IDEASTUDIO
THE MAKERSPACE @ WEST HOUSTON INSTITUTE

Module 1 - micro:bit Name Badge with Melody

Overview

This entry-level activity introduces the BBC micro:bit as a programmable device for interactive electronics. You will create a digital scrolling name badge and add custom sound effects and melodies that can be triggered by button presses.

This module is designed as your first step into coding, flashing .hex files, and interacting with micro:bit hardware.

Outcomes

After completing this training, you should be able to:

a. Flash .hex files to a micro:bit using Microsoft MakeCode
b. Program the LED display to scroll custom text
c. Trigger sounds and melodies with button inputs
d. Customize your badge text and tune

Assessment

To successfully complete this training, you will need to demonstrate competency and earn at least 20 points on the assessment. The following are the individualized criteria on which you will be assessed.

CRITERIA	Needs Work (0 points)	Competent (5 points)	Exceptional (10 Points)
Flash a .hex file successfully			
Customize scrolling text on LED grid			
Play at least one melody using button press			
Stop playback with button combination			
TOTAL SCORE:			

Updated September 4, 2025

Electronics with micro:bit

The micro:bit is a beginner-friendly microcontroller designed to introduce the basics of programming and electronics through simple interactive projects. In this training, you will learn how to transform the micro:bit into a digital name badge that scrolls custom text across its LED display and plays sound when buttons are pressed.

The micro:bit includes a built-in 5x5 LED grid and input buttons, which make it possible to program simple text messages, animations, and interactive features without additional hardware. By combining the display with the micro:bit's music library, you can program custom melodies and trigger them through button inputs. This creates a fun and engaging way to understand programming logic, event handling, and hardware interaction.

Step-by-Step Instructions

1. **Set Up Your Hardware**

   You will need:

   a. 1 x BBC micro:bit(V2 for extended features)
   b. 1 x micro:bit battery pack(2 x AAA)
   c. 1 x USB cable (micro-USB)
   d. A computer with internet access

2. **Flash the Badge Code**

   In this step, we will flash our code from MakeCode compiler to our micro:bit device. After flashing, the program will run on the micro:bit and we will press the buttons to see functionality.

   a. Go to the website github.com/WestHoustonInstitute/Introduction-to-Electronics-on-microbit/tree/main/1-Microbit_Name-Badge_w_Melody
   b. Download the provided .hex file → microbit-Name-badge.hex in the Software_Setup folder.
   c. Go to MakeCode for micro:bit website → https://makecode.microbit.org
   d. Import the downloaded file microbit-Name-badge.hex (Import → Import File).
   e. Change the text in the "show string" block to your name and customize the melodies.
   f. Connect your micro:bit via USB and click Download.
   g. Disconnect the USB, attach the battery pack, and watch your name scroll.

3. **Try Sound Interactivity**

Button	Action
A	Play custom melody
B	Play built-in micro:bit tune
A+B	Stop playback

Troubleshooting

- **No scrolling text?** Check your “show string” block is inside the *forever* loop.
- **No sound?** Confirm your micro:bit version. (V1 requires headphones/speaker via pins: V2 has them built-in)
- **Hex file not loading?** Ensure MICROBIT drive appears when you connect via USB.