Code for Fun with Codey Rocky

Contents

Codey Rocky

Codey Rocky is a caterpillar tracked robot. It integrates over 10 electronic blocks, including sound sensor, light sensor, LED screen and more. And with just a few lines of code, you can easily make Codey Rocky do all kinds of amazing things, like playing music, chasing lights or changing facial expressions like humans.

Codey

Rocky

Combine Codey with Rocky and then you get Codey Rocky!

mBlock 5

mBlock 5 - Block-based and text-based programming software

1 By connecting Codey Rocky to mBlock 5, you can make Codey Rocky show LED animations, play instruments or move as programmed. With the help of mBlock 5, you will find coding is as easy as blocks building. And it helps you to turn Codey Rocky into a smarter robot.

PC

2 You can also make digital stage projects only with mBlock 5. By writing programs in mBlock 5, you are able to create any animations, stories or games in the way you like.

APP

To get mBlock 5 PC, please go to the official website: http://www.mblock.cc/software/
To get the mBlock app, search for "mBlock" in application stores for download.

In this booklet, only screenshots from mBlock PC are shown. But all the projects in this booklet are available both on PC and mobile devices. FYI, the software interfaces may vary due to different versions, so the screenshots here are for references only.

A Tour of the Interface

Switch languages (CH/EN), Open files, Save files, Example programs, Help, etc.
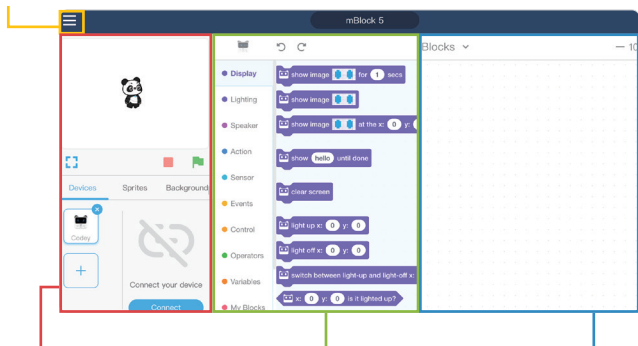
Stage

You can show off your projects, connect devices, set your sprites and customize the backgrounds here.

Blocks Area

In this area, you are able to find the blocks you 'll need by category or color.
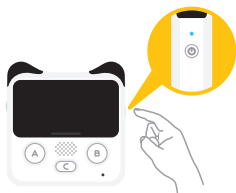
Script Area

This is the place where you drag blocks to write programs.
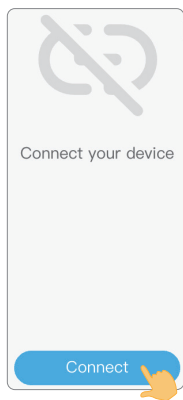
Connecting Codey Rocky to mBlock 5

1.Open mBlock 5. Connect Codey to your computer using the USB cable. (The on-screen instructions will tell you how to do when you are connecting Codey to the mBlock app.)

2. Powering on:Press the power button to turn on Codey.

3.Connecting:You can find the Connect button in the stage area.

Connect your device

Connect

Select the serial port number and click Connect.

Connect Device ✕

COM3

Connection

⬤ Only one device can be connected at a time in this version. A new device connection will lead to the disconnection of the existing one.

Scan the QR code on the left side to check out the demo.Note: The "COM3" here refers to the serial port number and it may vary due to different systems or computers. Anyway, you can just click " Connect " to move on to the next step.

Quick Start

Create a Codey Rocky Project

1 Drag the **play sound** block to the script area. (You can quickly locate the blocks you need by color.)

2 The blocks are in different colors and shapes. But they are able to connect to each other. Now, you need to drag out the **when Codey is shaking** block and combine it with the play sound block. Here is what your code should look like.(How to delete the program: Drag the program back to the blocks area or you can right click the blocks to delete them.)
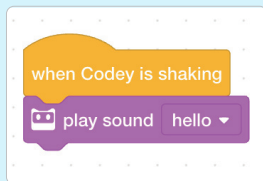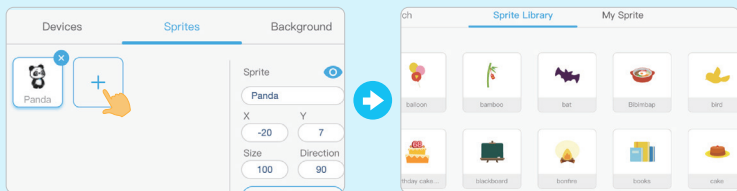
3 After finishing your program, click Upload to Device to store the program in Codey. In this way, you can run the program even when Codey is disconnected from mBlock 5.
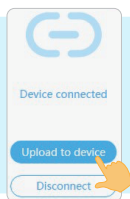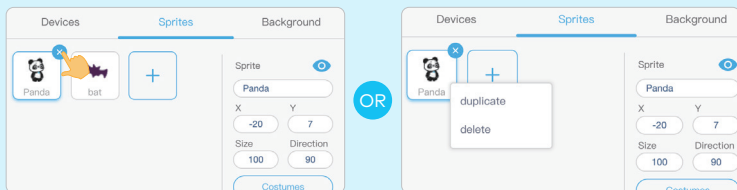
Try shaking Codey!

Create a Stage Project

1 Below the stage area, click Sprites and click + to add a sprite you like. (The panda is the default stage sprite.)


If you want to delete a sprite, just click "×" in the upper right corner of the sprite or right click the sprite icon to select **delete**.

2 Make the sprite move. Drag the **move 10 steps** block to the script area. Click on the block to check how the sprite moves exactly.

3 Give the sprite a sound effect and add an event block. Combine the two blocks with the move 10 steps block. Ok, now you've completed the program for your sprite!
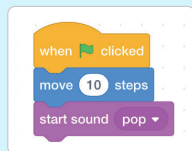
Click the icon" 🚩 "at the bottom right corner of the stage to run the program. As programmed, the bat will move 10 steps forward and play the sound "pop". To pause the program, click on" 🟥 ".

4 Remember to save your program! Click "Save as" under the Menu to save your program to local.
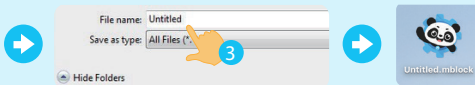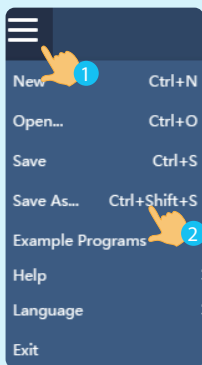
> **"** Try making your own project and share it with friends! **"**
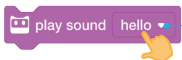
Change Codey's Emotions with Buttons

Codey
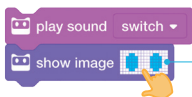
Scan the QR code
to view the demo

1 Add a sound effect

Drag the **play sound** block to the script area.
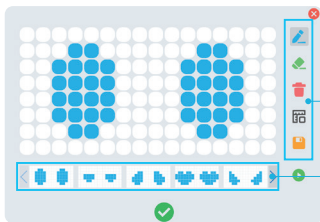
play sound hello ──── You can select another sound.

2 Give Codey Rocky its expression

In the **Display** category, you can find the **show image** block. Drag the block to the script area and add it to the end of the **play sound** block.

play sound switch

show image ──── You can edit the image.

Use the toolbar to draw an image yourself.

Or pick an image here.

3 Add an event

Add the **when button A is pressed** block to the previous blocks. This is how your code should look like:

when button [A ▾] is pressed
play sound [switch ▾]
show image [▦]

You've added a piece of code to Codey Rocky. Next, upload the code to test whether it can work as expected!

Explore more features

" Try adding the following programs to Codey Rocky as you just did! "

when button [A ▾] is pressed
play sound [switch ▾]
show image [▦]

when button [B ▾] is pressed
play sound [switch ▾]
show image [▦]
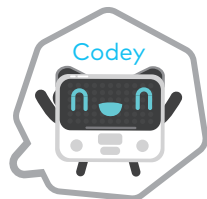
when button [C ▾] is pressed
play sound [switch ▾]
show image [▦]

Upload the code to Codey Rocky. Then try pressing the button A, B and C.(Remember to save your programs)

Can you use the three buttons to let Codey Rocky show more emotions or make different sounds?

Use Codey to create
LED animations

Codey

Scan the QR code
to view the demo

1

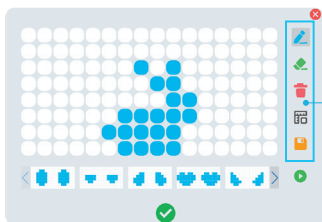## Add an image

Drag the **show image for 1 sec** block to the script area.

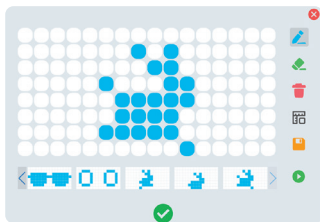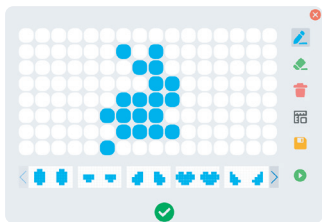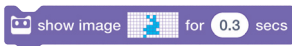show image [ ] for 1 secs ——— You can reset the time.

Click here to draw an image. Use the toolbar
to refine or save the image.

Toolbar

Repeat the steps above to give the rabbit different motions.

show image [ ] for 0.3 secs

show image [ ] for 0.3 secs

2 Add a sound effect

Add the **play sound** block to the code.

```
play sound  jump ▼
show image  🟦  for  0.3  secs
show image  🟦  for  0.3  secs
show image  🟦  for  0.3  secs
```

You can pick another sound effect.
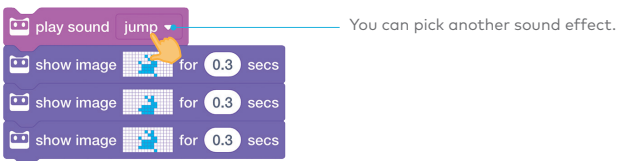
3 Add a loop

Drag the **repeat 10 times** block to the script area and use it to encircle other blocks.

```
repeat  3
  play sound  jump ▼
  show image  🟦  for  0.3  secs
  show image  🟦  for  0.3  secs
  show image  🟦  for  0.3  secs
```

You can reset the times.
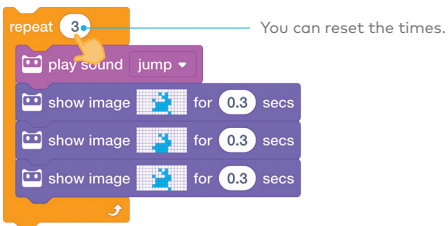
4 Add an event

Select the **when Codey is shaking** block from the **Events** category and add it to the code.


```
when Codey is shaking
repeat 3
    play sound  jump ▼
    show image [   ] for 0.3 secs
    show image [   ] for 0.3 secs
    show image [   ] for 0.3 secs
```
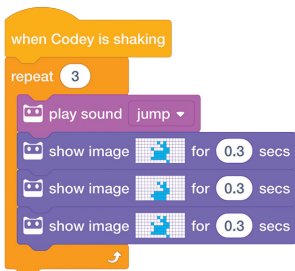
You've completed the code for making an LED animation. Now you'll need to upload the code to Codey Rocky. Then try shaking it! Or you can tie Codey to your body. Notice how Codey reacts when you keep jumping?

" Remember to save the program! "

Challenge

Can you create your own LED animations by drawing some different images? Give it a try!

Turn Codey into a Musician

Codey
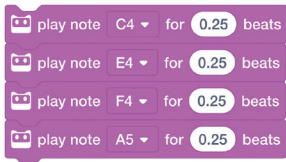
Scan the QR code
to view the demo

1 Add a note

Drag the **play note C3 for (0.25) beats** block to the script area.

play note C3 for 0.25 beats — You can reset the beat.

Click here to select a note.

Repeat the step to set different notes and snap the blocks together.

play note C4 for 0.25 beats
play note E4 for 0.25 beats
play note F4 for 0.25 beats
play note A5 for 0.25 beats

2 Add an event

Attach the **when button A is pressed** block to the top of the code.

when button A is pressed
play note C4 for 0.25 beats
play note E4 for 0.25 beats
play note F4 for 0.25 beats
play note A5 for 0.25 beats

1 Now the code for making Codey play music is ready. You can upload the code to Codey to test how it works. Try guessing what music Codey is playing?

3 Add the volume control

Drag the **set volume to (100)** block to the blank space in the script area.

`set volume to 100` ——— Note: Don't add this block to the previous code.

4 Add the gear potentiometer block

Drag the **gear potentiometer** block and put it inside the **set volume** block.

Tip

Gear potentiometer

Gear potentiometer is an input device that can be used to adjust values. Using the gear potentiometer, you can **change the volume of Codey and the brightness of the indicator light**.

`set volume to gear potentiometer value`

Note: You can't directly join these round blocks to other blocks.

5 Add a loop

Encircle the **set volume and gear potentiometer** blocks with the **forever** block.

```
forever
    set volume to [ gear potentiometer value ]
```

6 Add an event

Drag the **when Codey starts up** block to the top of the group of blocks you've designed in the step 5.

```
when Codey starts up
forever
    set volume to [ gear potentiometer value ]
```

```
when button A is pressed
play note C4 for 0.25 beats
play note E4 for 0.25 beats
play note F4 for 0.25 beats
play note A5 for 0.25 beats
```
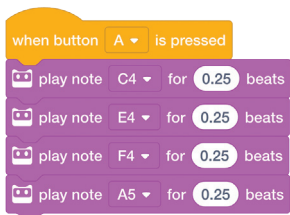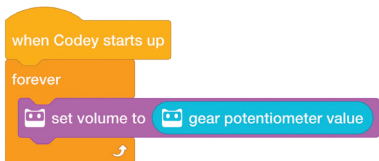
2 Now you've finished another program! Upload the program to Codey. Try changing the volume of the music!

> " Upload the program and press the button on Codey. Wait! Remember to save your program! "

Challenge

> Can you give Codey more sound effects or make Codey show light effects while playing music?

Make Codey Blink Eyes

Codey
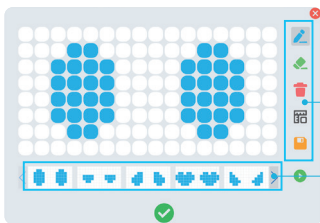
Scan the QR code
to view the demo

1 Give Codey a facial expression

Drag the **show image for (1) sec** block to the script area.

show image [ ] for (1) secs

You can reset the time.

Click here to select or draw an image.
Use the toolbar to revise and save the image.

Toolbar

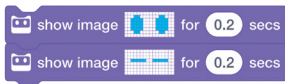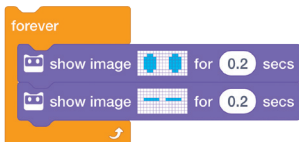Select an image

Repeat the steps above to add different images. Join the two blocks together.

show image [ ] for (0.2) secs
show image [ ] for (0.2) secs

2 Add a loop

Then you'll need to use the **forever** block. Drag the block to encircle the code.

forever
- show image [image] for 0.2 secs
- show image [image] for 0.2 secs

3 Add an event

Drag the **when Codey starts up** block from the **Events** category and add it to the code.

when Codey starts up

forever
- show image [image] for 0.2 secs
- show image [image] for 0.2 secs
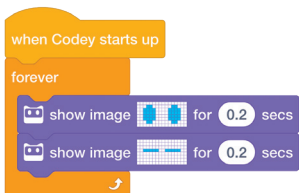
Ok, you've finished the program for making Codey blink eyes. Try uploading the program to Codey to test it. But how to make the blinking look more natural?

4 Make Codey blink eyes randomly

In the **Operators** category, you can find the **pick random (1) to (10)** block. Put the block inside the **show image for (0.2) secs** block.

You can change the random numbers .
Note: You can't directly join these round blocks to other blocks.


```
when Codey starts up
forever
    show image [ ] for  pick random ( 2 ) to ( 5 )  secs
    show image [ ] for ( 0.2 ) secs
```

Upload your program to Codey to test it. Can you notice? I'm blinking eyes at varied intervals!
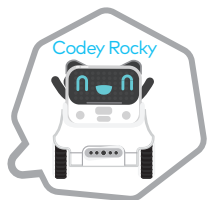
> **Remember to save your program!**

> Can you make Codey show different facial expressions?

Make Codey Rocky Identify Colors

Codey Rocky

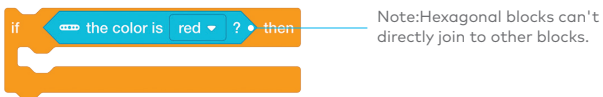Scan the QR code
to view the demo

1 Add a sensor

Drag the **color is red** block to the script area.

the color is [red ▾] ?

You can reset the color.

2 Add a control block

Drag the **if/then** block to the script area and put the **color is red** block inside that hexagonal hole.

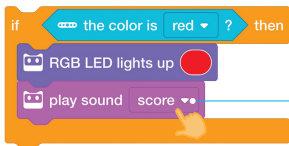if [the color is [red ▾] ?] then

Note:Hexagonal blocks can't directly join to other blocks.

3 Add a light effect

Drag the **RGB LED lights up** block into the **if/then** block.

if [the color is [red ▾] ?] then
RGB LED lights up

You can click here to reset the color.
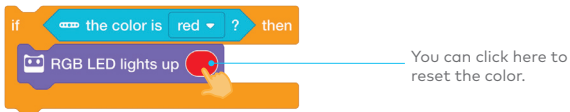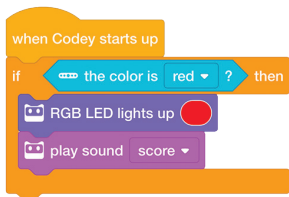
4 Add a sound effect

Drag the **play sound (score)** block from the **Speaker** category and add it to the code as shown below.

You can select another sound effect.

5 Add an event

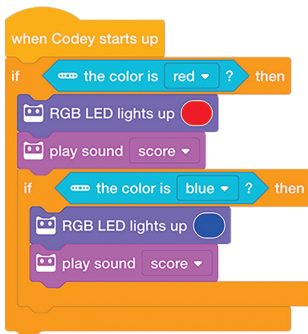Add the when Codey starts up block to your code.

Ok, you've finished the code for enabling Codey Rocky to identify red items. Now upload the code to Codey and place a red item before Codey Rocky. See how it reacts? But if you want to empower Codey Rocky to identify more colors, you'll need to add another piece of code!
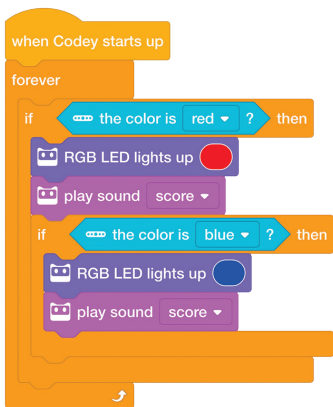
Repeat the steps 1-4 to make your code look like this:


```
when Codey starts up
if    the color is  red  ?  then
    RGB LED lights up  ●
    play sound  score
    if    the color is  blue  ?  then
        RGB LED lights up  ●
        play sound  score
```

6 Add a loop

Drag out the **forever block** and use it to **encircle** the code like this:


```
when Codey starts up
forever
    if    the color is  red  ?  then
        RGB LED lights up  ●
        play sound  score
        if    the color is  blue  ?  then
            RGB LED lights up  ●
            play sound  score
```

Now Codey Rocky should be able to identify two colors. So why wait? Upload the code to test whether it works!
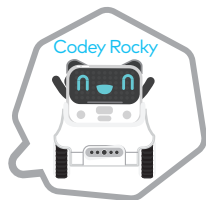
> " Important: Make sure you keep the
> IR sensor face down. "

Challenge

> Try using different colored materials to make items
> for Codey Rocky to identify. And revise the code to
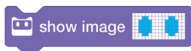> have Codey Rocky show different reactions.

Make Codey Rocky Avoid Obstacles
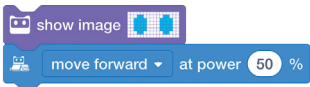

Codey Rocky

Scan the QR code
to view the demo

1 Add an image

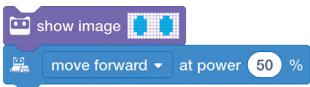Drag the **show image** block to the script area.

`show image [image]`

2 Add a motion

Find the **move forward at power 50%** block in the Action category. Then add it to the **show image** block.

`show image [image]`
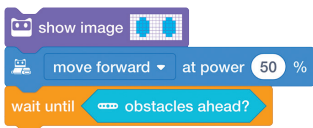`move forward ▾ at power 50 %`

3 Add a sensor

Drag the **obstacles ahead?** block to any blank space of the script area.

`show image [image]`
`move forward ▾ at power 50 %`

`obstacles ahead?`

Note: Hexagonal blocks can't directly join to other blocks.

4 Add a control block

Drag the **wait until** block to the script area and put the **obstacles ahead** block inside the hexagonal hole. Then join the two pieces of blocks like this.
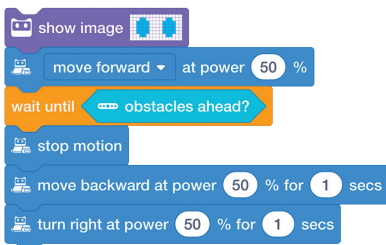
show image 🤖 ▦▦▦

move forward ⌄ at power 50 %

wait until 🚂 obstacles ahead?

5 Make Codey Rocky stop moving

Add the **stop motion** block to your code.

show image 🤖 ▦▦▦

move forward ⌄ at power 50 %

wait until 🚂 obstacles ahead?

stop motion
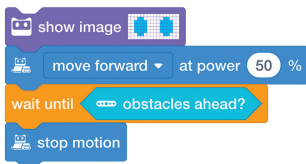
6 Add motions

First add the **move backward at power 50% for 1 sec** block to the code and then add the **turn right at power 50% for 1 sec** block.

```
show image [image]
move forward ▼ at power 50 %
wait until ( obstacles ahead? )
stop motion
move backward at power 50 % for 1 secs
turn right at power 50 % for 1 secs
```

7 Add an event

Add the **when Codey starts up** block to your code.

```
when Codey starts up
show image [image]
move forward ▼ at power 50 %
wait until ( obstacles ahead? )
stop motion
move backward at power 50 % for 1 secs
turn right at power 50 % for 1 secs
```
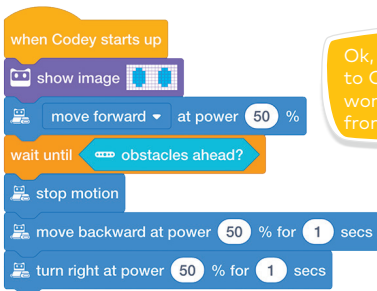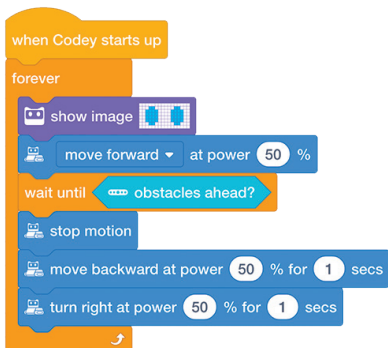
Ok, the code is ready now. Upload it to Codey Rocky to test how it works. Then try placing an item in front of the robot. What happens?

8 Add a loop

Encircle your code with the forever block as shown below.

```
when Codey starts up
forever
    show image [image]
    move forward ▼ at power 50 %
    wait until ⟨ obstacles ahead? ⟩
    stop motion
    move backward at power 50 % for 1 secs
    turn right at power 50 % for 1 secs
```

Now, Codey Rocky is able to stay away from obstacles whenever it meets them.

⚠️ Important: You should keep the IR sensor face forward.

Have a Try

"Look, Codey Rocky is able to avoid the obstacles!"

Try using the block `not` in your code to make Codey Rocky stay away from cliffs.

⚠️ Make sure you make the IR sensor face down.

Use Codey to Make
Sprites Play Instruments
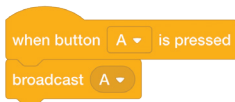
Codey

Scan the QR code
to view the demo

1 Add the broadcast

Drag the **broadcast message** block from the **Events** category to the script area.

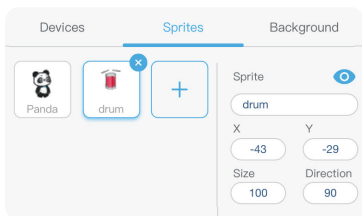`broadcast message ▾`

You can create a new message.

2 Add an event

Combine the **when button A pressed** block with the **broadcast** block like this.

`when button A ▾ is pressed`
`broadcast A ▾`

3 Add a sprite

Click **Sprites** under the stage to add the sprite **drum**.

Devices	Sprites	Background

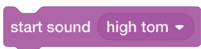| Panda | drum ⊗ | + |

Sprite 👁
drum
X: -43 Y: -29
Size: 100 Direction: 90

Tip

Each device or sprite has its specific script area.

4 Add a sound effect

Drag the **play sound high tom** block to the script area.

```
start sound  high tom ▼
```

5 Add a costume

Add the **switch costume to drum-a** block.

```
start sound  high tom ▼
switch costume to  drum-a ▼
```
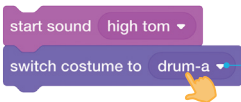
You can change the costume.

6 Add a control block

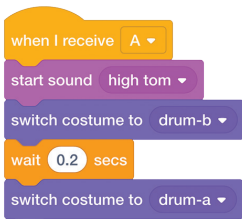Add the **wait 1 sec** block to the code in the following way.

```
start sound  high tom ▼
switch costume to  drum-b ▼
wait  1  secs
```

7 Add a costume

Add the **switch costume to drum-a** block.

```
start sound  high tom ▼
switch costume to  drum-b ▼
wait  0.2  secs
switch costume to  drum-a ▼
```
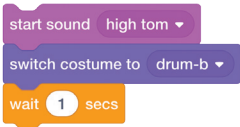
8 Add an event

Drag the **when I receive A** block to the top of the code.
Make sure your code looks like this.

```
when I receive  A ▼
start sound  high tom ▼
switch costume to  drum-b ▼
wait  0.2  secs
switch costume to  drum-a ▼
```

Ok, the code is ready. Now upload it to Codey Rocky to test how it works!

Press the button. Let's hear the drum sound!

Challenge

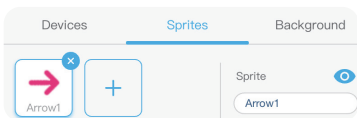Can you add more sprites to form a band?

Design a Controller for Codey Rocky
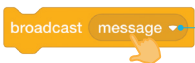
Codey Rocky

Scan the QR code
to view the demo

1 Add a sprite

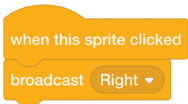Select the sprite **arrow1** from **Sprites** under the stage.

Devices	Sprites	Background

Arrow1   +

Sprite
Arrow1

2 Add the broadcast

Drag the **broadcast message** block to the script area of the arrow1.
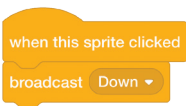
broadcast message

You can create a new message.

3 Add an Event

Add the **when this sprite clicked** block to the broadcast block.

when this sprite clicked
broadcast Right

Repeat the steps above to add four arrows indicating different directions. You can click **Costumes** to change the direction.

Devices	Sprites	Background

Arrow1   Arrow1

Arrow1   Arrow1

+

Sprite

Arrow1

X: 166   Y: 113

Size: 100   Direction: 90

Costumes

Sounds

when this sprite clicked
broadcast Left ▾

when this sprite clicked
broadcast Up ▾

when this sprite clicked
broadcast Down ▾

Tip
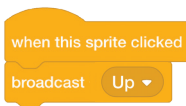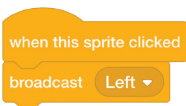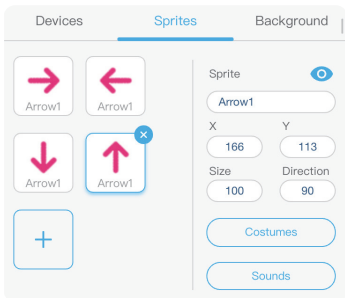
Each device or sprite has its specific script area, so you'll need to make sure you place the three groups of blocks above in the correct script area.
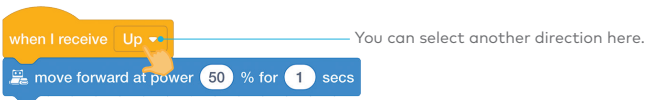
4 Add a motion

Click **Devices** under the stage. Then drag the **move forward at power 50% for 1 sec** block to the script area.
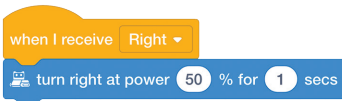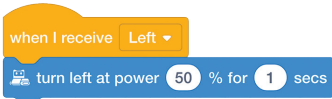
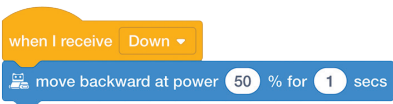move forward at power `50` % for `1` secs

5 Add an event

Use the when I receive up block in your code.

when I receive `Up ▾`
move forward at power `50` % for `1` secs

You can select another direction here.

➡ Finish the code for the rest arrows as you did in the step 4 and step 5.

when I receive `Down ▾`
move backward at power `50` % for `1` secs

when I receive `Left ▾`
turn left at power `50` % for `1` secs

when I receive `Right ▾`
turn right at power `50` % for `1` secs

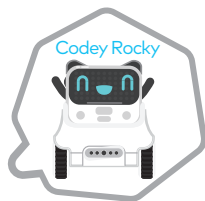Finish the code for the rest arrows as you did in the step 4 and step 5.
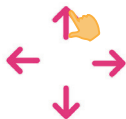
> " Click the arrows to check how Codey Rocky reacts. "

Challenge

You can try adding some other icons to empower the controller with more abilities, like sound control or facial expressions control.
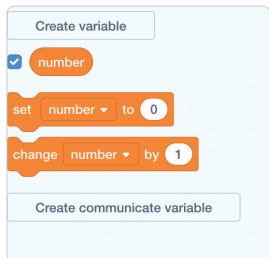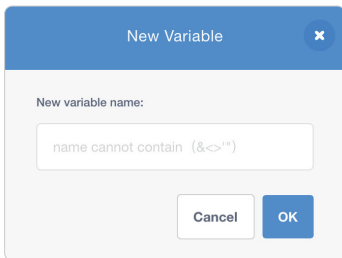
Make a Number Bomb Game

Codey Rocky

1 Create a variable

Click the **Variables** category and click **Create variable.** Name your variable as **number** and then click **OK.**
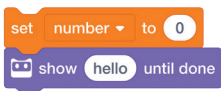
New Variable

✕

New variable name:

name cannot contain (&<>'")

Cancel   OK

Create variable

☑ number

set number ▾ to 0

change number ▾ by 1

Create communicate variable

2 Add a value

Drag the **set number to 0** block to the script area.

set number ▾ to 0

3 Add the display block

Click the **Display** category to add the **show hello until done** block to your code.

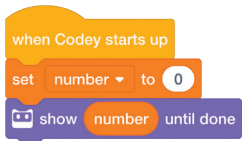set number ▾ to 0
show hello until done

4 Add a variable

Find the number block in the **Variables** category. Drag it into the **show hello until done** block. Your code should look like this.
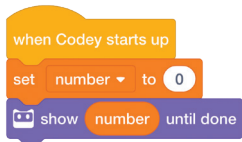
```
set number ▾ to 0
show number until done
```

5 Add an event

Add the when Codey starts up block to the code.

```
when Codey starts up
set number ▾ to 0
show number until done
```

6 Add the value

Drag the change number by 1 block to any blank space in the script area.

```
change number ▾ by 1
```

```
when Codey starts up
set number ▾ to 0
show number until done
```

Repeat Step 3 and Step 4.

```
change  number ▼  by  1
📺 show  number  until done
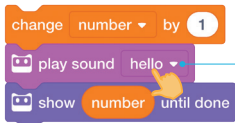```

```
when Codey starts up
set  number ▼  to  0
📺 show  number  until done
```
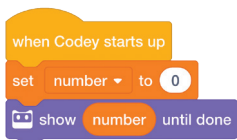
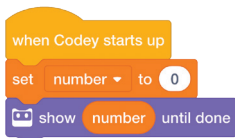# 7 Add a sound effect

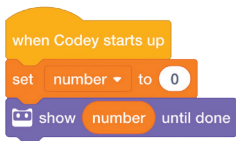Drag the **play sound hello** block from the Speaker category and add it to the code you've just created.

```
change  number ▼  by  1
📺 play sound  hello ▼
📺 show  number  until done
```

You can reset the sound effect.

```
when Codey starts up
set  number ▼  to  0
📺 show  number  until done
```

8 Add an event

Add the **when button A is pressed** block to the code you've finished in Step 7.

when button [A ▾] is pressed
change [number ▾] by (1)
play sound [prompt-tone ▾]
show (number) until done

when Codey starts up
set [number ▾] to (0)
show (number) until done

Ok, the code is ready. Now upload it to Codey Rocky, turning the robot into a timer!

Level up

"Make a number bomb game to challenge your friends. Two players take turns pressing the button A. At the same time, the number is growing. The one that triggers the bomb will lose the game."

```
when Codey starts up
set number ▼ to 0
show number until done
```

```
when button A ▼ is pressed
change number ▼ by 1
play sound prompt-tone ▼
show number until done
if   number > pick random 10 to 20   then
    show image [image]
    play sound explosion ▼
```

"Invite your friends to play the game!"

Challenge

Revise the code above. Make sure the game will start over when the button C is pressed.