Manual
Future Mechanic
Scratch Junior

Big Building Blocks Construction Team

makerzoid

Find more ideas here.

iOS

Android

APP Download



Content

Screwdriver Introduction.....01

Host Controller Introduction.....02

Introduction to Infrared Sensor.....04

Bluetooth Remote Control Introductions.....08

APP Introduction.....10

Host Controller Connect with APP.....11

Scratch JR.....12

Food Delivery Robot.....16

Ferris Wheel.....21

Rocking Car.....27

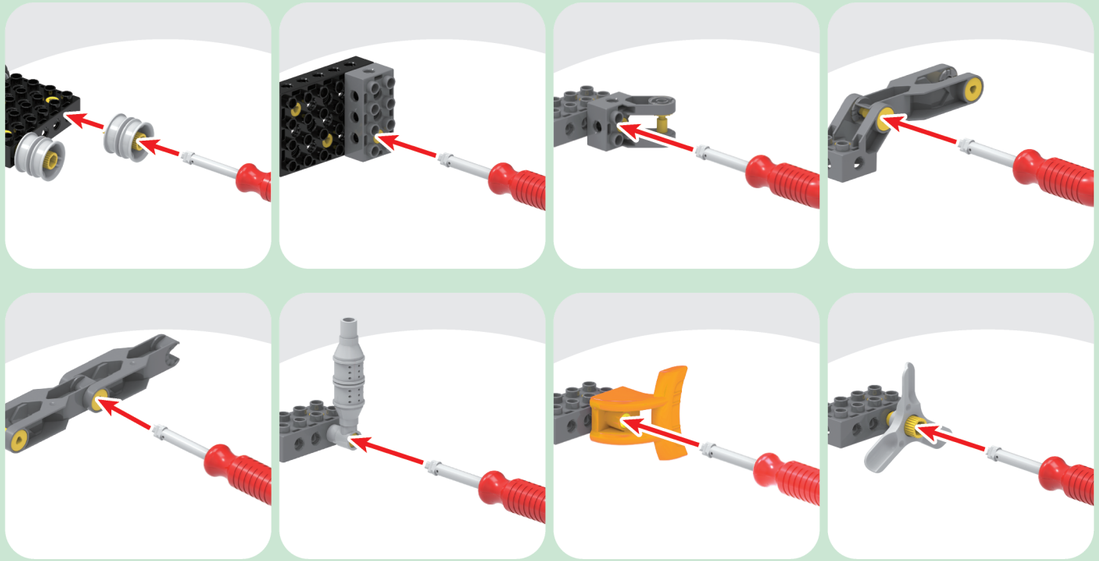
Intelligent Car.....35

Card Dispenser.....41

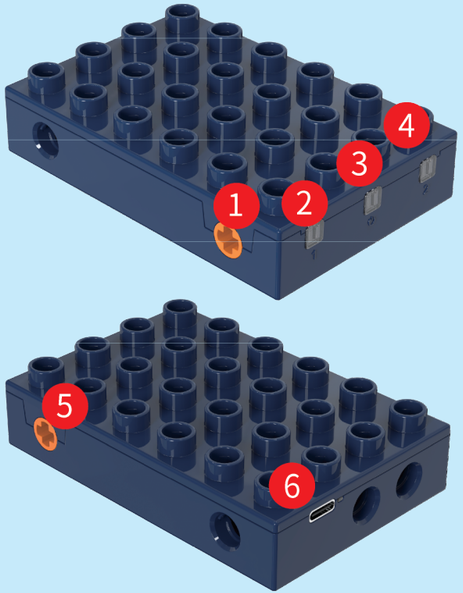
Product Information.....48

Screwdriver Introduction

When turning the keyhole with the specialized screwdriver, it makes a lively and interesting 'click-click-click' sound.



Host Controller Introduction



1. Motor 1 Output Port
2. Motor 1 Button (Short Press for Clockwise, Long Press for Counterclockwise)
3. Power Button
4. Motor 2 Button (Short Press for Counterclockwise, Long Press for Clockwise)
5. Motor 2 Output Port
6. Charging Port

Long Press the power button to enter Intelligent Mode.

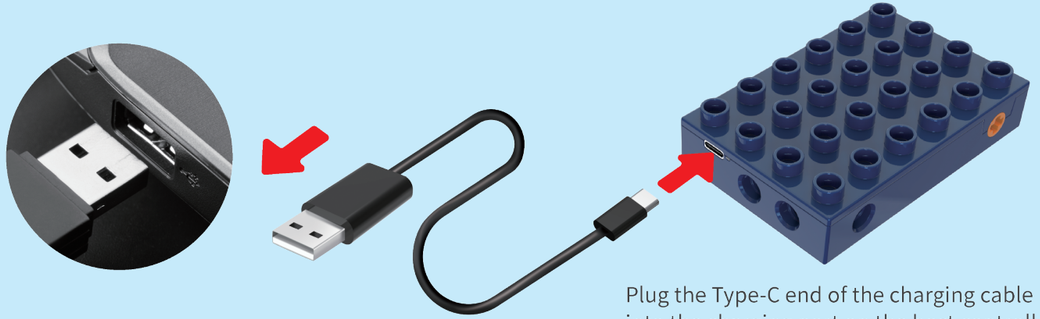


The host controller flashes red light.



Charging Instructions for the Host Controller

Connect the USB end of the charging cable to a power adapter, computer, or any USB-enabled digital device that supports charging.



Plug the Type-C end of the charging cable into the charging port on the host controller.

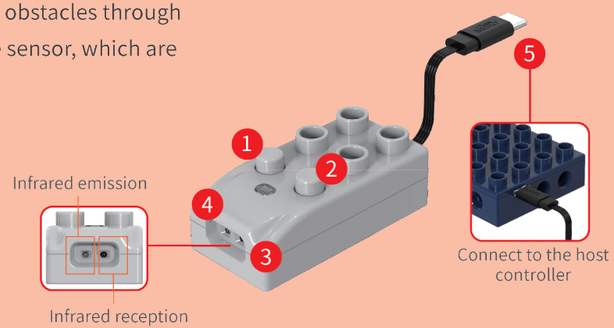
Precautions

- Regular Inspection: Regularly check the cables, plugs, housing, and other components for damage. If any damage is found, stop using it until it is repaired.
- The toy must not be connected to more than one power source at a time.
- The toy is not suitable for children under 3 years old.
- The toy should only be used with the recommended transformer.
- The transformer is not a toy.
- Do not alter the circuit structure. The toy cannot be used while charging.
- Use a charger with an output of 5V/0.5A for charging the host controller.

Introduction to Infrared Sensor

The infrared distance sensor judges distance and obstacles through the infrared light. There are two small eyes in the sensor, which are used for transmitting and receiving.

1.Button 1
2.Button 2
3.Infrared reception
4.Infrared emission
5.Joint

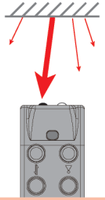


Principle Demonstration

The emitter tube emits infrared rays.

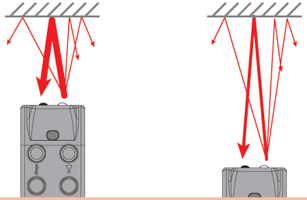
The receiver tube receives infrared rays.





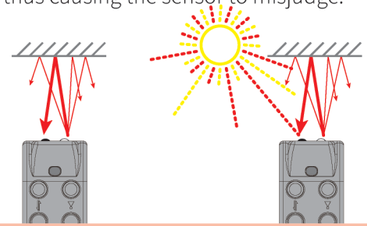
Measuring distance

By judging the strength of the received infrared rays, the distance of the object can be determined.



Influencing factors - sunlight

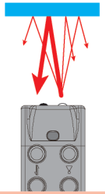
Sunlight contains very strong infrared light, which will affect the intensity of infrared light received by the sensor, thus causing the sensor to misjudge.



Influencing factors - color

The color depth of an object will affect the intensity of the reflected light.

The darker the color, the weaker the reflected light will be and the closer the detection distance will be.



The lighter the color, the stronger the reflected light will be and the longer the detection distance will be.

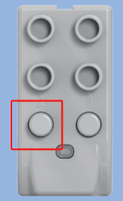


Connect to the host controller



Tip:
The sensor cable is made of silicone. Do not pull it.
(Pressing with building blocks, gears, or pulling it may cause the cable to break.)

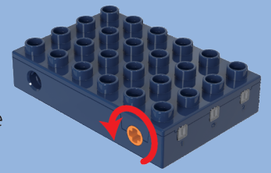
Button 1





Motor 1

Counterclockwise

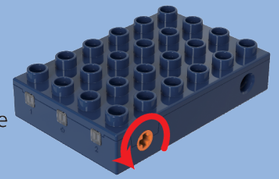


Motor 1 counterclockwise
Motor 2 clockwise
(moves forward)



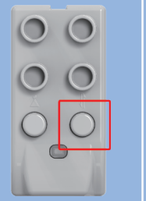
Motor 2

Counterclockwise

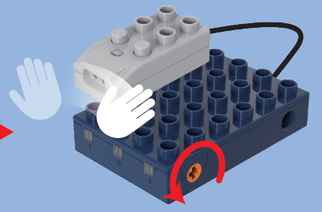


Motor 1 clockwise
Motor 2 counterclockwise
(moves afterward)

Button 2







When an object is detected,
the motor turns.



If no object is detected, the
motor stops.





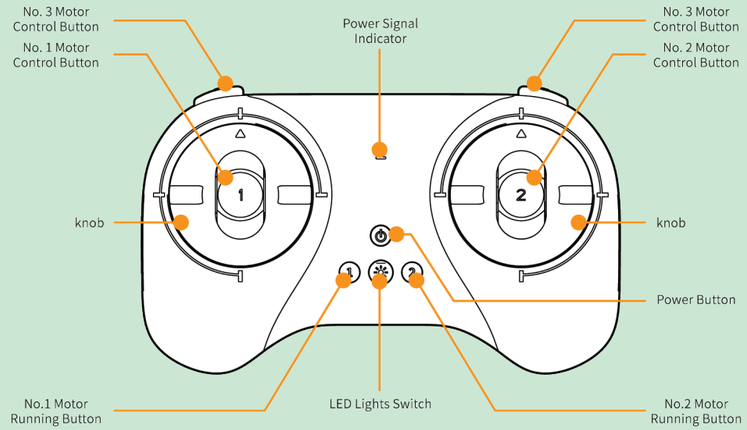
An object is detected and the
motor stops.



No object is detected, the
motor rotates.

Bluetooth Remote Control Instructions

REMOTE INSTRUCTION
(For Remote Version Only)



How to use the Remote

Power Button

1.Long press: Re-pairing (LED light flashes quickly), disconnect the paired host controller and search for the new host controller.
2.Short press: Connect to the paired host controller (the controller turn on and disconnect to the mobile phone within the remote control distance).

LED Lights Switch

1.Short press the LED Lights Switch after power on: Switch the light color.
2.When shutting down, press the LED Lights Switch, then press the Power Button to turn on, and then release the LED Lights Switch: enter the "Slave Mode" and connect to host controller as a programming control handle.

No. 1 and No. 2 Motor Control Button

1.Short press after power on: the motor clockwise.
2.Long press after power on: the motor counterclockwise.

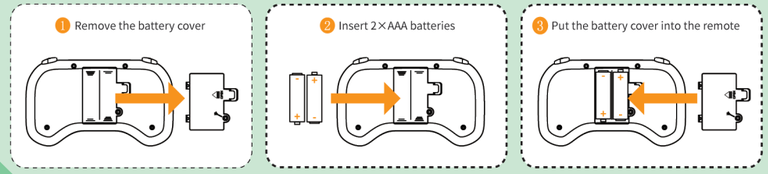
No. 3 Motor Control Button

1.The motor keeps rotating: Press the button of the motor, release immediately.
2.The motor stops working: Press the button of the motor, then release it after a while.
3.Re-calibrate the joystick: Press the No. 3 buttons on both sides at the same time, then press the Power Button to turn on, and then release it.

Parameter

Connection Mode: Bluetooth connection
Remote Control Distance: Within 15 meters

Remote Control Battery Installation:



Battery Installation nstructions

1. Non-rechargeable batteries cannot be charged.
2. Please charge the rechargeable battery under adult supervision.
3. Batteries of differentsizes or old and new batteries cannot be used together.
4. Used batteries should be removed from the product.
5. The toy cannot be connected to more than one power source.
6. The rechargeable battery should be removed from the toy before charging.
7. The batteryshould be inserted with the correct polarity.
8. The power terminals should not be short-circuited.
9. This product does not contain batteries.

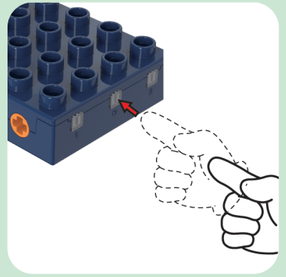
Connec the Remote Control to the Host Controller



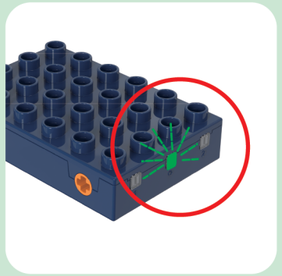
Turn on the remote controller.



The blue light on the remote will flash when it's powered on.



Press the power button on the host controller.



The green light of the host controller will be on when it’ s powered on.



Bring the remote control close to the host controller. The remote and host controller will start pairing.



When the green light on the remote controller stops flashing, it’ s successfully connected to the host controller.

APP Introduction

1. APP Introduction



APP Download APP icon

①Scan the QR Code

②APP store-search “makerzoid” IOS

②APP store-search “makerzoid” Android

1 APP Download



The APP includes different robot kits, you can choose the kit you have purchased

2 Choose the Robot Kit



It teaches you how to build a robot

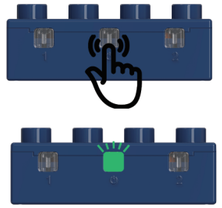
3 Build a robot



Please scan the QR code to enter our website: www.makerzoid.com

Host Controller Connect with APP

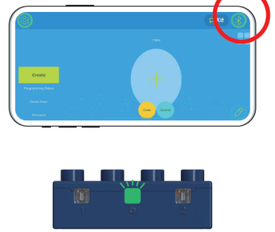
1



Short press the power button to enter programming mode.

The power light on the main controller flashes green, waiting for Bluetooth connection.

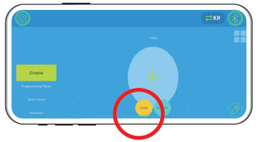
2



Click on the upper right corner of the APP to connect the main controller and APP.

When the green light stops flashing, it means successful connection.

3



Click on “code” to enter the programming interface.

4

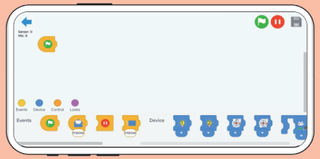


Enter the programming interface and start programming.

Scratch JR

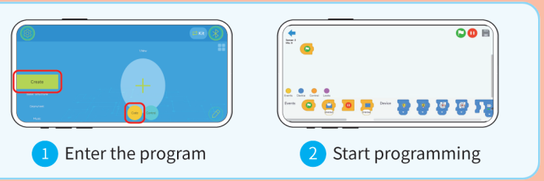
1. What is the Scratch Jr graphical programming?

Scratch Jr is a programming platform of entry level. With graphical modules only, it' s much easier for kids to learn how to code than Scratch 3.0.



2. How to access the Programming page.

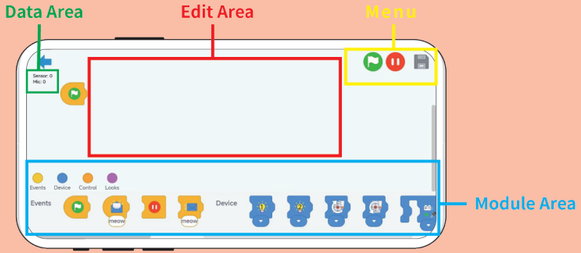
Open the Makerzoid App, and connect the APP to the host controller via bluetooth. Tap "Create" or choose the robot that needs to be coded, then tap "Code" to access the programming page.



1 Enter the program　　2 Start programming

3. Introduction to the Programming Area

There are 4 areas: Module, Edit, Menu, Data.



Module Area:

To choose Modules with different functions.

Edit Area:

To drag modules here to make some executable codes.

Data Area:

To display the value of the sensor.

Sensor: 0
Mic: 0

Sensor Value
Microphone Value

Menu:

Start
Pause
Save

1		When the green flag is clicked, start execution
2		When a message is received (content = "meow"), start execution
3		Stop (end program)
4		Broadcast message (content = "meow")
5		Set LED1 color or turn on/off
6		Set LED2 color or turn on/off
7		Set motor to rotate/stop
8		When microphone volume > specified value (3), execute inner block
9		When microphone volume < specified value (3), execute inner block
10		Forever loop, execute inner block

11		Repeat (microphone volume) times, execute inner block
12		Repeat (random value) times, execute inner block
13		Repeat (4) times, execute inner block
14		Wait for specified value (1 second), then start execution
15		Wait until (microphone volume > specified value / < specified value / reaches max), then start execution
16		Jump out of loop
17		Play sound/music (random/ID/code)
18		Show image on screen (random/ID/code)
19		Print characters (123) on screen
20		Display current print content

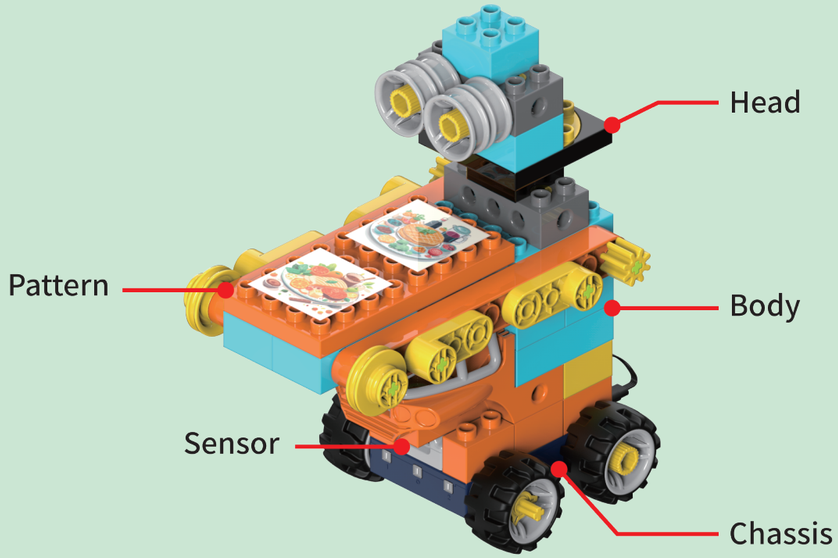
21		Add number (1) to the number on the screen
22		Subtract number (1) from the number on the screen
23		Multiply the number on the screen by (1)
24		Divide the number on the screen by (1)
25		When the number on the screen equals the specified character (123), execute inner block
26		Set Motor 1 to gear (low speed) rotate clockwise
27		Set Motor 1 to gear (low speed) rotate counterclockwise
28		Set Motor 2 to gear (low speed) rotate clockwise
29		Set Motor 2 to gear (low speed) rotate counterclockwise
30		Set Motor 1 to gear (medium speed) rotate clockwise

31		Set Motor 1 to gear (medium speed) rotate counterclockwise
32		Set Motor 2 to gear (medium speed) rotate clockwise
33		Set Motor 2 to gear (medium speed) rotate counterclockwise
34		Set Motor 1 to gear (high speed) rotate clockwise
35		Set Motor 1 to gear (high speed) rotate counterclockwise
36		Set Motor 2 to gear (high speed) rotate clockwise
37		Set Motor 2 to gear (high speed) rotate counterclockwise
38		Set Motor 1 to gear (microphone volume) rotate clockwise
39		Set Motor 1 to gear (microphone volume) rotate counterclockwise
40		Set Motor 2 to gear (microphone volume) rotate clockwise

41		Set Motor 2 to gear (microphone volume) rotate counterclockwise
42		Set Motor 1 to gear (random value) rotate clockwise
43		Set Motor 1 to gear (random value) rotate counterclockwise
44		Set Motor 2 to gear (random value) rotate clockwise
45		Set Motor 2 to gear (random value) rotate counterclockwise
46		Set dual motors to gear (low speed) move forward
47		Set dual motors to gear (low speed) move backward
48		Set dual motors to gear (medium speed) move forward
49		Set dual motors to gear (medium speed) move backward
50		Set dual motors to gear (high speed) move forward
51		Set dual motors to gear (high speed) move backward

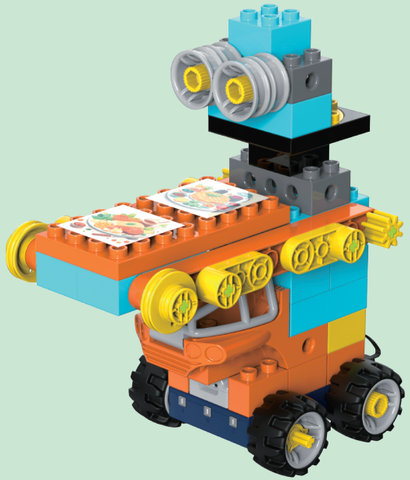
52		Stop dual motors moving forward
53		Stop dual motors moving backward
54		When Sensor 1 value equals specified value (microphone volume), execute inner block
55		When Sensor 2 value equals specified value (microphone volume), execute inner block
56		When Sensor 1 value equals specified value (random value), execute inner block
57		When Sensor 2 value equals specified value (random value), execute inner block
58		When Sensor 1 value is less than specified value (3), execute inner block
59		When Sensor 2 value is less than specified value (3), execute inner block
60		When Sensor 1 value is greater than specified value (3), execute inner block
61		When Sensor 2 value is greater than specified value (3), execute inner block

Food Delivery Robot Construction Analysis



Explore 1

Food Delivery Robot

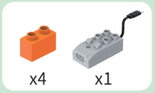


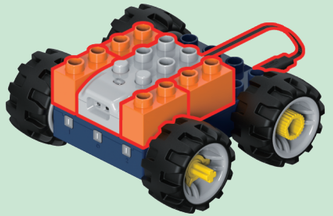
01





02



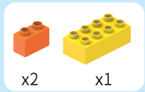


03



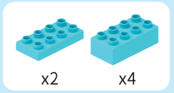


04



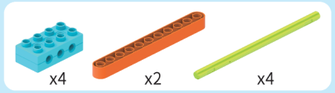


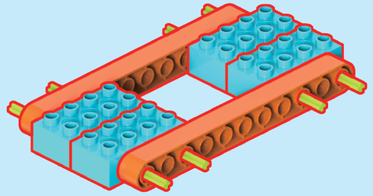
05





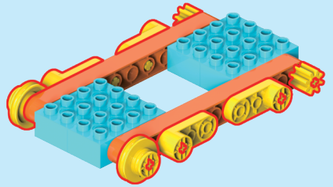
06



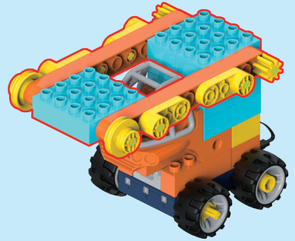


07

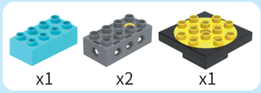


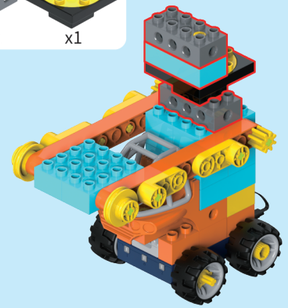


08

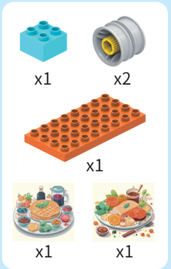


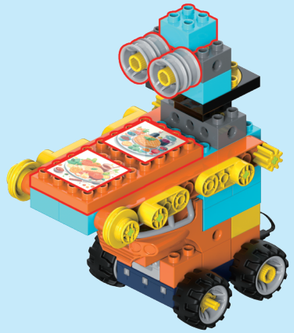
09





10



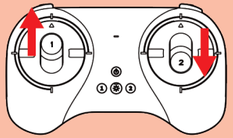


Explore 2

After assembling, short press the power button on the host controller, connect the remote control, and use the remote control to control the robot to move forward.



Set the remote control joysticks as follows: Joystick 1 forward, Joystick 2 backward, and make the robot move forward.





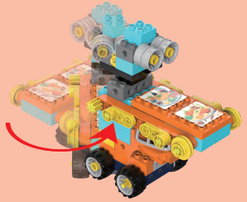
After you move the joystick, the robot will move forward.

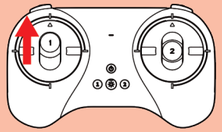
Creative

Use the remote control to make the robot turn left and then go straight.

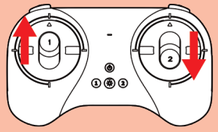
Turn Left

Go straight



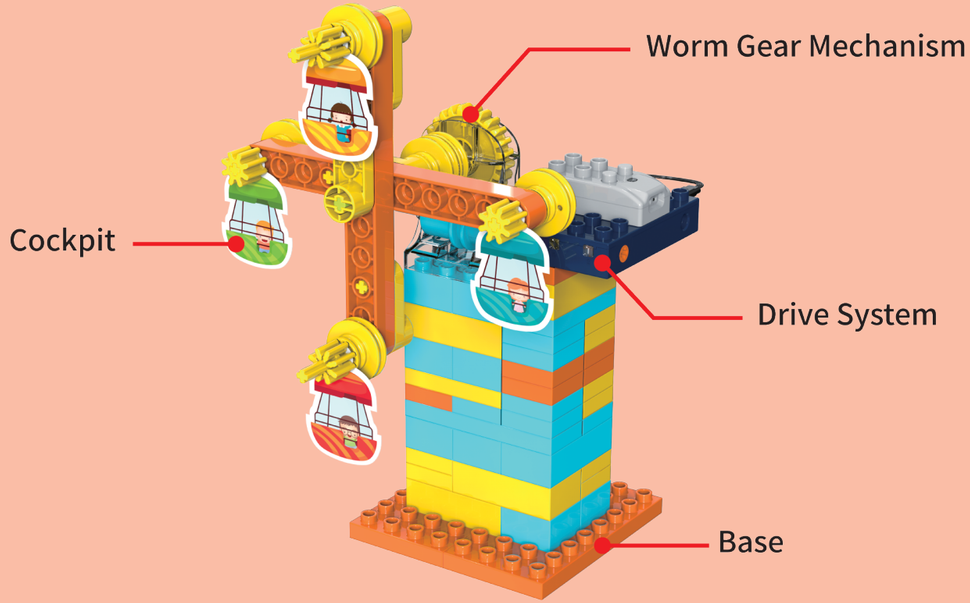


Turn Left



Go straight

Ferris Wheel Construction Analysis

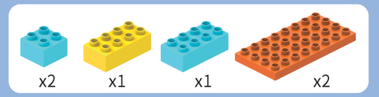


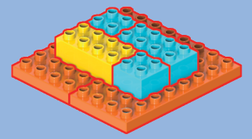
Explore 1

Ferris Wheel

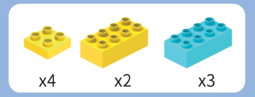


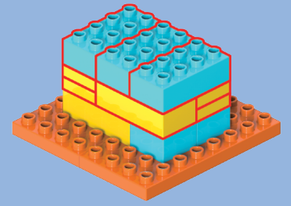
01



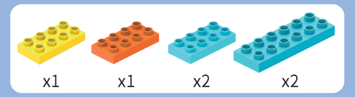


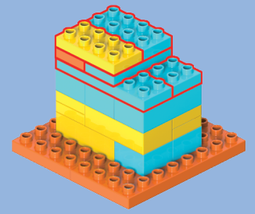
02



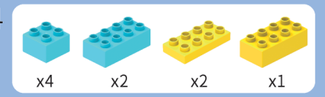


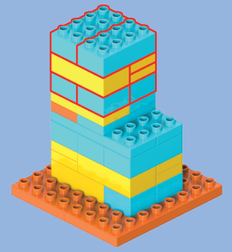
03



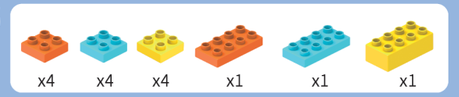


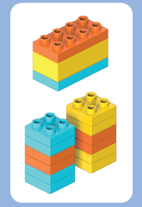
04

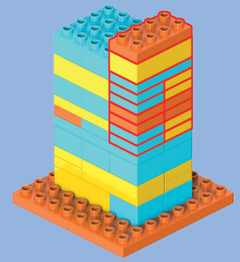




05





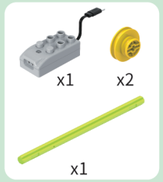


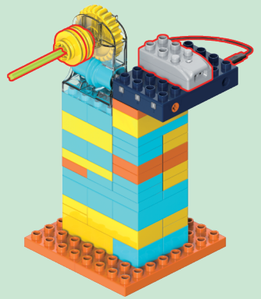
06





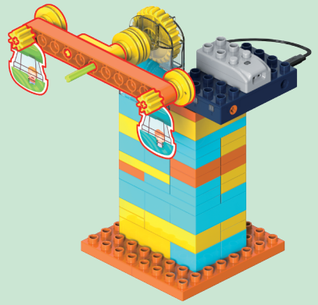
07



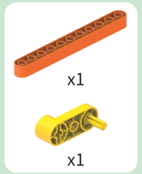


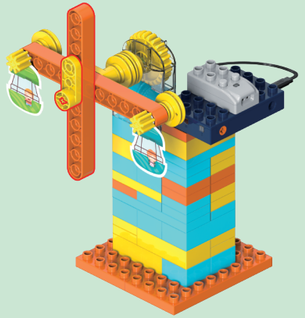
08



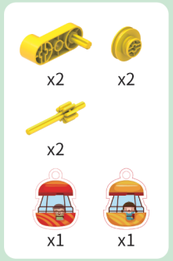


09





10

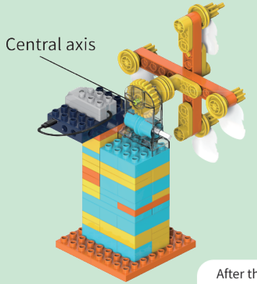


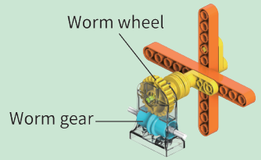


Explore 2



After assembling, press and hold the power button on the host controller and set it to press the sensor button 1.



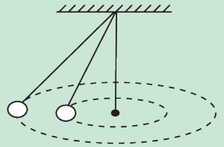


Worm Gear Mechanism

After the motor is started, power is transmitted to the worm gear mechanism. The worm gear mechanism functions to reduce speed and provides a self-locking feature. The shaft on the worm wheel serves as the central axis of the Ferris wheel, around which the Ferris wheel rotates.

Principle Analysis

What is rotation about a central axis?



Rotation about a central axis refers to the motion of an object rotating around its central axis. The central axis is a virtual axis inside the object, around which all points of the object rotate.



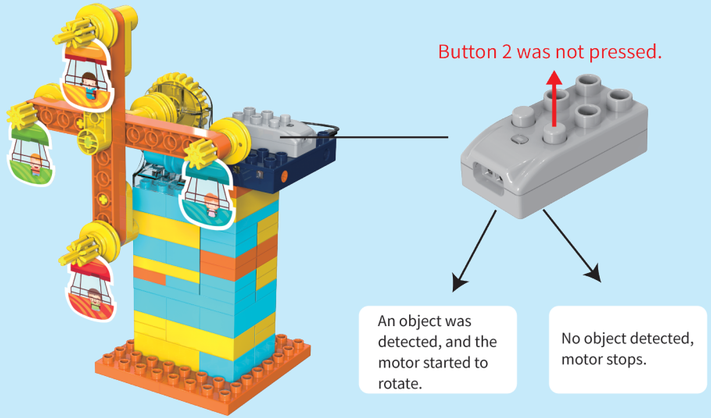
Clock hands

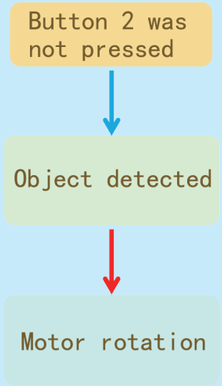


Bicycle wheels

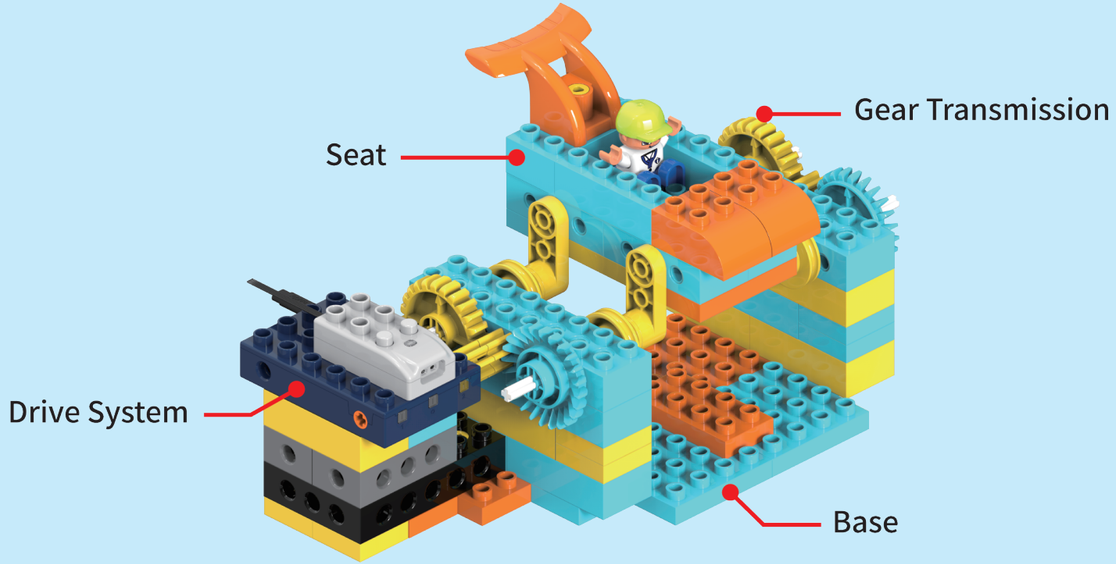
Kids, can you guess what other items also utilize a central axis for rotation?

Set sensor button 2 to: Motor rotates when an object is detected;
motor stops when no object is detected.
Then use a flowchart to depict the process of the sensor detecting an object.



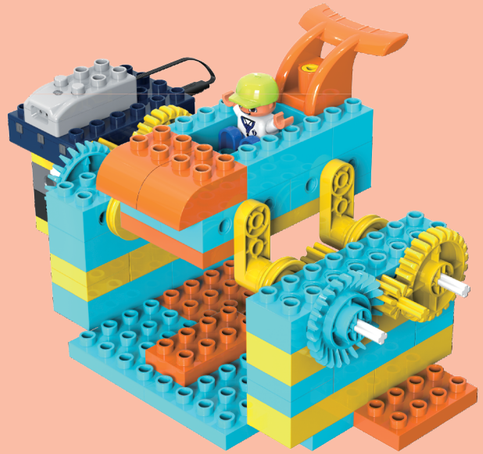


Rocking Car Construction Analysis

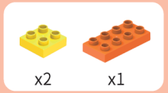


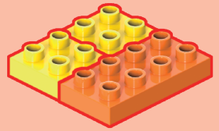
Explore 1

Rocking Car

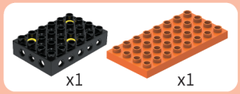


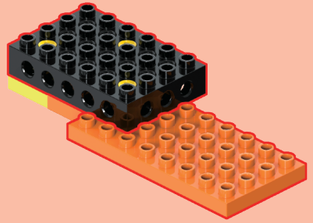
01



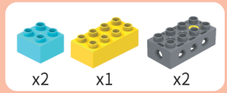


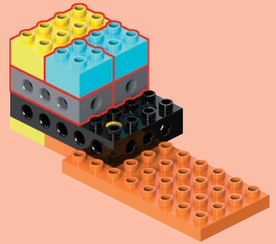
02



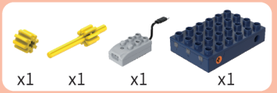


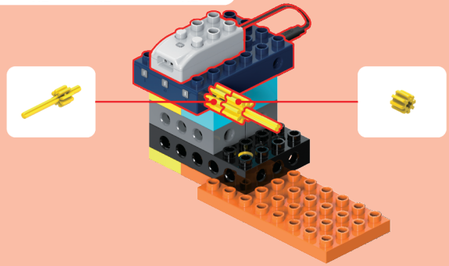
03



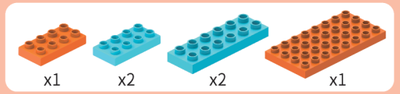


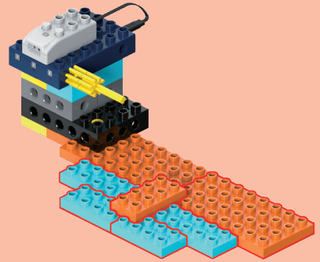
04



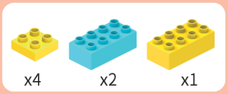


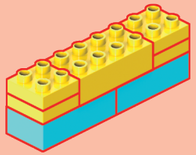
05



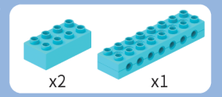


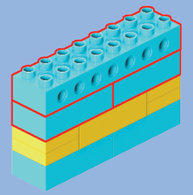
06



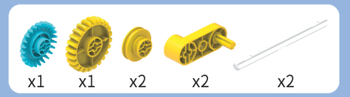


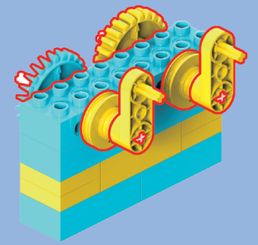
07



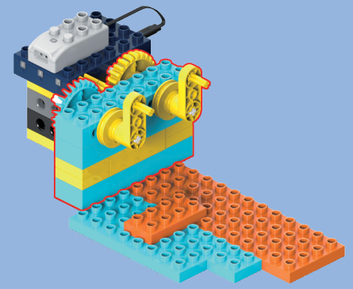


08

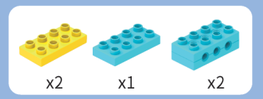


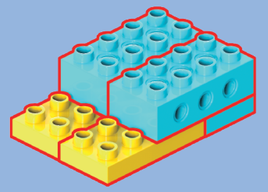


09

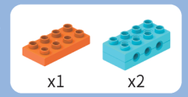


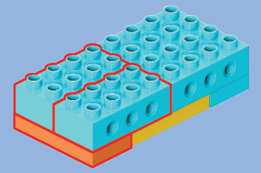
10



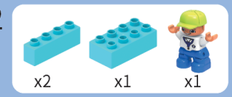


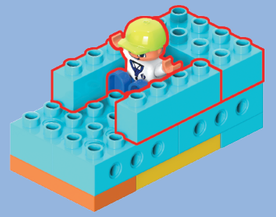
11



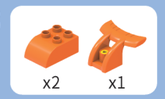


12



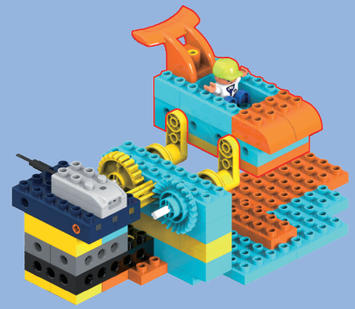


13

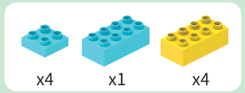


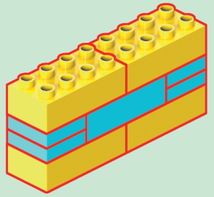


14

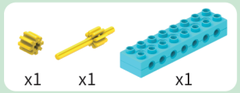


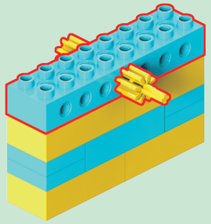
15





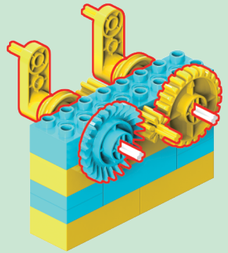
16



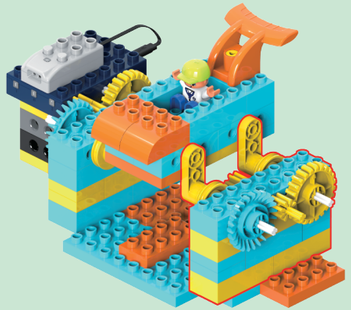


17



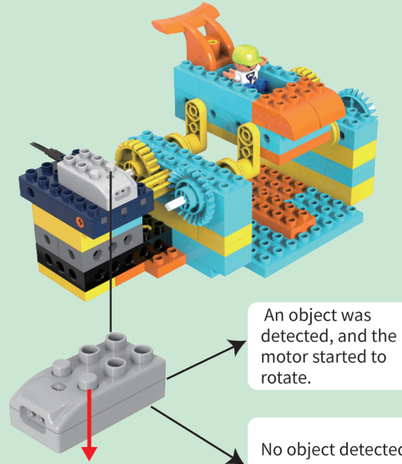


18

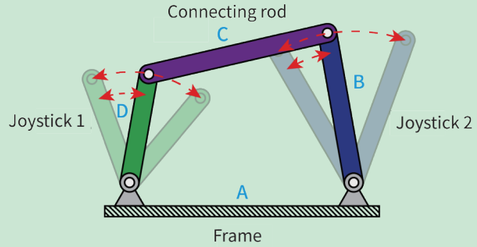


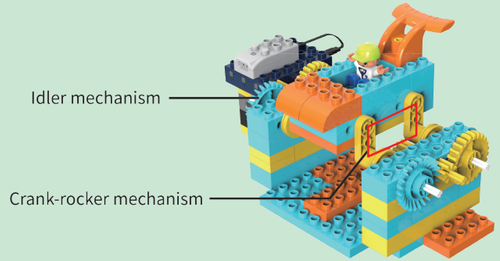
Explore 2

After assembling, press and hold the power button on the host controller, and set sensor button 2 to:
Object detected, motor rotates;
No object detected, motor stops.



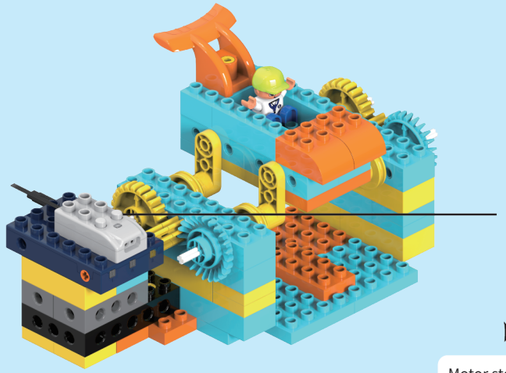
Principle Analysis

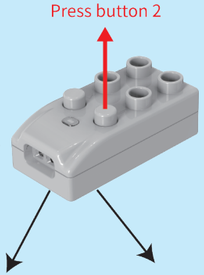




After the motor is started, the power is transmitted to the idler wheel mechanism, which in turn drives the crank rocker mechanism, causing the rocking car to swing up and down.

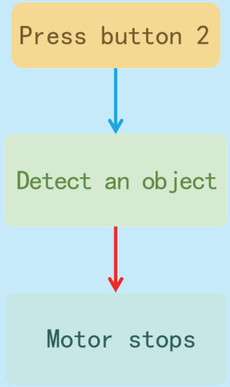
Set sensor button 2 to: Motor stops when an object is detected;
motor runs when no object is detected.
Then use a flowchart to depict the process of the sensor detecting an object.



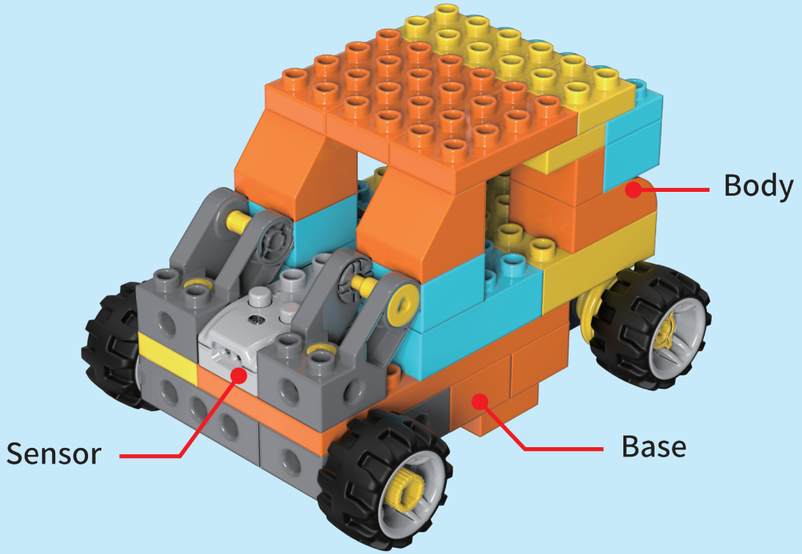


Motor stops when an object is detected.

Motor runs when no object is detected.

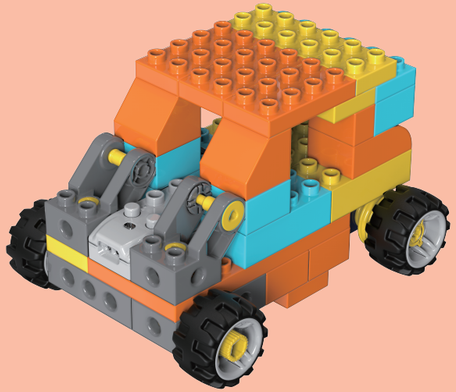


Intelligent Car Construction Analysis

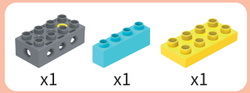


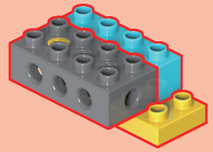
Explore 1

Intelligent Car

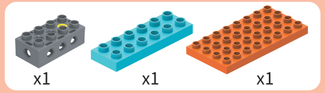


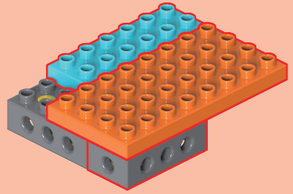
01



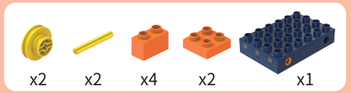


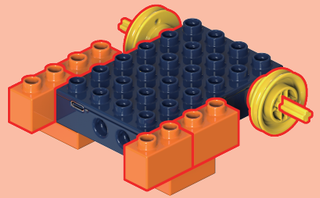
02



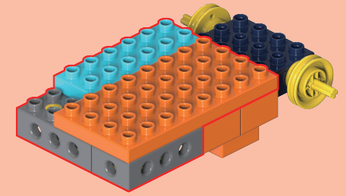


03



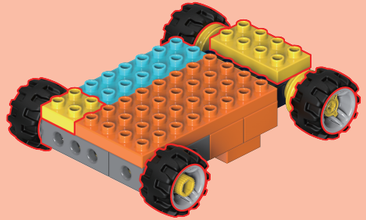


04

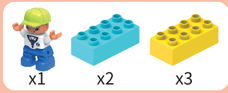


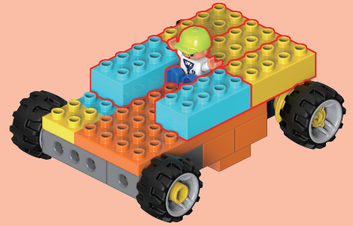
05



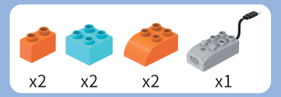


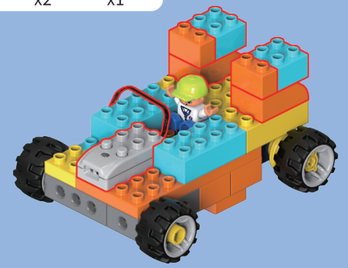
06



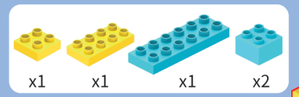


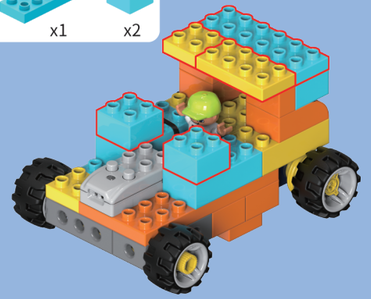
07



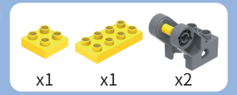


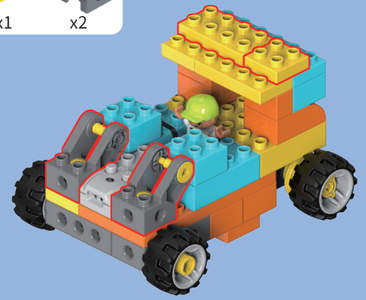
08



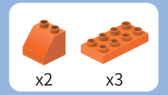


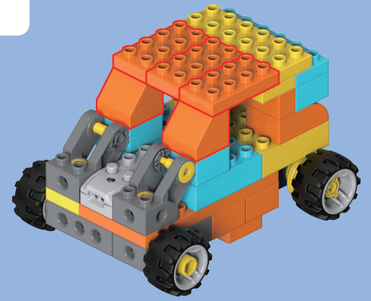
09





10





Explore 2

Understanding building blocks



Dual motors rotate the building blocks forward: Set the dual motors to rotate forward at a specified speed (low speed).



Dual motors rotate the building blocks backward: Set the dual motors to rotate backward at a specified speed (low speed).

Use the program to make the car move forward for a while and then backward.

Set the backward time:



Set the forward time:



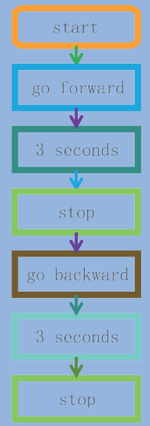
Principle Analysis

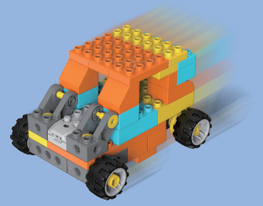
After clicking to run the program, the car will move forward for 3 seconds, then stop, and then move backward for 3 seconds.

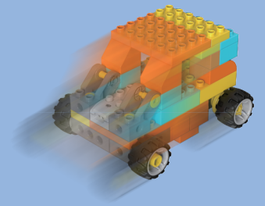




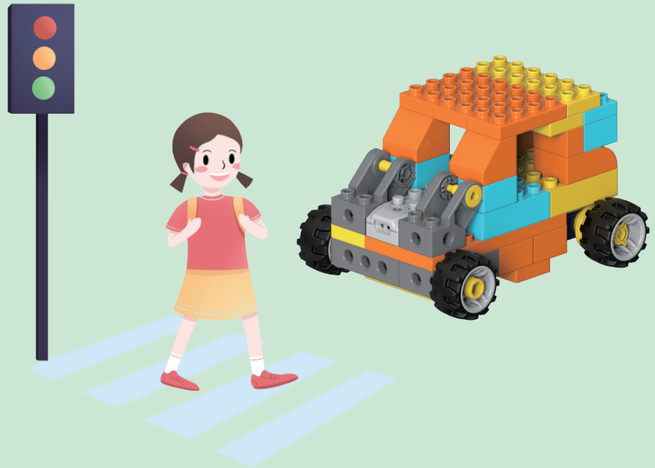
Program Flowchart







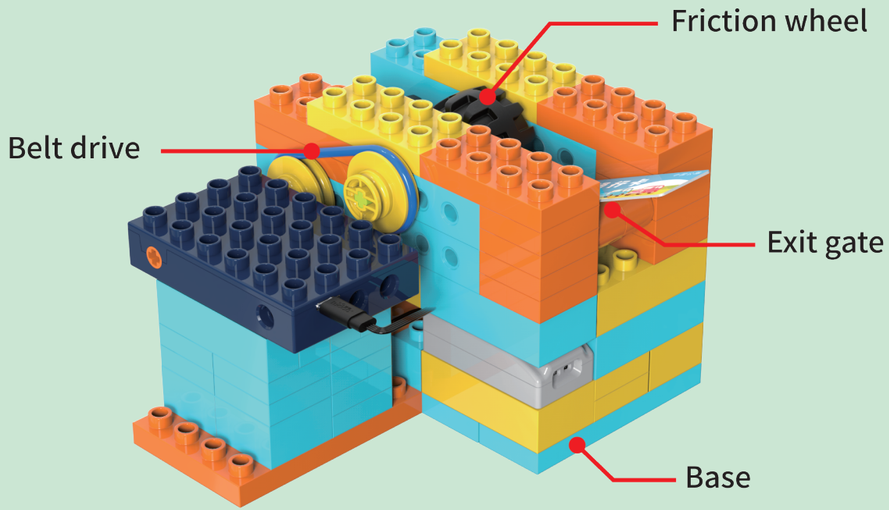
Use  The car will move forward and stop when it encountered an obstacle.



After writing the program, click to run it and see if your car can stop when it encounters a pedestrian.



Card Dispenser Construction Analysis

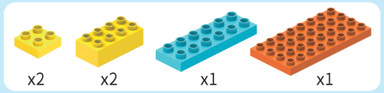


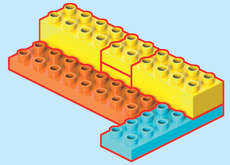
Explore 1

Card Dispenser

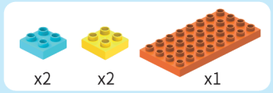


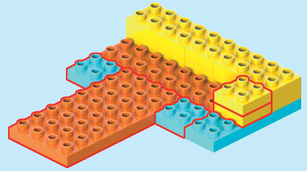
01



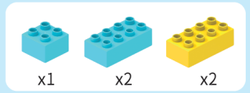


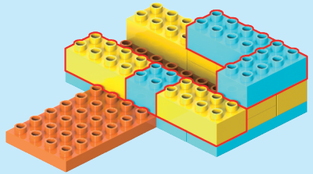
02



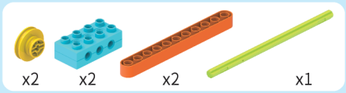


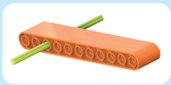
03

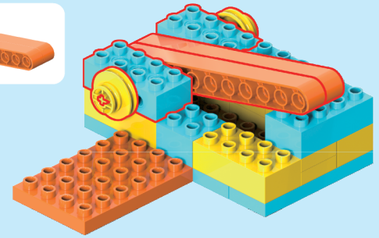




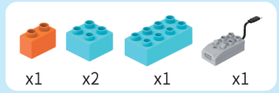
04

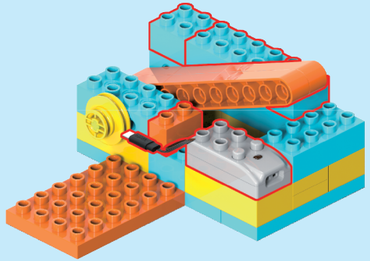




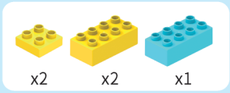


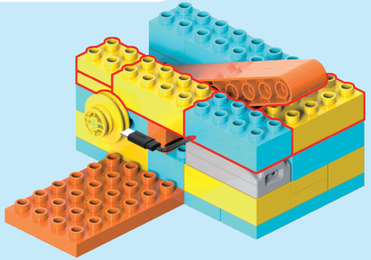
05



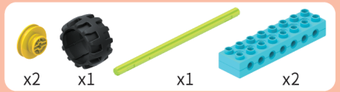


06

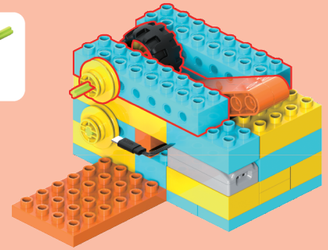




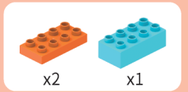
07

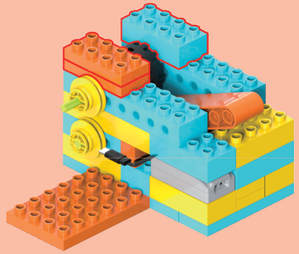




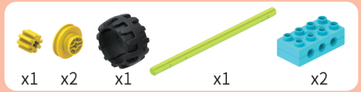


08

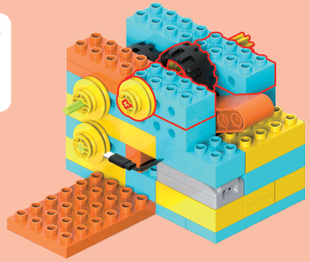




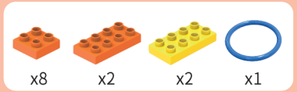
09

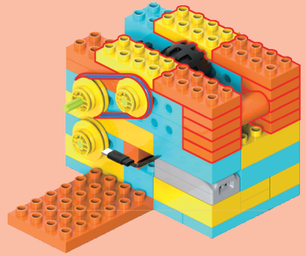




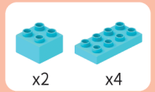


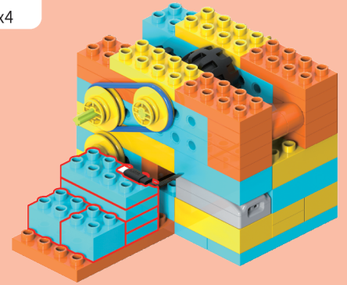
10



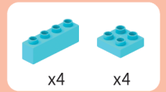


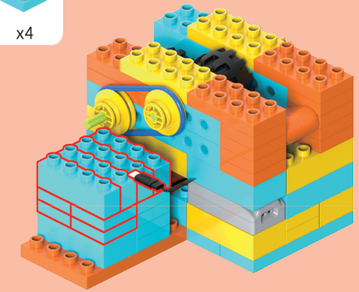
11



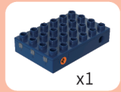


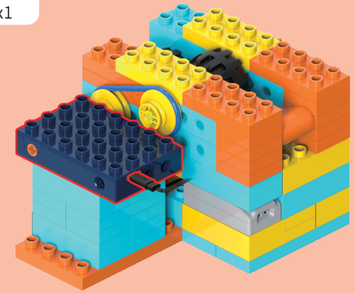
12





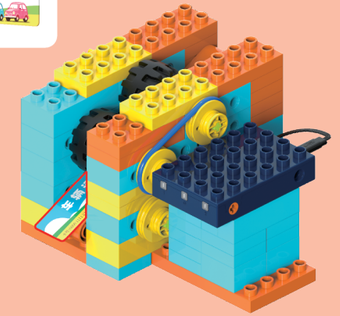
13





14





Explore 2

Understanding building blocks



Start block (small green flag):
When the small green flag is clicked, the program starts running.



Stop Block: End program execution.



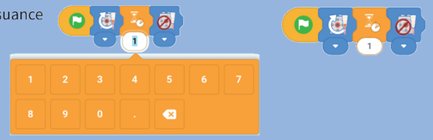
Motor 1 rotates the blocks clockwise:
Set the motor to rotate clockwise at the specified speed (low speed).



When you drag a block and a gray shadow appears, you'll see the two blocks connected together when you release it.

The card issuance is implemented using a program.

Set card issuance time

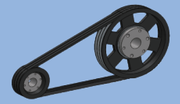


Principle Analysis

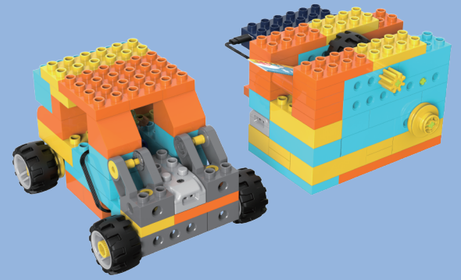
When the trolley moves in front of the card dispenser, after clicking to run the program, the motor drives the belt drive mechanism to rotate the friction wheel and push out the card.







Belt drives, consist of one or more belts tightly fitted onto two pulleys. The two pulleys are mounted on the driving shaft and the driven shaft, respectively. Motion and power are transmitted through the friction between the belt and the two pulleys.

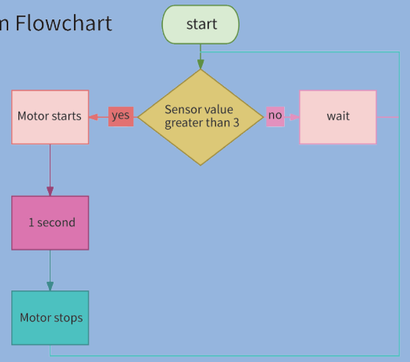


Creative

Use implement intelligent card issuance function.

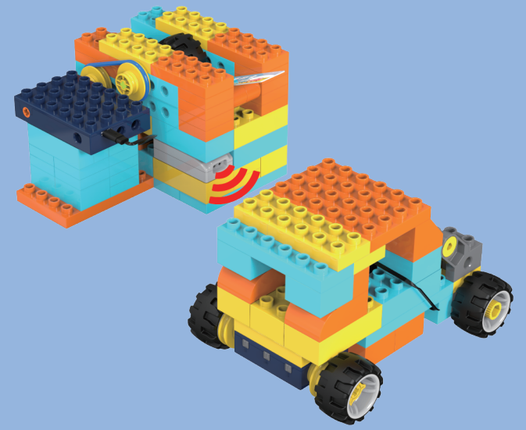


Program Flowchart





After writing the program, click to run it and see if the car can automatically issue cards when it moves in front of the card issuing machine.



Product Name: Future Mechanic
Model Number: MKZ-OEC-FM
Age: 3 years and above
After-sales Service: If the product is damaged, please contact our Customer Service Center.
After-sales Email: support@makerzoid.com

Warning! Do not aim at eyes or face.
Warning! Contains small parts. Not suitable for children under 3 years old.
Warning! Contains small balls, which may present a choking hazard. Not suitable for children under 3 years old.
The user manual contains important information. Please keep it for future reference.
Care & Maintenance: Do not immerse in water or use in damp environments. Please wipe clean with a dry cloth before use.