

Optional: Microphone and Touch

Textbook

Optional: Microphone and Touch

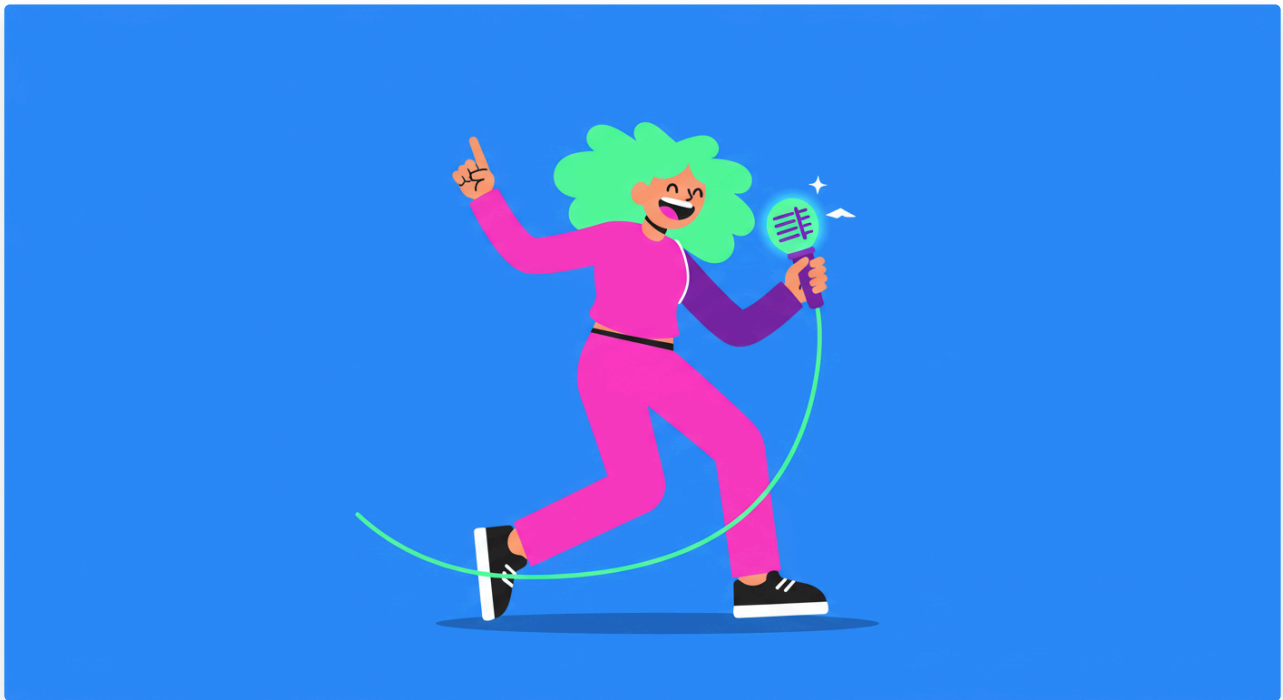


Photo Credit: National Museum of American History

The game SIMON was a blast back in the 80's and 90's. You had to use memory, color recognition AND touch. These cool features exist in many of the devices we use every day, like smartphones and smart speakers. The micro:bit (version 2) has both a microphone and a touch sensor, allowing it to listen for sounds and detect touch. In this lesson, you'll learn how to program the micro:bit to react to sound and touch—opening up exciting possibilities for creative projects!

The microphone and touch features only apply to version 2 of the micro:bit. Version 2 has an in-built microphone and speaker. This means it can be programmed to both make sound *and* listen for it. You can program the micro:bit to light up with your voice or to respond when you clap. The possibilities are endless!

Learn more through this video:



Code It! - Microphone

Practice programming your micro:bit to show an exclamation point when there is a loud sound.

1. Drag an `on loud sound` input block into your code editor.
2. Connect a `Show LEDs` block into the input block.
3. Create an exclamation point in the LED display.

Touch

Version 2 also now responds to touch. We see touch sensors used in everyday life. Phones and tablets have touch sensors that allow you to touch the screen, open apps, and swipe. For example, you might swipe through a set of images and then tap a heart to "like" them. These different touches are recognized by the touch sensor in a phone and programmed to respond.

Learn more about the micro:bit's touch sensor through watching this video:



Code It! – Touch

The micro:bit's touch sensor is the gold logo at the top. You get to program the micro:bit to respond however you want it to when you touch this golden sensor. Maybe it will show a bright light when you touch it, or perhaps it will play a melody instead! Let your imagination run wild. For this example, let's program the micro:bit to show a smiley face when the micro:bit touch sensor is touched. To do this:

1. Drag the `on logo pressed` input block into the code editor.
2. Drag a `show icon` block and connect it in the input block.
3. Select the smiley face.

What will you create?

Adopted from microbit.org platform

Critical Thinking Questions

1. How do microphone sensors help make technology more interactive? Can you think of devices that use them?
2. Why do you think touchscreens have replaced buttons on many modern devices?
3. What are some ways sound-activated or touch-sensitive technology could help people with disabilities?

Questions (5)

1. What can the micro:bit's microphone be programmed to detect?

MULTIPLE CHOICE

Choose the correct answer:

- A. Smell
- B. Light
- C. Loud sounds
- D. Touch

2. What does the "on loud sound" block do in micro:bit coding?

MULTIPLE CHOICE

Choose the correct answer:

- A. Detects touch
- B. Sends a message
- C. Runs when a loud sound is heard
- D. Shows a random icon

3. Where is the micro:bit's touch sensor located?

MULTIPLE CHOICE

Choose the correct answer:

- A. On the back
- B. In the middle of the screen
- C. On the gold logo at the top
- D. Inside the battery pack

4. What block do you use to make the micro:bit react when the touch sensor is used?

MULTIPLE CHOICE

Choose the correct answer:

- A. On button A pressed
- B. On start
- C. On logo pressed
- D. On shake

5. How have touch and sound sensors improved technology for everyone?

MULTIPLE CHOICE

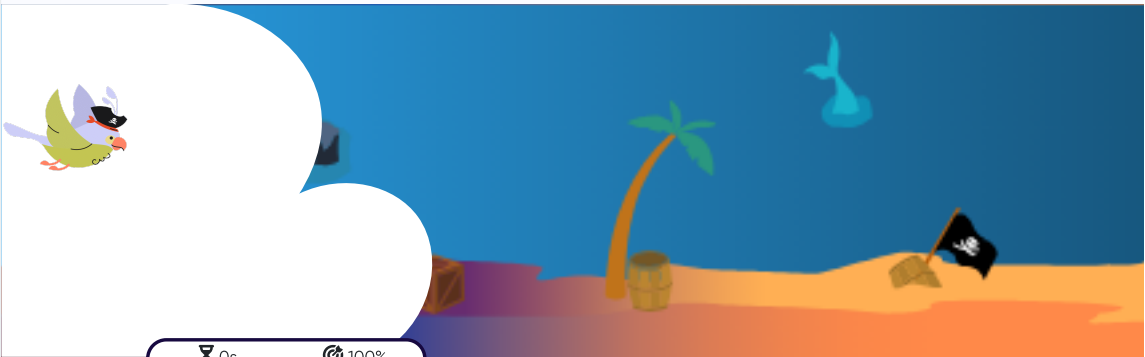
Choose the correct answer:

- A. They slow down machines
- B. They replace microphones
- C. They make technology more interactive and accessible
- D. They make screens bigger

Games (2)

1. Microphone Typing

Full Screen Audio Instructions Restart Pause



0s 100%

The micro:bit has an in-b

2. Microphone Category

Full Screen

Audio

Instructions

Answer Key

Pause

Clear All

Check Order

Attempts: 0

Using a remote control

Controlling a game with a keyboard or controller

Swiping on a Tablet

Pressing the "heart" to react to a social media photo

Using voice commands

Selecting an App on Phone Screens



Ways We Use the Touch Sensor

Ways We Don't Use the Touch Sensor

Robotics Challenges (5)

1. Clap On Lights

Challenge

Textbook

Step 1

Begin with the **forever** block.

Clap On Lights

Step 1 of 5

1

Next

Code the micro:bit to turn its lights on if there is a loud clap. Otherwise, the micro:bit should have a clear screen.

Adopted from micro:bit.org projects

Requirements

- Use a forever block in your program
- Program the micro:bit to show a fully lit LED screen IF the sound level > 70
- Or ELSE program the micro:bit to clear the screen when the sound level < 70,

Answer Key

Download

...

...

Toolbox

Search...

Basic

Input

Music

Led

Radio

Loops

Logic

Variables

Math

Extensions

Advanced

forever

2. Disco Lights

Challenge
Textbook

Disco Lights

Code the micro:bit to become a disco light that matches the music!

Adopted from [micro:bit.org projects](#)

Requirements

- Code the micro:bit to show a lit screen
- Use a forever block in your program
- Set the brightness to match the sound level

Answer Key

Submit

Step 1

Begin with the **on start** block.

Disco Lights
Step 1 of 4

1
Next

Toolbox

Search...
Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Extensions
Advanced

3. A Brightened Quiet

Challenge
Textbook

A Brightened Quiet

Code the lights on the micro:bit to dim when sound is loud and to brighten when sound gets quieter.

Requirements

- Code the micro:bit to show a lit screen
- Use a forever block in your program
- Set the light to be bright when the sound level is less than 50
- Set the light to be dim when the sound level is greater than 50

Answer Key

Submit

Search...

Basic
 Input
 Music
 Led
 Radio
 Loops
 Logic
 Variables
 Math
 Extensions

Advanced

Download

4. Touch Emotions

Challenge
Textbook

Touch Emotions

Code the micro:bit to do the following:

- Show a smiley face when button A is pressed
- Show a sad face when button B is pressed
- Show a heart when the logo is touched.

Requirements

- Code a happy face to show when Button A is pressed.
- Code a sad face to show when Button B is pressed.
- Code a heart to show when the logo is pressed.

Step 1

Code the micro:bit to show a smiley face when button A is pressed.

Touch Emotions
Step 1 of 3
Next

Toolbox

Search...

- Basic
- Input
- Music
- Led
- Radio
- Loops
- Logic
- Variables
- Math
- Extensions
- Advanced

Download

...

5. Touch to Start Timer

Challenge

Textbook

Touch to Start Timer

Code the micro:bit to start a timer when you touch the logo and stop the timer when you release it.

Requirements

- ☐ Use the 'on logo touched' input
- ☐ Code the micro:bit to start running time when the logo is touched
- ☐ Use the 'on logo released' input
- ☐ Set the variable 'time' to be the running time
- ☐ Use the 'show number' block to display the time in seconds

Step 1

Drag two **on logo pressed** blocks into the code editor. Change one to read **on logo touched** and one to read **on logo released**.

Touch to Start Timer Step 1 of 7



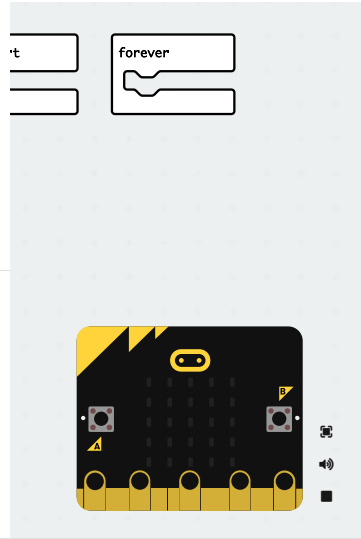
1

Next

Toolbox

Search...

- Basic
- Input
- Music
- Led
- Radio
- Loops
- Logic
- Variables
- Math
- Extensions
- Advanced



Download

Answer Keys & Solutions

Questions

1. What can the micro:bit's microphone be programmed to detect?

MULTIPLE CHOICE

Correct Answer:

- | | |
|----------------|-------------|
| A. Smell | ✗ Incorrect |
| B. Light | ✗ Incorrect |
| C. Loud sounds | ✓ Correct |
| D. Touch | ✗ Incorrect |

Explanation:

Think of how the device might respond to clapping or shouting.

2. What does the "on loud sound" block do in micro:bit coding?

MULTIPLE CHOICE

Correct Answer:

- | | |
|------------------------------------|-------------|
| A. Detects touch | ✗ Incorrect |
| B. Sends a message | ✗ Incorrect |
| C. Runs when a loud sound is heard | ✓ Correct |
| D. Shows a random icon | ✗ Incorrect |

Explanation:

It starts the code when the micro:bit hears something loud.

3. Where is the micro:bit's touch sensor located?

MULTIPLE CHOICE

Correct Answer:

- | | |
|----------------|-------------|
| A. On the back | ✗ Incorrect |
|----------------|-------------|

B. In the middle of the screen

✗ Incorrect

C. On the gold logo at the top

✓ Correct

D. Inside the battery pack

✗ Incorrect

Explanation:

It's a gold-colored part on the front of the device.

4. What block do you use to make the micro:bit react when the touch sensor is used?

MULTIPLE CHOICE

Correct Answer:

A. On button A pressed

✗ Incorrect

B. On start

✗ Incorrect

C. On logo pressed

✓ Correct

D. On shake

✗ Incorrect

Explanation:

This block detects when the logo is pressed.

5. How have touch and sound sensors improved technology for everyone?

MULTIPLE CHOICE

Correct Answer:

A. They slow down machines

✗ Incorrect

B. They replace microphones

✗ Incorrect

C. They make technology more interactive and accessible

✓ Correct

D. They make screens bigger

✗ Incorrect

Explanation:

They make it easier and more fun to interact with devices.

1. Microphone Typing

Typing game - no answer key needed. Students practice typing the provided content.

2. Microphone Category

Category Solutions:

Category 1: Ways We Use the Touch Sensor

- Selecting an App on Phone Screens
- Swiping on a Tablet
- Pressing the "heart" to react to a social media photo

Category 2: Ways We Don't Use the Touch Sensor

- Using voice commands
- Using a remote control
- Controlling a game with a keyboard or controller

Students must sort items into their correct categories.