

e-book

# Hamster Coding

Scratch 2

Written by ConceptOn



# How to Use

This manual is designed for the educational utilization of the Hamster robot.

- Please use this manual as on-screen instructions when teaching the Hamster class.
- The contents are easy to understand. Just read them before the class.
- Worksheets can be downloaded from the Robomation website.
- This manual can be used to ensure the best lesson plan.
- For more information, contact us at [7concepton@daum.net](mailto:7concepton@daum.net).



# Hamster Coding

Scratch 2

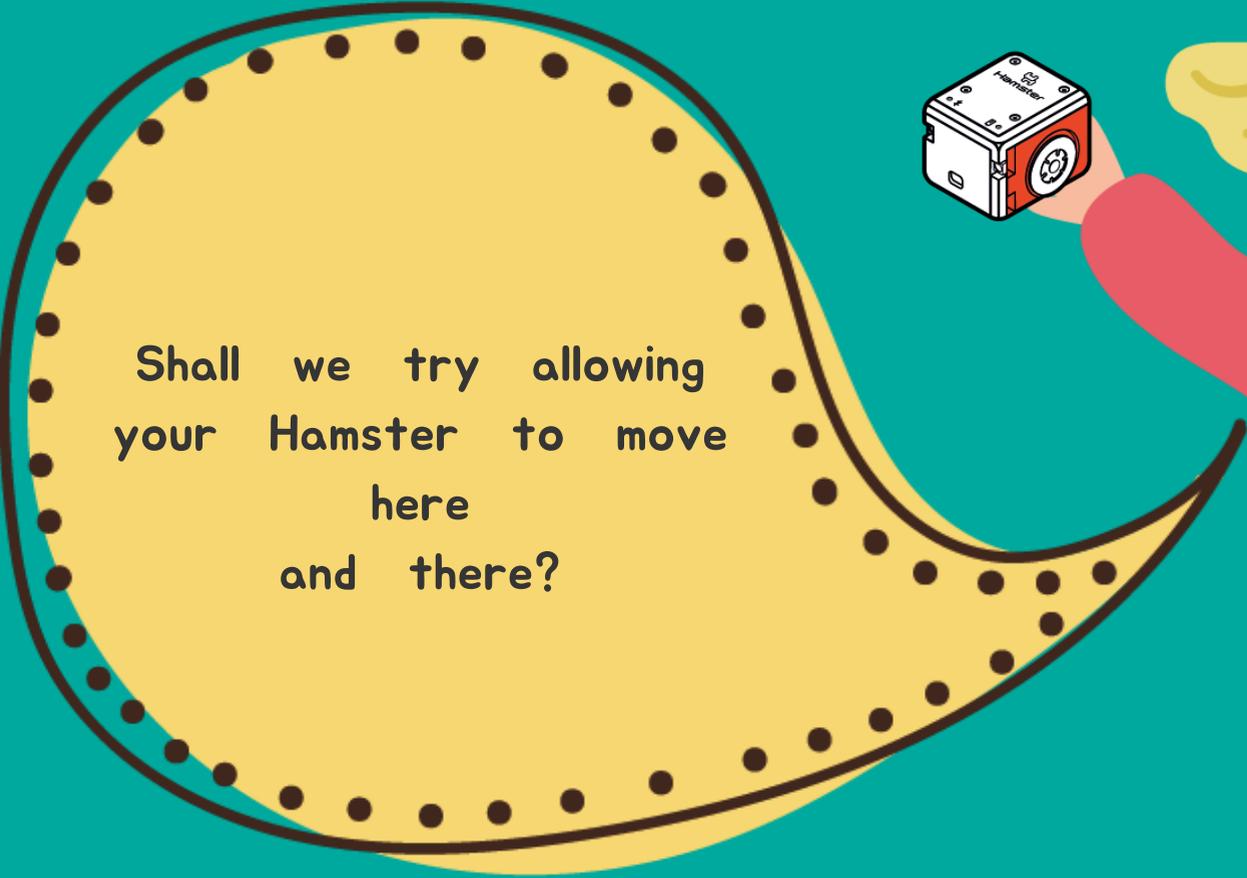
Let's get started with Hamster coding with the Scratch program!

The use of the Scratch programs will make coding more interesting!

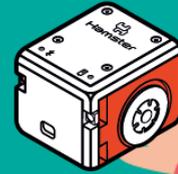


# Today's Activity

Division	Description	Time
Introduction	<b>Explore the problem.</b> Why not get Hamster to move here and there?	5min
Development	<b>Find out a solution.</b> Let's find out what the Movement block is.  <b>Solve the problem.</b> Let's command Hamster to move toward the target.	30min
Conclusion	<b>Review today's activities.</b> Let's talk about what you have learned and enjoyed.	5min



Shall we try allowing  
your Hamster to move  
here  
and there?



# Get ready

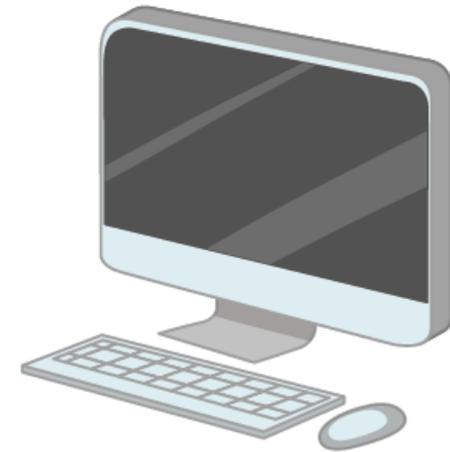
First, let's find out what is needed for Hamster coding.



1 Hamster



2 Bluetooth Dongle



3 PC

4 Writing supplies (pen and paper)

5 Charging cable

# Open the program

When opening the program, turn on Hamster and plug the Bluetooth Dongle into the USB port of your PC.



## Open the program

1

Run the Robot Coding program.

2

Check if your Hamster robot is connected with the Bluetooth Dongle (through its LED light colors).

3

Click on Scratch 3 Offline.

4

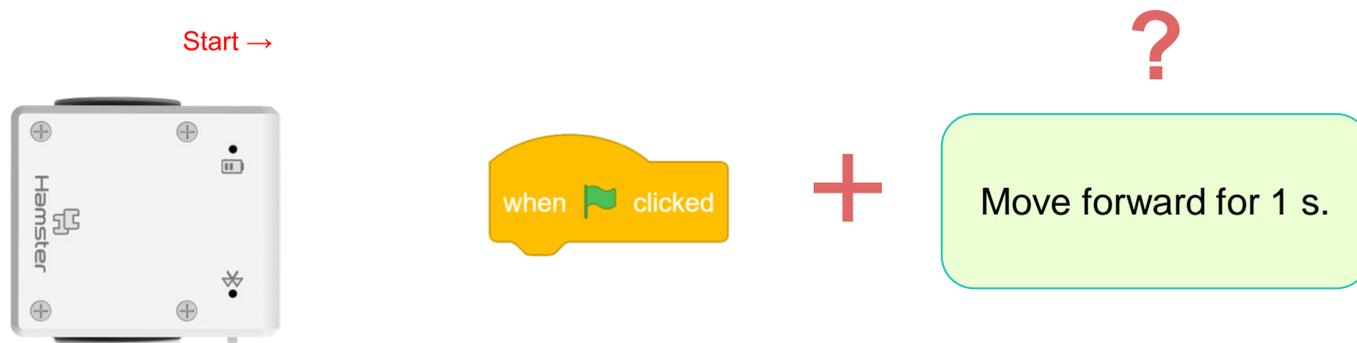
Click on "Single Robot" and then "New File."



# Move forward

Find the block that allows your Hamster to move forward for a second.

Preparation: Hamster



Click on the Scratch Offline and the Hardware blocks to see!



Code hints



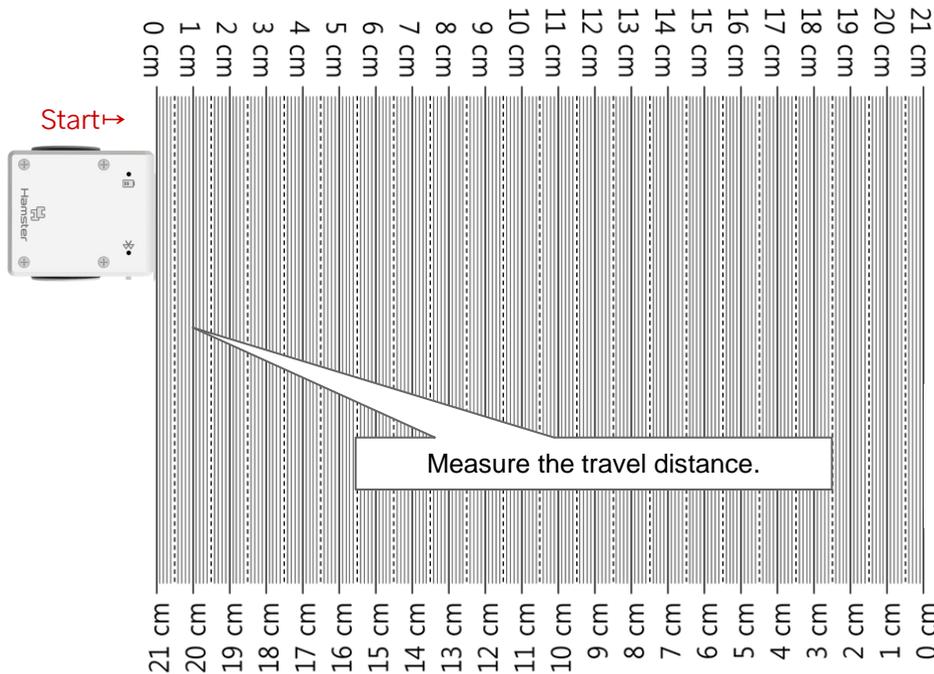
Find the right blocks to write the code.  
Does your Hamster move as you expected?



# Moving forward

Let's measure the distance when your Hamster moved forward for a second.

Preparations: Hamster, Worksheet (ruler)



1st round

2nd round

3rd round

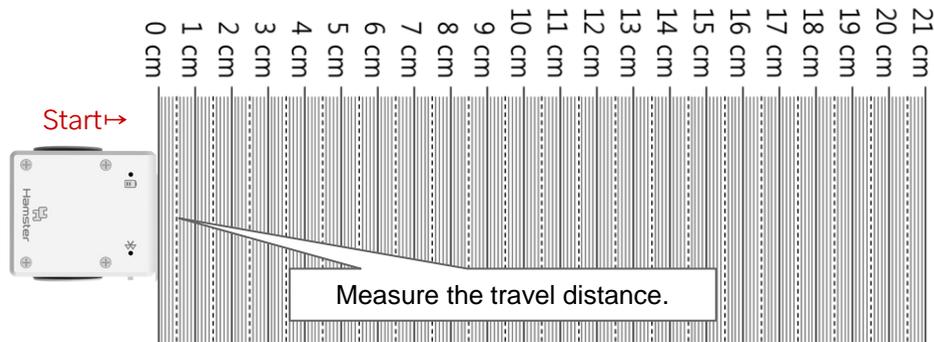
4th round

The distance traveled by your Hamster may slightly vary, but you can write the code however you like by adjusting the travel time (variable)!

# Exercise 1

Let your Hamster move forward for 5 s.

Preparations: Hamster, Worksheet (ruler)



Measure the distance traveled  
by your Hamster.

cm

## Code hints

[Example]

- Stack 5 blocks to move for a second.
- Modify time (variable).
- Use the Repeat block.

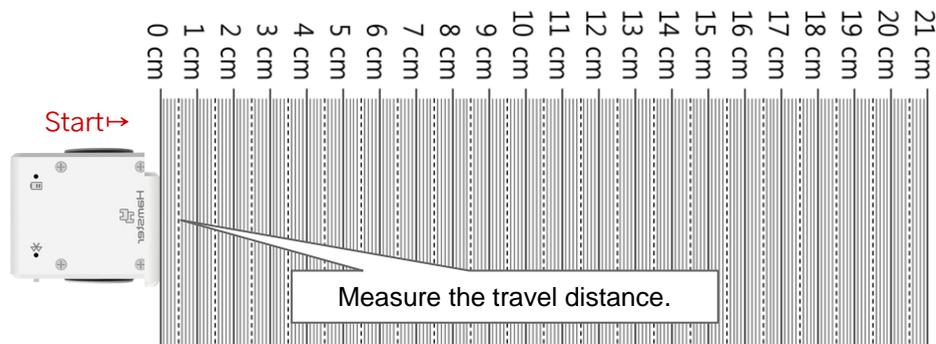


Think about the ways you can move your Hamster for 5 s before coding. Then, talk about what you would like to do for Hamster coding!

# Exercise 2

Let your Hamster move backward for 4 s.

Preparations: Hamster, Worksheet (ruler)



Measure the distance traveled  
by your Hamster.

cm

## Code hints

[Example

- Stack 5 blocks to move for a second.
- Modify time (variable).
- Use the Repeat block.



Think about the code that lets your Hamster  
move backward!  
Did it move as you expected?

# Exercise 3

Let's write the code as follows so that your Hamster can move accordingly.

- ① Move forward 5 s and beep.



- ② After beeping, move backward for 6 s.

- ③ Move forward for 3 s and then backward for 3 s.

- ④ Move backward for 4 s, and then come back.

- ⑤ After beeping, move backward for 3 s and then forward for 3 s.

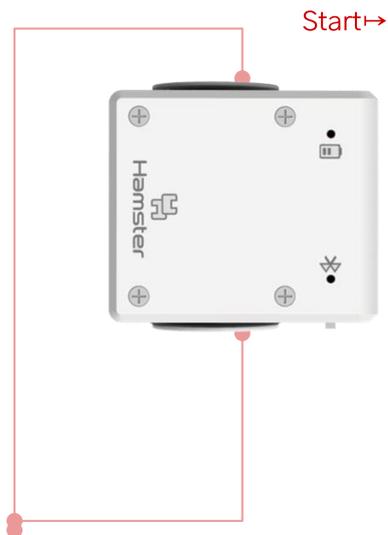
- ⑥ Move backward for 5 s and then come back before beeping.

\* Let your Hamster make different movements by modifying the travel time and distance..

# Move at a fixed speed

Let's find the blocks that let your Hamster move forward at a fixed speed.

Preparation: Hamster



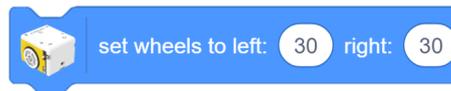
Set the speed values of both wheels.



?

Set the speed values of wheels

Code hints



Let's find the right blocks before writing the code.  
Does your Hamster move as you expected?

# Move at a fixed speed

Let's find the blocks that let your Hamster move forward at a fixed speed.

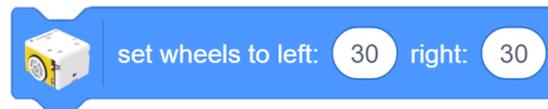
Preparation: Hamster



Move fast

Move slowly

Change the speed by modifying the values of both wheels differently.



100

100

The greater the speed value of both of Hamster's wheels, the faster it moves.

Let's find the right blocks before writing the code.  
Does your  
Hamster move as you expected?

# Exercise 4

Let's set the speed at which your Hamster moves and write the code to move it backward.

Preparation: Hamster

Start →

when clicked + Move backward at a speed of 30 ?

Change the speed by modifying the values of both wheels differently.

set wheels to left: 30 right: 30

-100 -100

If you modify the speed values of both wheels to negative ones, they will move in the opposite direction.

Find the right blocks and write the code. Does your Hamster move as you expected?

# Exercise 5

Let's write the code to let your Hamster move forward at the desired time and speed.

Preparation : Hamster

① Run forward at a speed of 30 for 3 s and then stop.

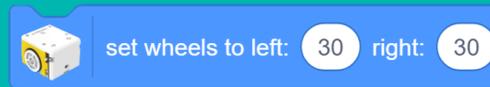
② Run forward at a speed of 100 for 2 s and then stop.

③ Run forward at a speed of 40 for 5 s and then come back and stop.



1. Set the speed values of both wheels.
2. Establish the travel time.
3. End it by using the Stop block.

Code  
hints



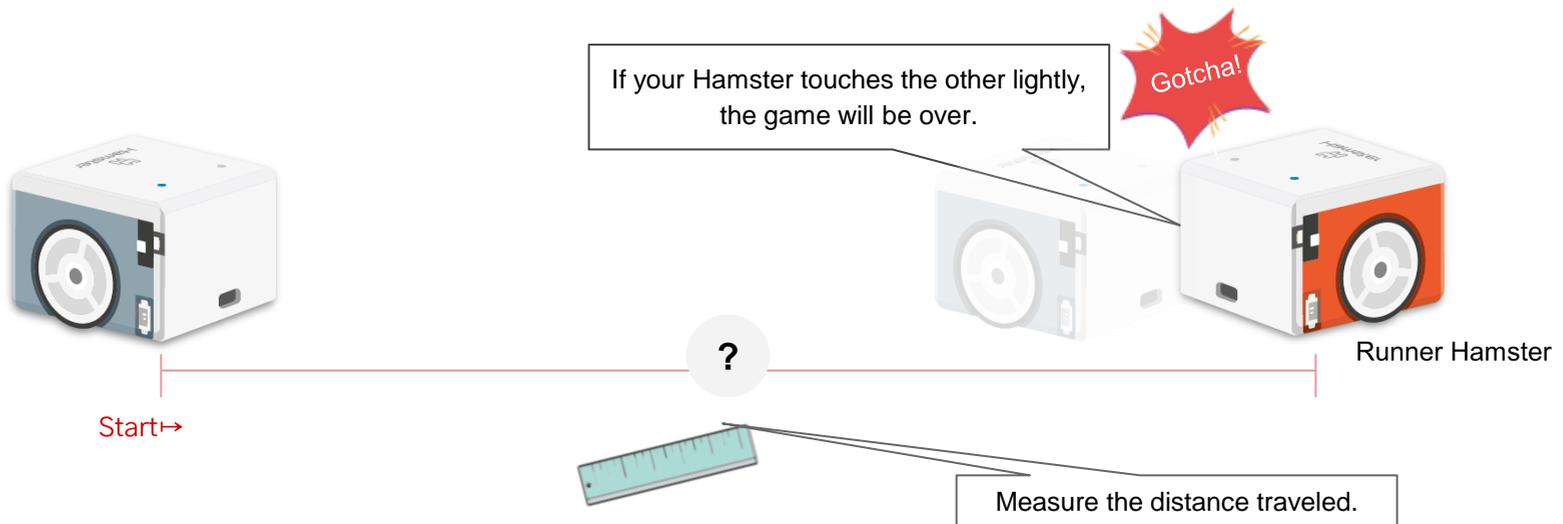
# Playing tag

## Moving forward

### Challenge 1

Let's write the code that lets your Hamster move to the target point.

Preparations: Hamster, Ruler



1. Establish roles (of the tagger and runner Hamsters).
2. Set the position of the runner Hamster.

3. Think about and write the code that lets the tagger Hamster move from the starting point to the point where the runner Hamster is located before stopping.

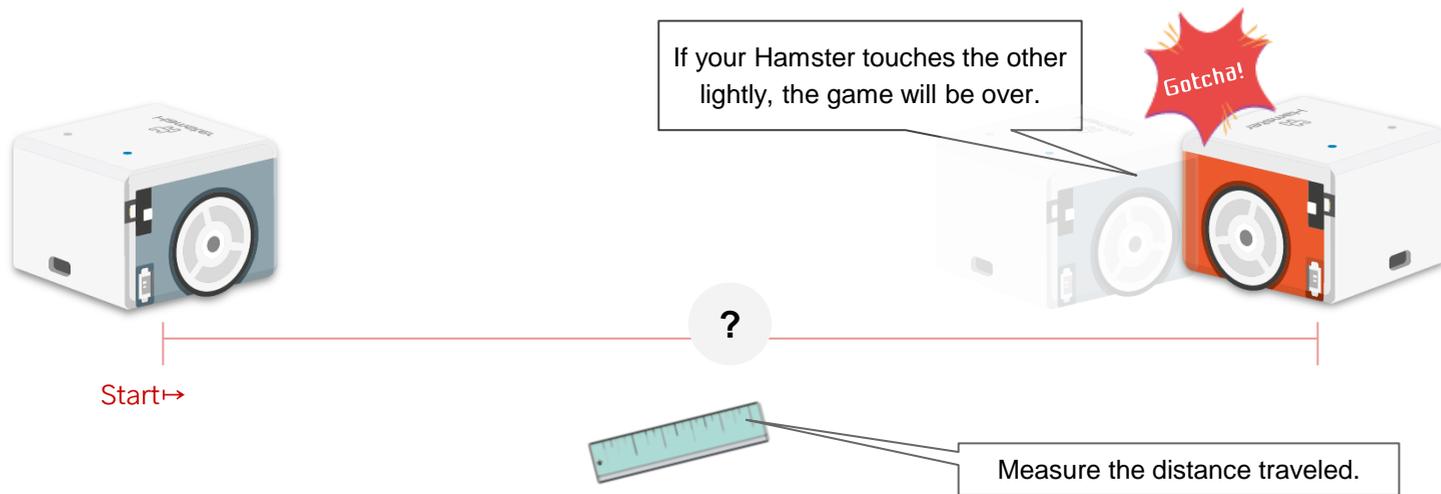
# Playing tag

## Moving forward

### Challenge 2

Let's write the code that lets your Hamster move to the target point.

Preparations: Hamster, Ruler



1. Establish roles (of the tagger and runner Hamsters).
2. Set the position of the runner Hamster.

3. Think about and write the code that lets the tagger Hamster move from the starting point to the point where the runner Hamster is located before stopping.

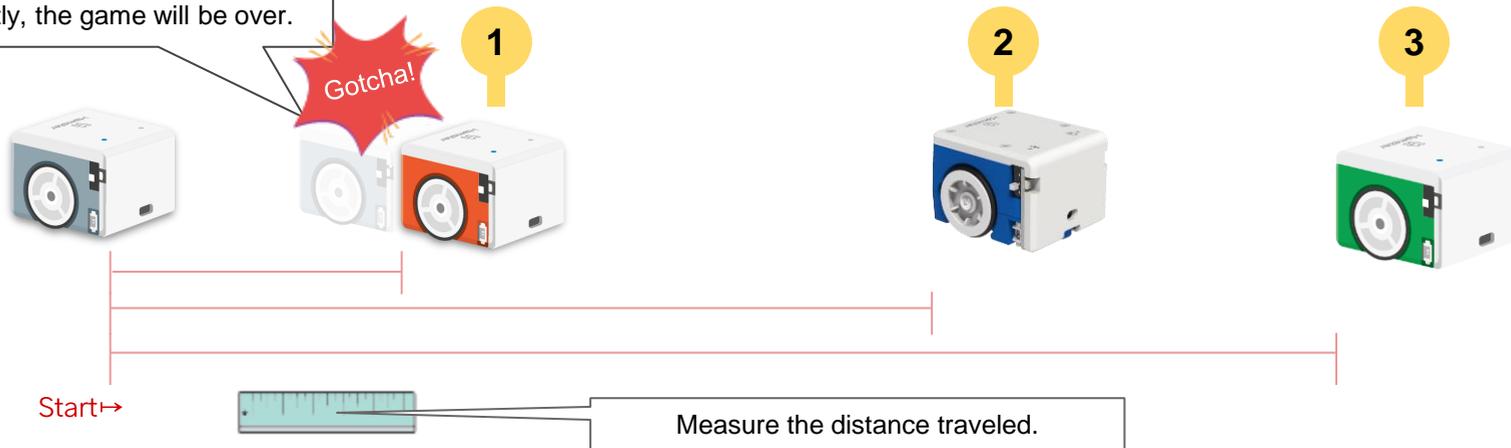
# Playing tag

## Team competition

### Challenge 3

Let's write the code that lets your Hamster move to the target point.  
Preparations: Hamster, Ruler

If your Hamster touches the other lightly, the game will be over.



1. Establish roles (of the tagger and runner Hamsters).
2. Line up three runner Hamsters.
3. Think about and write the code that lets the tagger Hamster move from the starting point to the point where the runner Hamsters are located.

If the tagger Hamster catches a runner Hamster, it should start again from the starting point.

Please move a caught runner Hamster to the side so as not to get in the way of the tagger Hamster!

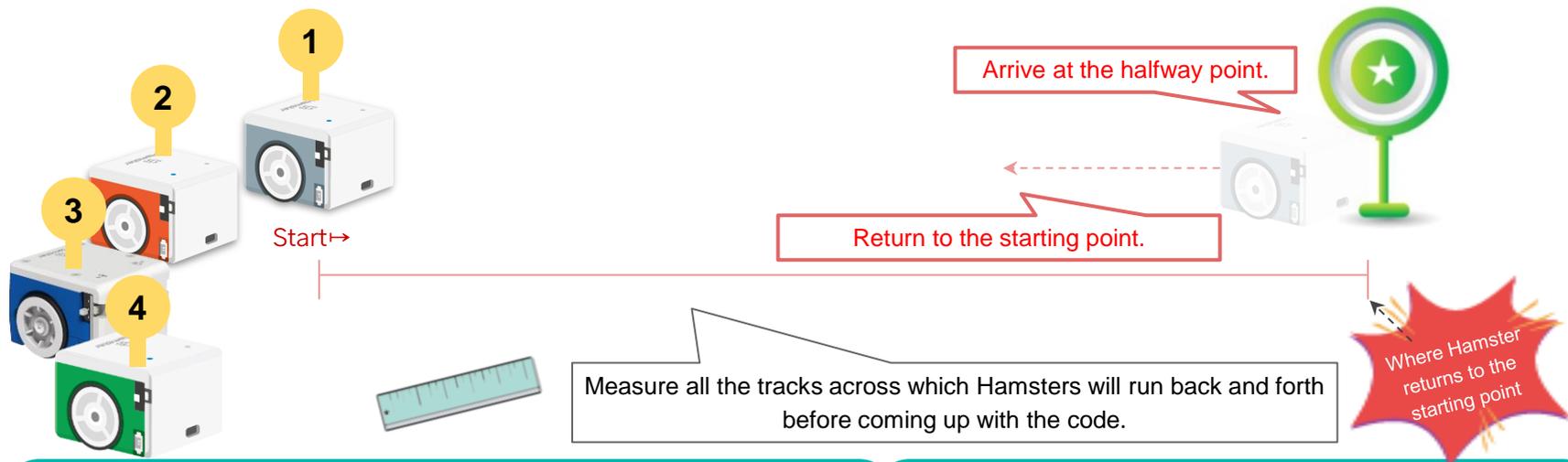
# Shuttle relay

## Team competition

### Challenge 3

Let's write code for the shuttle relay.

Preparations: Hamsters (3 to 4), Ruler



1. Set the order of the challenges.
2. The tagger Hamster moves to the halfway point and then returns to the starting point again.

After departure, move forward to the halfway point and then backward to the starting point again.

Let the next tagger Hamster do this the same way.

# Playing tag - team competition

Let's engage in different versions of playing tag by:

- Placing the runner Hamster at different distances
- Picking the team that completed the mission the fastest
- Selecting the tagger Hamster that caught the most runner Hamsters within a set time, etc.



# Let's Review

- 😊 What did you learn today?
- 😬 Did you encounter any difficulties?
- 😍 What interested you the most about Hamster robot?

See you  
again!

