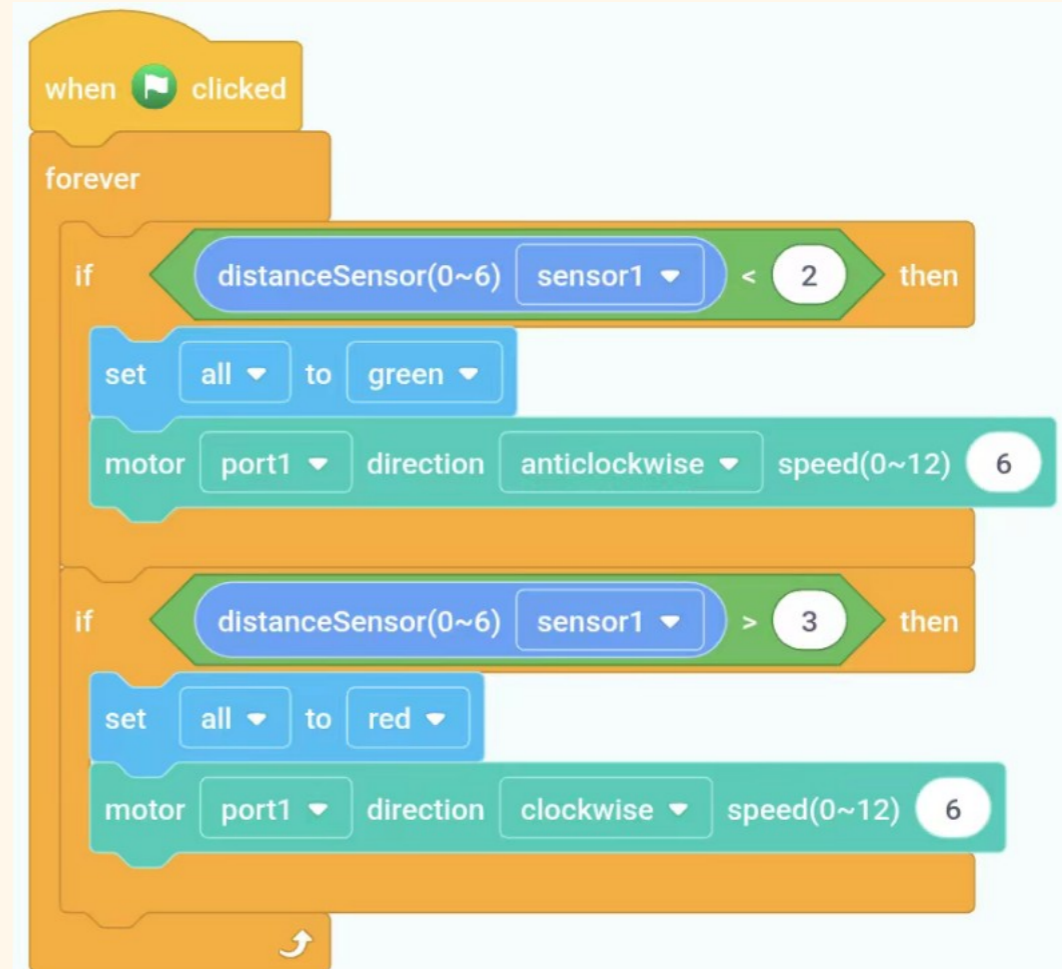
1. Programming logic

1. Programming completed.



```
when clicked
if distanceSensor(0~6) sensor1 < 2 then
  set all to green
  motor port1 direction anticlockwise speed(0~12) 6
if distanceSensor(0~6) sensor1 > 3 then
  set all to red
  motor port1 direction clockwise speed(0~12) 6
```

The code block starts with a 'when clicked' trigger. It contains two conditional blocks. The first 'if' block checks if the distance sensor (0~6) is less than 2. If true, it sets 'all' to 'green' and runs the motor on port1 in the anticlockwise direction at speed 6. The second 'if' block checks if the distance sensor (0~6) is greater than 3. If true, it sets 'all' to 'red' and runs the motor on port1 in the clockwise direction at speed 6.



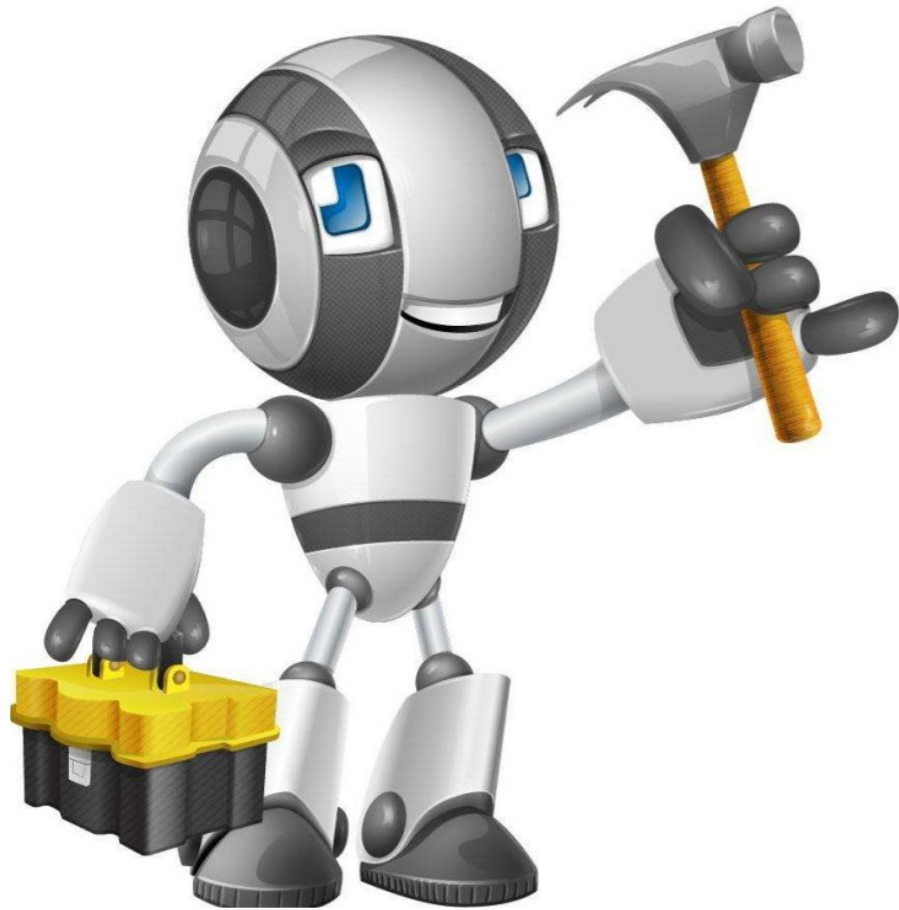
```
when clicked
forever
  if distanceSensor(0~6) sensor1 < 2 then
    set all to green
    motor port1 direction anticlockwise speed(0~12) 6
  if distanceSensor(0~6) sensor1 > 3 then
    set all to red
    motor port1 direction clockwise speed(0~12) 6
```

The code block starts with a 'when clicked' trigger. It is enclosed in a 'forever' loop. Inside the loop, it contains two conditional blocks. The first 'if' block checks if the distance sensor (0~6) is less than 2. If true, it sets 'all' to 'green' and runs the motor on port1 in the anticlockwise direction at speed 6. The second 'if' block checks if the distance sensor (0~6) is greater than 3. If true, it sets 'all' to 'red' and runs the motor on port1 in the clockwise direction at speed 6.



Consolidate and extend

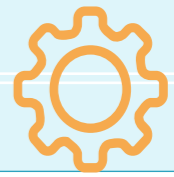
Q1 : Alex wrote a program for the sorting machine, but it keeps sorting everything in the same direction. Why is this happening?



```
when clicked
  forever
    if distanceSensor(0~6) sensor1 < 2 then
      set all to green
      motor port1 direction anticlockwise speed(0~12) 6
    if distanceSensor(0~6) sensor1 > 3 then
      set all to red
      motor port1 direction anticlockwise speed(0~12) 6
```

**Q &
A**

A1 : The motor direction was set incorrectly, so the machine goes in the same direction regardless of whether the color is light or dark.



Knowledge Review

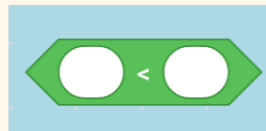


(1)



The “if...then...” command is a commonly used logic block, and it is usually used together with a repeat loop.

(2)



The compare block is used to check which of the two values is greater or smaller.



Knowledge Review



(3)

distanceSensor(0~6) sensor1 ▾

The distance sensor module.

(4)

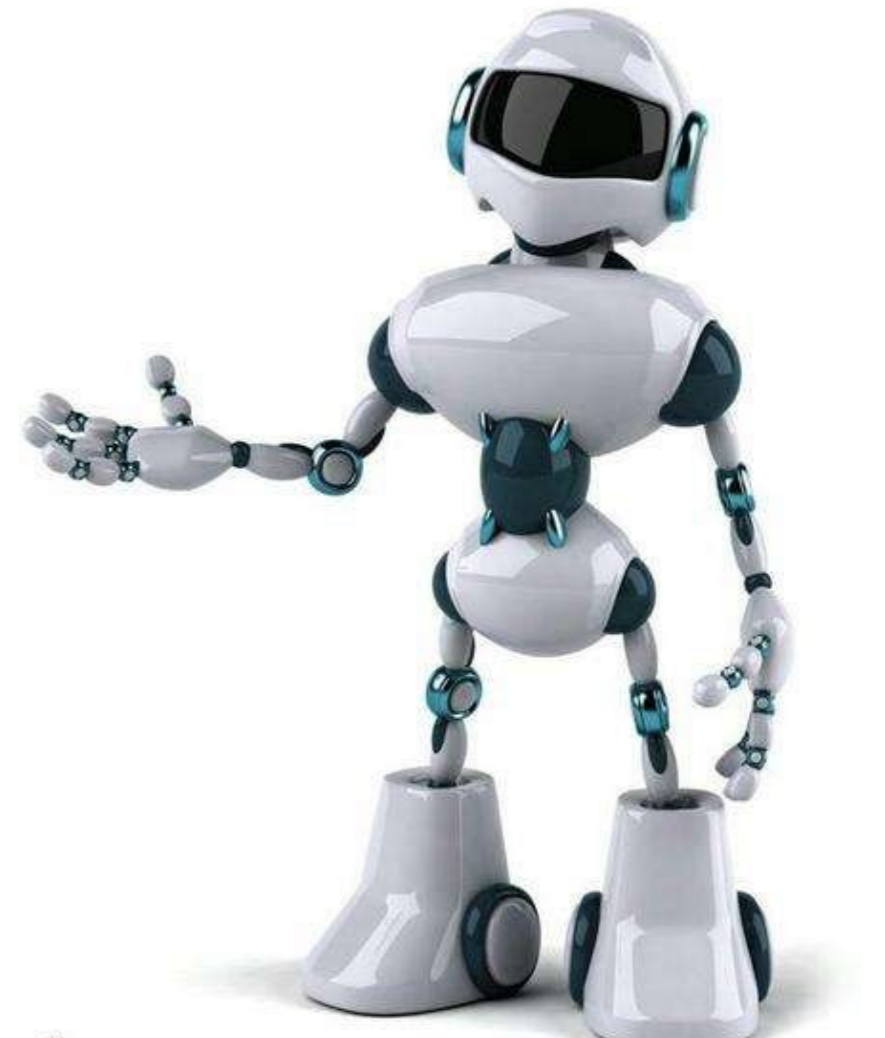
wait 1 seconds

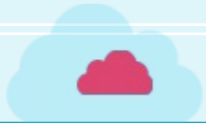
The program runs in sequence, with a waiting interval between the two scripts.

Alex wrote a program for the sorting machine, but it didn't separate the colors correctly. Why did this happen? ()

```
when clicked
  forever
    if distanceSensor(0~6) sensor1 < 2 then
      set all to green
      motor port1 direction anticlockwise speed(0~12) 6
    if distanceSensor(0~6) sensor1 > 5 then
      set all to red
      motor port1 direction clockwise speed(0~12) 6
```

- A** The motor speed is not fast enough. **B** Because the repeat was terminated.
- C** Because there is no repeat module. **D** Because the distance sensor value was set too high.





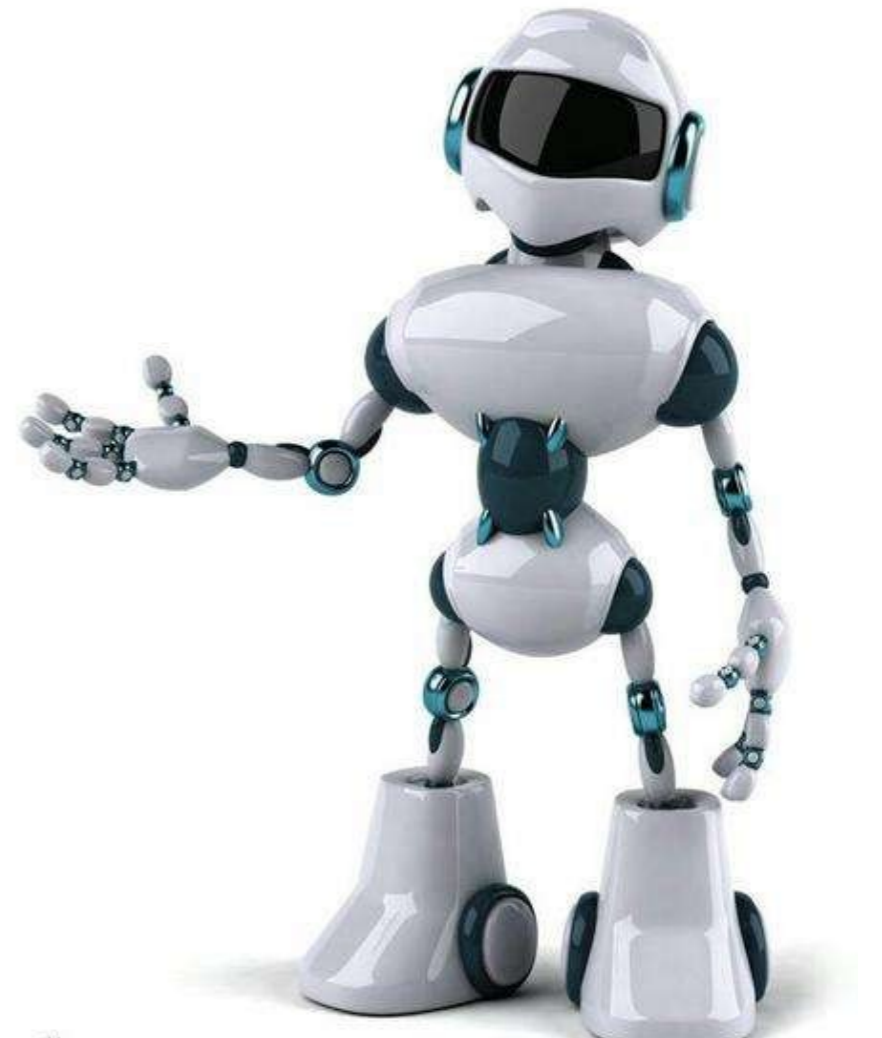
Answer **D**

:

Analysis **Because the distance sensor value was set too high.**

:

```
when clicked
  forever
    if distanceSensor(0~6) sensor1 < 2 then
      set all to green
      motor port1 direction anticlockwise speed(0~12) 6
    if distanceSensor(0~6) sensor1 > 3 then
      set all to red
      motor port1 direction clockwise speed(0~12) 6
```





Talk





THANKS

