

Melodies

Textbook

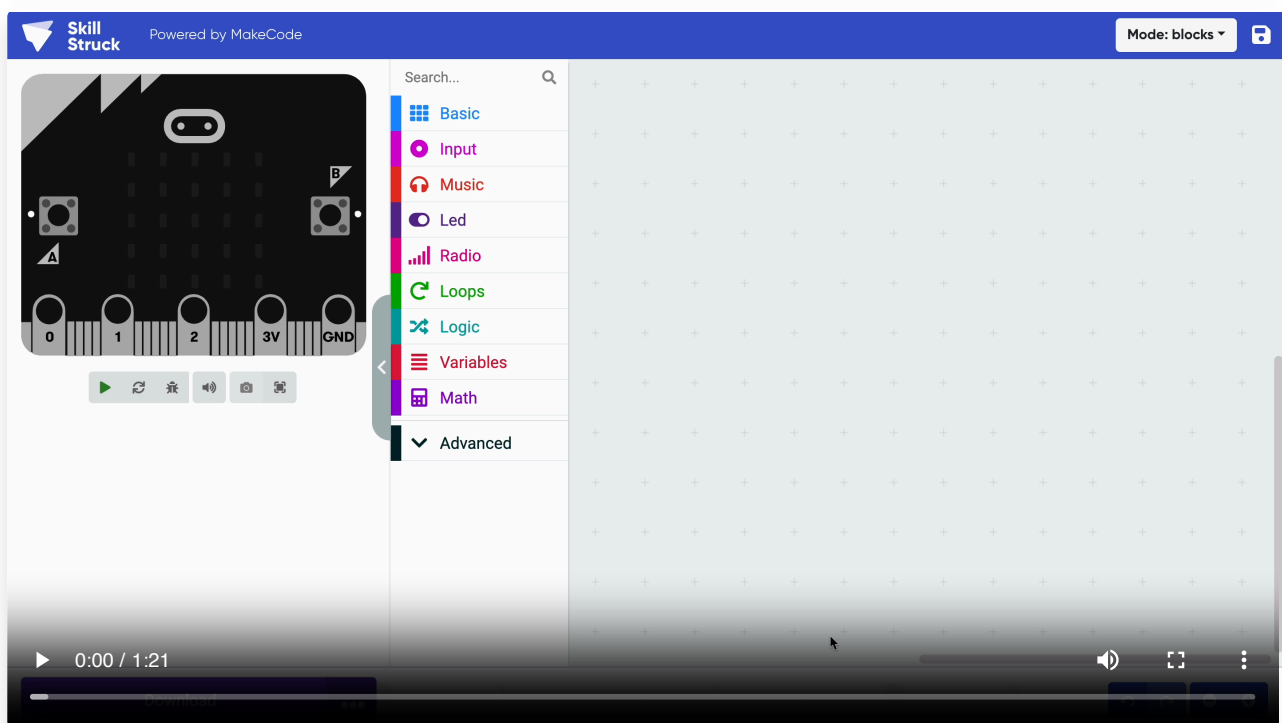
Melodies



Think about your favorite song. Ok now forget the lyrics and just start humming it. That's the melody! Just like how we hear songs on our phones or radios, we can teach the micro:bit to play melodies. Whether it's a song you make up or a classic tune, you can program the micro:bit to play music through its tiny speaker. In this lesson, you'll learn how to create your own melodies and control how fast they play—making the micro:bit your very own musical instrument!

The micro:bit also can produce sounds and melodies through its speaker output.

Watch [here](#) to get a better idea of how sound works on the micro:bit:



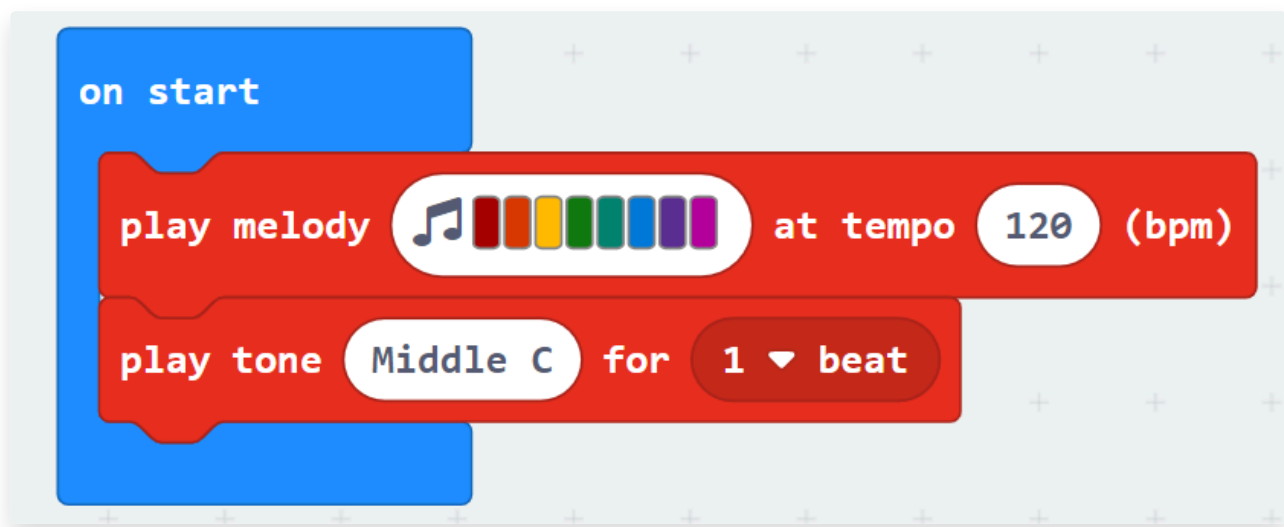
Code It! – Melodies

A melody is a sequence of musical notes. We can program the micro:bit to play melodies by following these steps:

1. Choose an input block and drag it into the code editor.
2. Click on the red Music category and drag the `play melody` block and connect it in the input block.
3. Create your own melody or choose an existing melody in the gallery.
4. To create your own melody, click on the squares. There are 8 columns and each column represents a note, or tone. A [tone](#) is a musical sound. You can only select one square in each column to represent a note in your melody.

5. On this same block you will notice words that say tempo 120 (bpm). The [tempo](#) is how fast your melody plays. BPM means beats per minute. The higher the tempo, or beats per minute, the faster it plays. Practice changing the tempo on your melody to a higher number and then to a lower number to hear the difference.

As previously mentioned, tone is a musical sound. You can use a red tone block to play a single note in your code instead of a melody if you prefer.



Outputs

When your music plays, you will hear the melody through one of the micro:bit's outputs. An output is a place where information is produced on a computer. For example, the speaker is an output on the micro:bit. A speaker produces the melodies you make! The LED light display is another example of an output. It shows the code you create using its lights.

Adopted from microbit.org

Critical Thinking Questions

- A melody is like humming your favorite song without the words. How is programming a melody on the micro:bit similar to deciding what notes to hum to make a tune?
- Imagine you want to play a really exciting, fast song on the micro:bit, and then a calm, slow lullaby. What part of the music block would you change to make the songs sound fast or slow?
- The micro:bit's speaker is an "output" because it produces sound. What are some other "outputs" from everyday things, like a radio, a TV, or even your voice?

Questions (5)

1. What part of the micro:bit plays sound?

MULTIPLE CHOICE

Choose the correct answer:

- A. The LED display
- B. The power button
- C. The speaker
- D. The microphone

2. What does BPM stand for?

MULTIPLE CHOICE

Choose the correct answer:

- A. Bits per message
- B. Beats per minute
- C. Beeps per melody
- D. Bytes per music

3. What does tempo control in a melody?

MULTIPLE CHOICE

Choose the correct answer:

- A. The volume
- B. The type of instrument
- C. The speed of the melody
- D. The pitch of the notes

4. What is an output on the micro:bit?

MULTIPLE CHOICE

Choose the correct answer:

- A. A code editor
- B. A storage unit
- C. Information is received
- D. Information is produced

5. Which block plays a full melody in the code editor?

MULTIPLE CHOICE


Choose the correct answer:

- A. show number
- B. play melody
- C. repeat loop
- D. input pin

Games (2)

1. Melodies Typing

Full ScreenAudioInstructionsRestartPause



0s100%

Just like how we hear so

2. Melodies Matching

Full ScreenAudioInstructionsAnswer KeyPauseClear AllCheck Matches

Attempts: 0

MelodySpeakerTempo

BPMTone

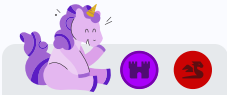
How fast your melody plays

The sound of a song without the words

Where sound comes out of the micro:bit

A specific musical sound

Beats per minute



Robotics Challenges (10)

1. Add a Melody

Challenge

Textbook

Add a Melody

Code the micro:bit to play a melody. You may select one from the gallery or create your own!

Requirements

Play a melody on the micro:bit.

Answer Key

Submit

Step 1

Begin with the **on start** block.

Add a Melody Step 1 of 5

1Next

Toolbox

Search...

Basic

Input

Music

Led

Radio

Loops

Logic

Variables

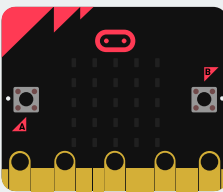
Math

Extensions

Advanced

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2. Melodies and Music Notes

Challenge

Textbook

Melodies and Music Notes

Code the micro:bit to play a melody using the 'on start' block. Also program the micro:bit to show a music note when button A is pressed.

Requirements

Play a melody.

Show a music note when Button A is pressed.

Answer Key

Submit

Step 1

Program the micro:bit to play a melody.

Melodies and Music Notes Step 1 of 2

1Next

Toolbox

Search...

Basic

Input

Music

Led

Radio

Loops

Logic

Variables

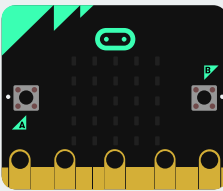
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3. Create Your Own Melody

Challenge

Textbook

Create Your Own Melody

Program the micro:bit to play a melody you created!

Requirements

Play a melody of your own creation

Answer Key

Submit

Step 1

Begin with the **on start** block.

Create Your Own Melody Step 1 of 5

1 Next

Toolbox

Search...

Basic

Input

Music

Led

Radio

Loops

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micro:bit

4. A Joyful Song

Challenge

Textbook

A Joyful Song

Code the micro:bit to play a joyful melody on repeat 5 times when buttons A + B are pressed together.

Requirements

Program your code to repeat exactly 5 times.

Play a joyful melody when Buttons A+B are pressed together.

Answer Key

Submit

A Joyful Song

micro:bit

Toolbox

Search...

Basic

Input

Music

Led

Radio

Loops

Logic

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micro:bit

5. Horror Film

Challenge

Textbook

Horror Film

Program the micro:bit to play a scary melody that you might hear in a horror film. What does that sound like to you? Code the micro:bit to play this melody when you shake the micro:bit.

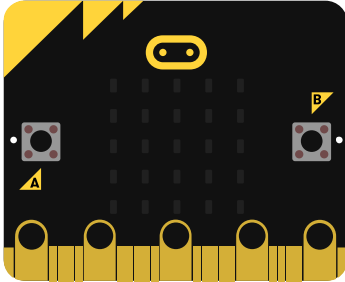
Requirements

Program your code to start when the micro:bit shakes

Play a scary melody

Answer Key

Submit



Search...

Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Extensions
Advanced

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6. Tones, Tones, and More Tones

Challenge

Textbook

Tones, Tones, and More Tones

Program the micro:bit to do the following:

When you shake the micro:bit, play a melody.

When button A is pressed, a tone is played.

When Button B is pressed, a ring tone is played.

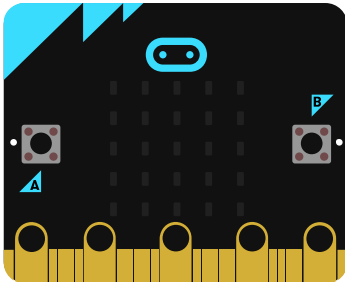
Requirements

Play a tone when Button A is pressed.

Play a ring tone when Button B is pressed.

Play a melody when the micro:bit shakes.

Answer Key



Search...

Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
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7. Two Tempos

Challenge

Textbook

Two Tempos

Add a melody to your code that has a faster tempo (bpm). Then, add that same melody to play again, but this time with a slower tempo (bpm).

Requirements

- Play one melody at a beat faster than 120 bpm.
- Play one melody at a beat slower than 120 bpm.
- You need at least two total melodies in your code.

Answer Key

Submit

Step 1

Begin with the **on start** block.

Two Tempos Step 1 of 7

1

Next

Toolbox

Search...

Basic

Input

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Led

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micro:bit

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8. Multiple Melodies

Challenge

Textbook

Multiple Melodies

Program the micro:bit to play three melodies you create! Your melodies should have at least 4 notes each.

Requirements

- Use the forever block
- Create 3 melodies that play in your code

Answer Key

Submit

Step 1

Begin with the **on start** block.

Multiple Melodies Step 1 of 7

1

Next

Toolbox

Search...

Basic

Input

Music

Led

Radio

Loops

Logic

Variables

Math

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forever

micro:bit

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9. A Song on Loop

Challenge

Textbook

A Song on Loop

Program the micro:bit to play a repeating melody.

Requirements

Code a loop that plays a melody 6 times.

Play a melody

Answer Key

Submit

Step 1

Program the micro:bit to play a melody 6 times.

A Song on Loop Step 1 of 1

1 Done

Toolbox

Search...

Basic

Input

Music

Led

Radio

Loops

Logic

Variables

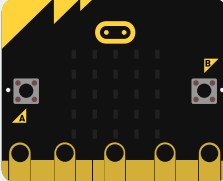
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10. Signal to Start

Challenge

Textbook

Signal to Start

Create a stopwatch that counts from 0 to 10. Code the micro:bit to also play a fun melody before it starts to count.

Requirements

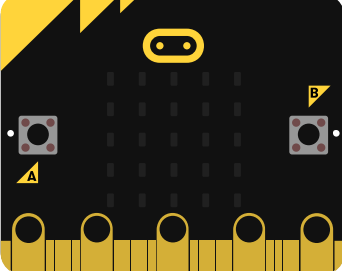
Add a melody at the beginning of your countdown timer.

Create a program that counts up from 0 to 10.

Answer Key

Submit

Signal to Start



Toolbox

Search...

Basic

Input

Music

Led

Radio

Loops

Logic

Variables

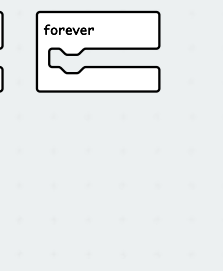
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Answer Keys & Solutions

Questions

1. What part of the micro:bit plays sound?

MULTIPLE CHOICE

Correct Answer:

- A. The LED display ✗ Incorrect
- B. The power button ✗ Incorrect
- C. The speaker ✓ Correct
- D. The microphone ✗ Incorrect

Explanation:

This output produces the melodies you code.

2. What does BPM stand for?

MULTIPLE CHOICE

Correct Answer:

- A. Bits per message ✗ Incorrect
- B. Beats per minute ✓ Correct
- C. Beeps per melody ✗ Incorrect
- D. Bytes per music ✗ Incorrect

Explanation:

A higher BPM means a faster tempo.

3. What does tempo control in a melody?

MULTIPLE CHOICE

Correct Answer:

- A. The volume ✗ Incorrect

B. The type of instrument

✗ Incorrect

C. The speed of the melody

✓ Correct

D. The pitch of the notes

✗ Incorrect

Explanation:

Try changing it to a higher number to hear the difference.

4. What is an output on the micro:bit?

MULTIPLE CHOICE

Correct Answer:

A. A code editor

✗ Incorrect

B. A storage unit

✗ Incorrect

C. Information is received

✗ Incorrect

D. Information is produced

✓ Correct

5. Which block plays a full melody in the code editor?

MULTIPLE CHOICE

Correct Answer:

A. show number

✗ Incorrect

B. play melody

✓ Correct

C. repeat loop

✗ Incorrect

D. input pin

✗ Incorrect

Explanation:

It's found under the red "Music" category.

Games

1. Melodies Typing

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

2. Melodies Matching

Matching Game Solutions:

1. →
2. →
3. →
4. →
5. →

Students must drag items from the left to match with corresponding items on the right.