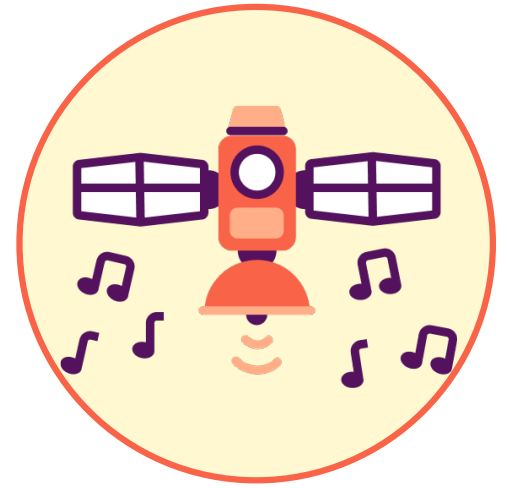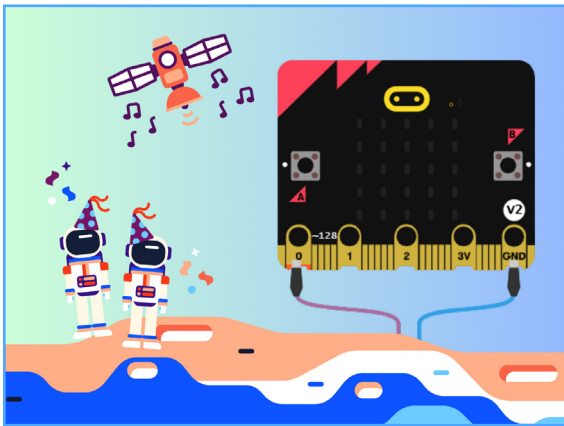# MOONHACK 2025

PartyMix:Bit

Turn your micro:bit into a mobile DJ controller.

INTRODUCTION

What you will need

HARDWARE

micro:bit V2 (needs the inbuilt speaker) and power source

A computer with internet access

SOFTWARE

MakeCode Editor

What you will learn

- How to add **music**

- How to add **sound effects**

- Using **variables** and **logic** to create interactivity

- Using **input** to control sound
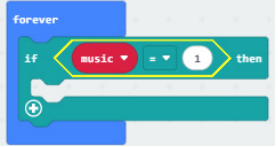
Moonhack Certificate
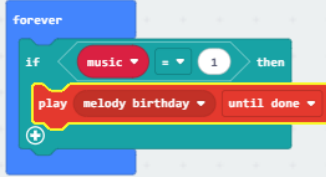
Finished the project? Download a certificate of completion here.

Additional notes for educators

Read our blog that explores the creation of this project and the coding aspects behind it.

STEP 1 - CREATING MUSIC CHOICES

Go to MakeCode Editor and start a new project. Call your project PartyMix:Bit.

Start with the **forever** basic block.
Add an **if then** logic block.

Create a new variable called **music.**
Replace the true Boolean with a **logic =**
Boolean. On the left add the variable **music**
and on the right type 1 (music number).
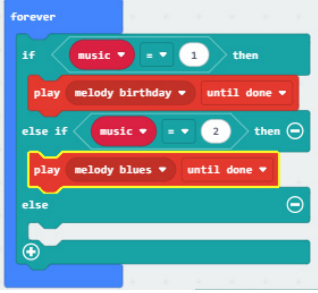**Ensure you select the number comparison
not the one with " " string comparison

Add a **play melody** music block from the
Melody Advanced section. Change the
melody to birthday and change the
condition to until done.

At the bottom of the loop block, click the
+ button twice to add new branches.

Duplicate the Boolean operator from
above and add it into the block, changing
the number to 2. Add another melody of
choice, ensuring you change the
condition to until done.

Continue adding branches, Booleans,
and melodies until you have at least 4
that will feature in the DJ set list. To tidy
up the loop, click the final - button in the
loop block.

STEP 2 - CREATING BEAT CHOICES

○ Add a new forever basic block. Add an if then logic block.

○ Create a new variable called beat. Replace the true Boolean with a logic = Boolean. On the left add the variable beat and on the right type 1 (beat number). In the music menu scroll to the bottom and add a play block. These will form the beats.
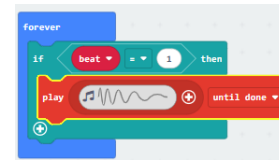
○ Click on the music icon inside the block to choose the beat. You can add a premade one from the gallery or make your own in the editor.
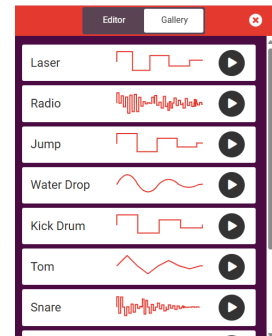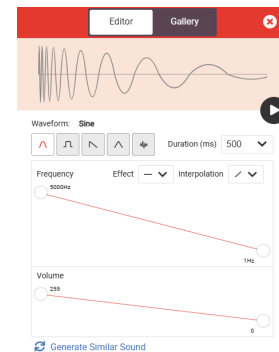
○ Continue this process until you have a minimum of 4 different beats in your set list.
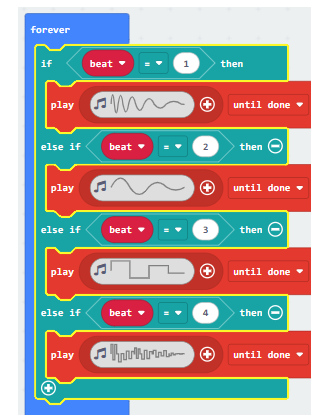
○ Inside the on start basic block, add a variable block to set the beat to 1. Add another to set the music to 1.
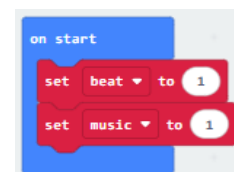
Run your code. You should hear both your music and beat start playing. Let's add code so we can change the music and the beat to mix the music.

STEP 3 - USER INPUT

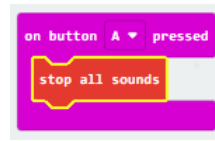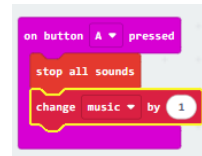Add the input of on button A pressed. From the music menu add the block to stop all sounds. This will stop any music playing before the next one starts.
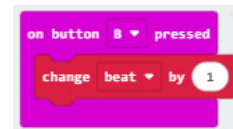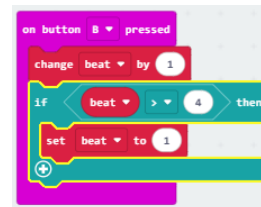
Add a variable block to change the music by 1.

Once it gets to music track 4, there is no number 5 so moving to the next track will create silence. Add a logic block that if the music variable goes to more than 4, it sets to music track 1.
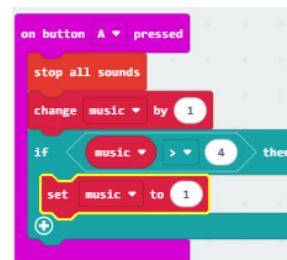
Create similar code for the beats with input on button B.

Add a loop so that if the beat variable is greater than 4 it will reset to 1.

Run your code. Use buttons A and B to change the music and beat. Now you've got the party started! But sometimes the beat doesn't match the melody. Let's add some input so that we can control the tempo.

STEP 4 - CONTROLLING TEMPO

Add the input on tilt left. Add the music block to change the tempo bpm (beats per minute) to speed up the tempo. Add the input on tilt right. Add the change tempo bpm block with a negative number to slow down the tempo.
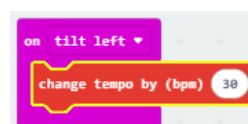
Challenges:

Improve the music and beats

The melody choices are short, and the music stops once the melody is over. Can you create your own melodies or make the current ones longer? You can also create your own beats. Is having 4 choices enough or should there be more?

Creating a party atmosphere

At the moment the micro:bit is just playing music, but we could add so much more. Can you create LED lights to party along with the music or beats? Maybe the LED lights show a message or beat with the volume of the music.

Design project

Can you turn your micro:bit into a mixing board? It could have physical inputs to change the music, beats, and tempo. You could incorporate lights or use added components to flash lights, use LED's, or connect to external components that move to the music. Be creative!

Congratulations! You're a Moonhack changemaker. You can try one of our other projects or try one of the challenges above.

Don't forget to talk to an adult about registering your participation and downloading your certificate at moonhack.com