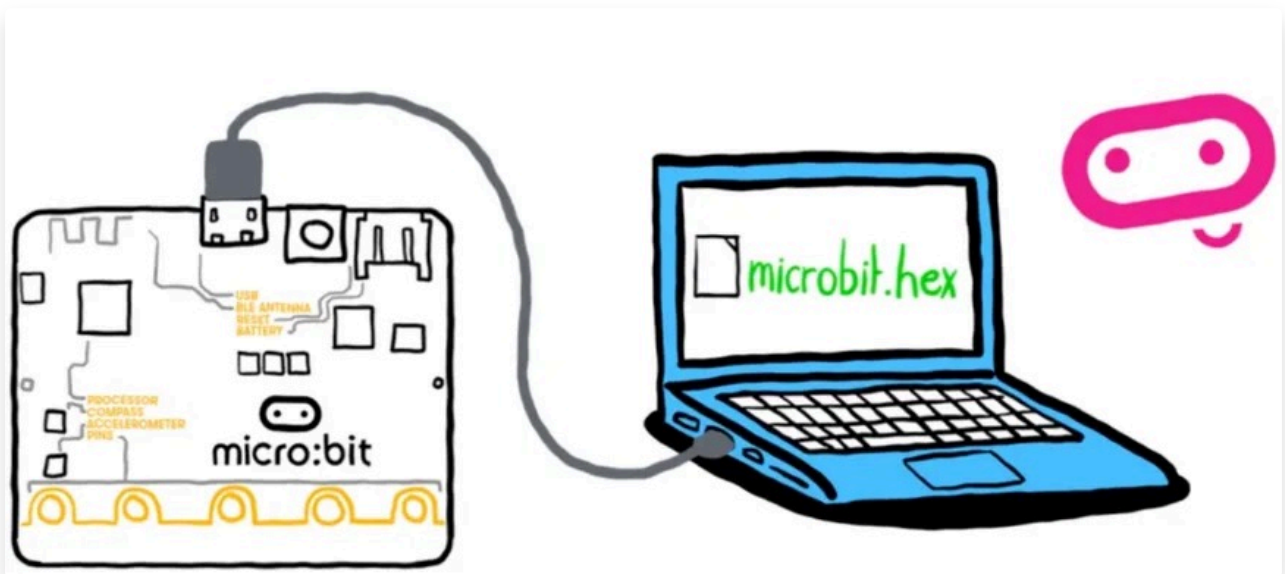


## Download to the micro:bit

### Textbook

## Download to the micro:bit



Once you have finished coding your program on the platform, it's time to try it on the micro:bit! You can do this by following 2 basic steps. Watch this video to learn how and refer to the instructions below as a reminder:



## 1. Download as a Hex File

Download your program from the code editor on your computer. Your program needs to download as a **.hex file**.

## 2. Transfer the program from your computer to the micro:bit

Transfer the program from your computer to the micro:bit where it is stored in the micro:bit's memory. We call this "flashing", because the micro:bit stores it in its flash memory.

To do this, plug the USB cable into the USB port at the top of the micro:bit. Then, plug the other end of the cable into the USB socket of your computer. You should see the micro:bit appear on your computer like a USB drive.

Look for MICROBIT.

As the program is copying over, you'll see a light blinking on the micro:bit. When the light stops blinking you can test out your programming creation!

**Important note: DO NOT DELETE the two files in the MICROBIT extension.**

## Robot Explanation

The micro:bit robot has several functions and features. First, the micro:bit has inputs. Inputs are information that goes into the robot. Examples of these inputs are the two buttons on the micro:bit that you can program separately or together. We will learn how to do this in future lessons.

The micro:bit also has outputs. An [output](#) is information that comes out of the robot. The 2 outputs on the micro:bit are its speaker and LED display. LEDs are lights. There are 25 LEDs on the front of the micro:bit that are used to show words, pictures, and more!

## Turn the micro:bit On and Off

To turn on the micro:bit, press the **power/reset button**. This will wake the micro:bit and restart your program to run the new code you create.

To turn off the micro:bit to save battery when done using it, hold the **reset/power button** on the back of the micro:bit.

## Take Care of the micro:bit

The micro:bit has wires and fragile pieces. This means you need to be very careful when using the micro:bit so nothing breaks. Here are a few things to practice when using the micro:bit:

1. Use both hands to hold the micro:bit and its battery. Don't let the wires dangle when carrying it.
2. Always have clean hands when using the micro:bit.
3. Lay the micro:bit on a flat surface.
4. If working in a group, take turns!

*Adopted from [microbit.org](https://microbit.org) platform*

## Critical Thinking Questions

- Imagine you're building a simple machine that needs to know if someone is nearby and then make a sound. What kind of input would your machine need to sense, and what kind of output would it use to alert someone? Explain your choices.
- Think about how a blueprint or a recipe gives instructions to create something real. How is the idea of putting a computer program onto a robot like a blueprint coming to life to build a house, and why is this step so important?

- We're often told to be careful with our phones and laptops. Why is taking good physical care of a small robot, like keeping it clean and holding it carefully, just as important as protecting your other electronics, and what might happen if you don't?

## Questions (10)

**1. Your friend just finished coding a program and wants to test it on their micro:bit. They connect the USB cable but their program does not work. What step did they most likely skip?**

MULTIPLE CHOICE

**Choose the correct answer:**

- A. They forgot to turn on the micro:bit
- B. They forgot to download the program as a .hex file first
- C. They forgot to press the reset button
- D. They forgot to clean their hands

**2. A student sees their micro:bit's light blinking after connecting it to their computer. What should they do next?**

MULTIPLE CHOICE

**Choose the correct answer:**

- A. Unplug the USB cable immediately
- B. Press the reset button to stop the blinking
- C. Wait for the light to stop blinking, then test their program
- D. Delete files from the MICROBIT folder

**3. Your micro:bit program worked yesterday, but today when you turn it on, nothing happens. What is the most likely first step to fix this?**

MULTIPLE CHOICE

**Choose the correct answer:**

- A. Download a new .hex file
- B. Clean the LED display
- C. Press the power/reset button to restart the program
- D. Unplug and replug the USB cable

**4. A student wants to save battery life on their micro:bit when they finish using it. What should they do?**

MULTIPLE CHOICE

**Choose the correct answer:**

- A. Unplug the USB cable
- B. Hold the reset/power button to turn it off
- C. Cover the LED display
- D. Put it in a drawer

**5. You are working with a partner on a micro:bit project. Your partner picks up the micro:bit by grabbing just the battery, letting the wires hang loose. What advice should you give them?**

MULTIPLE CHOICE

**Choose the correct answer:**

- A. That's fine as long as you're careful
- B. You should use both hands to hold the micro:bit and battery together
- C. Just hold it by the USB cable instead
- D. Only touch the LED display when carrying it

**6. A student connects their micro:bit to the computer but cannot find the MICROBIT drive. What should they check first?**

MULTIPLE CHOICE

**Choose the correct answer:**

- A. Whether the .hex file is the right size
- B. Whether the USB cable is plugged into both the micro:bit and computer
- C. Whether they have the right program downloaded
- D. Whether the LED display is working

**7. You want to create a program that makes sound and shows images at the same time. How many outputs will your program use?**

MULTIPLE CHOICE

**Choose the correct answer:**

- A. 1 output
- B. 2 outputs
- C. 3 outputs
- D. 4 outputs

**8. Your teacher says you should not delete the files already in the MICROBIT folder. A classmate asks why this rule exists. What is the best explanation?**

MULTIPLE CHOICE

**Choose the correct answer:**

- A. Those files take up too much space
- B. Those files are needed for the micro:bit to work properly
- C. Those files contain your old programs
- D. Those files are just examples you can ignore

**9. You are setting up a micro:bit workstation for your class. Based on the care instructions, which setup would work best?**

MULTIPLE CHOICE

**Choose the correct answer:**

- A. A tilted desk with dirty towels nearby
- B. A flat table with a clear space
- C. A soft cushioned chair with snacks
- D. A standing area with no surface to set things down

**10. Your group is sharing one micro:bit, but two people keep grabbing for it at the same time. Based on the care guidelines, what is the best solution?**

MULTIPLE CHOICE

**Choose the correct answer:**

- A. Let the fastest person always get it first
- B. Hold it together with four hands
- C. Take turns using the micro:bit
- D. Get a second micro:bit immediately

## Robotics Challenges (1)

### 1. Download the Beating Heart

Challenge

Textbook

Download the Beating Heart

Now take the Beating Heart challenge from last lesson and practice downloading it to the micro:bit!

Create a program where the micro:bit shows a heart icon. The icon will alternate between the **HEART** and the **SMALL\_HEART** icons, so that it looks like a beating heart.

Requirements

Display the HEART icon 3 times

Display the SMALL\_HEART icon 3 times

Answer Key

Submit

Step 1

Display the **HEART** icon

Beating Heart Step 1 of 3

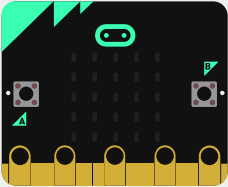
1

Next

Toolbox

Search

```
1 def on_forever():
2     pass
3     basic.forever(on_forever)
4
```



Download

...

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## Answer Keys & Solutions

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### Questions

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**1. Your friend just finished coding a program and wants to test it on their micro:bit. They connect the USB cable but their program does not work. What step did they most likely skip?**

MULTIPLE CHOICE

**Correct Answer:**

- |   |             |
|---|-------------|
| A. They forgot to turn on the micro:bit                     | ✗ Incorrect |
| B. They forgot to download the program as a .hex file first | ✓ Correct   |
| C. They forgot to press the reset button                    | ✗ Incorrect |
| D. They forgot to clean their hands                         | ✗ Incorrect |

**Explanation:**

You must save your program in the right file type before moving it to the micro:bit.

**2. A student sees their micro:bit's light blinking after connecting it to their computer. What should they do next?**

MULTIPLE CHOICE

**Correct Answer:**

- |   |             |
|---|-------------|
| A. Unplug the USB cable immediately                             | ✗ Incorrect |
| B. Press the reset button to stop the blinking                  | ✗ Incorrect |
| C. Wait for the light to stop blinking, then test their program | ✓ Correct   |
| D. Delete files from the MICROBIT folder                        | ✗ Incorrect |

**Explanation:**

The blinking light shows something important is happening that you should not interrupt.

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**3. Your micro:bit program worked yesterday, but today when you turn it on, nothing happens. What is the most likely first step to fix this?**

MULTIPLE CHOICE

**Correct Answer:**

- A. Download a new .hex file ✗ Incorrect
- B. Clean the LED display ✗ Incorrect
- C. Press the power/reset button to restart the program ✓ Correct
- D. Unplug and replug the USB cable ✗ Incorrect

**Explanation:**

Sometimes electronics need a fresh start to work properly.

**4. A student wants to save battery life on their micro:bit when they finish using it. What should they do?**

MULTIPLE CHOICE

**Correct Answer:**

- A. Unplug the USB cable ✗ Incorrect
- B. Hold the reset/power button to turn it off ✓ Correct
- C. Cover the LED display ✗ Incorrect
- D. Put it in a drawer ✗ Incorrect

**Explanation:**

There is a specific way to properly shut down the micro:bit mentioned in the passage.

**5. You are working with a partner on a micro:bit project. Your partner picks up the micro:bit by grabbing just the battery, letting the wires hang loose. What advice should you give them?**

MULTIPLE CHOICE

**Correct Answer:**

- A. That's fine as long as you're careful ✗ Incorrect
- B. You should use both hands to hold the micro:bit and battery together ✓ Correct



C. Just hold it by the USB cable instead

✗ Incorrect

D. Only touch the LED display when carrying it

✗ Incorrect

#### Explanation:

The micro:bit has delicate parts that need proper support when moving.

### 6. A student connects their micro:bit to the computer but cannot find the MICROBIT drive. What should they check first?

MULTIPLE CHOICE

#### Correct Answer:

A. Whether the .hex file is the right size

✗ Incorrect

B. Whether the USB cable is plugged into both the micro:bit and computer

✓ Correct

C. Whether they have the right program downloaded

✗ Incorrect

D. Whether the LED display is working

✗ Incorrect

#### Explanation:

The micro:bit needs a complete connection to show up on your computer.

### 7. You want to create a program that makes sound and shows images at the same time. How many outputs will your program use?

MULTIPLE CHOICE

#### Correct Answer:

A. 1 output

✗ Incorrect

B. 2 outputs

✓ Correct

C. 3 outputs

✗ Incorrect

D. 4 outputs

✗ Incorrect

#### Explanation:

Count the different ways information can come out of the micro:bit.

**8. Your teacher says you should not delete the files already in the MICROBIT folder. A classmate asks why this rule exists. What is the best explanation?**

MULTIPLE CHOICE

**Correct Answer:**

- A. Those files take up too much space ✗ Incorrect
- B. Those files are needed for the micro:bit to work properly ✓ Correct
- C. Those files contain your old programs ✗ Incorrect
- D. Those files are just examples you can ignore ✗ Incorrect

**Explanation:**

Some files are essential for the device to function correctly.

**9. You are setting up a micro:bit workstation for your class. Based on the care instructions, which setup would work best?**

MULTIPLE CHOICE

**Correct Answer:**

- A. A tilted desk with dirty towels nearby ✗ Incorrect
- B. A flat table with a clear space ✓ Correct
- C. A soft cushioned chair with snacks ✗ Incorrect
- D. A standing area with no surface to set things down ✗ Incorrect

**Explanation:**

Consider what conditions help protect the micro:bit's delicate parts.

**10. Your group is sharing one micro:bit, but two people keep grabbing for it at the same time. Based on the care guidelines, what is the best solution?**

MULTIPLE CHOICE

**Correct Answer:**

- A. Let the fastest person always get it first ✗ Incorrect
- B. Hold it together with four hands ✗ Incorrect

C. Take turns using the micro:bit

✓ Correct

D. Get a second micro:bit immediately

✗ Incorrect