



## makeblock Nextmaker 3 in 1 Coding Kit User Guide

[Home](#) » [Makeblock](#) » makeblock Nextmaker 3 in 1 Coding Kit User Guide 

# makeblock

NEXTMAKER

Magic Tree

Move your hand to change the tree size

### Contents

- 1 Nextmaker 3 in 1 Coding Kit
- 2 Play with Max
- 3 Magic Show
- 4 Lucky Draw
- 5 Make a Musical Instrument
- 6 Coding Project Card
- 7 Meet Halocode
- 8 Sound activated light
- 9 Color looping
- 10 Fix the dancing robot
- 11 Fix the aircraft
- 12 Wearable device
- 13 Coding Project Card
- 14 Meet the Speaker
- 15 Airplane Sound Effect
- 16 Airplane Music Box
- 17 Airplane Battle Game
- 18 Video Sensing Airplane Game
- 19 Creative Challenge
- 20 Coding Project Card
- 21 Documents / Resources
  - 21.1 References



*Move your hand up to  
enlarge the tree*

```

when hand up
switch costume to tree1
wait 0.2 seconds
switch costume to tree2
wait 0.2 seconds
switch costume to tree3
wait 0.2 seconds
switch costume to tree4
wait 0.2 seconds
switch costume to tree5
wait 0.2 seconds
switch costume to tree6
wait 0.2 seconds
switch costume to tree7
wait 0.2 seconds
  
```

*Move your hand down to  
shrink the tree*

```

when hand down
switch costume to tree7
wait 0.2 seconds
switch costume to tree6
wait 0.2 seconds
switch costume to tree5
wait 0.2 seconds
switch costume to tree4
wait 0.2 seconds
switch costume to tree3
wait 0.2 seconds
switch costume to tree2
wait 0.2 seconds
switch costume to tree1
wait 0.2 seconds
  
```

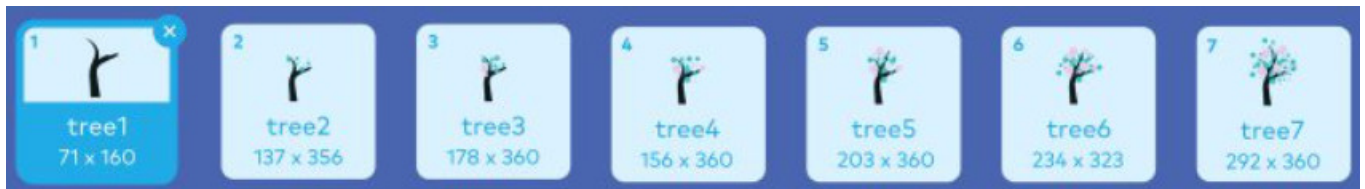
The "when hand ()" block is a Hat block and an Events block. Scripts placed below this block will be activated when a specified hand gesture occurs.

The "switch costume to ()" block changes its sprite's costume to a specified one.

The "wait () seconds" block can pause its script for the specified amount of seconds. The wait can also be a decimal number.

The sprite has multiple costumes and is programmed to switch between different costumes in a specified order.

This is the key to creating animations.

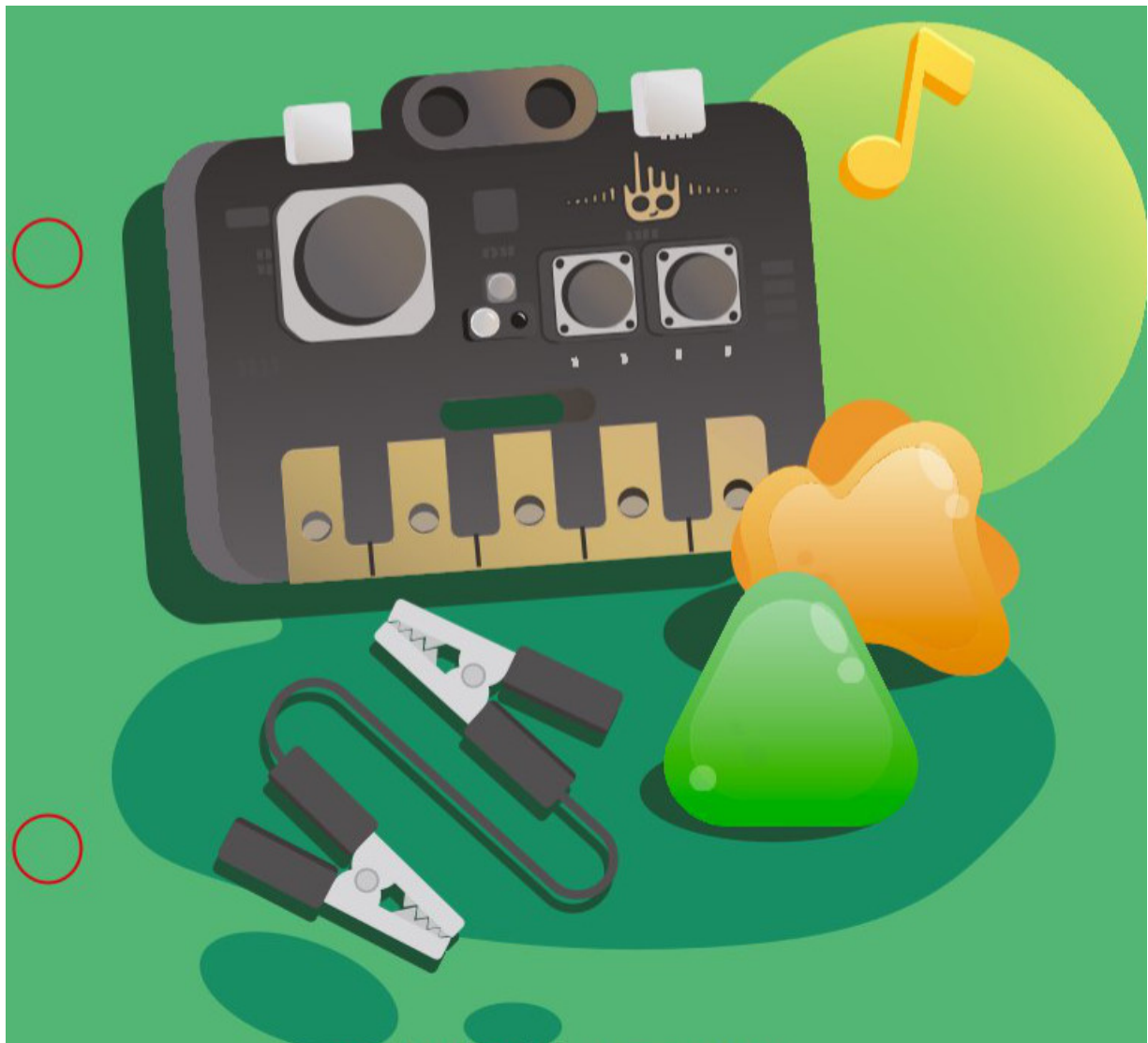


### Try:

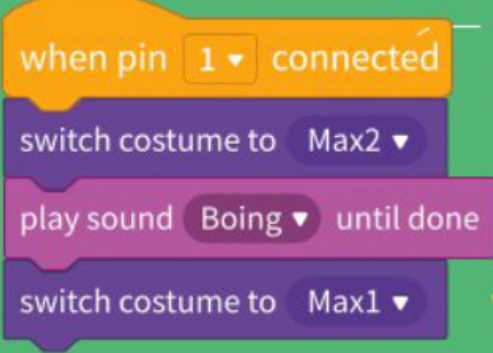
Delete the “wait () seconds” blocks in your scripts and run the scripts to see what happens.

### Play with Max

Connect the pins to make Max move its body



Connect pin 1 to change Max's costume.



when pin 1 connected

switch costume to Max2

play sound Boing until done

switch costume to Max1

Scripts placed below this block will be activated when pin 1 is connected.

If you'd like Max to change its costume when you connect different pins, you need to write multiple scripts.

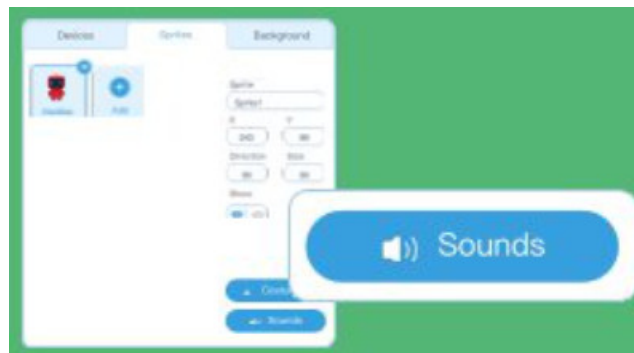
### How to connect a pin to execute the program?

The golden parts with numbers at the bottom of the fingertip piano board are pins. Connect a pin to GND via a wire or any other conductive object to complete the electrical circuit so as to execute the program.



### How to change the sound?

1. Enter the Sounds library to add a sound effect.



2. Click on the drop-down menu on the block to select the sound effect.





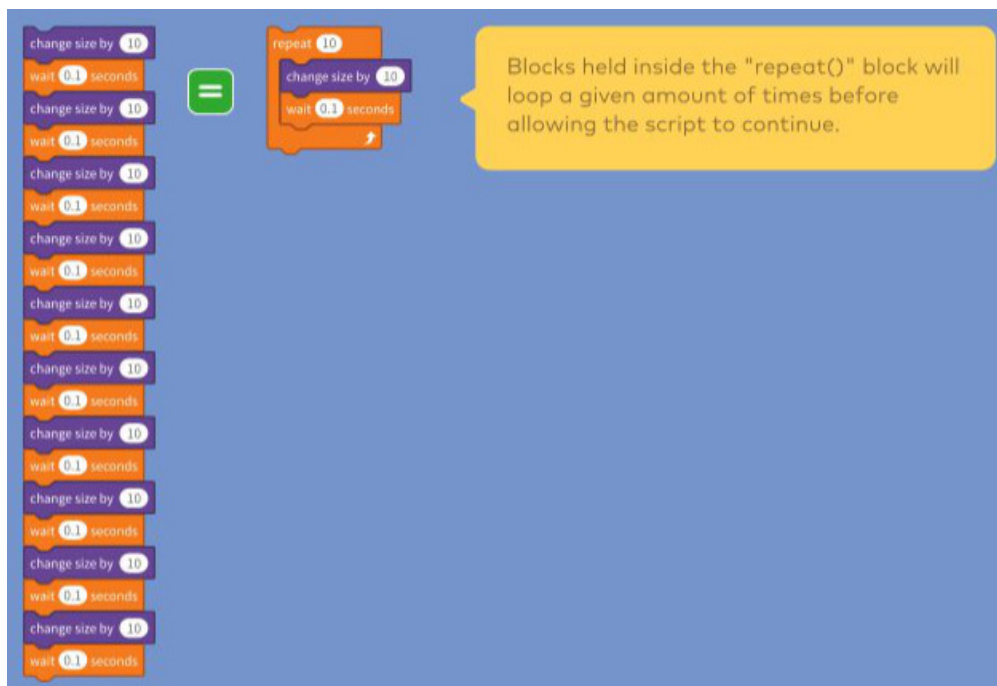
## Magic Show

Move your hand to do some magic tricks

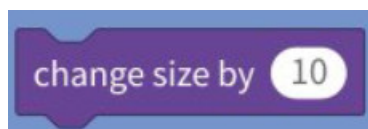


### How to use loops to simplify the script?

The two scripts are actually equal to each other. And you can change the amount of times the blocks repeat.



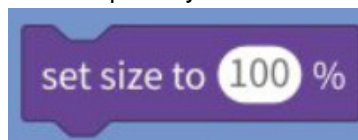
## How to change the sprite size?



Enlarge the sprite by 10.



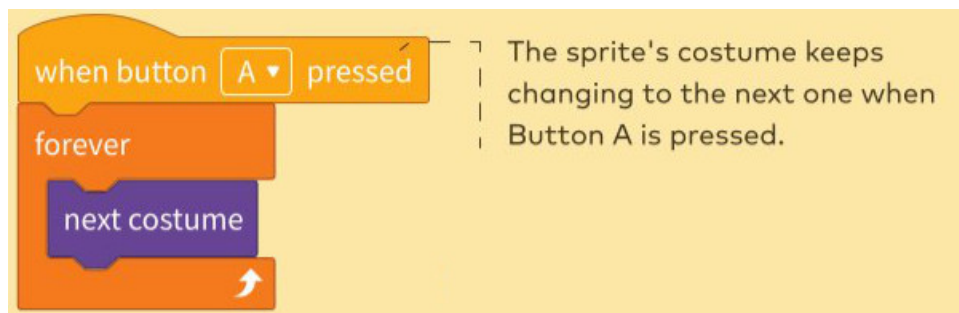
Add a "-" sign in front of the number to shrink the sprite by 10.



If your sprite gets too large or small, you can use this block to reset the sprite to its default size.

## Lucky Draw

Let's see what big prize you'll draw!



Blocks held inside the “forever” will be in a loop — just like the “repeat ()” block, except that the loop never ends (unless the stop sign is clicked, the “stop all” block is activated, or the “stop this script” block is activated within the loop).

### How to stop a fooping script?



Method 1 Click the red stop button.

**Method 2 Use a “stop ()” block in the script.**



The “stop all” block deactivates all scripts in the project, stopping it completely.

The “stop this script” block deactivates its script. It works like the “stop all” block, except that it only stops its script and doesn’t deactivate all scripts in the project.

## Creative Challenge

### Make a Musical Instrument

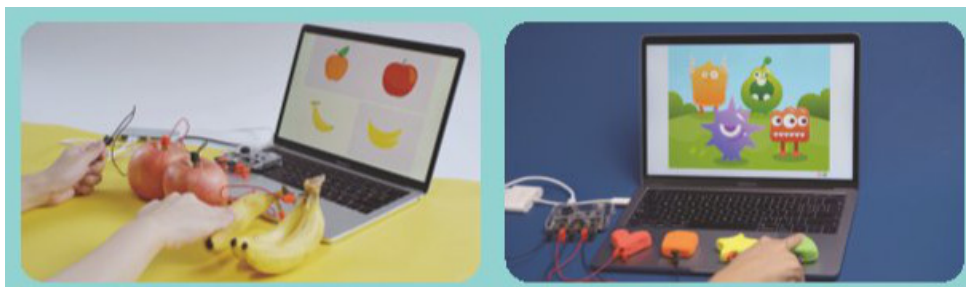


#### Task requirements

Find conductive objects in daily life, and use mBlock's Music blocks to program them to create a musical instrument. The conductive objects are connected to pins separately. Touch each of the objects to activate a specified sound.

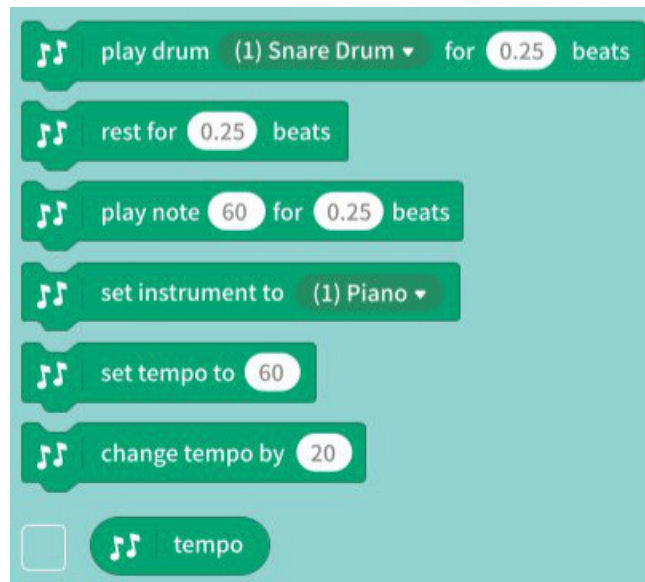
#### Steps

1. Create a conductive device. You can search your home for conductive objects. Use alligator clips to attach them to the fingertip piano board.



2. Program musical effects. You can use mBlock's Music blocks to add different sounds.

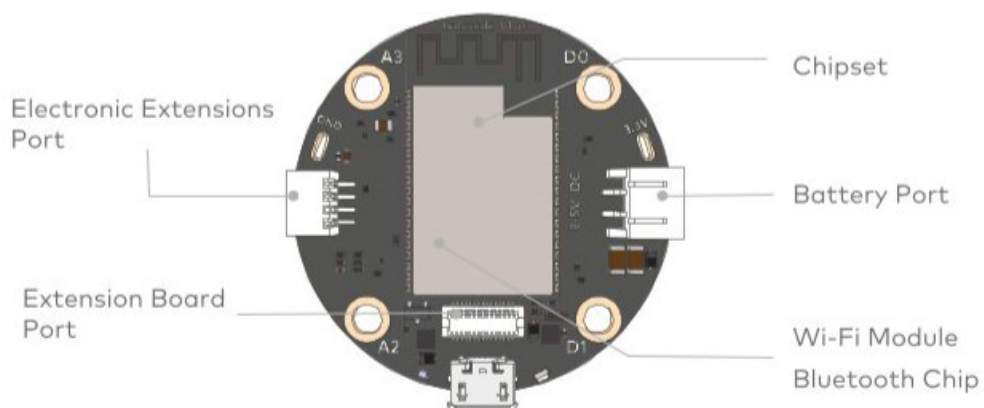
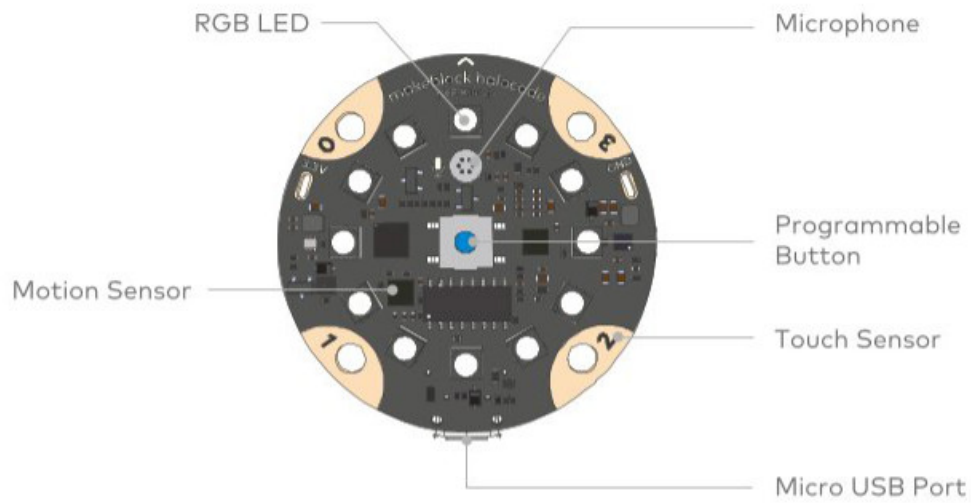




## Coding Project Card



Halocode



## Meet Halocode

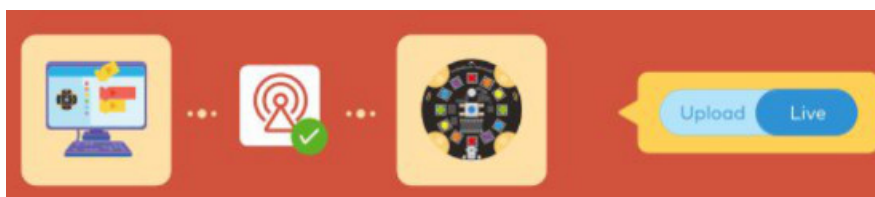
Halocode is amicrocomputer



## Upload & Live modes

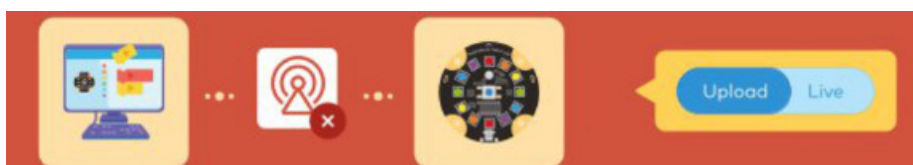
### Live:

Halocode stays in constant communication with mBlock so users can debug their program online.



### Upload:

Halocode is disconnected from mBlock so users can't debug their program online. To make Halocode run programs without the software, you first need to enable the Upload mode, and upload your program to Halocode.

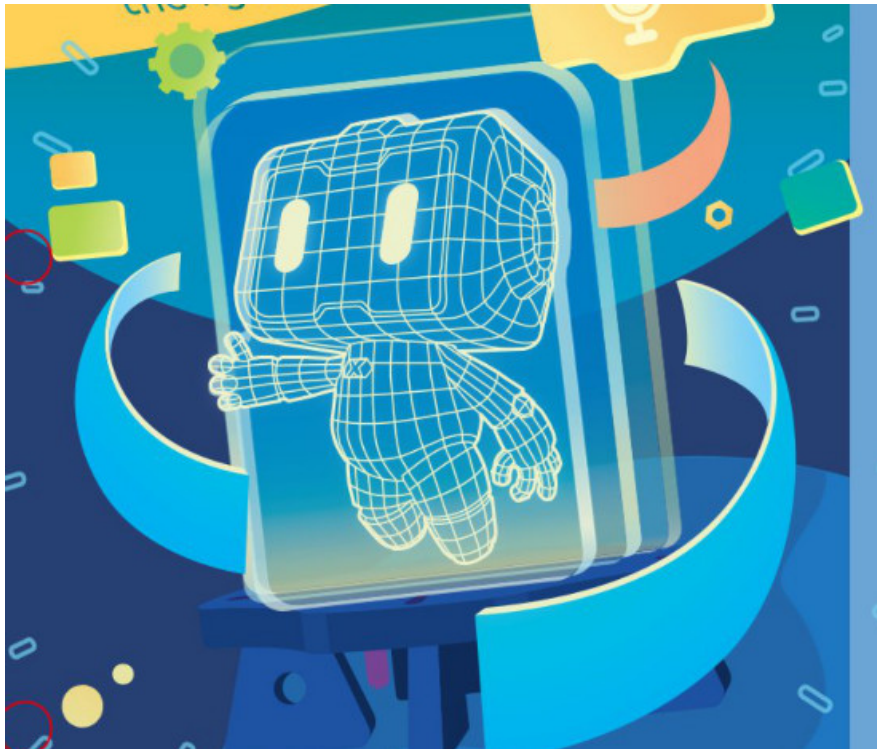


### Note

When Halocode is disconnected from the computer, you need to connect the battery to Halocode to supply power.

## Sound activated light

Use sound to turn on or off the light



If you'd like the light to be activated by a louder sound, how will you modify the number then?

The microphone loudness ranges from 0 to 100.

```
when microphone loudness > 10
  all LEDs light up red, brightness 5 %
  wait 5 seconds
  light off all LEDs
```

Change the number here to adjust the brightness.

Change the number here to set up the lighting-up time.

### Challenge

Apart from using sounds, can you think of any other ways to control the lights in the evening?

What if we control the light through shaking movements?

What are the advantages of this change? Try modifying the program to make this possible!

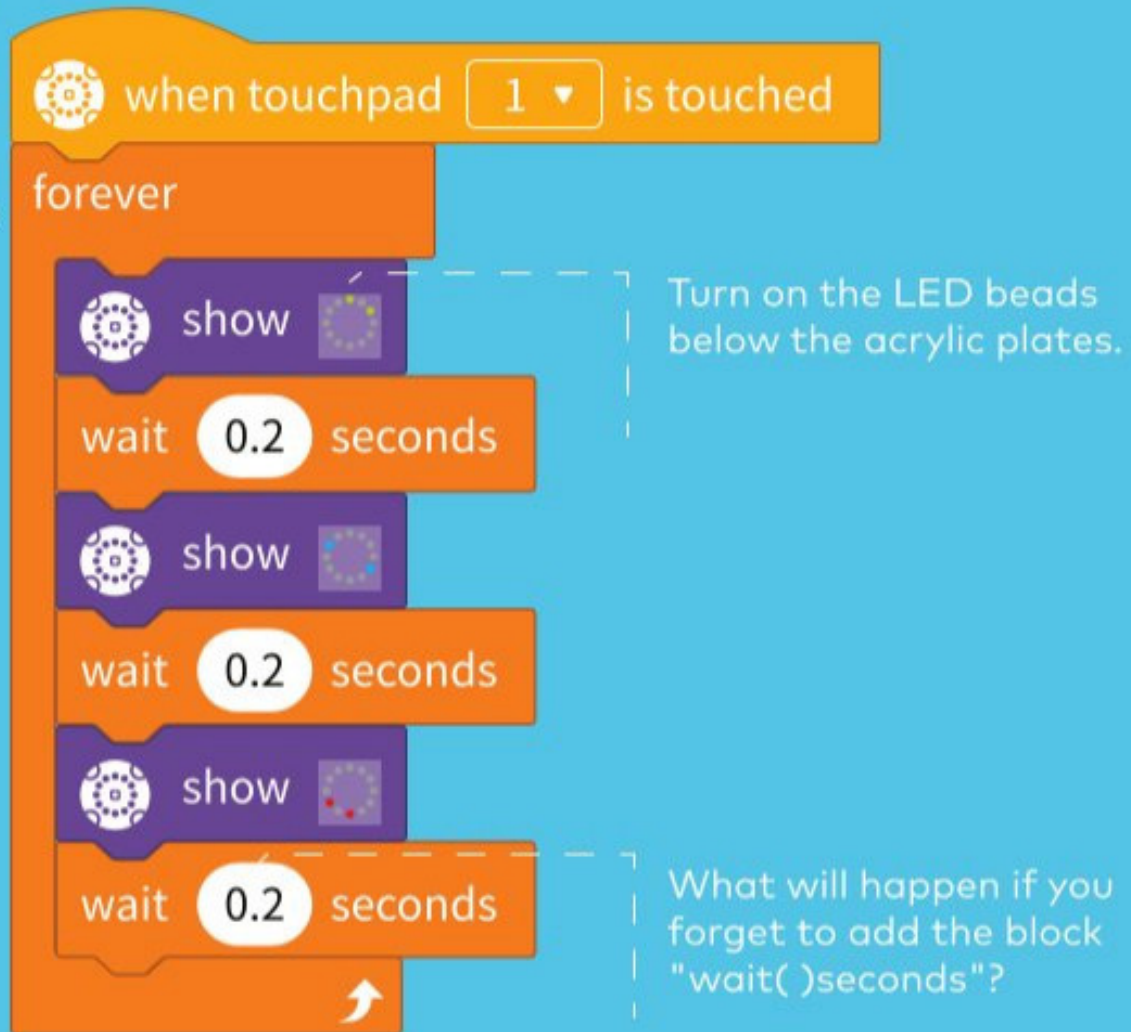
### Color looping



Write programs to make the light keep changing!



Add the "forever" block to execute the commands inside repeatedly.



### Loops:

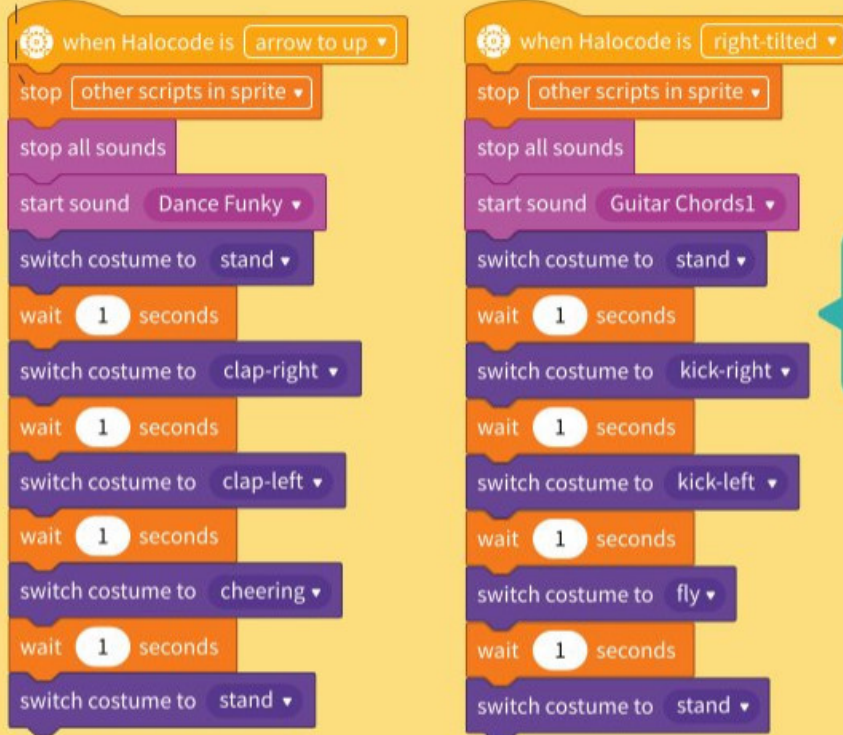
running the same sequence multiple times

### Fix the dancing robot

Make the robot dance the right way! ion



In multithreading, we often add the "stop other scripts in sprite" block to the program to avoid interruptions from other threads.



Sequence:  
identifying a  
series of steps  
for a task

The block "start sound ( )" stops running once the program stops running. But the sound will not stop until it finishes. If you'd like the sound to stop immediately, use the block "stop all sounds".

### Multithreading:

A thread of execution refers to the script under one single event block. If a program contains multiple event blocks, we call it multithreading.

### Bug and Debug:

A bug is an error or flaw in a computer program. The process of fixing the bugs is called Debug.

### Fix the aircraft

Correct the programs to define the engine's 3 gears, helping Max leave the deserted island.



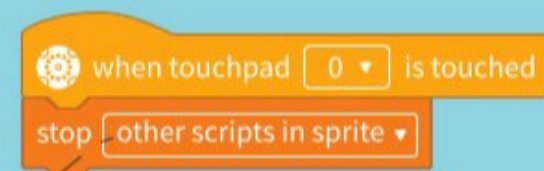




In multithreading programming, we often use the block "stop other scripts in sprite" to avoid interruptions from other threads.



The "turn right" block makes the sprite turn right by specified degrees. Change the number inside the block to change the angle degree.



Can we change this one to "stop all"? Try it.

## Creative Challenge

### Wearable device

Make a wearable and illuminable device.





### Ideate how to make it

1. What do you take with you when you go out?
2. How to attach Halocode to your body?
3. What light effects will you add to this?

Like a hat, a bag, gloves, a mask, a shirt, a tie, an umbrella, a breathing mask...

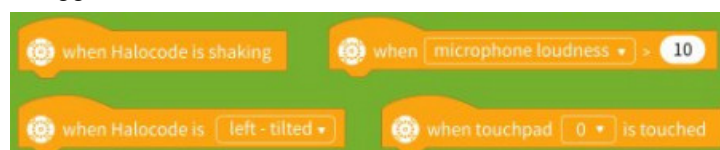
### Coding tips:

1. To adjust the tempo, use 
2. To ensure an endless looping light effect, use 

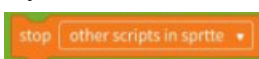
To ensure the light effect repeats specified times, use




3. How will the light effect be triggered?



4. If you'd like to add multiple light effects, you need to rely on multithreading. So you should use



to ensure threads don't interfere with each other.

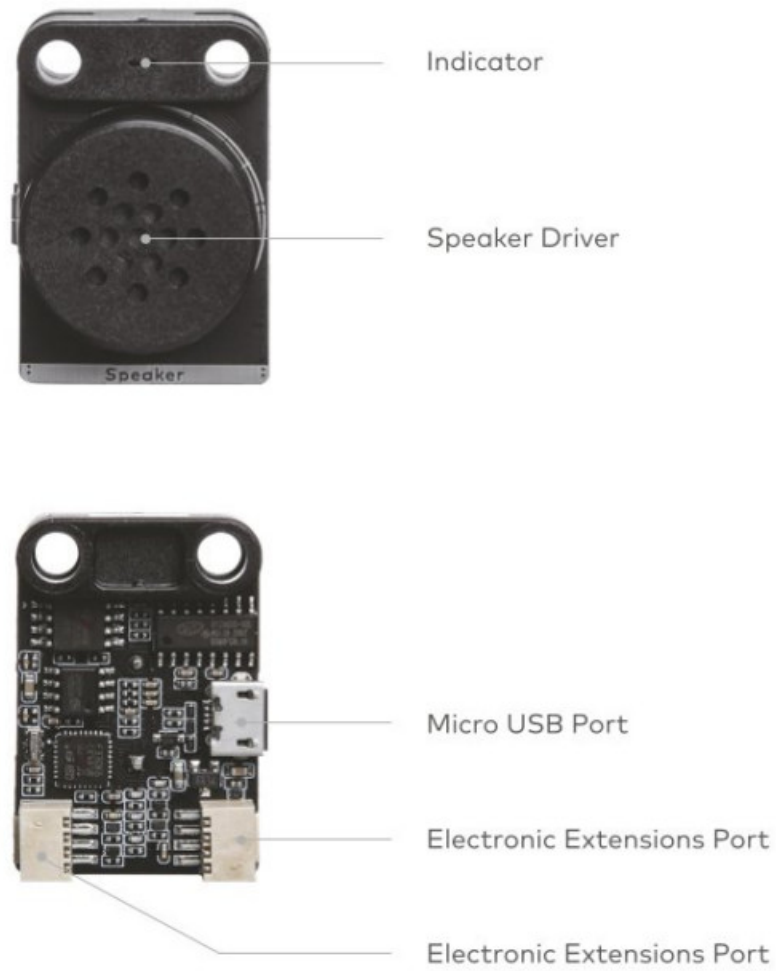
5. Finally, attach Halocode to your body. Remember to upload the program  to the device so that Halocode can run the program without the computer!

## Coding Project Card



**Speaker**



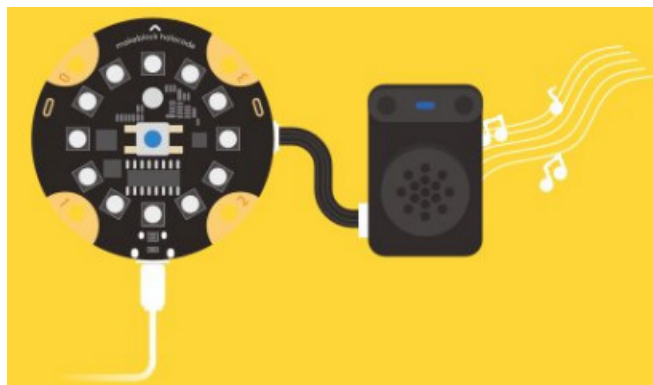


## Meet the Speaker

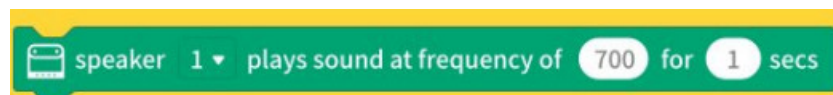
A speaker can make sounds



Connect the speaker



Make the speaker play sounds of different pitches



The pitch of a sound depends on its frequency of vibration. Sound frequency is measured in Hertz (Hz).

**Rule:**

Faster vibrations will make the pitch of a sound higher.

## Airplane Sound Effect

Design fun sound effects for the airplane



### Take-off sound

The "speaker () plays () until done" block plays the specified sound and waits for the sound to finish playing.

when button is pressed

- speaker 1 ▾ plays number and letter sound 3 ▾ until done
- speaker 1 ▾ plays number and letter sound 2 ▾ until done
- speaker 1 ▾ plays number and letter sound 1 ▾ until done
- speaker 1 ▾ plays electronic sound start ▾ until done

### Warning sound

You can try different event blocks when designing sound effects. The "when Halocode is shaking" block here triggers the sound when we shake the board.

when Halocode is shaking

- speaker 1 ▾ plays electronic sound warning ▾ until done

### Shooting sound

Use "repeat ()" to play the sound a couple of times.

when touchpad 0 ▾ is touched

repeat 3 ▾

- speaker 1 ▾ plays physical sound shot-1 ▾ until done

### Challenge

Replace “speaker () plays () until done” with “speaker () plays ()” and see what happens.

### Airplane Music Box

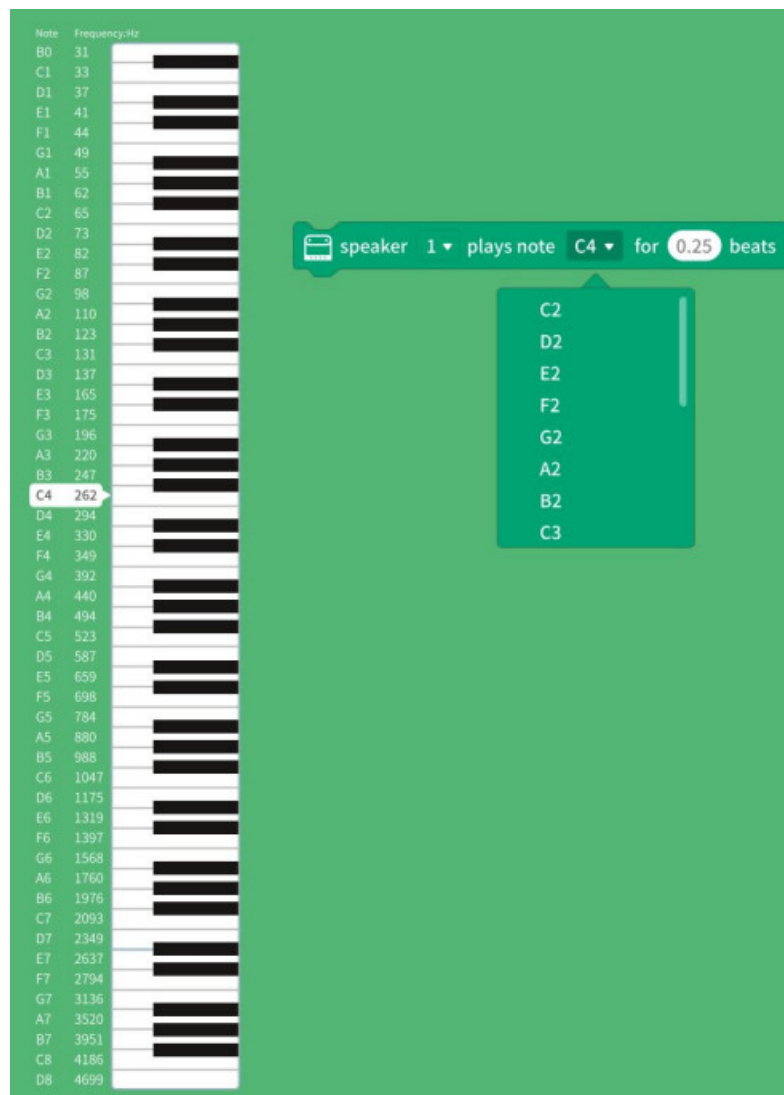
Make the airplane music box play music



### Speaker notes and piano keys

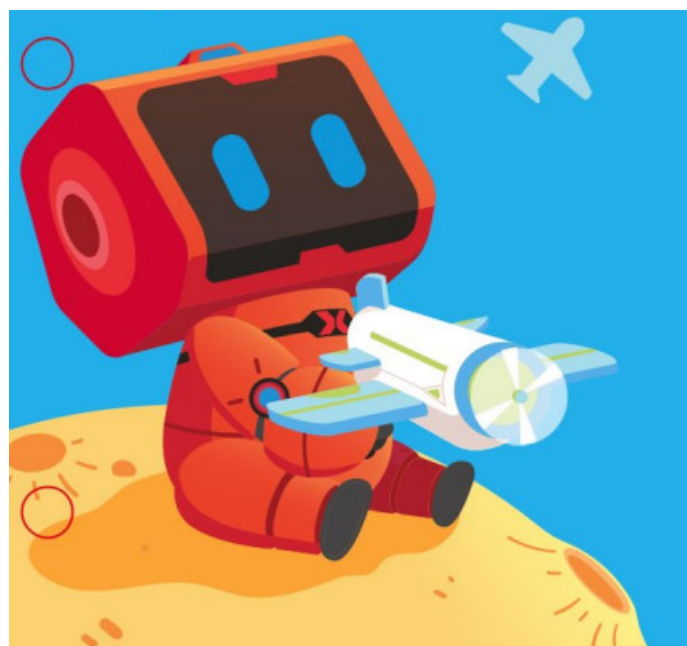
Notes of the speaker correspond to different frequencies. For example, C4 of the speaker corresponds to Middle-C on the piano.



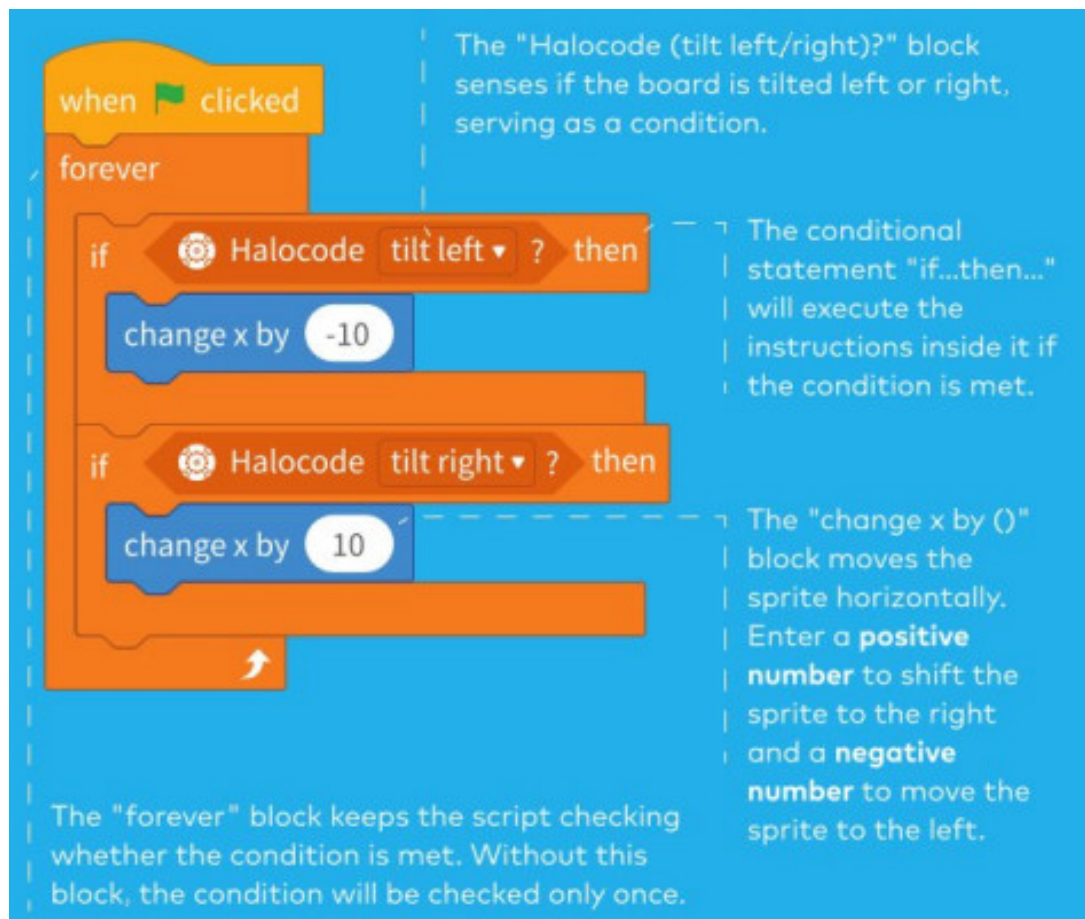


## Airplane Battle Game

Use the DIY airplane to contro/ the Plane sprite



Use Halocode to control the movement of a sprite



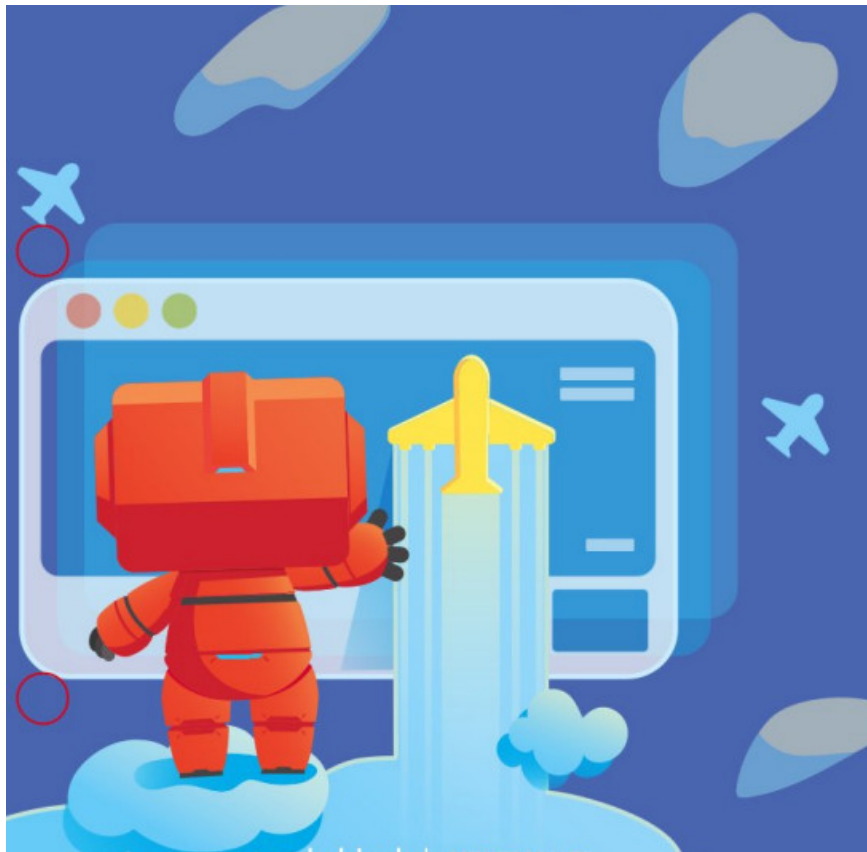
### Note

Positive Numbers are numbers greater than 0. A positive number can be written with a plus (+) sign in front of it. The plus sign is usually left out. For example, 2 and 20 are positive numbers.

Negative Numbers are numbers smaller than 0. A negative number starts with a minus (-) sign, like -5 and -10. The minus sign can't be left out.

### Video Sensing Airplane Game

Control the pigpe sprite with your palm



Turn video on/off

turn video on ▼

turn video off ▼

Click the drop-down menu and select direction or motion to detect.

This block can detect which direction the object in the video is going.

```

when clicked
  forever
    if video direction on sprite < 0 then
      change x by -10
    if video direction on sprite > 0 then
      change x by 10
    
```

When the object moves from left to right, the video direction is greater than 0; when the object moves the other way around, the video direction goes below 0.

For courses, please visit [www.nextmaker.com](http://www.nextmaker.com)

## Creative Challenge

Invent a glzmowith the spe?

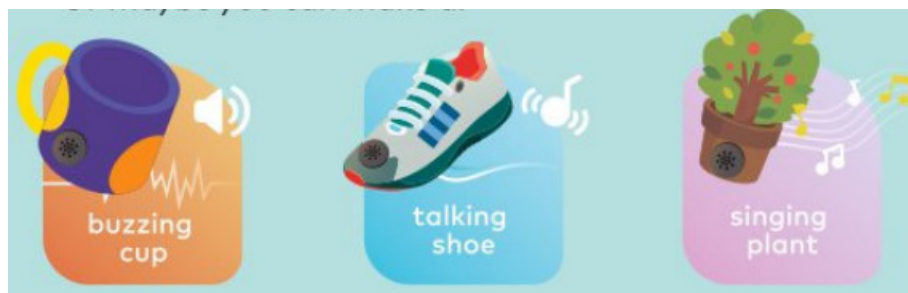


Here are some ideas

Find inspiration in everyday life and you may create a/an:



Or maybe you can make a:



### Tips and tricks

Program the speaker to play your favorite sound or song:

1. Connect the speaker to your computer;
2. Add the audio file you want to play to the speaker's disk;
3. Modify the audio file name following the rules;
4. Use the blocks to play the audio.



For step-by-step instructions, check out the lesson [Invent a Gizmo with the Speaker](#).

## Coding Project Card



## Fingertip Piano

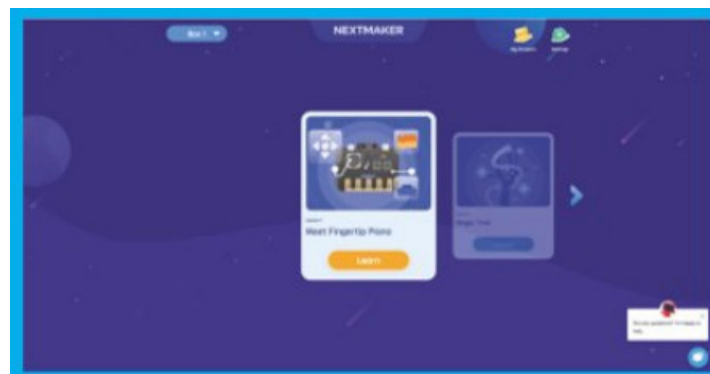


## Assemble the casing



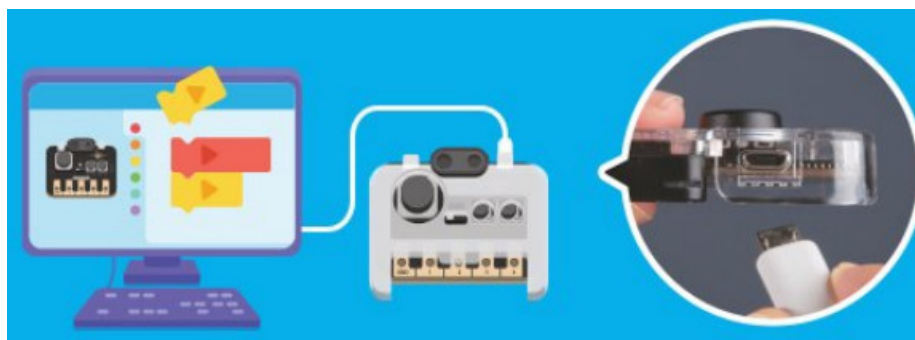
Prepare for coding

1. Go to NextMaker's online learning website at [nextmaker.com](https://nextmaker.com) Select "Box 1 Lesson 1" to start your learning journey.



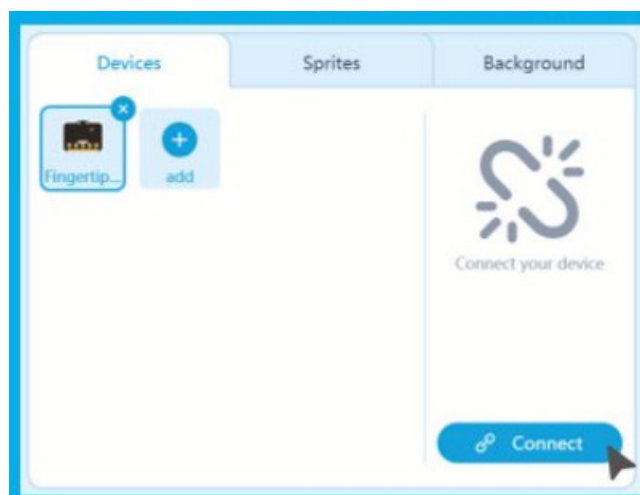
2. Power the board

Connect the fingertip piano board to your computer with the USB cable.

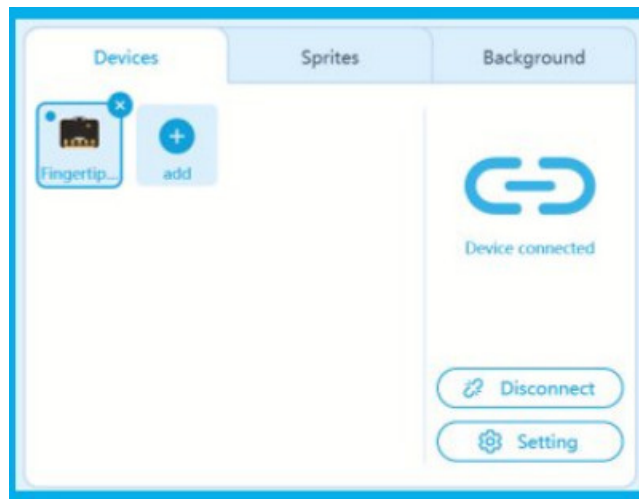


3. Connect to mBlock

In the "Devices" area, click on the button "Connect".



"Device connected" will appear on the interface when the connection is successful.



## Meet Fmgertlp Piano

Write programs to change the light effects

The "when button () pressed" block is a Hat block and an Events block. Scripts placed below this block will be activated when a specified button is pressed.

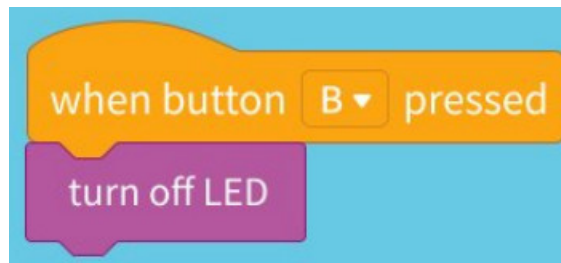
when button **A** pressed

LED displays  with brightness **50** %

Click on the color palette to select a color you love.

Enter a number here to change the brightness.

Press Button B to turn off the LED



### Challenge

Could you program the joystick to turn it into a controller that's used to change the LED color?

# makeblock

For courses, please visit [www.nextmaker.com](http://www.nextmaker.com)

---

## Documents / Resources



[makeblock Nextmaker 3 in 1 Coding Kit](#) [pdf] User Guide  
Nextmaker 3 in 1 Coding Kit, Nextmaker, 3 in 1 Coding KitCoding Kit

## References

- [User Manual](#)

[Manuals](#), [Privacy Policy](#)

This website is an independent publication and is neither affiliated with nor endorsed by any of the trademark owners. The "Bluetooth®" word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. The "Wi-Fi®" word mark and logos are registered trademarks owned by the Wi-Fi Alliance. Any use of these marks on this website does not imply any affiliation with or endorsement.