

e-book

Hamster Coding

Scratch 12

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.



Hamster Coding

Scratch 12

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

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

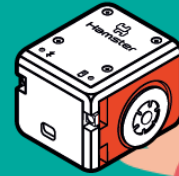


Today's Activity

Division	Description	Time
Introduction	Explore the problem. Why not code to transform your Hamster into a cute pet?	5min
Development	Find a solution. Let's code by selecting movements according to the proximity sensor values. Solve the problem. Let's command your Hamster to move 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 coding
for your Hamster to
respond like a cute pet?



Get ready

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



1 Hamster

4 Worksheet



2 Bluetooth Dongle

5 Writing supplies (pen and paper)

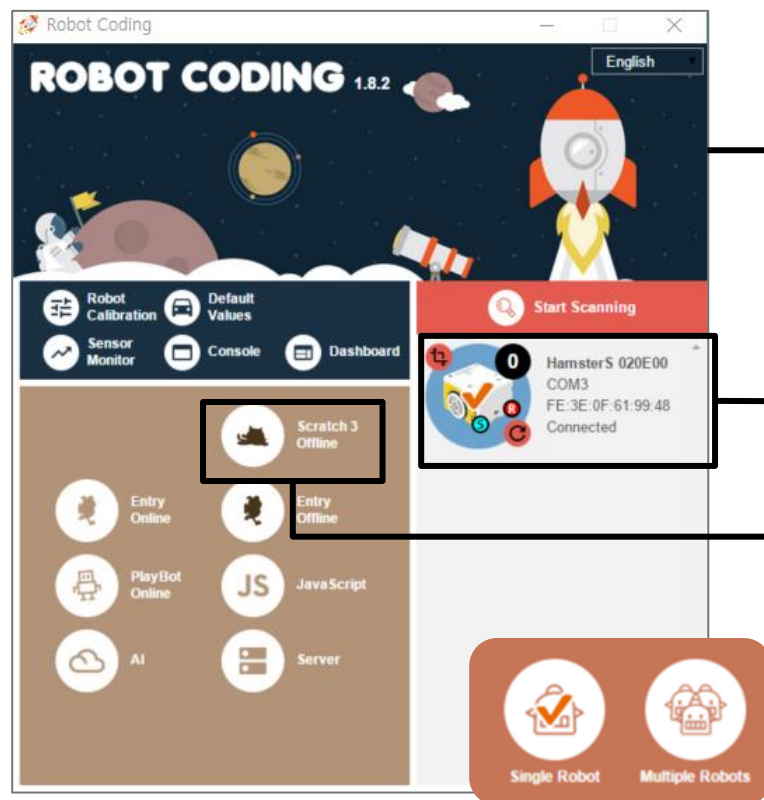


3 PC

6 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."



Let's use the proximity sensors



Pinky

Until now, you've coded to operate your Hamster in the order you set!

Now, let's code so that Hamster can work according to the sensor values!



Does Hamster work according to the sensor values?

It's really interesting...



Sunny

Let's use the proximity sensors



Do you remember different sensors embedded Hamster?

Just as people perceive and act on their surroundings, the Hamster robot can also recognize and act on external situations through its sensors.

Let's code to measure sensor values and then select Hamster's movements according to the values!

Let's think

Let's decide what your favorite pet is and think about how to express it with your Hamster.

If I approach,
the dog barks happily!



If I approach,
the cat meows and turns around!



Let's code with proximity sensors
so that Hamster can act like a pet!

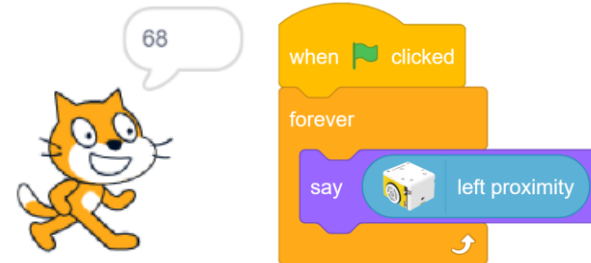
Shall we start step by
step?

Measure the left proximity sensor values

Let's talk about how the sensor values change after measurement.



Measure the sensor value



The Say code can be used to measure the proximity sensor values.

- 1 Measure the proximity sensor values, which depend on the distance between Hamster and your hand.

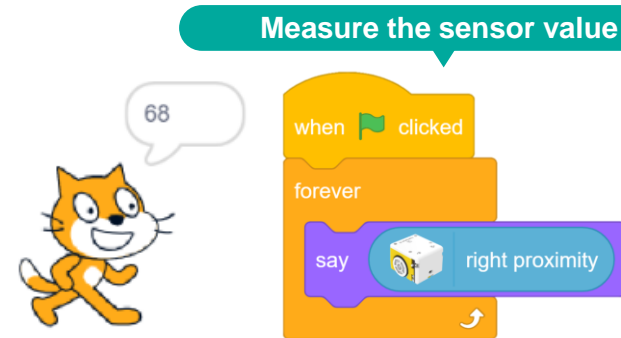
Distance	2cm	5cm	10cm
Left proximity sensor			

- 2 How do the left proximity sensor values change as your hand moves away from the sensor?

The values become smaller.

Measure the right proximity sensor values

Let's talk about how the sensor values change after measurement.



The Say code can be used to measure the proximity sensor values.

- 1 Let's measure the values of the right proximity sensor in the same way as the left one.

Distance	2cm	5cm	10cm
Left proximity sensor			

- 2 How do the right proximity sensor values change as your hand moves away from the sensor?

The values become smaller.

Exercise 1

Let's write the code for movement according to the left proximity sensor values.



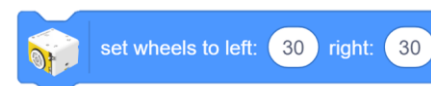
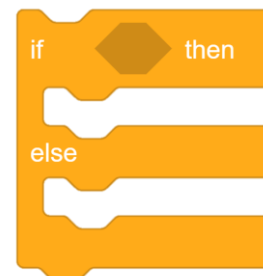
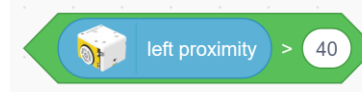
Does Hamster turn left following your hand?

- 1 Find the code that checks the sensor value.



- 2 Let's write the code so that your Hamster turns left when placing your hand close to the left proximity sensor.

Code hints



Exercise 2

Let's write the code for movement according to the right proximity sensor values.



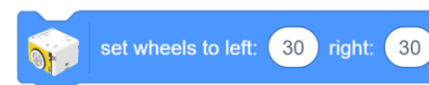
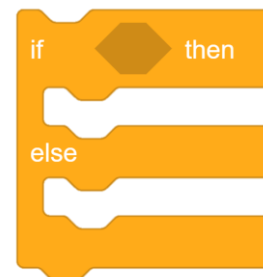
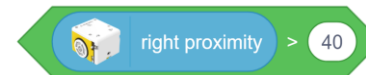
Does Hamster turn right following your hand?

- 1 Find the code that checks the sensor value.



- 2 Let's write the code so that your Hamster turns left when placing your hand close to the left proximity sensor.

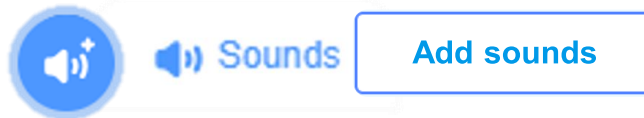
Code hints



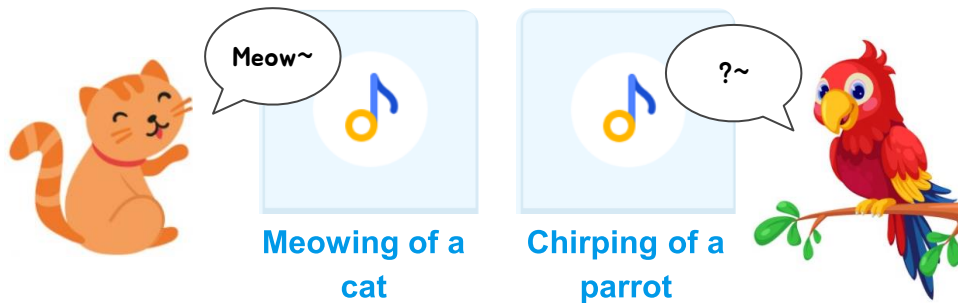
Add sounds

Let's write the code so that your Hamster makes different animal sounds.

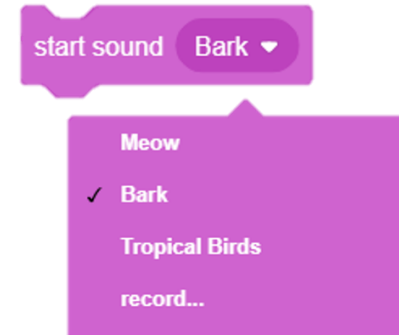
- 1 Let's write the code so that your Hamster makes different animal sounds.



- 2 Listen to other different sounds and add needed ones.



- 3 Do you see the sounds you added?



Exercise 3

Let's code and execute as follows.

- 1 If you put your hand close, Hamster makes the sound of a cat.



- 2 If you put your hand close to a chirping parrot, it will stop chirping.



Please code so that it can make other sounds you want!

- 3 If you put your hand close,



Hamster transformed into a cute pet

Challenge 1

Let's write the code that defines the characteristics of your favorite pet and expresses them with Hamster.



Transformation into a cute dog

If I approach,
it will bark
happily!



```
when clicked
  forever
    if (left proximity > 40 and right proximity > 40) then
      start sound Bark
```

Hamster transformed into a cute pet

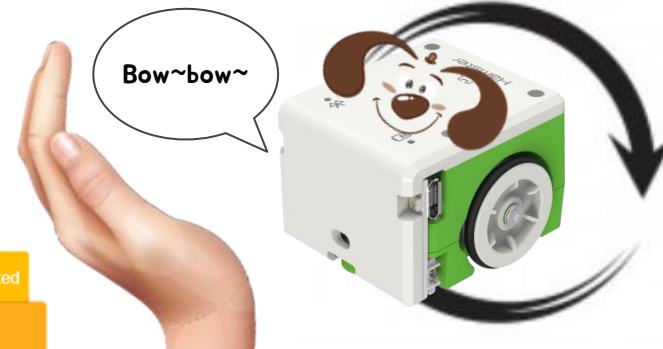
Challenge 2

Let's write the code that defines the characteristics of your favorite pet and expresses them with Hamster.



Transformation into a cute dog

If I approach,
it will bark
and turn
around!



```
when clicked
  forever
    if left proximity > 40 and right proximity > 40 then
      start sound Bark
      set wheels to left: -30 right: 30
      wait 3 seconds
      stop
```

Hamster transformed into a cute pet

Challenge 3

Let's write the code that defines the characteristics of your favorite pet and expresses them with Hamster.



Transformation into a cute dog

Hamster will
turn on the
green LED
lights joyfully
if it meets
me!

Bow~bow~



```
when clicked
  forever
    if left proximity > 40 and right proximity > 40 then
      start sound Bark
      set both led to green
      wait 0.5 seconds
      clear both led
      wait 0.5 seconds
```

Hamster transformed into a cute pet

Challenge 4

Let's write the code that defines the characteristics of your favorite pet and expresses them with Hamster.



Let's Review

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

See you
again!

