



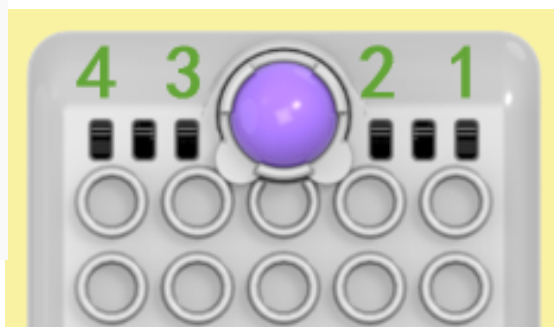
Review

1. Module Explanation

built-in line tracker's 1-(left-outer) value

- ✓ 1-(left-outer)
- 2-(left-inner)
- 3-(right-inner)
- 4-(right-outer)

The corresponding sensor values can be read.



超霸mini巡线: 27*21*27*33

built-in line tracker's 1-(left-outer) value

27

built-in line tracker's 2-(left-inner) value

21

built-in line tracker's 3-(right-inner) value

26

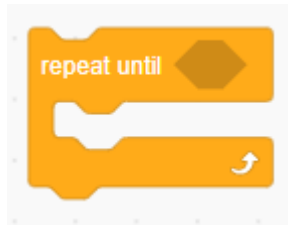
built-in line tracker's 4-(right-outer) value

33

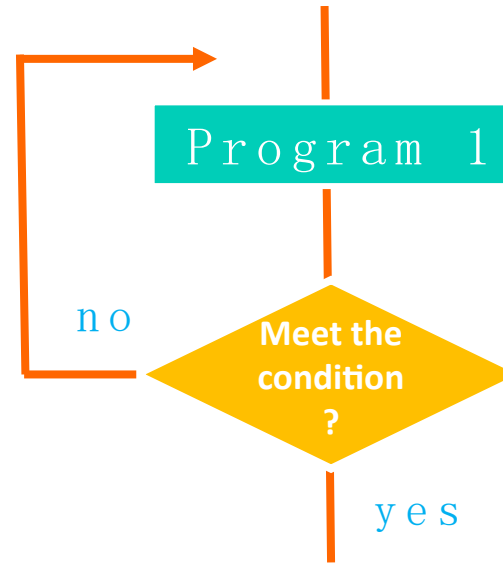
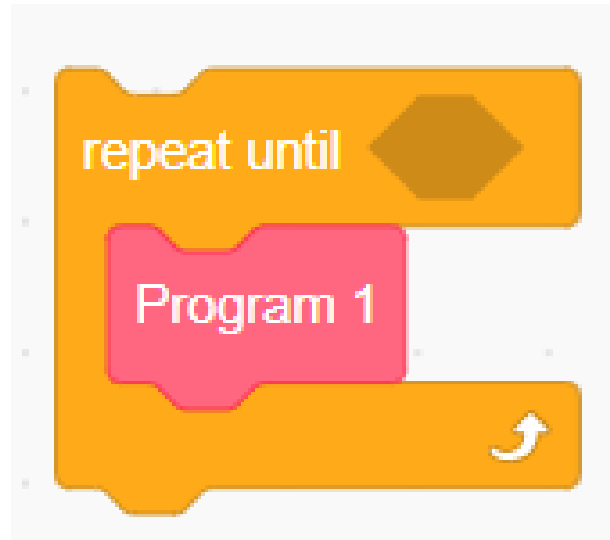


Review

2. Conditional loop



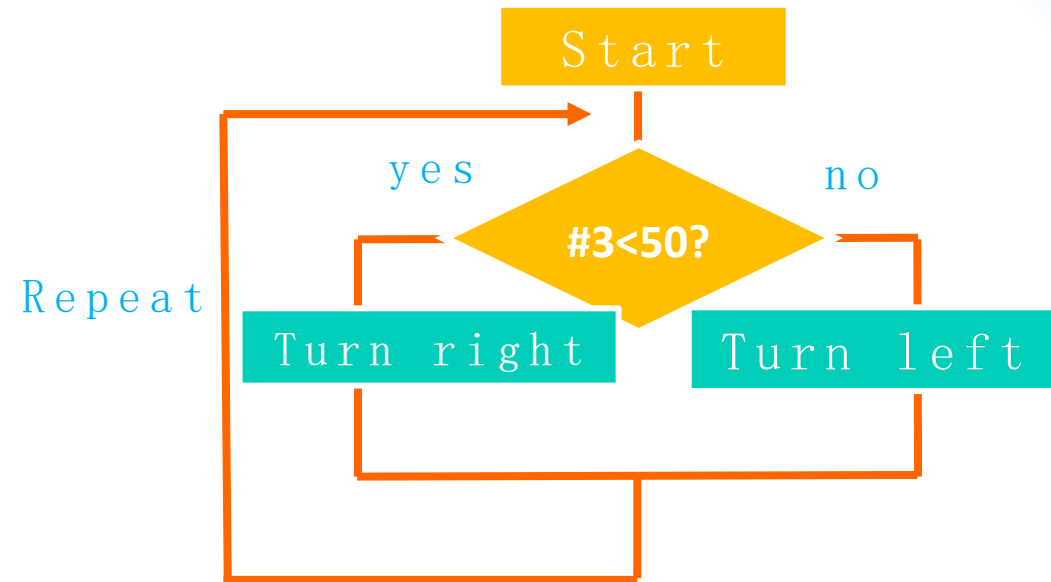
The robot can repeatedly execute the program and stop the loop when the condition is met.





Review

3. Routing principle

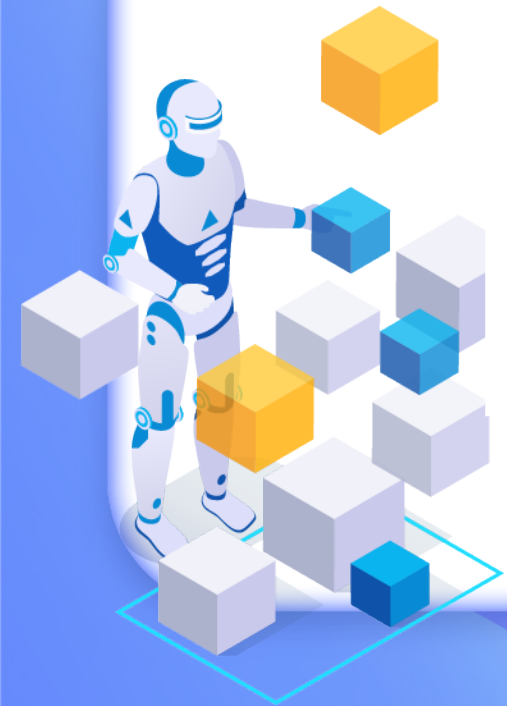


Please use your own kit.

Do not put any parts in your mouth.

Please clean up after use.

Please raise your hand if you have any questions.



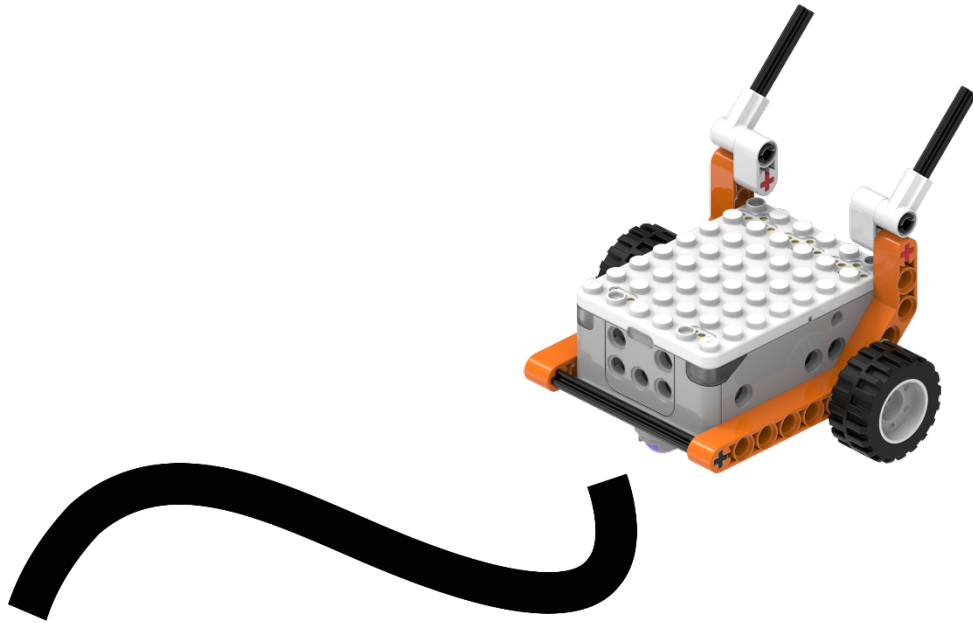
INTRODUCTION





Scenarios

In the previous lesson, we had the car follow the black line and stop automatically. In this lesson, we will have the car patrol along a designated route.



Dear kids:
What type of U-turn is used during the car's patrol?
What can be used to simplify the program?

Let's embark on our journey of exploration together with the "Patrol Car"!

Patrol Car

AI Courses

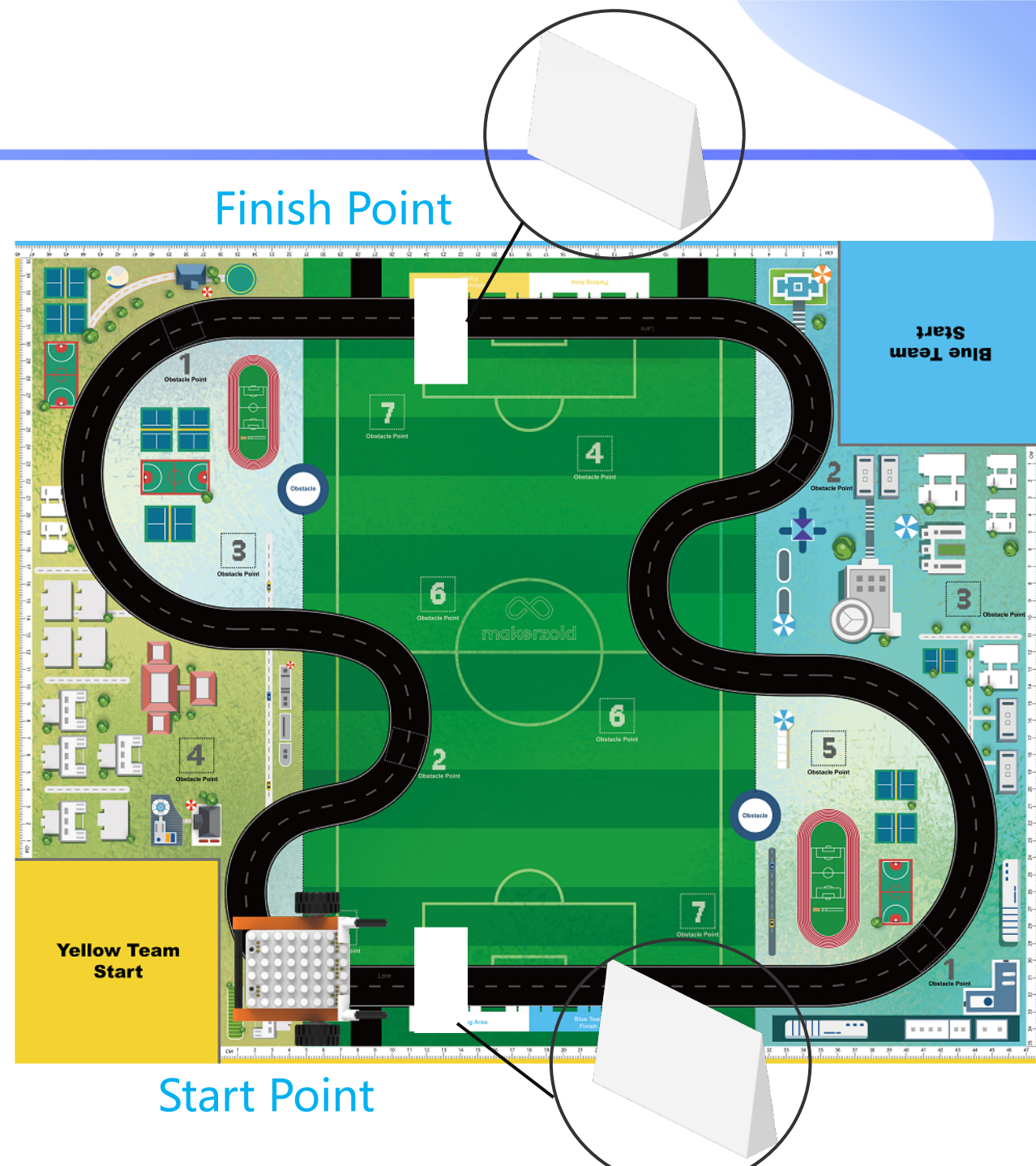
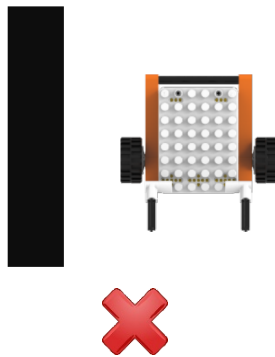
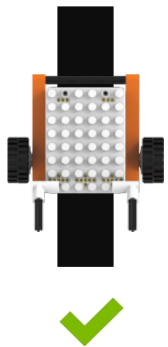




Scenarios

Competition rules:

1. The contestant's car starts from the starting point and automatically follows the black line to the finish line.
2. The car must not leave the black line.
3. Let's see whose car completes the most patrols in 2 minutes.



Start Point

Finish Point



Scenarios

Question :

Kids, do you know:

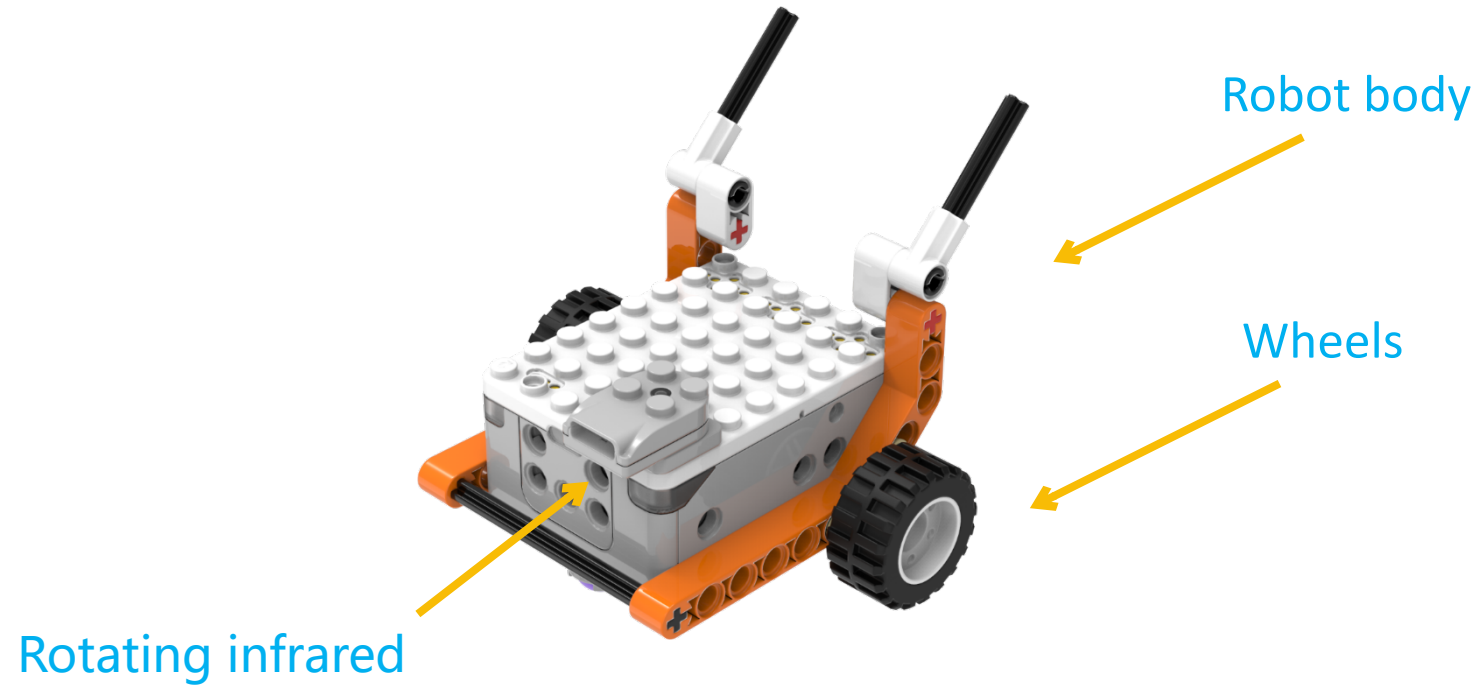
1. What type of U-turn is used during the car's patrol?
2. What can be used to simplify the program?





Scenarios

Today, everyone is a junior engineer. Let's work together to complete the gesture control course!



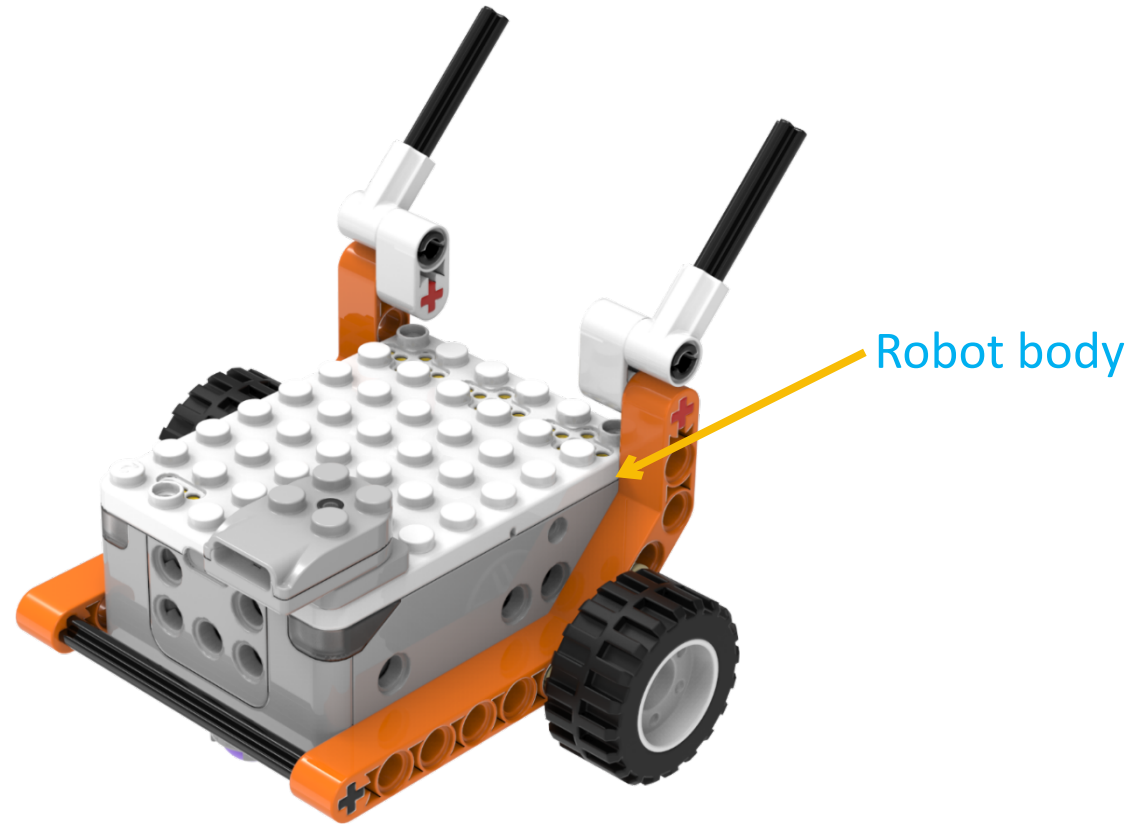
ASSEMBLY





The Final Model

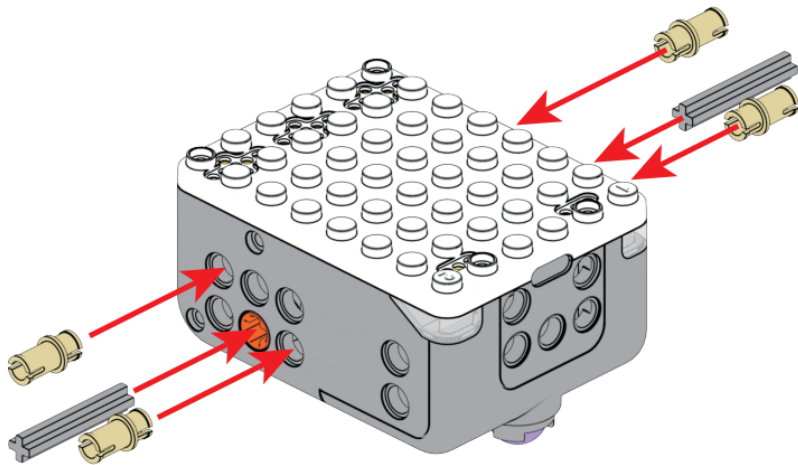
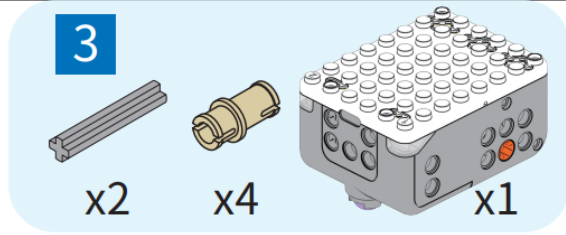
Confrontation components and robot body assembly



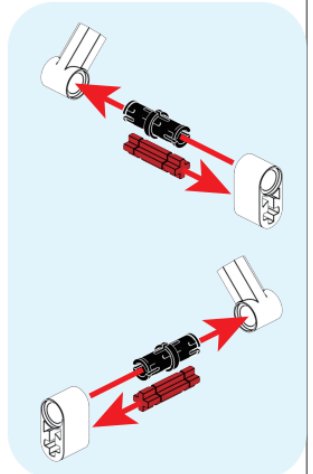
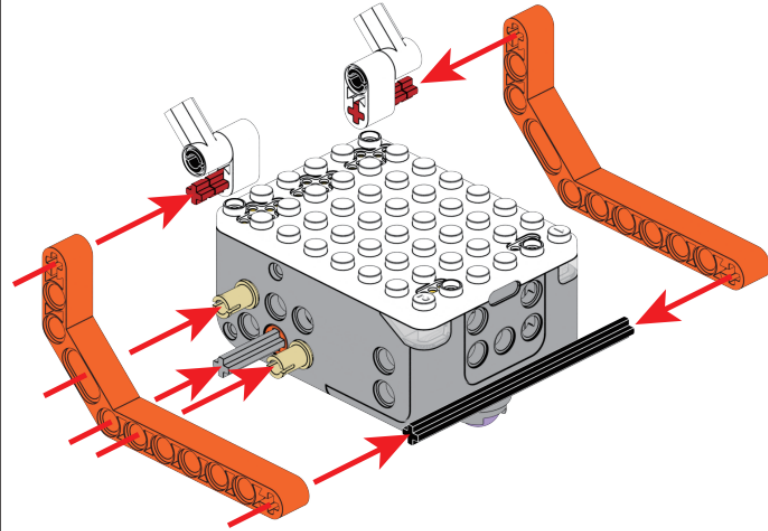
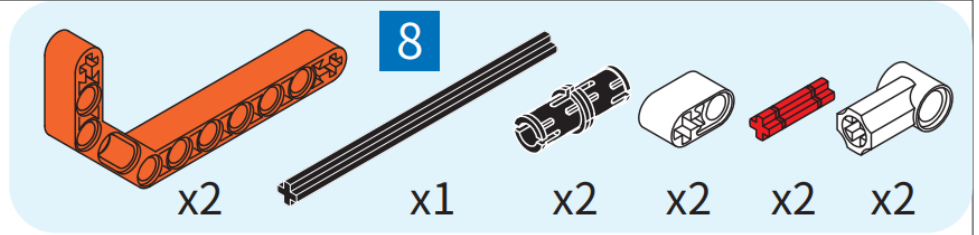


Assembly

1



2





Assembly

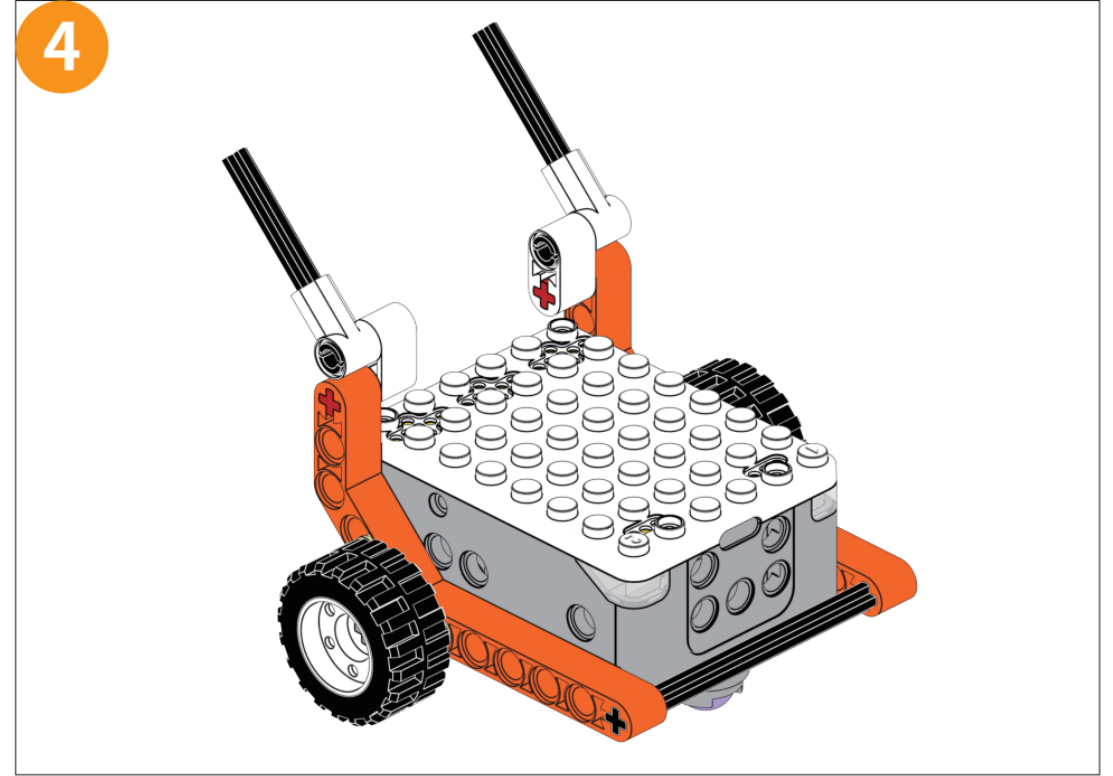
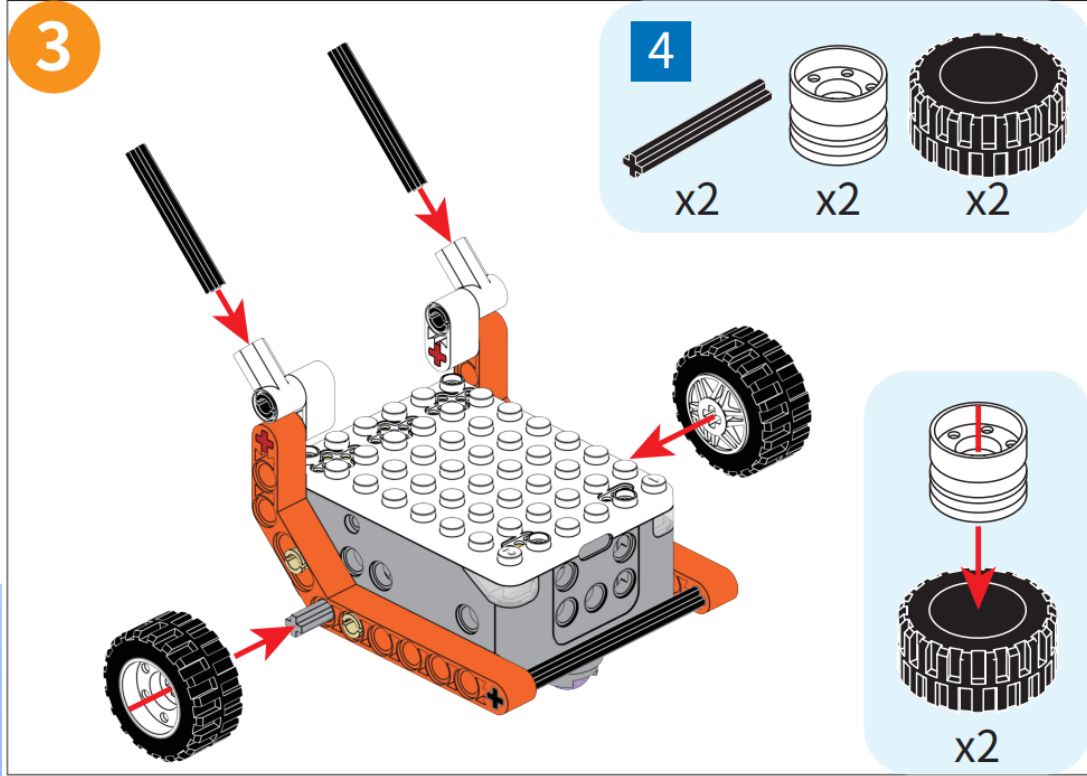
Wheels assembly



Wheels



Assembly

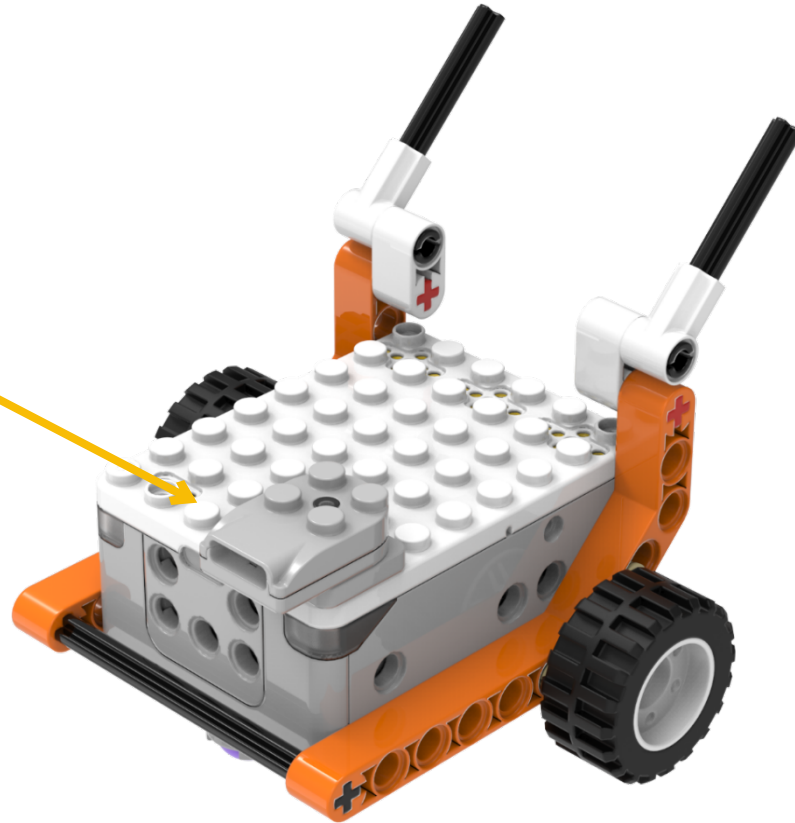




Assembly

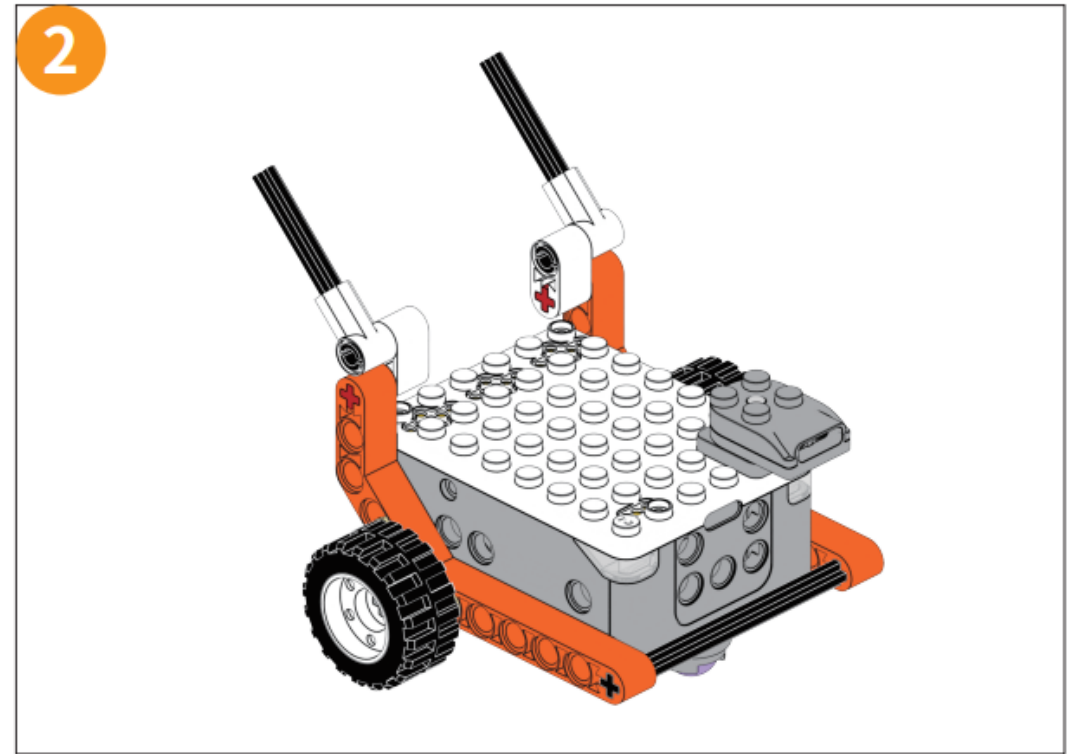
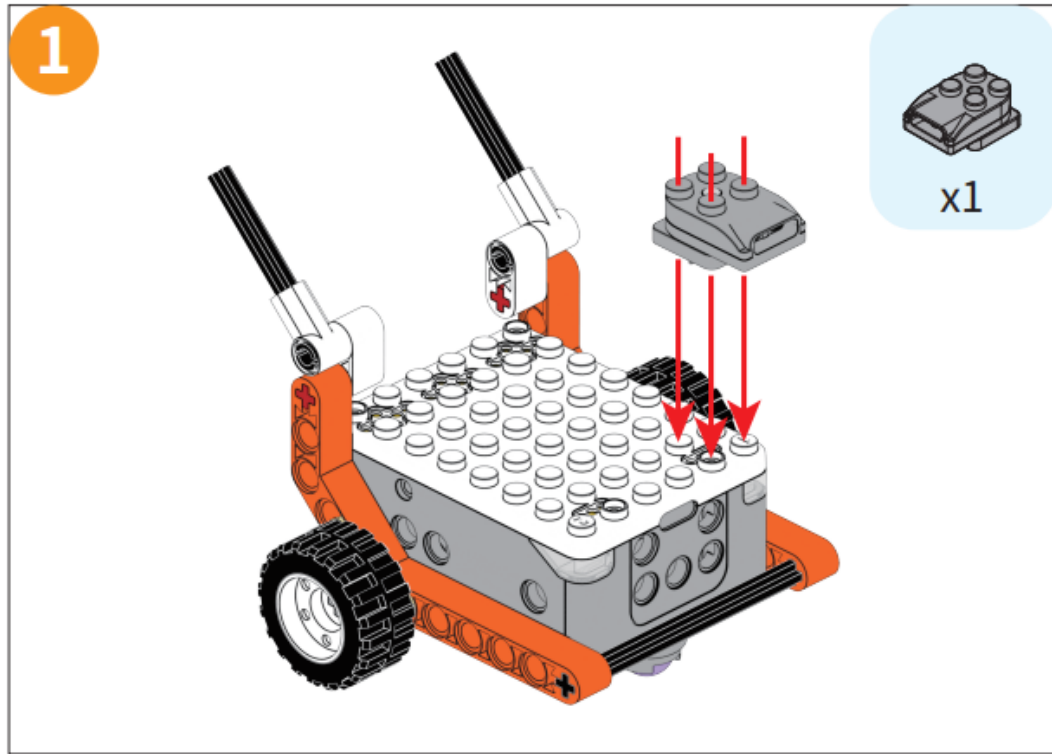
Rotating infrared sensor assembly

Rotating
infrared





Assembly



PROGRAMMING





Introductions

Module Explanation

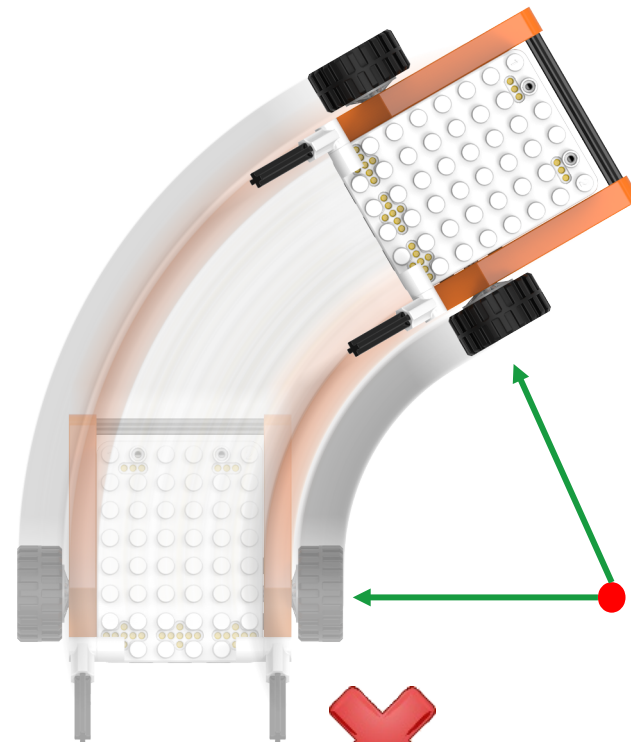
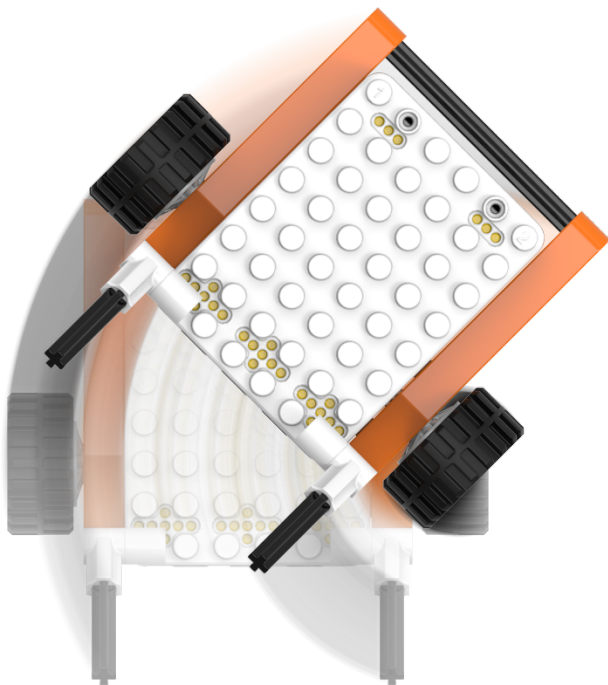
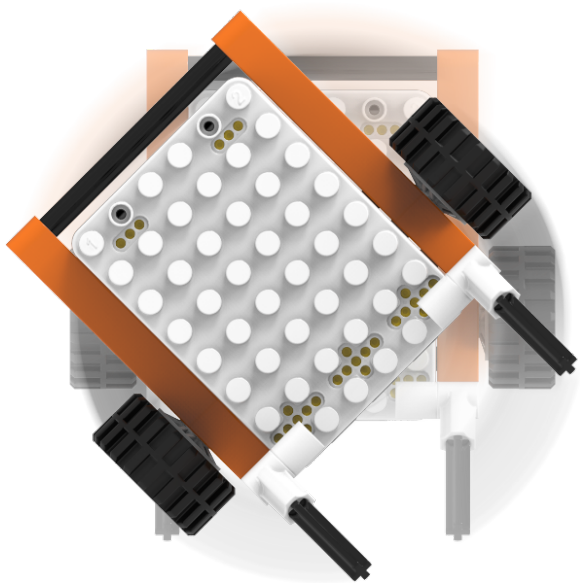




Introductions

Module Explanation

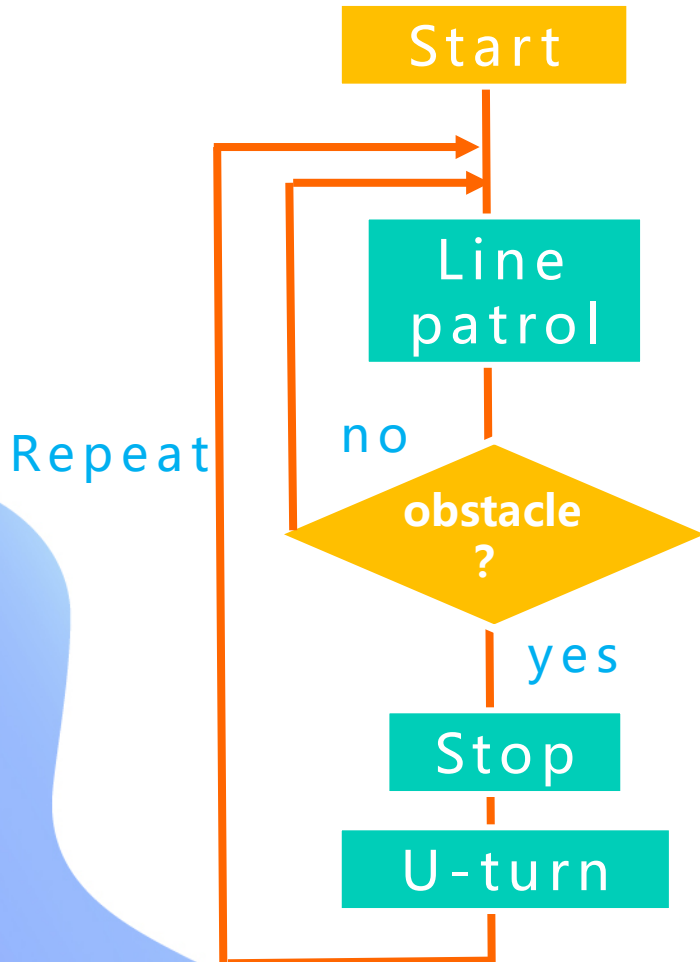
掉头时要选择合理的转弯方式。



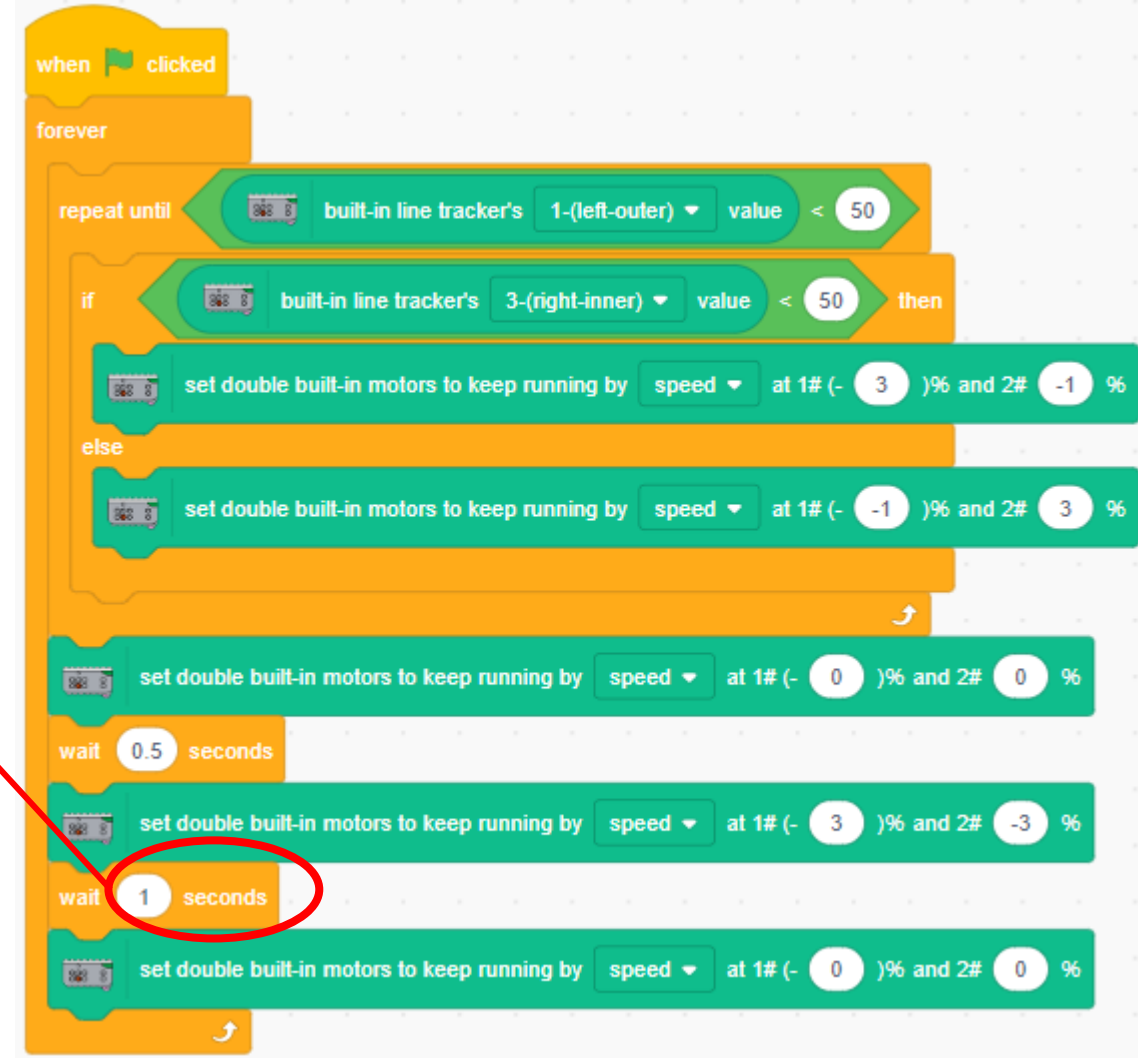


Introductions

Program Explanation



Adjust the time to allow the robot to turn around





Play and Try

Let's play:

Click the start button and see if the robot can patrol along the black line.

```
on click clicked
forever
  repeat until [built-in line tracker's 1-(left-outer) value < 50]
  if [built-in line tracker's 3-(right-inner) value < 50] then
    set double built-in motors to keep running by speed at 1# (-3)% and 2# (-1)%
  else
    set double built-in motors to keep running by speed at 1# (-1)% and 2# 3%
  set double built-in motors to keep running by speed at 1# (-0)% and 2# 0%
  wait 0.5 seconds
  set double built-in motors to keep running by speed at 1# (-3)% and 2# -3%
  wait 1 seconds
  set double built-in motors to keep running by speed at 1# (-0)% and 2# 0%
```

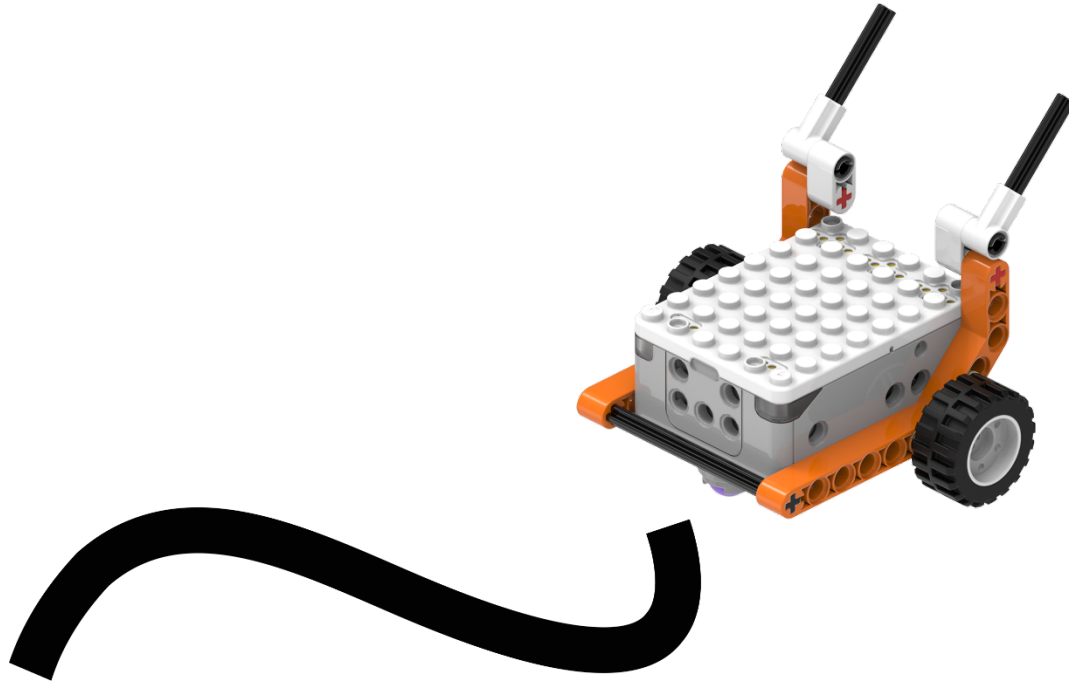




Play and Try

Let's compete:

Contestants, get ready! Let's see whose car reaches the finish line the fastest!



Kids, is there a way to make the robot even stronger?

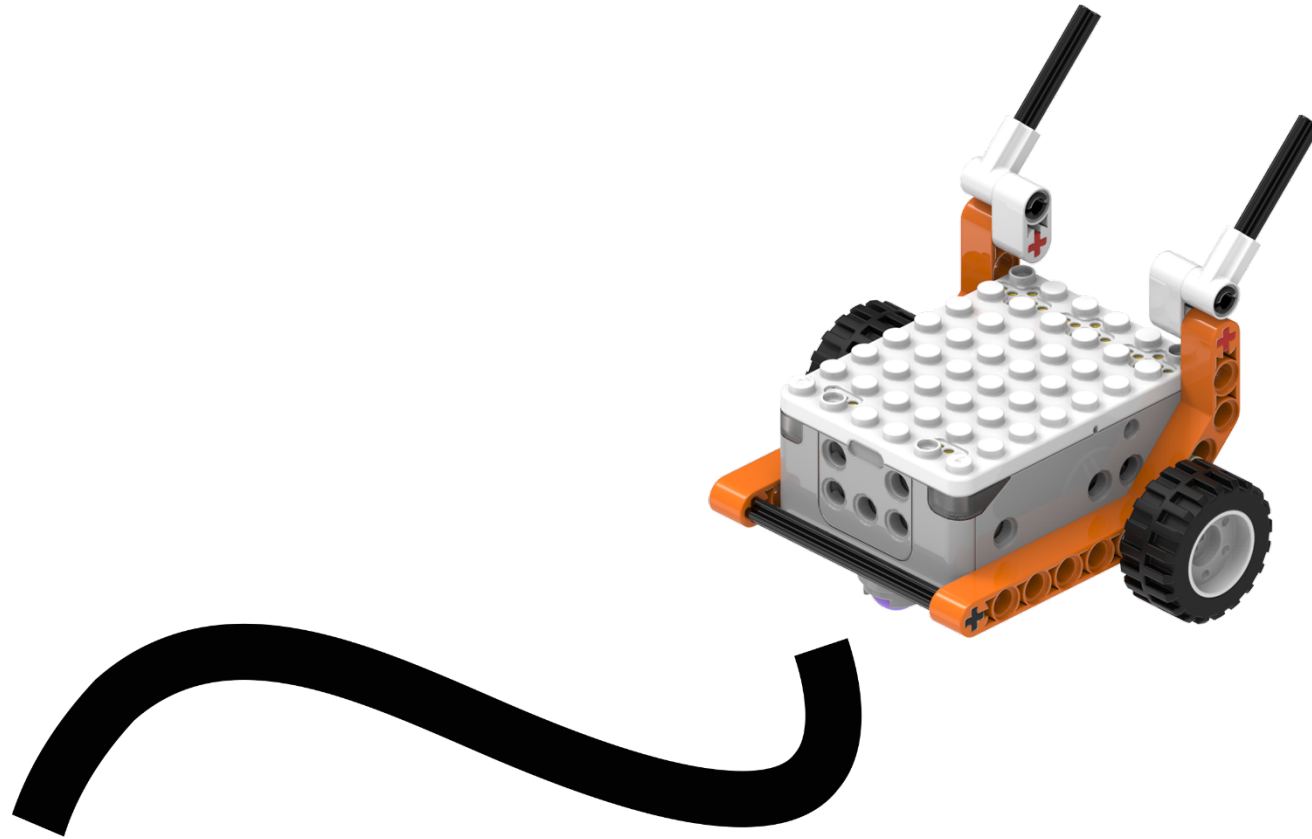
CREATION





Create

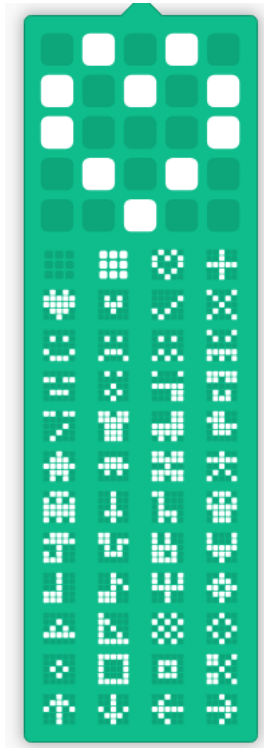
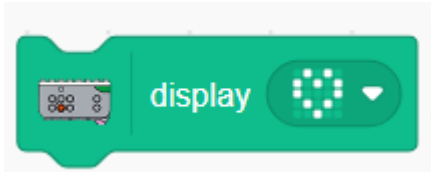
1. How can the car detect an obstacle and display an × icon on the screen?



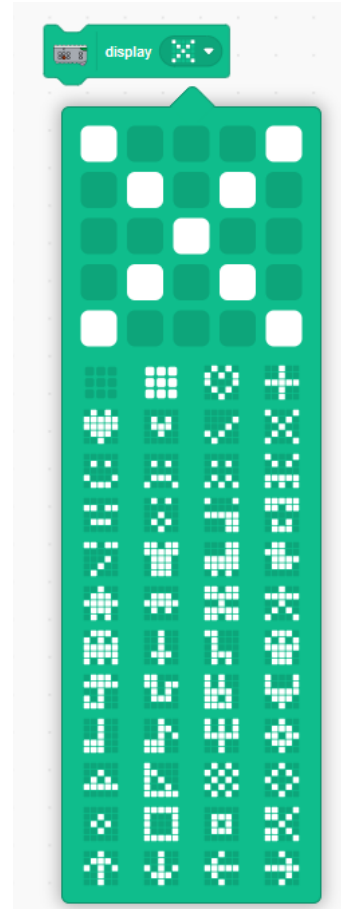


Introductions

Module Explanation



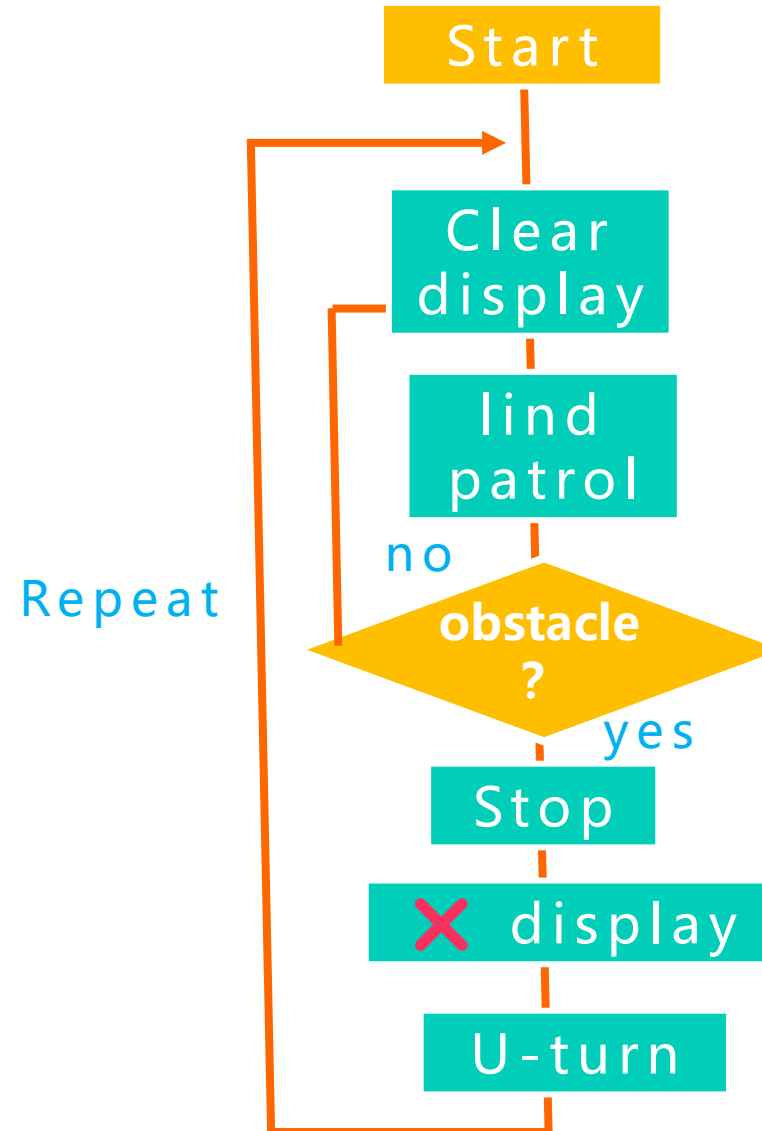
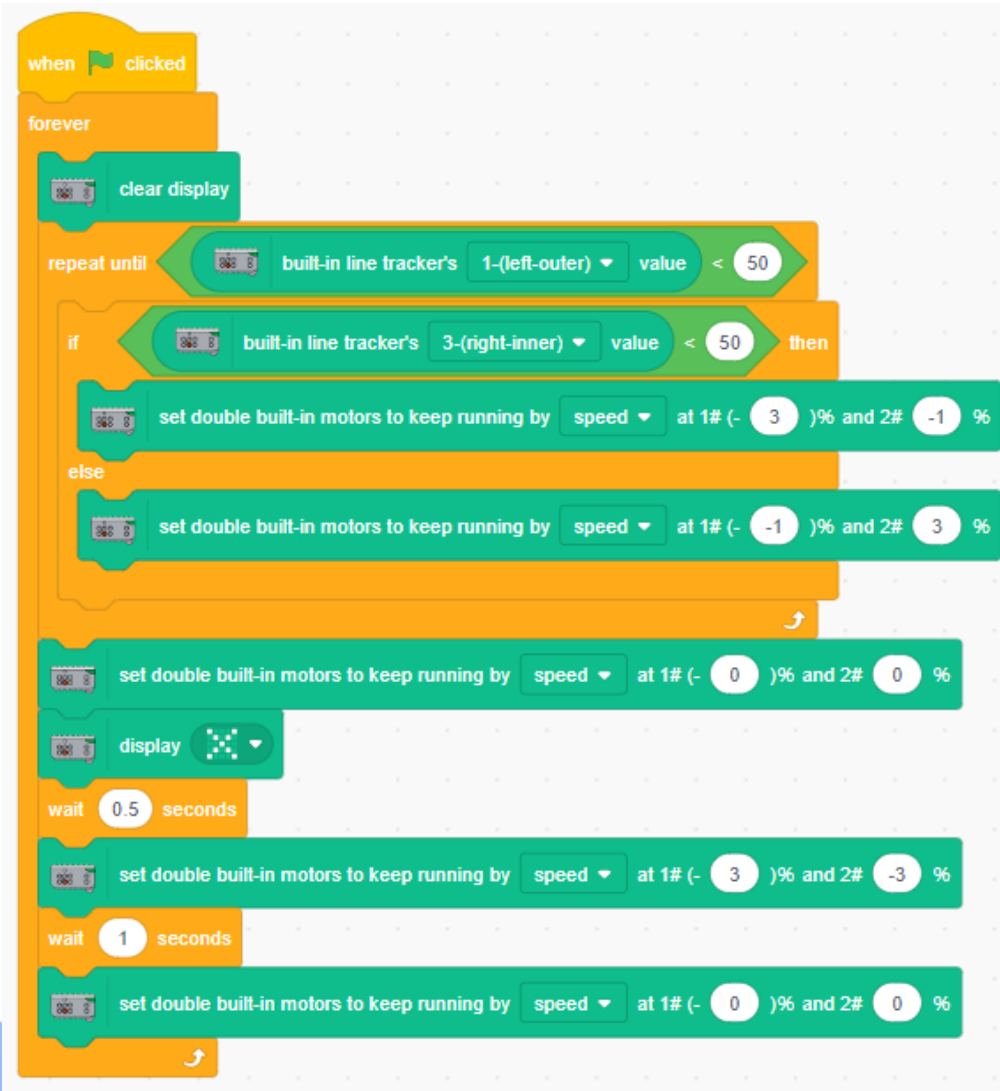
Draw your desired pattern using the LED display module.





Introductions

Module Explanation





Create

2. Is there any way to simplify the program?

```
when clicked
  forever
    clear display
    repeat until [built-in line tracker's 1-(left-outer) value < 50]
      if [built-in line tracker's 3-(right-inner) value < 50] then
        set double built-in motors to keep running by speed at 1# (-3)% and 2# (-1)%
      else
        set double built-in motors to keep running by speed at 1# (-1)% and 2# 3%
    set double built-in motors to keep running by speed at 1# (-0)% and 2# 0%
    display [ ]
    wait 0.5 seconds
    set double built-in motors to keep running by speed at 1# (-3)% and 2# (-3)%
    wait 1 seconds
    set double built-in motors to keep running by speed at 1# (-0)% and 2# 0%
```





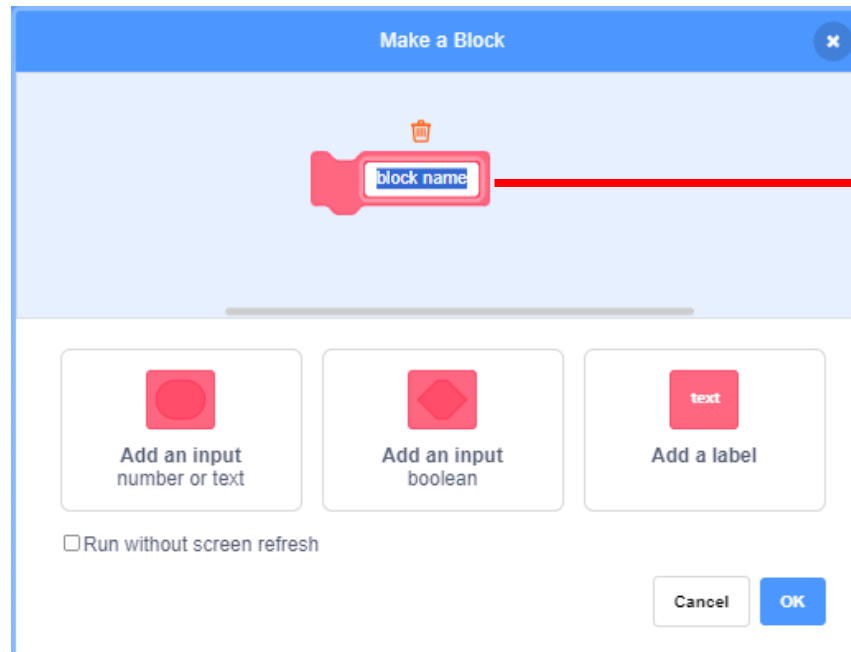
Introductions

Module Explanation



Sometimes a part of the program may need to be used multiple times, which can cause excessive repetition of program units. We can simplify the program by using custom blocks.

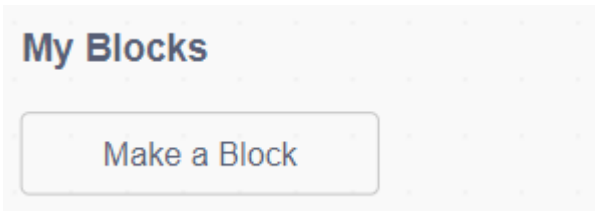
If the program uses offline mode, there are three naming requirements.



Must name with English/number

The first character cannot be a number

Not allow spaces





Introductions

Module Explanation

1

Make a Block

block name

Add an input number or text

Add an input boolean

Add a label

Run without screen refresh

Cancel OK

2

Make a Block

block name

3

Make a Block

block name

Add an input number or text

Add an input boolean

Add a label

Run without screen refresh

Cancel OK

4

```
define line
if [single channel line tracker 3#] 's value < 50 then
  set double built-in motors to keep running by power at 1# (-50)% and 2# (-10)%
else
  set double built-in motors to keep running by power at 1# (-10)% and 2# 50%
```



Introductions

Module Explanation

```
define go straight
if built-in line tracker's 3-(right-inner) value < 50 then
set double built-in motors to keep running by speed at 1# (-3)% and 2# (-1)%
else
set double built-in motors to keep running by speed at 1# (-1)% and 2# 3%
```

```
define turn
set double built-in motors to keep running by speed at 1# (-3)% and 2# (-3)%
wait 1 seconds
set double built-in motors to keep running by speed at 1# (0)% and 2# 0%
```

```
when clicked
forever
clear display
repeat until built-in line tracker's 1-(left-outer) value < 50
go straight
set double built-in motors to keep running by speed at 1# (0)% and 2# 0%
display
wait 0.5 seconds
turn
```



Create

2. Simplify the program

Please simplify the program according to the above method and see if the car runs correctly.

```
when clicked
  forever
    clear display
    repeat until built-in line tracker's 1-(left-outer) value < 50
      go straight
    set double built-in motors to keep running by speed at 1# (- 0)% and 2# 0%
    display
    wait 0.5 seconds
    turn
```



SUMMARY

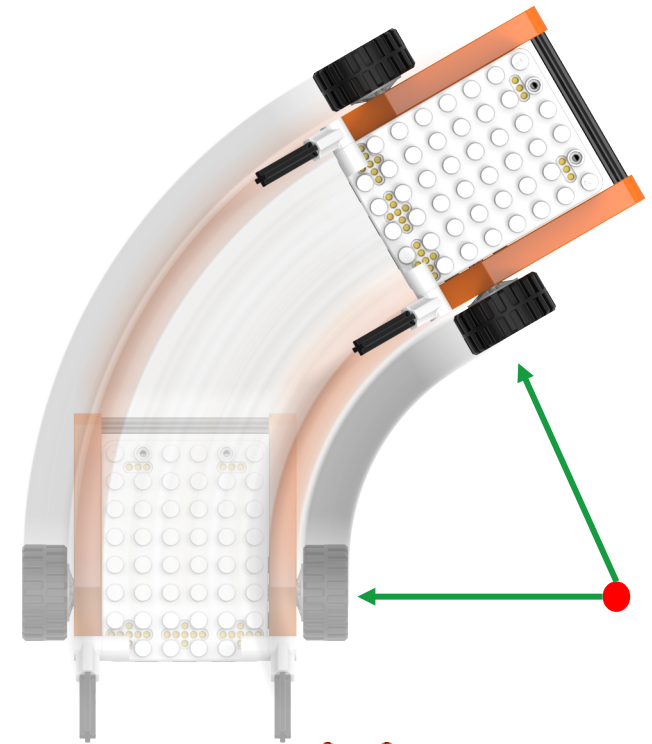
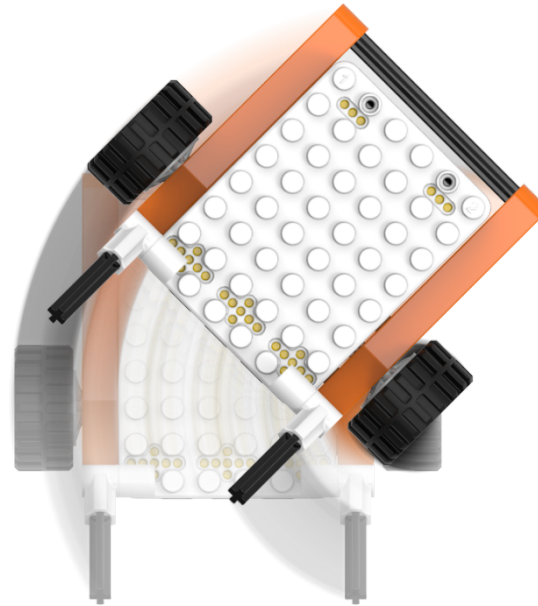
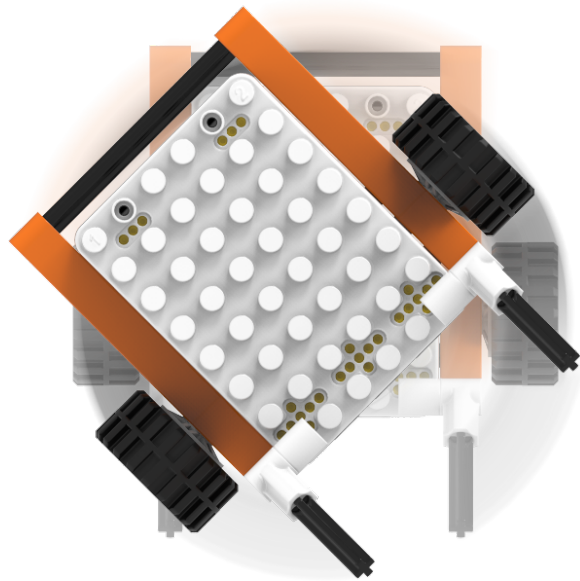




Summary

1. Module Explanation

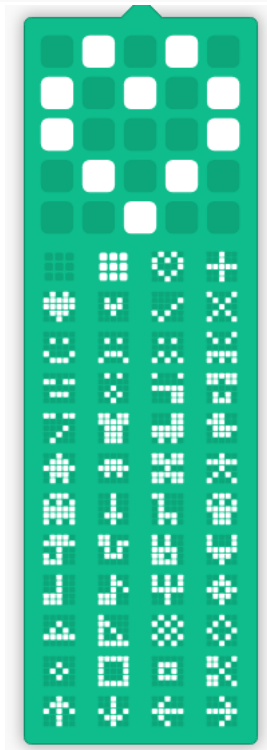
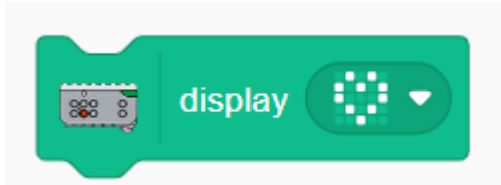
When making a U-turn, choose the appropriate turning mode.



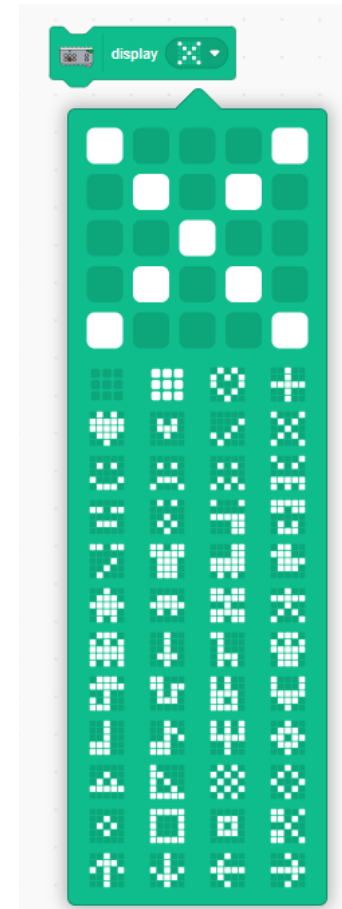


Summary

2. LED Light Module



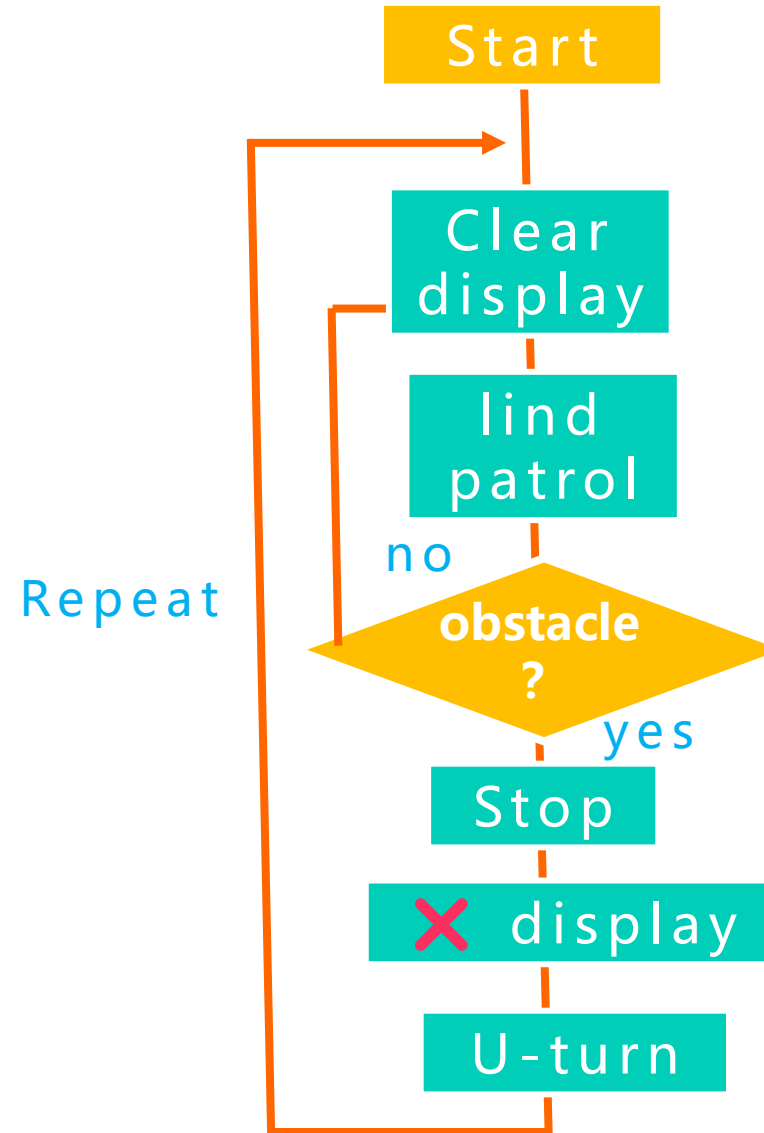
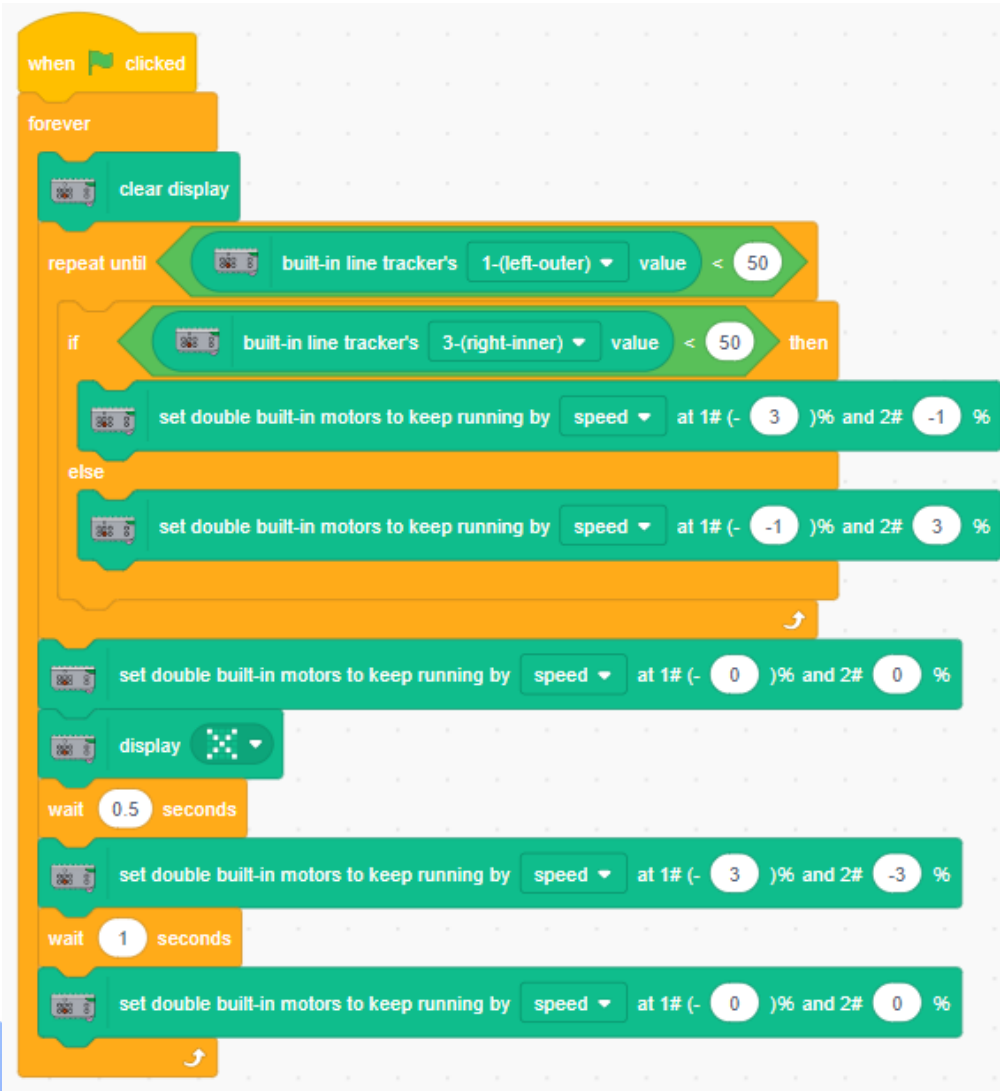
Use the LED display module to draw the pattern you need.





Summary

3. Program Analysis





Summary

4. Make a block

```
define go straight
  if built-in line tracker's 3-(right-inner) value < 50 then
    set double built-in motors to keep running by speed at 1# (-3)% and 2# (-1)%
  else
    set double built-in motors to keep running by speed at 1# (-1)% and 2# 3%
```

```
define turn
  set double built-in motors to keep running by speed at 1# (-3)% and 2# (-3)%
  wait 1 seconds
  set double built-in motors to keep running by speed at 1# (0)% and 2# 0%
```

```
when clicked
  forever
    clear display
    repeat until built-in line tracker's 1-(left-outer) value < 50
      go straight
    set double built-in motors to keep running by speed at 1# (0)% and 2# 0%
    display
    wait 0.5 seconds
    turn
```

SHARE WITH YOUR PARENTS

Share the knowledge about the Patrol Car
with your mom and dad when you get home!

