

Accessibility

Textbook

Accessibility



What is Accessibility?

Accessibility means making websites, apps, and other online items easy for everyone to use, including people with disabilities. It is a key part of **user interface (UI) design**.



Ways to Make Programs More Accessible

Here are some features we can add to programs to make them more usable:

- **Visual Design:** Choose colors and fonts with high **contrast** (like black on white) that are easy to see.
- **Media Features:** Add **captions** and **audio descriptions** to videos to help users who cannot hear well.
- **Input Flexibility:** Design programs so they can be used with a **keyboard** instead of a mouse.

Adaptive Technologies

Adaptive technologies are special tools that allow people to use computers in different ways. Here are a few examples:

- **Screen Readers** are programs that read text aloud for users who cannot see the screen well.
- **Closed Captions** show words on the screen for users who cannot hear well.
- **Assistive Devices**, such as braille keyboards and adaptive switches, provide alternative input methods.
- **Voice Recognition** lets people control a computer by talking, which is useful for those who cannot use their hands.

In today's activity, you'll use the micro:bit to build a tool that makes using technology easier for different kinds of users.

Critical Thinking Questions

1. Why is it important to make sure technology works for lots of different people?

2. What are some everyday technologies that have accessibility features, and what is the technical function of each?
3. You're designing a new adaptive technology project for the micro:bit. Before you start coding, how could you use a digital organizer (like a concept map or a Venn diagram) to plan your ideas and make sure your project is accessible to different users? Create a concept map using a digital organizer.

Questions (5)

1. Why is it important to make a website or app accessible?

MULTIPLE CHOICE

Choose the correct answer:

- A. To make it load faster
- B. To make sure all users can interact with it
- C. To make it more colorful
- D. To make it work on all phones

2. Which tool would help someone who can't see the screen very well?

MULTIPLE CHOICE

Choose the correct answer:

- A. A color picker
- B. A mouse
- C. A screen reader
- D. A fast internet connection

3. What is one way to help someone who has trouble hearing a video?

MULTIPLE CHOICE

Choose the correct answer:

- A. Make the video shorter
- B. Add bright colors
- C. Add captions
- D. Turn up the brightness

4. Why is voice recognition helpful for some users?

MULTIPLE CHOICE

Choose the correct answer:

- A. It changes the voice in games
- B. It plays music louder
- C. It lets people use their voice to control the computer
- D. It helps the computer speak

5. What makes good color contrast helpful for users?

MULTIPLE CHOICE

Choose the correct answer:

- A. It makes the screen more colorful
- B. It helps people see words and buttons more clearly
- C. It matches your favorite color
- D. It helps the computer go faster

Games (2)

1. Accessibility Typing

Full Screen

Audio

Instructions

Restart

Pause

Online accessibility mean

2. Accessibility

Full Screen

Audio

Instructions

Answer Key

Pause

Clear All

Check Order

Attempts: 0

Make programs so you can use the keyboard instead of a mouse.

Closed Captions show words for people who can't hear well.

Screen Readers read out loud what's on the screen for people who can't see well.

Using mouse-only controls.

Voice Recognition lets people control the computer by talking.

Making instructions only appear when you hover over something.

Making text very small.

Choosing fancy or hard-to-read fonts.

Put captions and sound on videos.

Pick colors and fonts that are easy to read.

Ways to Improve Accessibility

Ways that Don't Improve Accessibility

Robotics Challenges (2)

1. Light Sensor

Light Sensor

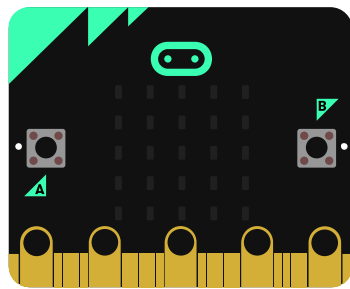
Code the micro:bit to play a low tone if the light level is less than 100. Otherwise, it should play a high tone.

Requirements

- ☐ Add the forever block
- ☐ Add an IF statement to see if the light level is less than 100.
- ☐ If the light level is less than 100, play a low tone.
- ☐ Else, it will play a high tone.

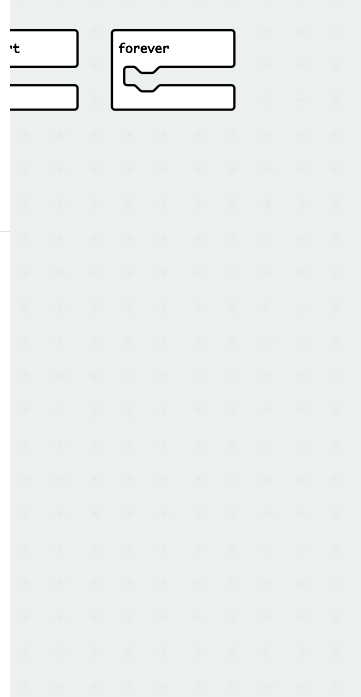
Answer Key

Submit



Search...

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



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2. Temperature Warning

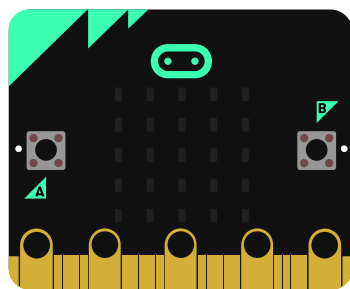
Temperature Warning

Use the micro:bit's temperature sensor to create a program that shows an LED design to the user when the temperature is greater than 30 degrees Celsius and shows a different design if the temperature is less than 18 degrees Celsius. Otherwise, the micro:bit will have a clear screen.

This tool can be useful for people who are sensitive to temperature changes.

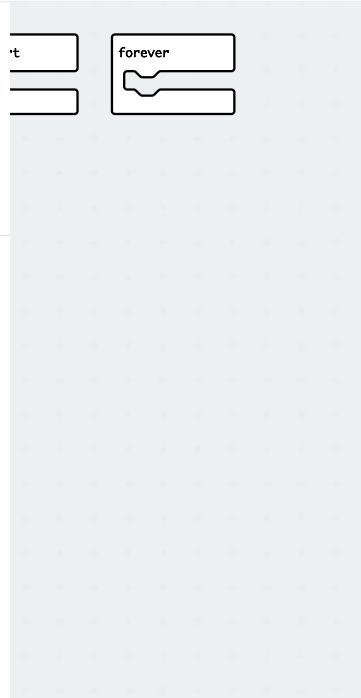
Requirements

- ☐ Begin with the **forever** block.
- ☐ Drag the **if true then else** block and connect it in the **forever** block.
- ☐ Add the temperature input in the first 0 section. Then, change the second number to



Search...

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



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Answer Keys & Solutions

Questions

1. Why is it important to make a website or app accessible?

MULTIPLE CHOICE

Correct Answer:

- A. To make it load faster ✗ Incorrect
- B. To make sure all users can interact with it ✓ Correct
- C. To make it more colorful ✗ Incorrect
- D. To make it work on all phones ✗ Incorrect

Explanation:

Accessibility means making sure all people can use it easily.

2. Which tool would help someone who can't see the screen very well?

MULTIPLE CHOICE

Correct Answer:

- A. A color picker ✗ Incorrect
- B. A mouse ✗ Incorrect
- C. A screen reader ✓ Correct
- D. A fast internet connection ✗ Incorrect

Explanation:

This tool reads the words on the screen out loud.

3. What is one way to help someone who has trouble hearing a video?

MULTIPLE CHOICE

Correct Answer:

A. Make the video shorter

✗ Incorrect

B. Add bright colors

✗ Incorrect

C. Add captions

✓ Correct

D. Turn up the brightness

✗ Incorrect

Explanation:

Captions show the words so people can read them.

4. Why is voice recognition helpful for some users?

MULTIPLE CHOICE

Correct Answer:

A. It changes the voice in games

✗ Incorrect

B. It plays music louder

✗ Incorrect

C. It lets people use their voice to control the computer

✓ Correct

D. It helps the computer speak

✗ Incorrect

Explanation:

This helps people who can't use a mouse or keyboard.

5. What makes good color contrast helpful for users?

MULTIPLE CHOICE

Correct Answer:

A. It makes the screen more colorful

✗ Incorrect

B. It helps people see words and buttons more clearly

✓ Correct

C. It matches your favorite color

✗ Incorrect

D. It helps the computer go faster

✗ Incorrect

Games

1. Accessibility Typing

2. Accessibility

Category Solutions:

Category 1: Ways to Improve Accessibility

- Pick colors and fonts that are easy to see and have good contrast, like black and white.
- Put captions and sound on videos.
- Make programs so you can use the keyboard instead of a mouse.
- Screen Readers read out loud what's on the screen for people who can't see well.
- Closed Captions show words for people who can't hear well.
- Assistive Devices like braille keyboards, adaptive switches, and more.
- Voice Recognition lets people control the computer by talking.

Category 2: Ways that Don't Improve Accessibility

- Using only color to show important information.
- Choosing fancy or hard-to-read fonts.
- Making text very small.
- Using mouse-only controls.
- Adding auto-playing videos with no pause or mute option.
- Not labeling buttons or images clearly.
- Making instructions only appear when you hover over something.

Students must sort items into their correct categories.