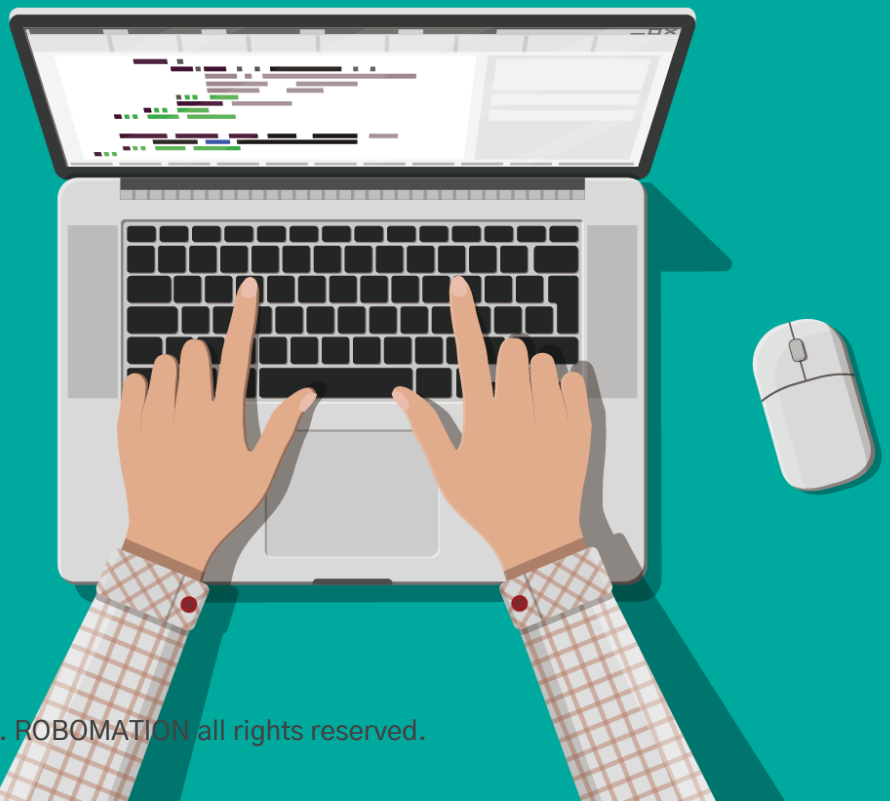
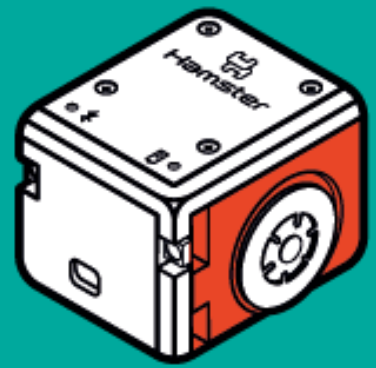
e-book

Hamster Coding

Scratch 3

Written by ConceptOn





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ROBOMATION
MAKE THINGS ALIVE

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.

Hamster Coding Scratch 3

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

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

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Today's Activity

Division	Description	Time
Introduction	**Explore the problem.** Why not get Hamster to rotate in different directions?	5min
Development	**Find out a solution.** Let's find out the Rotate block. **Solve the problem.** Let's command Hamster to rotate according to a given mission.	30min
Conclusion	**Review today's activities.** Let's talk about what you have learned and enjoyed.	5min

Shall we try allowing Hamster to rotate in different directions?

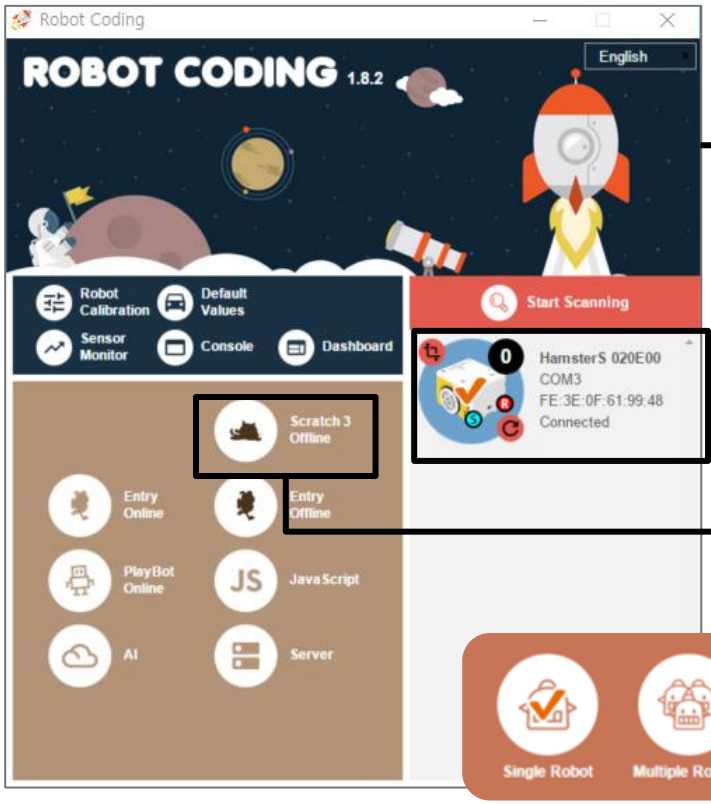
Get ready

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).

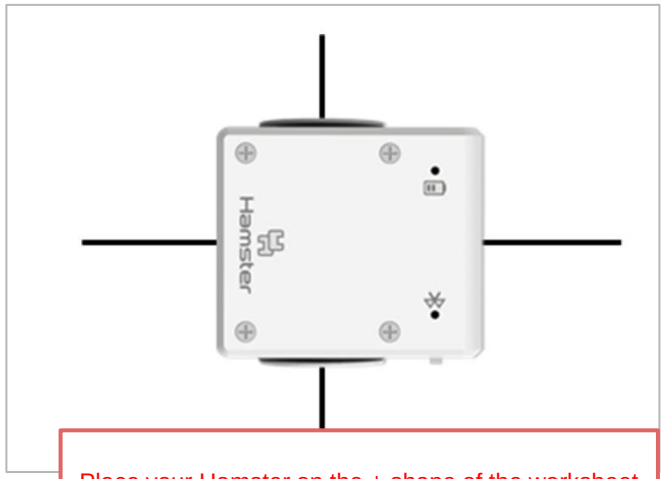
3. Click on Scratch 3 Offline.

4. Click on “Single Robot” and then “New File.”

Rotate in the desired direction

Let’s find the code that lets your Hamster rotate to the right and left for a second each.

Preparations: Hamster, Worksheet (with a (+) mark)



+

Left rotate for 1 s

Right rotate for 1 s

Place your Hamster on the + shape of the worksheet and write the code that lets it rotate counterclockwise!

Code hints

Find the right blocks to write code.How did your Hamster move?

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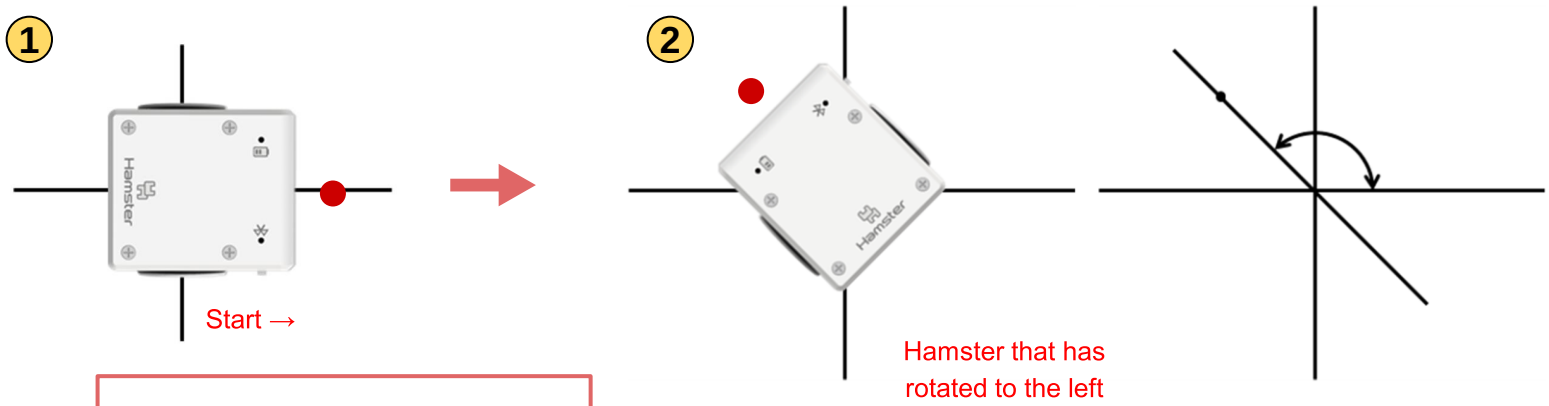
Rotate in the desired direction

Let's write the code so that Hamster rotates as follows:

Preparations: Hamster, Worksheet (with a (+) mark)



What should you do to make your Hamster as shown in 1 left rotate and stop as shown in 2?

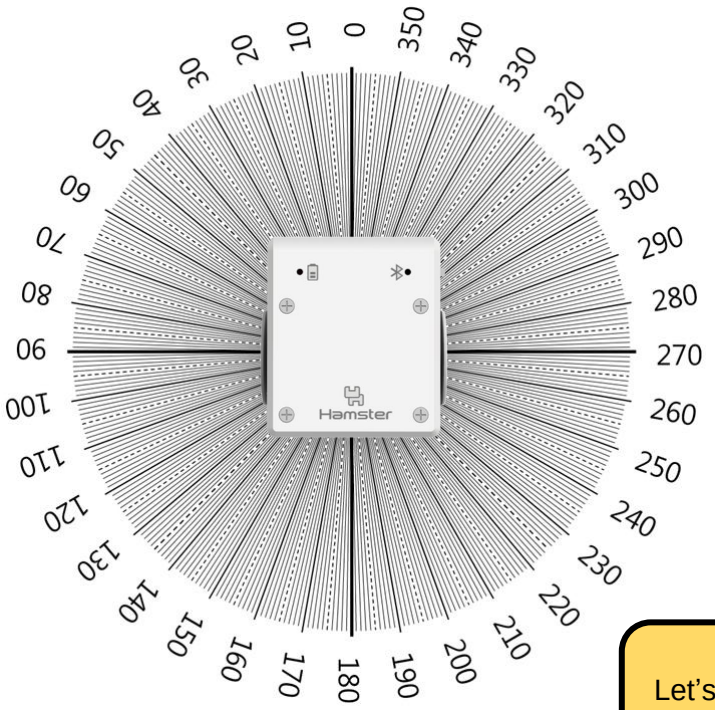
Code hints

Modify time (variable)

Measure the angle of rotation

Let’s measure the angle by which Hamster rotates.

Preparations: Hamster, Worksheet (protractor)



Measure the angle of rotation.

?

Modify time (variable)

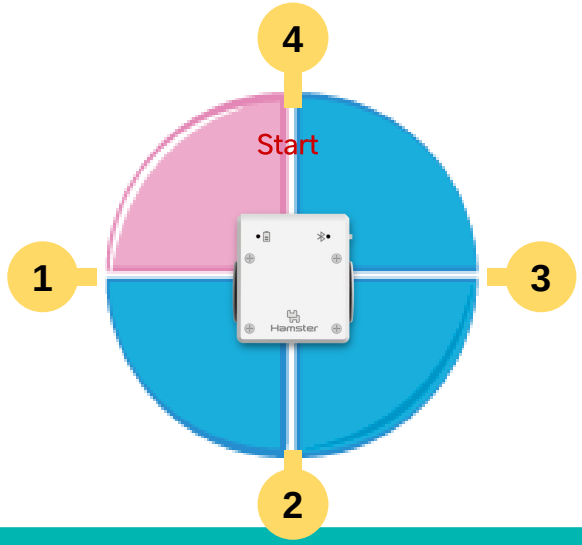
Let’s modify time (variable) for coding so that Hamster can rotate by the desired angle.

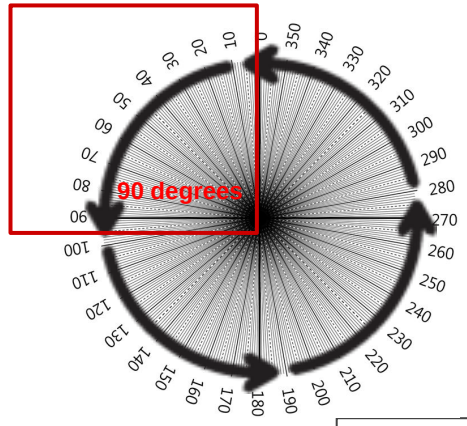
Keep rotating in place

Challenge 1

Let's write the code so that your Hamster can rotate in increments of 90 degrees in place.

Preparations: Hamster, Worksheet (protractor)

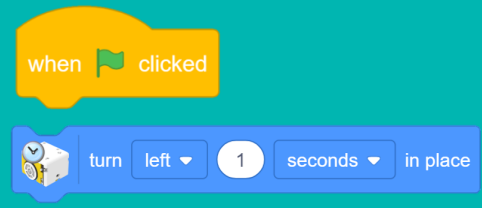




How many seconds does it take for Hamster to rotate by 90 degrees?

1. Place your Hamster with its head facing the starting point.
2. Think about how to make it turn and face the point with No. 1 or 2.
3. Let your Hamster turn to face No.[?], rotate by 360 degrees in place, etc.

Code hints



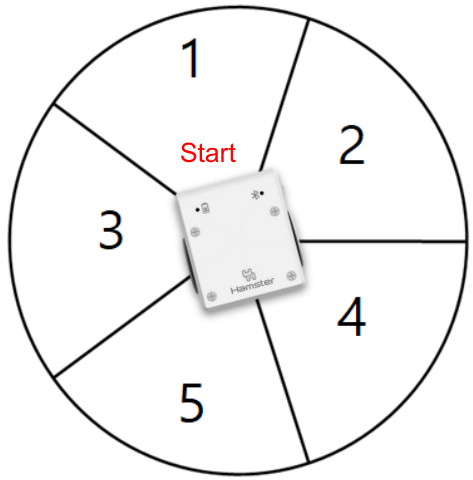
Unlock a password

Challenge 2 Let's write the code so that your Hamster can rotate in the order of a password.

Preparations: Hamster, Worksheet (circular number board)

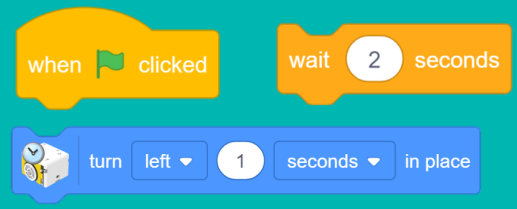
1	1	2	1	3
2	2	4	5	2
3	3	5	4	1

1	4	1	5	2
5	5	4	3	2
6	?	?	?	?



1. Place your Hamster with its front facing the starting point.
2. Think about how to make it rotate according to the proposed password and temporarily stop when it finds the right numbers.
3. Create various passwords to get it to rotate accordingly.

Code hints

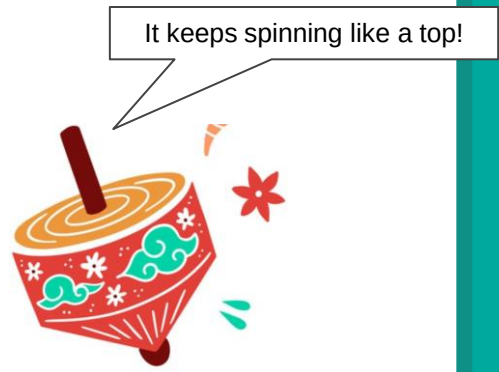


Dancing Hamster

Challenge 3 Let's write the code so that your Hamster can keep rotating in place.

1 Left rotate twice

2 Keep right rotating

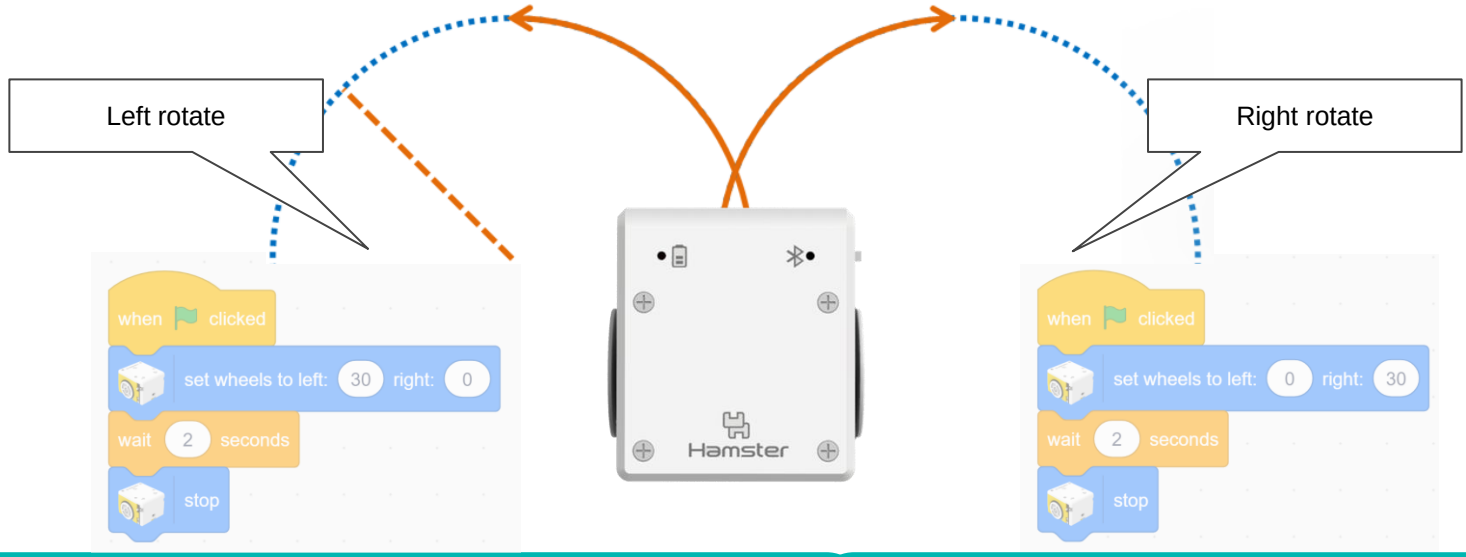


1. Think about how to make your Hamster keep rotating, and then write the code accordingly.
2. Utilize the blocks used in Challenge 3.

Code hints

Rotate in different directions

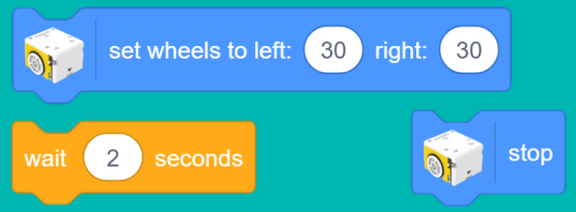
Let’s code so that the rotation can change through the modified speed values of both wheels.



1. Think about how to make Hamster rotate by modifying the speed values of both wheels and then write the code accordingly.

2. Write the code for the left rotation and right rotation.

Code hints

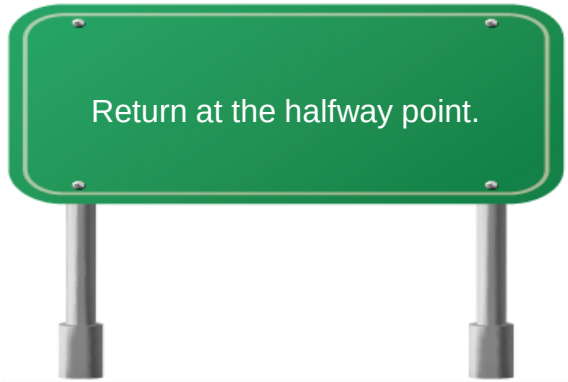


Running exercise

Challenge 4

Let's write the code so that your Hamster can move as written on the sign.

Preparations: Hamster, Worksheet (running course)

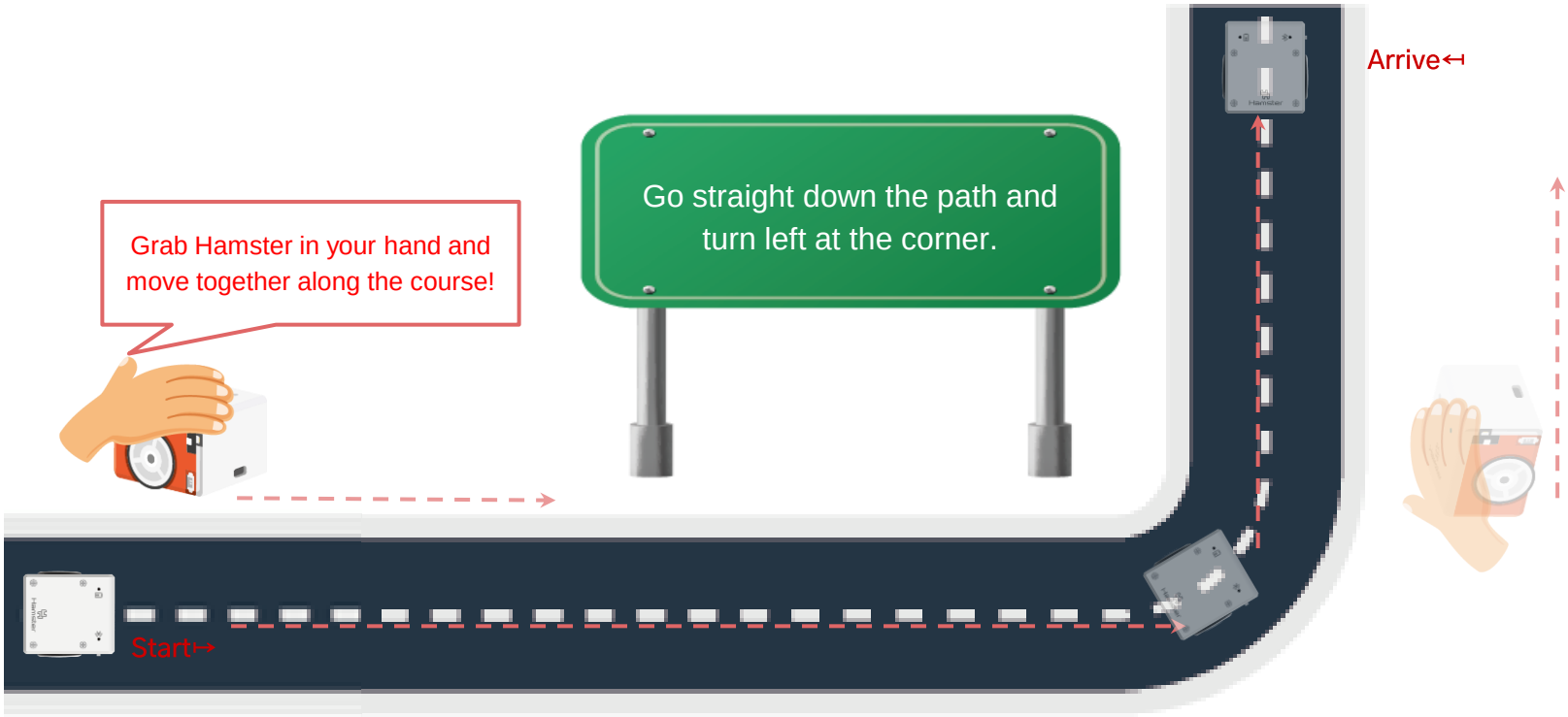


Grab Hamster in your hand and move it along the course!

Running exercise

Challenge 5 Let's write the code so that your Hamster can move as written on the sign.

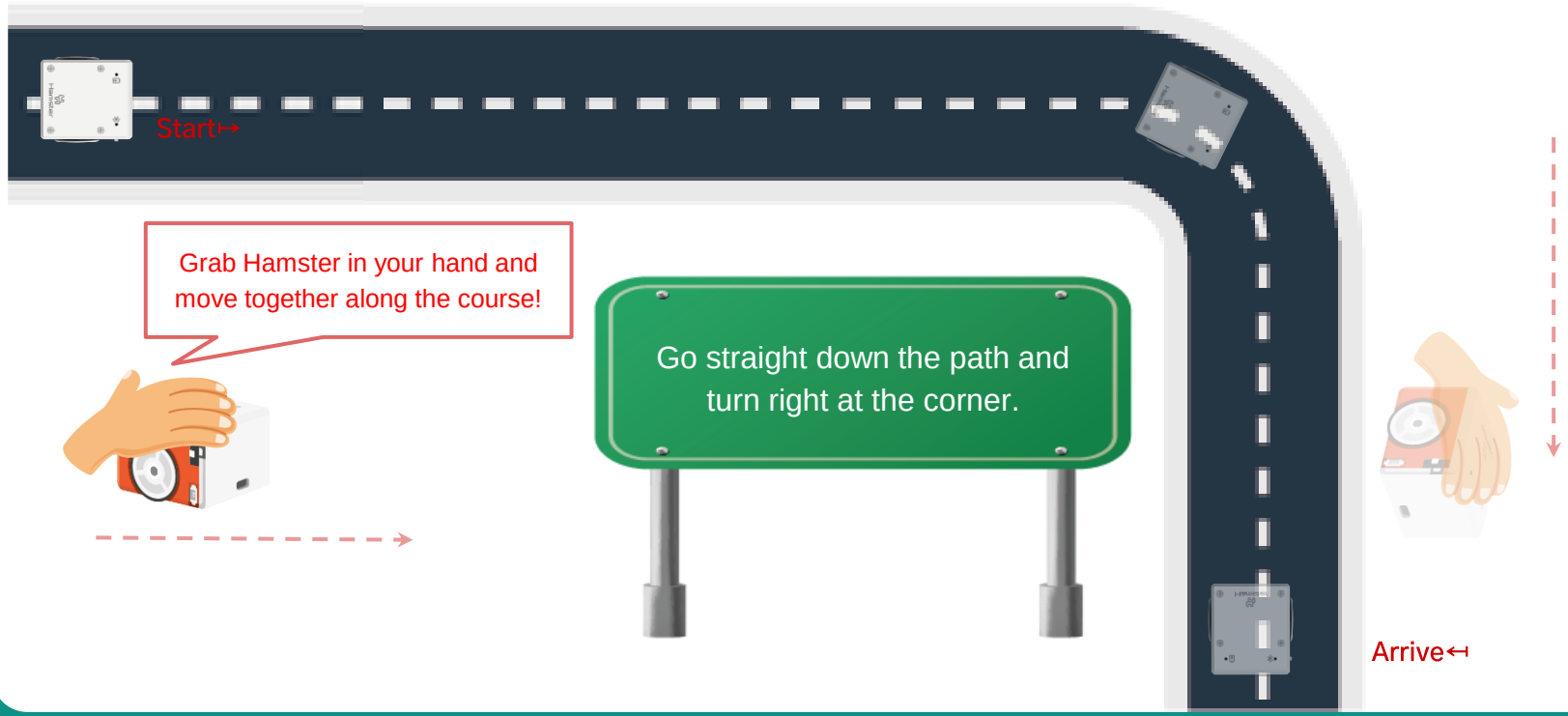
Preparations: Hamster, Worksheet (running course)



Running exercise

Challenge 6 Let's write the code so that your Hamster can move as written on the sign.

Preparations: Hamster, Worksheet (running course)



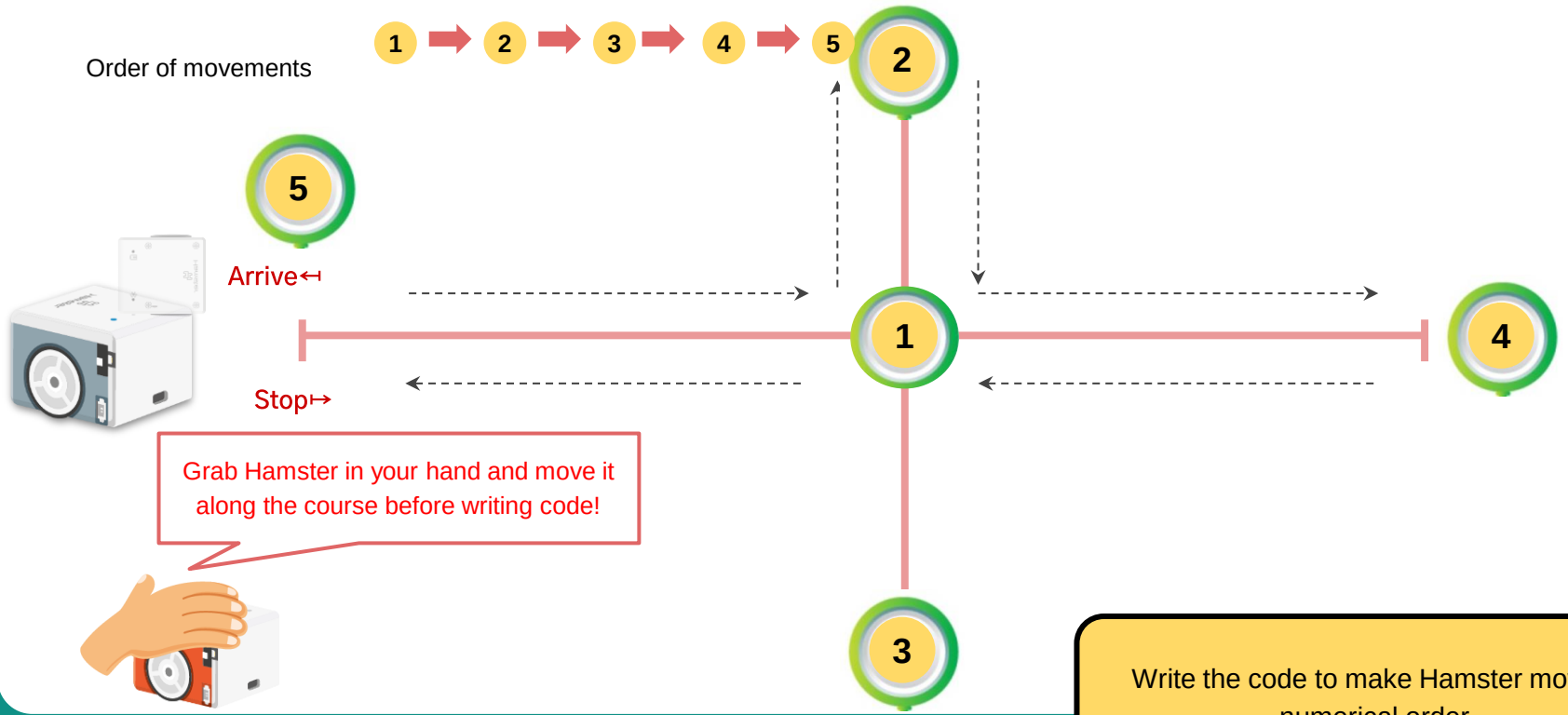
Run in four directions

(northern, southern, eastern, and western)

Challenge 7

Let's write the code so that your Hamster can move in different directions.

Preparations: Hamster, Worksheet (north, south, east, and west)



Write the code to make Hamster move in numerical order.

Let's Review

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