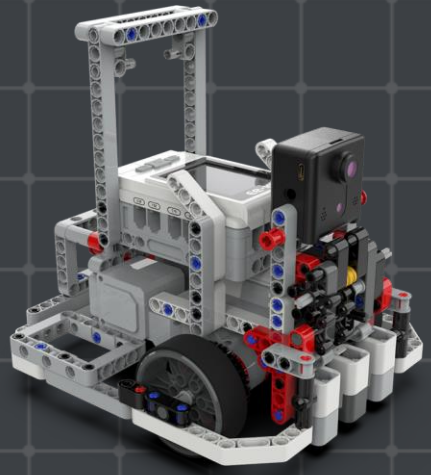


Lesson 25 | Runner |

Key points from this lesson:

1. Learn about the meaning and application of address data

2. Know how to set and obtain address data

Possible difficulties from this lesson:

1. Learn to use address data to control device status through programming

Running

Running is an activity that uses your feet to move and exercise your body through fast and rhythmic steps. When running, both feet move alternately but do not touch the ground at the same time.



Benefits of running



Running can exercise your body, enhance your cardiopulmonary function, improve your body's immunity, strengthen your willpower, and so on.

Project Tasks

Design a runner model and control it by using the left and right buttons on the controller.

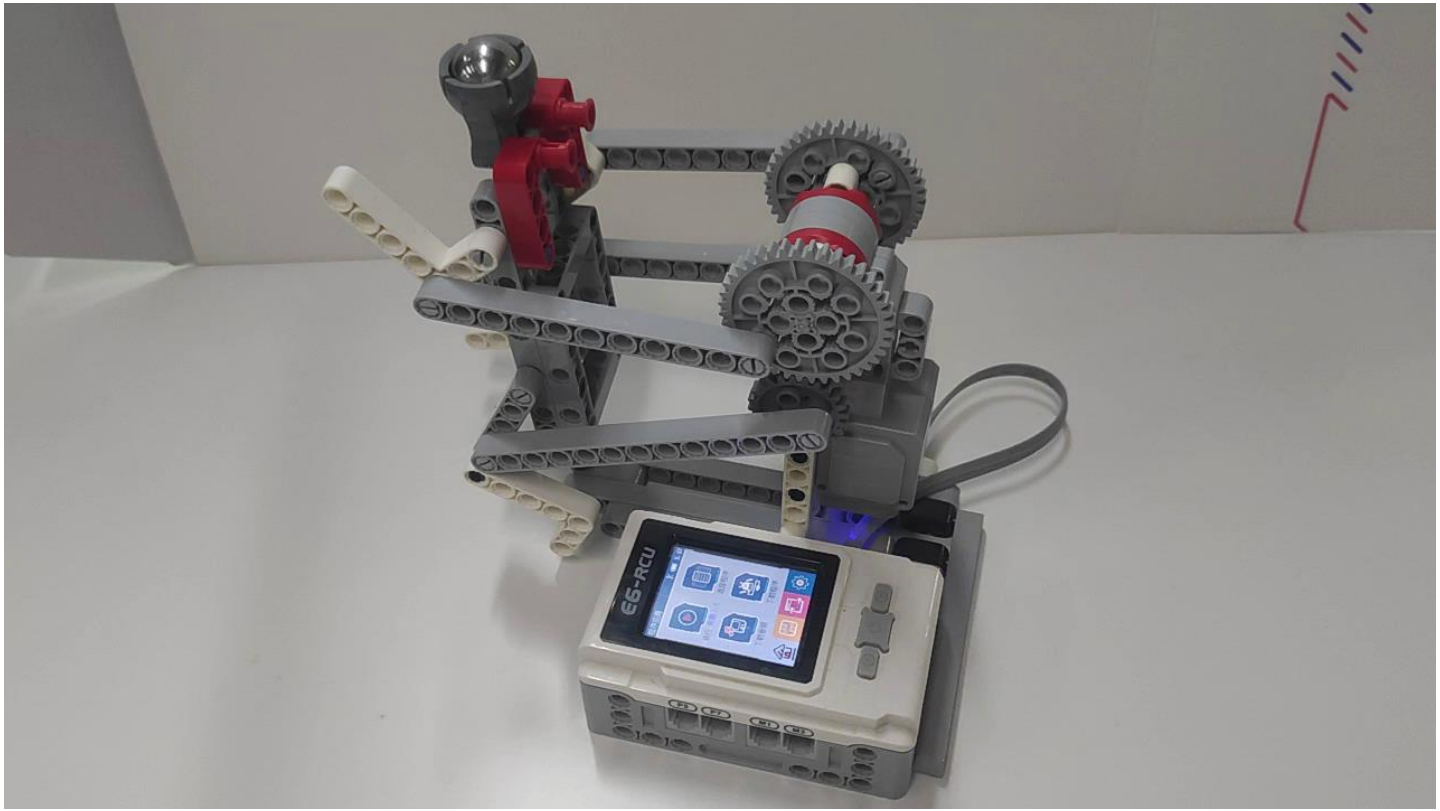
Requirements for robot functions:

1. After pressing the left button, the runner robot will stop after a period of movement.

2. During the running process, if you press the right button, the runner robot will stop.

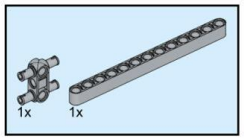
3. You can set the speed and duration of the runner robot on the controller (in seconds).

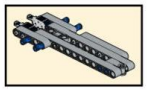
Effect Demonstration

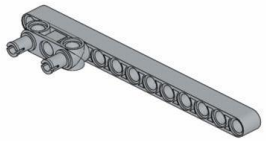


Build a robot

1







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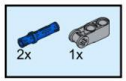
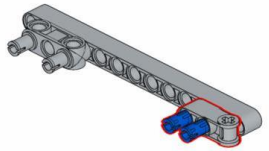
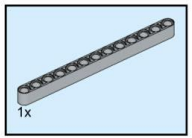


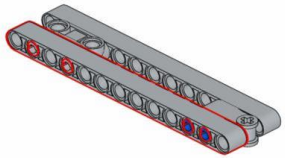


Build the base of the robot

Build a robot

3





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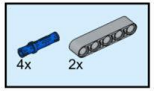
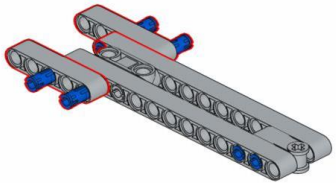
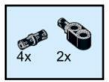
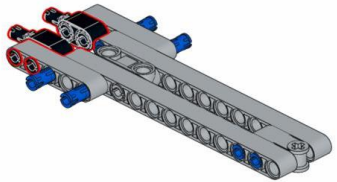




Build a robot

5





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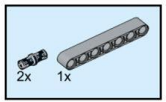
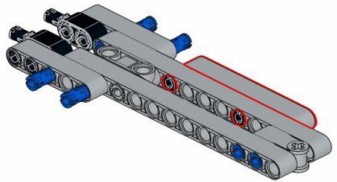
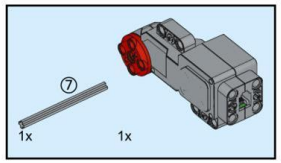
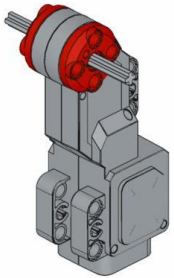


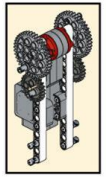


Build a robot

7







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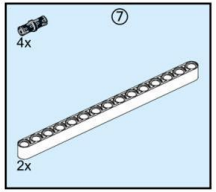
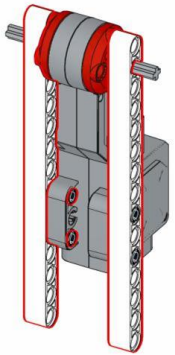
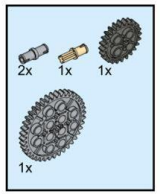
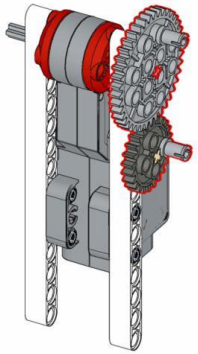




Build a robot

9





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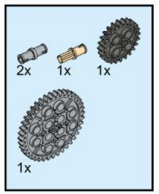
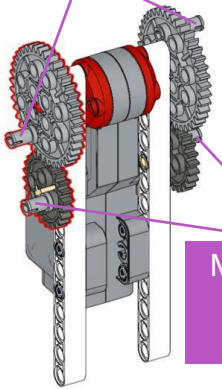


Make it 180 degrees staggered

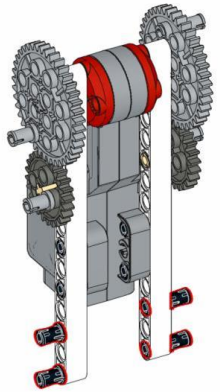


Make it 180 degrees staggered

Build a gear drive structure

Build a robot

11 4x



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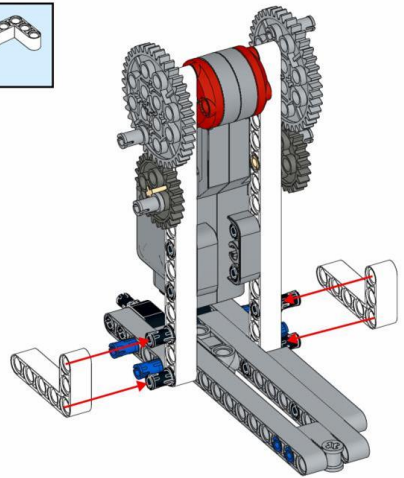

Build a robot

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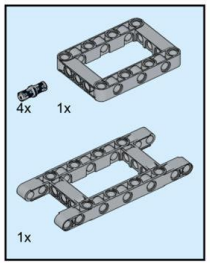

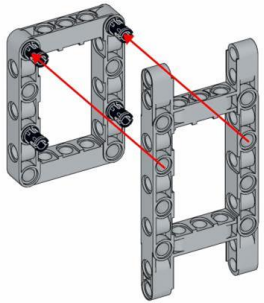

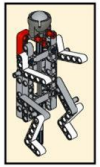

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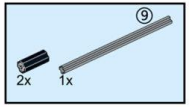
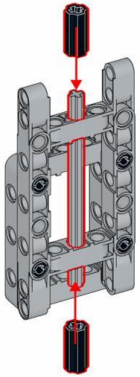
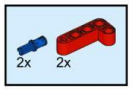
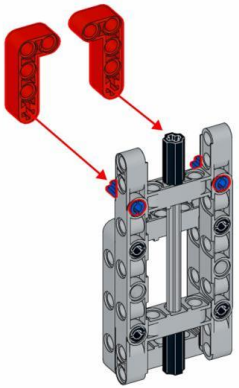




Build a robot

15





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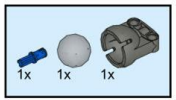
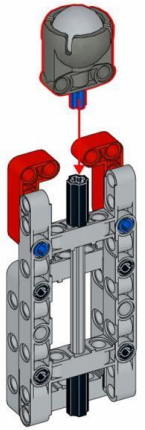
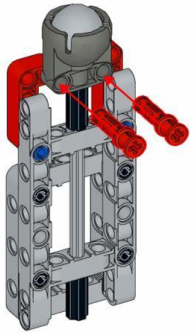
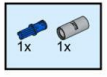


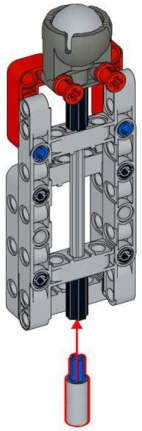


Build a robot

17 

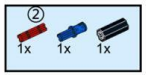


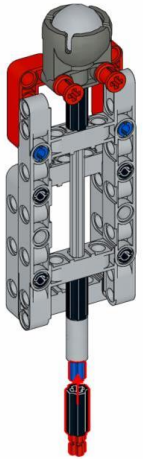
18 



Build a robot

19





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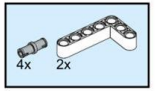
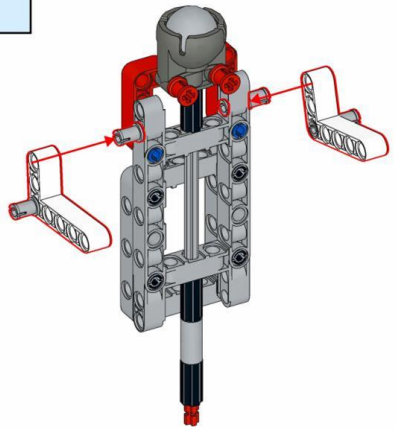
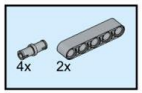
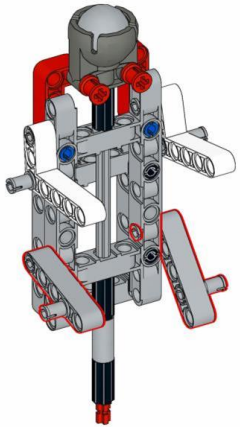




Build a robot

21





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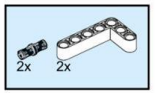
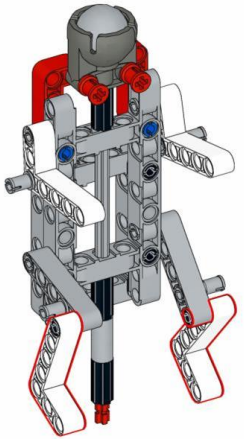
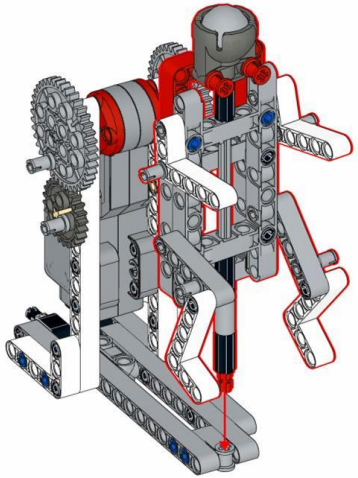




Build a robot

23



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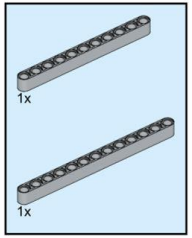
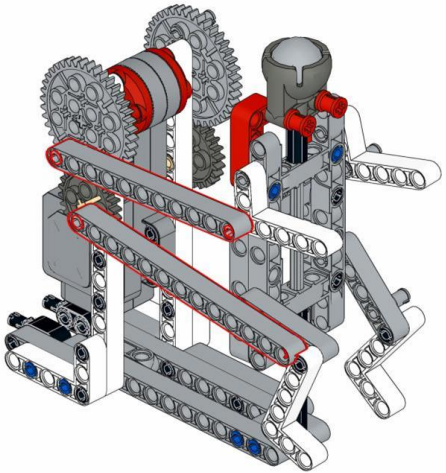
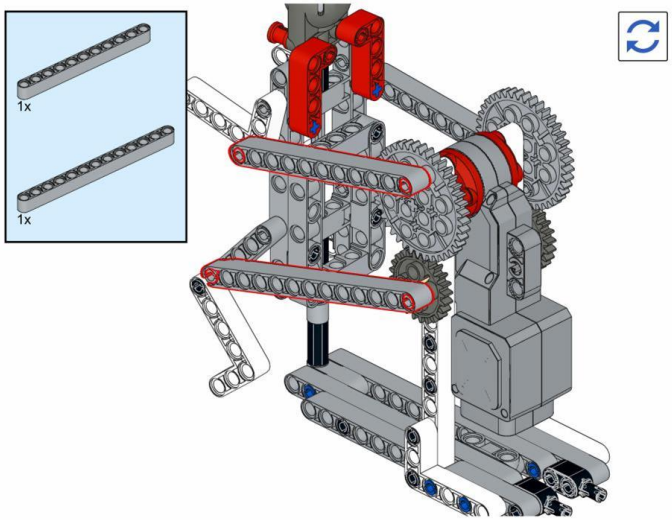




Install the linkage structure

Build a robot

25



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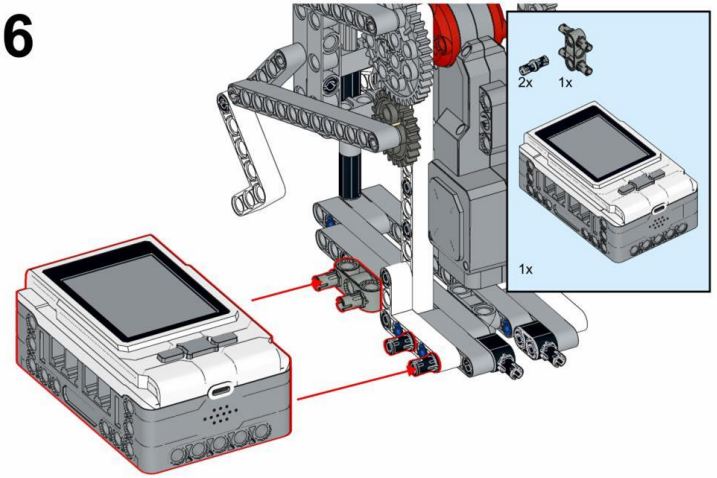
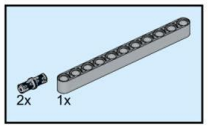
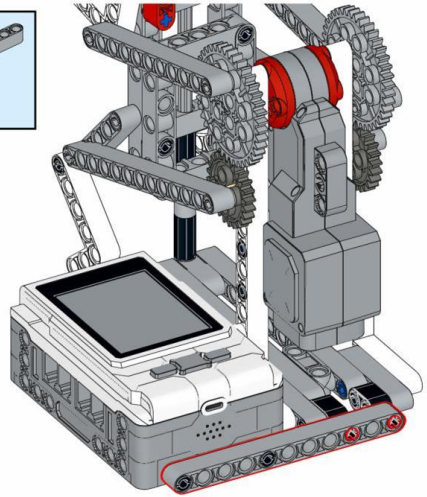


Install the controller

Build a robot

27





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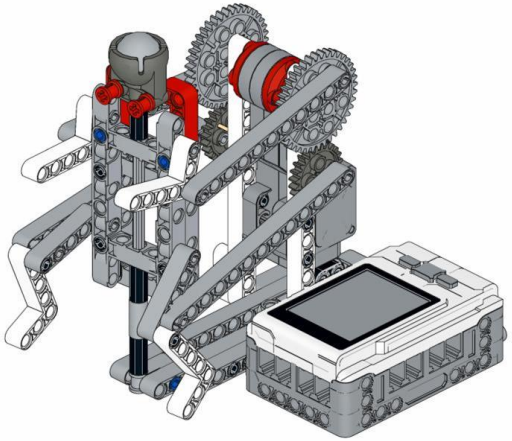
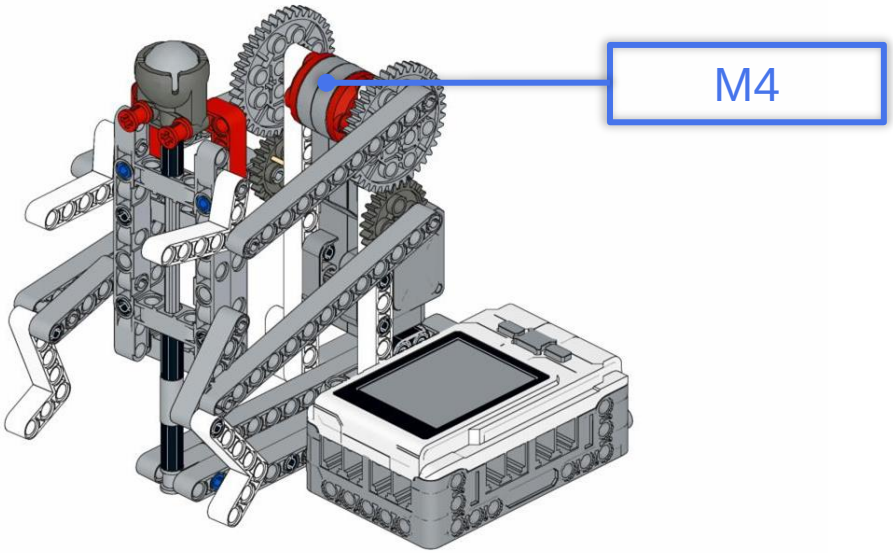


Hardware Connection

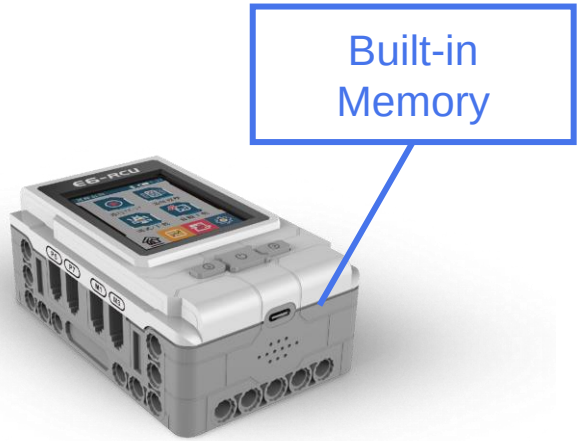


“

How do we achieve the required functions?

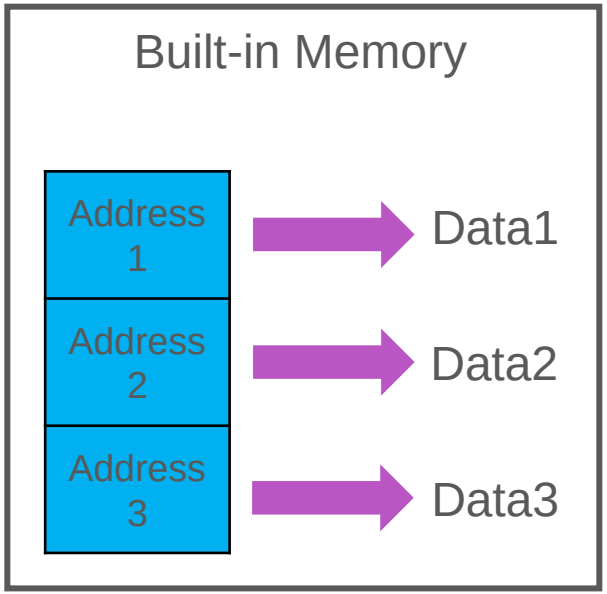
”

Learn about the built-in memory



In addition to the space for storing the operating system and downloaded programs, the controller also has a built-in memory for storing data that can be changed directly on the controller.

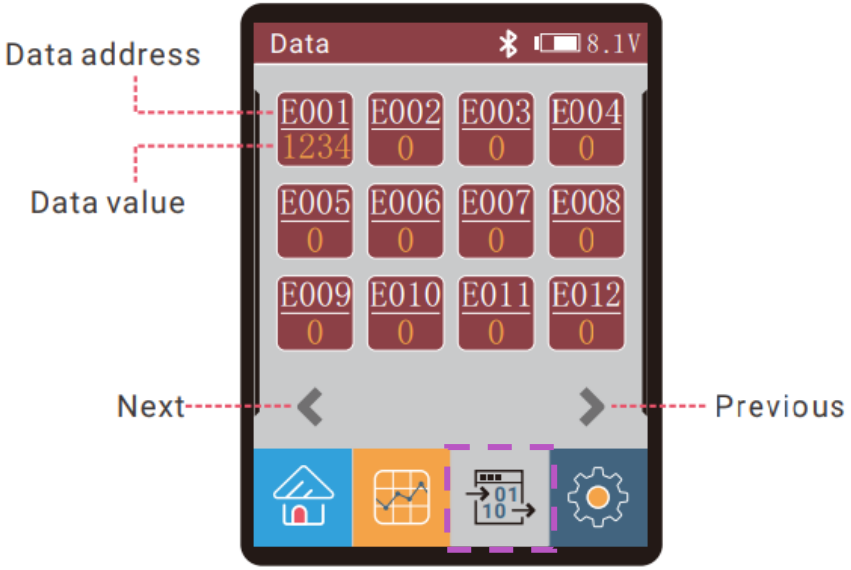
Learn About the Built-in Memory



In order to store and read data conveniently, the built-in memory is divided into many spaces, each of which has an address different from other spaces, which can be called "address 1", "address 2", "address 3"... Each address stores a piece of data.

Just like you can find someone's home by the address they provide, you can find the data by the address of the data.

Data Modification



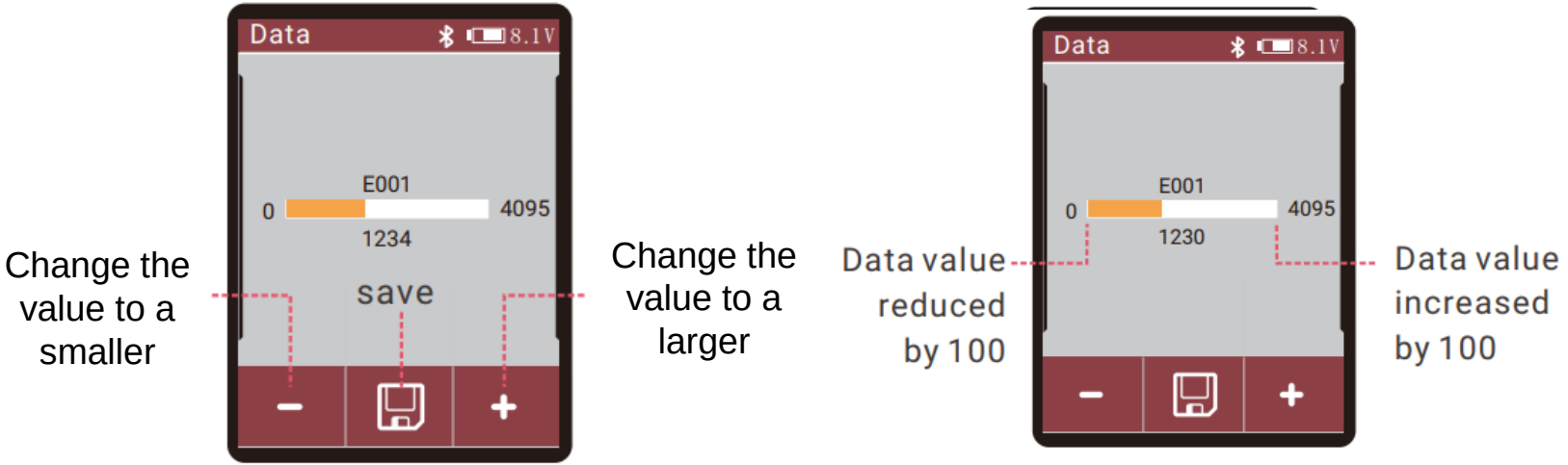
Open the controller and click the "Data" icon in the bottom menu bar to enter the data modification interface.

Each small square represents a storage space, and the number after the data address "E" represents the address number. For example, E001 represents address 1, and E002 represents address 2.

The data value is the value stored in the address.

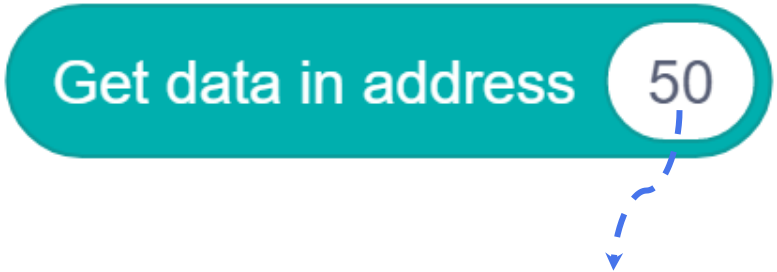
Data Modification

Click into an address box to modify the data value inside—the range of 0 to 4095.



Coding block - get address data

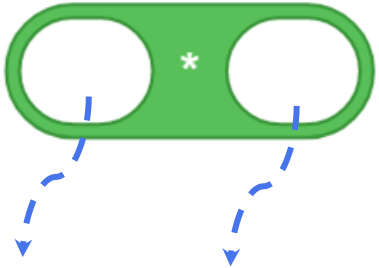
This block can read the value of the controller's built-in data.



Data address. You can enter a value or place a value type coding block here, and the value range is: 1~156

Operator - Multiplication

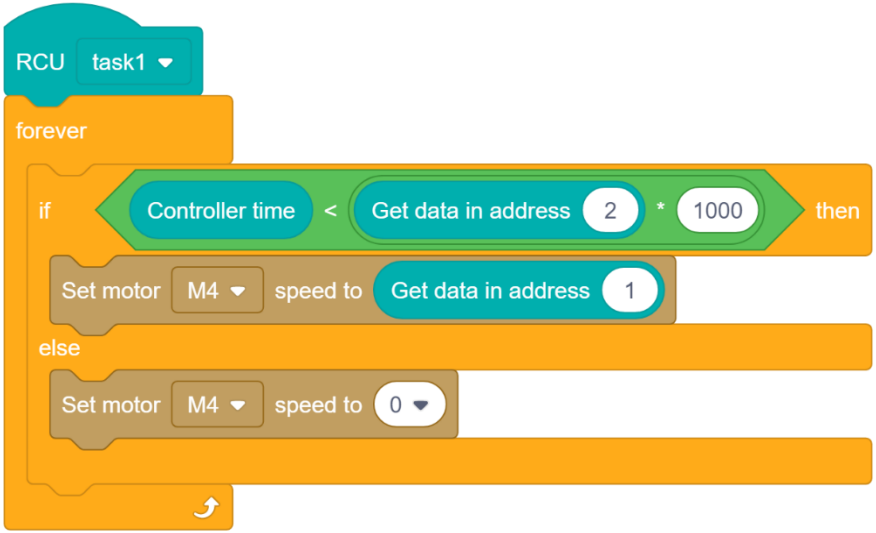
It performs multiplication on the values on both sides and returns the result.



You can enter a value or place

a value-type coding block here.

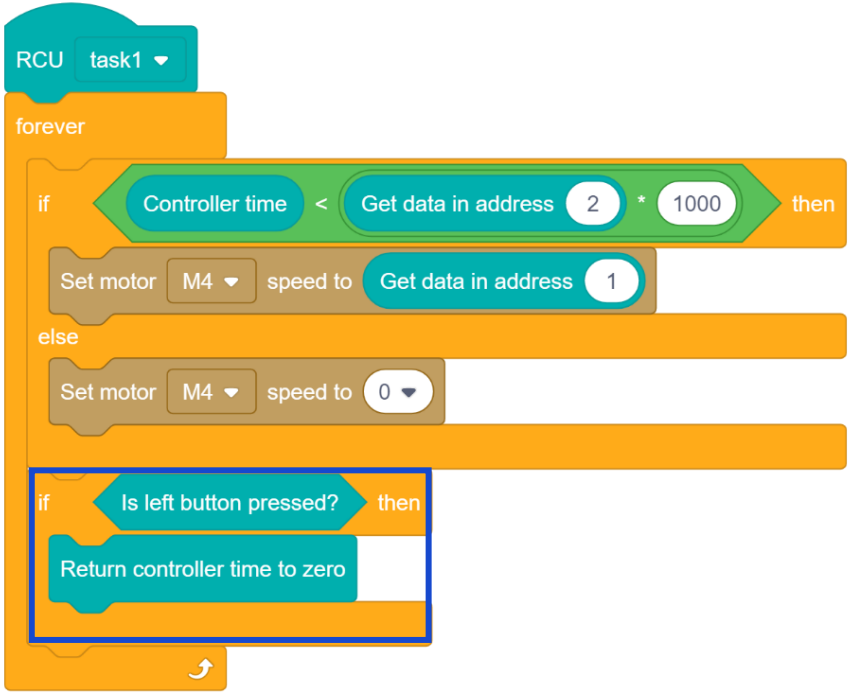
1. Stop after running for a while



If the controller time is less than the set value, the motor speed is set to the address 1 data value, otherwise the motor is stopped.

Before running the program, the data values of address 1 and address 2 need to be set on the controller.

2. Press the left button to start



If you press the left button, the controller time will be reset to zero.

After resetting the controller time to zero, the motor will rotate for a while.

3. Press the left button to stop



If you press the right button, the motor will stop rotating and wait for a while.

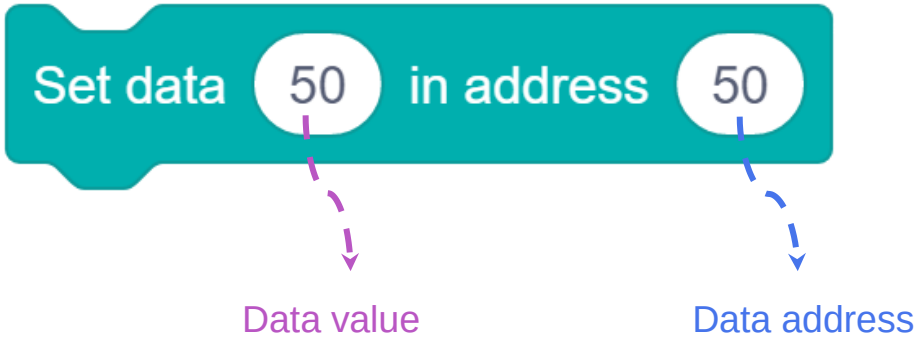
The waiting time value is the data value of address 2.

Expansion Tasks

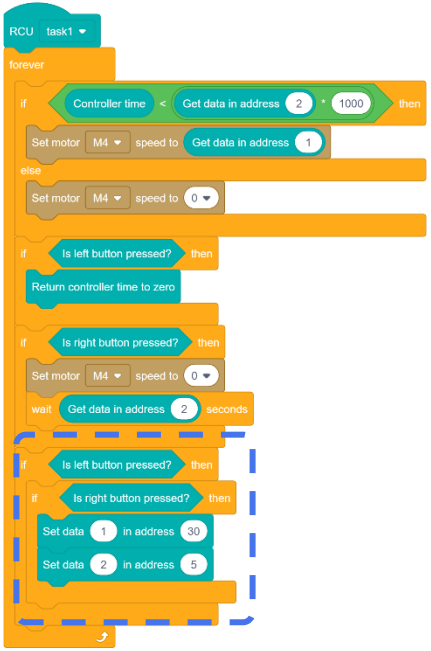
Press the left and right keys simultaneously to set the default value



Expansion Program



Expansion Program



Press the left and right buttons at the same time to set the data values of address 1 and address 2 to the specified values.

Quiz

Single-choice question

Which of the following statements about the controller's built-in data is incorrect? ( )

A. Built-in data has its corresponding address

B. Built-in data cannot be modified

C. Data address range: 0~156

D. Data value range: 0~4095

Answer: B

Further Reading



To exercise your body through running, you need to pay attention to some running skills.

Before starting to run, do proper warm-up exercises, such as stretching, skipping rope, etc., to increase muscle elasticity and blood flow, and reduce the risk of sports injuries.

The way you breathe when running has a great impact on the body's oxygen supply and fatigue. It is recommended to use abdominal breathing, inhale through the nose and exhale through the mouth, maintain the depth and frequency of breathing, and avoid breathing too shallowly and too fast.

Further Reading



When running, your hands should swing naturally and keep in coordination with your steps to increase your body's balance and forward momentum. When running, you should land on the forefoot first, which can reduce the impact on the knee joint and reduce the risk of injury.

It is generally recommended to keep the cadence at about 180 times per minute, and the stride depends on your personal height and physical fitness level. Stay hydrated: You should drink enough water before and after running to replenish your body's water.

Thanks!