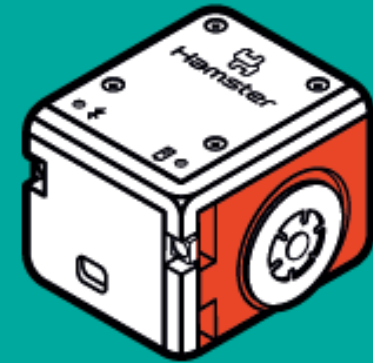


e-book

Hamster Coding

Scratch 18

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 18

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

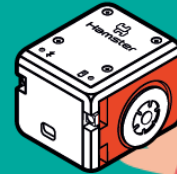
The use of the Scratch
programs will make coding
more interesting!



Today's Activity

Division	Description	Time
Introduction	Explore the problem. Let's hold a Hamster concert!	5min
Development	Find a solution. Let's code using the Scale, Add Sound blocks. 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
to transform your Hamster
into a melodic or
rhythm instrument?



Get ready

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



1 Hamster



2 Bluetooth Dongle



3 PC

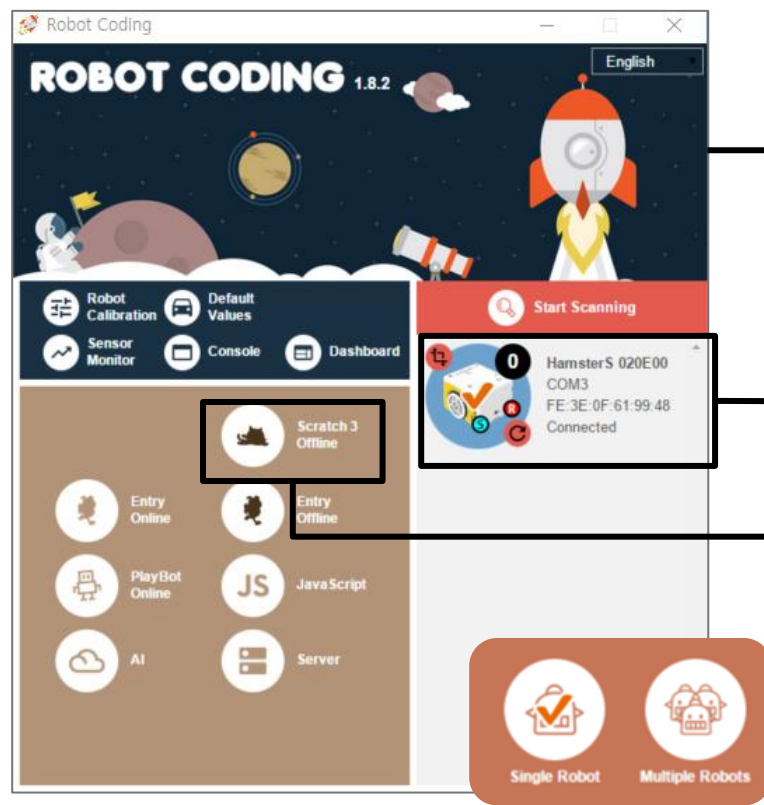
4 Worksheet

5 Writing supplies (pen and paper)

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 talk

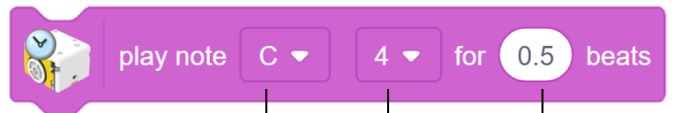
Are you ready to perform cheerfully?

Introduce a concert you've been to with your friends.

Notes and Note blocks

Let's find out the blocks that represent musical notes.

Write the code that changes the notes and their octaves and lengths, and then listen to the notes.











Note

Octave

Length

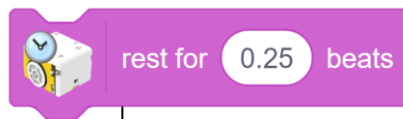


Note	Name	Rhythm syllable	Length (beet)
	Whole note	W Ta-ah-ah-ah	 4
	Dotted half note	WW Ta-ah-ah	 3
	Half note	W Ta-ah	 2
	Quarter note	V Ta	 1

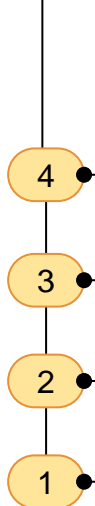
Different notes and their lengths

Rests and Rest blocks

Let's find out the blocks that represent rests.



Length



Note	Name	Rhythm syllable	Length (beet)
	Whole rest	www 1-2-3-4	 4
	Dotted half rest	ww 1-2-3	 3
	Half rest	w 1-2	 2
	Quarter rest	v 1	 1

Different rests and their lengths

Exercise

Let's write the code using the Note and Rest blocks.
Why not play with your friends together after coding?

- 1 Play the notes of **do (4), re, mi, fa, sol, la, ti, and do (5)** with 1 beat.

- 2 Play the notes of **do (5), ti, la, sol, fa, mi, re, and do (4)** with 1 beat twice.

3

Do mi sol do mi so la la la sol

4

Mi re do re mi mi mi re re re mi sol sol

Length of a dot \square Length of a left note $\times 1.5$ Length of the eighth note: 0.5



Play with a score

Twinkle, Twinkle, Little Star



1

Play the whole song once

2

Play a round

This means playing the same song at different times. In other words, the second player starts playing after the first player plays eight bars.

Twin kle twin-kle lit-tle star how I won-der

what you are! Up a-bove the world so high

like a dia-mond in the sky Twin-kle twin-kle

lit-tle star how I won-der what you are!

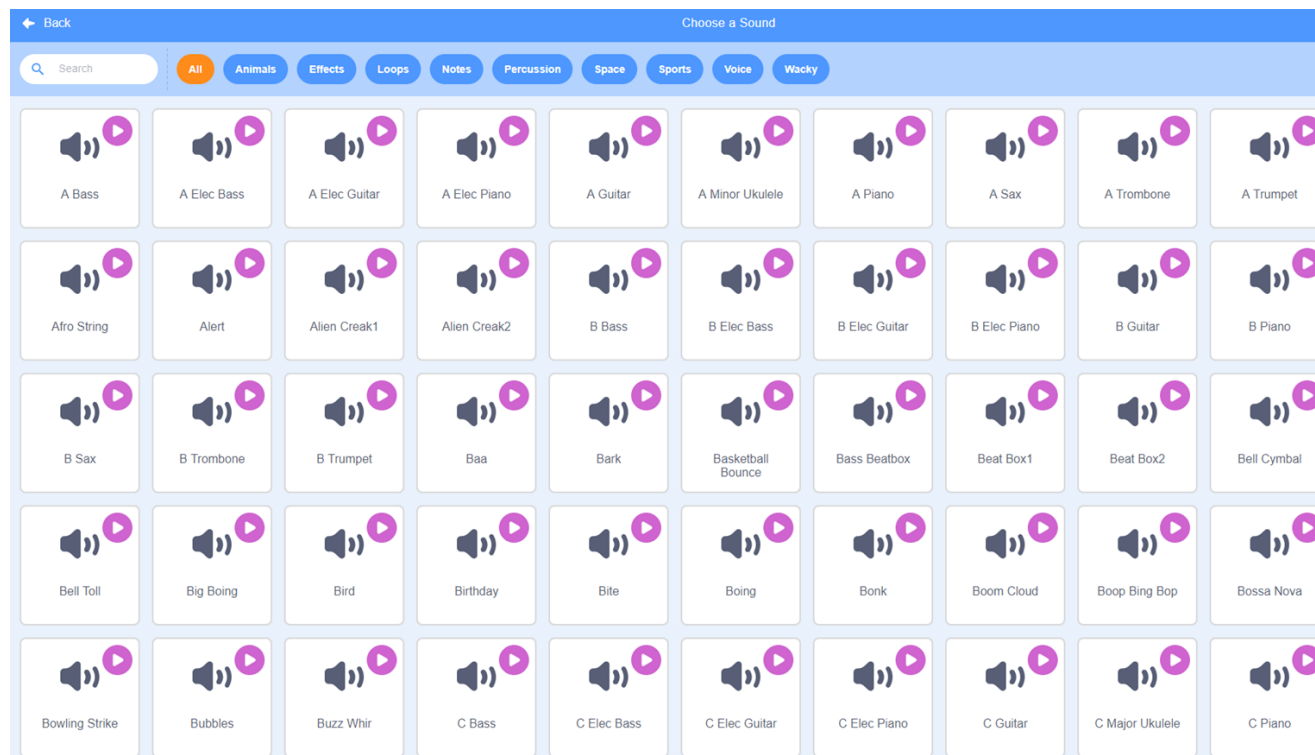


What Hamster should do

Play the notes as
in the score

Add sounds

Let's add more sounds to the Sound blocks.



Create a rhythm instrument

Let's make a Hamster instrument that creates various sounds.

If the right proximity sensor is covered, it makes a clapping and cheering sound.

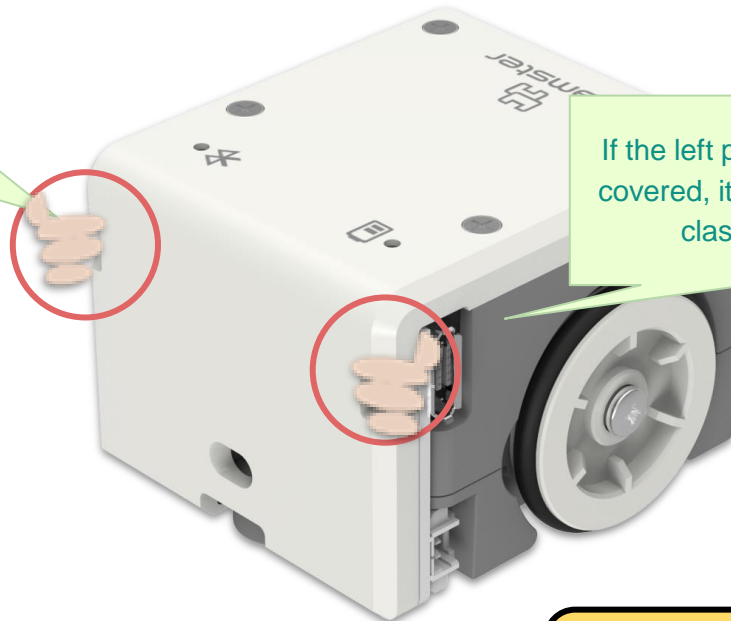


Clapping

If the left proximity sensor is covered, it makes a cymbals clashing sound.



Crash Cymbal



Let's write the code for Hamster to make specific instrument sounds when its sensors detect a hand.

Hamster orchestra

Twinkle, Twinkle, Little Star

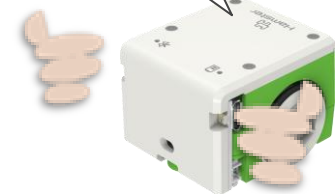


Do do sol sol

Melodic instrument

What Hamster should do
Play the notes as in the score

Twin kle twin-kle lit-tle star how I won-der
what you are! Up a-bove the world so high
like a dia-mond in the sky Twin-kle twin-kle
lit-tle star how I won-der what you are!



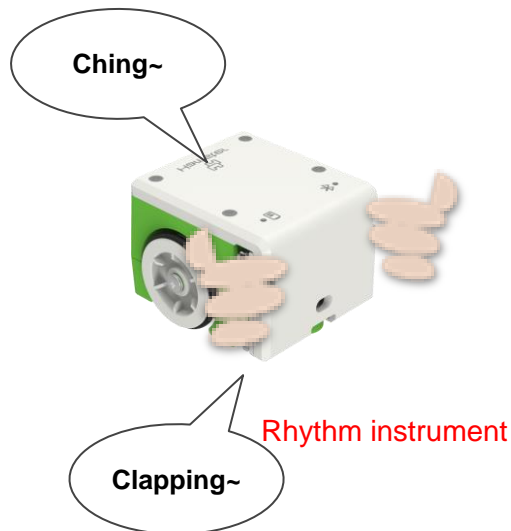
Ching~

Rhythm instrument

Clapping~

What Hamster should do
Play cymbals at the parts marked with "O," and make a clapping and cheering sound when the performance is over

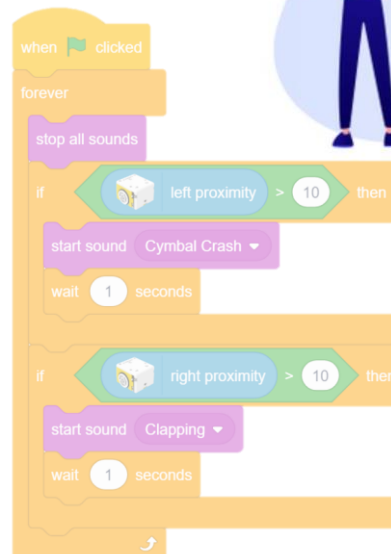
Hamster orchestra



Rhythm instrument

What Hamster should do

Play cymbals at the parts marked with "O," and make a clapping and cheering sound when the performance is over



The sensor values vary depending on the situation, so let's measure them before coding.

Let's Review

😊 What did you learn today?

😄 Did you encounter any difficulties?

💖 What interested you the most about Hamster robot?

See you
again!

