A simple melody

Open the MakeCode editor:
https://makecode.microbit.org/
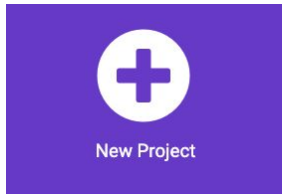
Create a new project and give it a name.

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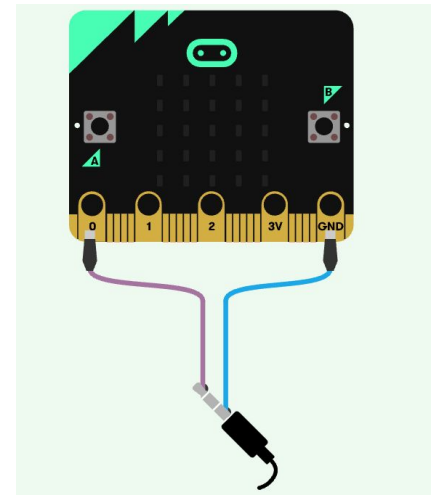
1. From the `Music` menu, drag the `play melody ... at tempo 120 (bpm) [until done]` block and place it inside the `forever` block.

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2. Click on the melody to open the Editor. Switch to the Gallery and choose a melody. See the melody pattern in the Editor.

Click the play ▶ button to hear the chosen melody.

---

3. Test:
- Try different melodies and hear the changes
- Change the notes to change the melody
- Keep experimenting until you hear a melody you like

Play and stop

1. From the `Input` menu, drag an `on button` block to the code editor panel.

2. Open the `Variables` menu and click **Make a Variable**. Name your new variable `playing`.

3. From the `Variables` menu, drag a `set playing` block inside the `on button` block.

4. From the `Logic` menu, drag a `not` block inside the `0`.
   From the `Variables` menu, drag the `playing` block inside the `not` block.

5. From the `Logic` menu, drag an `if` block inside the `forever` block.
   Place your melody inside the `if` block.
   From the `Variables` menu, drag the `playing` block inside the `if` block.
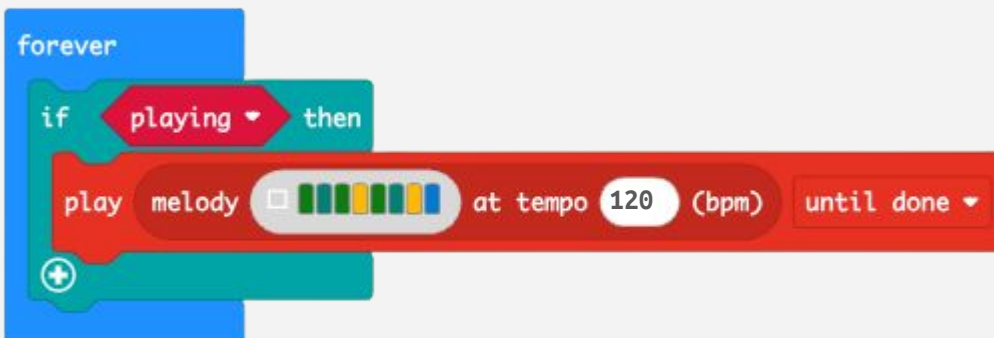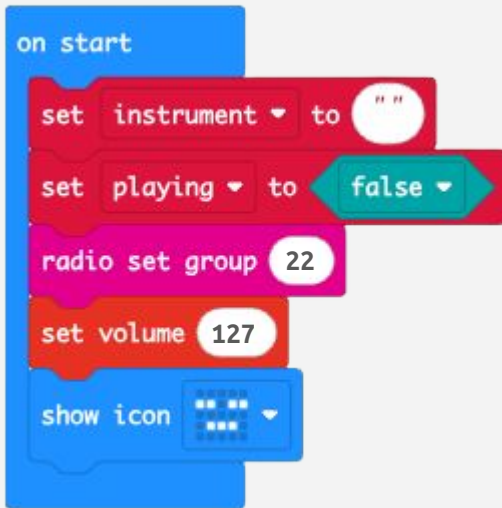

6. **Test:**
   - Press button A to set 'playing' to `true` (starting the melody)
   - Press button A again to set 'playing' to `false` (stopping the melody)

Challenge: Build a band

Use radio to build a micro:bit band with two micro:bits!

Get the micro:bits ready.

```
on start
  set instrument ▾ to " "
  set playing ▾ to false ▾
  radio set group 22
  set volume 127
  show icon ▾
```

Tell the micro:bits that nothing is playing yet.

Both micro:bits must be in the same **radio group** so they can communicate with each other.

Set the volume, and set the icon to a sleepy face.

One micro:bit will play the melody.

Check the micro:bit is *not* set to be a **melody** instrument.

```
on button A ▾ pressed
  if instrument ▾ ≠ ▾ "Melody" then
    set instrument ▾ to "Melody"
    set playing ▾ to true ▾
    show string "M"
  ⊕
```
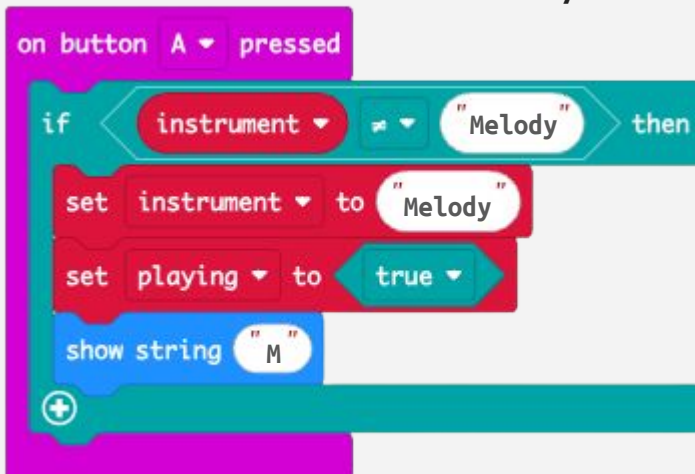
Test:
- Press button A to start playing the melody
- The micro:bit will show 'M'

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Challenge: Build a band (continued)

The other micro:bit will play the **bass**.

Press button B to tell another micro:bit to be the bass.

```
on button B ▾ pressed
radio send string "Bass"
```

If a micro:bit is not doing anything and receives the bass message, it starts the bass part.

Check that the micro:bit is not set to an instrument. If it receives the bass message, it starts the bass and shows 'B'.

```
on radio received receivedString
    if   receivedString = ▾ "Bass"  and ▾  instrument ▾ = ▾ " "  then
        set instrument ▾ to "Bass"
        set playing ▾ to true ▾
        show string "B"
    else                                                          ⊖

    ⊕
```

The melody micro:bit plays its tune, then sends a signal to tell the bass micro:bit when to play.

You can use the melody you created earlier!

```
forever
    if  instrument ▾ = ▾ "Melody"  and ▾  playing ▾  then
        play melody [▮▮▮▮▮▮▮] at tempo 120 (bpm) until done ▾
        radio send string "newBar"
    ⊕
```

When the bass micro:bit receives 'newBar', it plays in time with the melody.

Add these blocks inside the `else` in `on radio received`.

```
else                                                              ⊖
    if  receivedString = ▾ "newBar"  and ▾  playing ▾  and ▾  instrument ▾ = ▾ "Bass"  then
        play melody [▮▮▮▮▮▮] at tempo 120 (bpm) until done ▾
    ⊕
⊕
```

Test:
- Press A to start the melody
- Press B to start the bass on another micro:bit

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Challenge: Build a band (continued)

Pause and play again.

Check if a micro:bit is set as an instrument. If it is, change the playing state.

Test:
- Shake the micro:bit to pause the music and show a sleepy face
- Shake again to start

Share your tune with us by sending us your project's unique web address!

At the top right of the MakeCode editor, you can find the menu bar.

- Click the share button
- If you have not already named your project, do that now
- Click **Share Project**

- Click **Copy**

- Paste the link into a message, or write down the link to give to the person you want to share the project with

Tip: 💡 People who open this link will get their own version of your project. They will not be able to change your version.
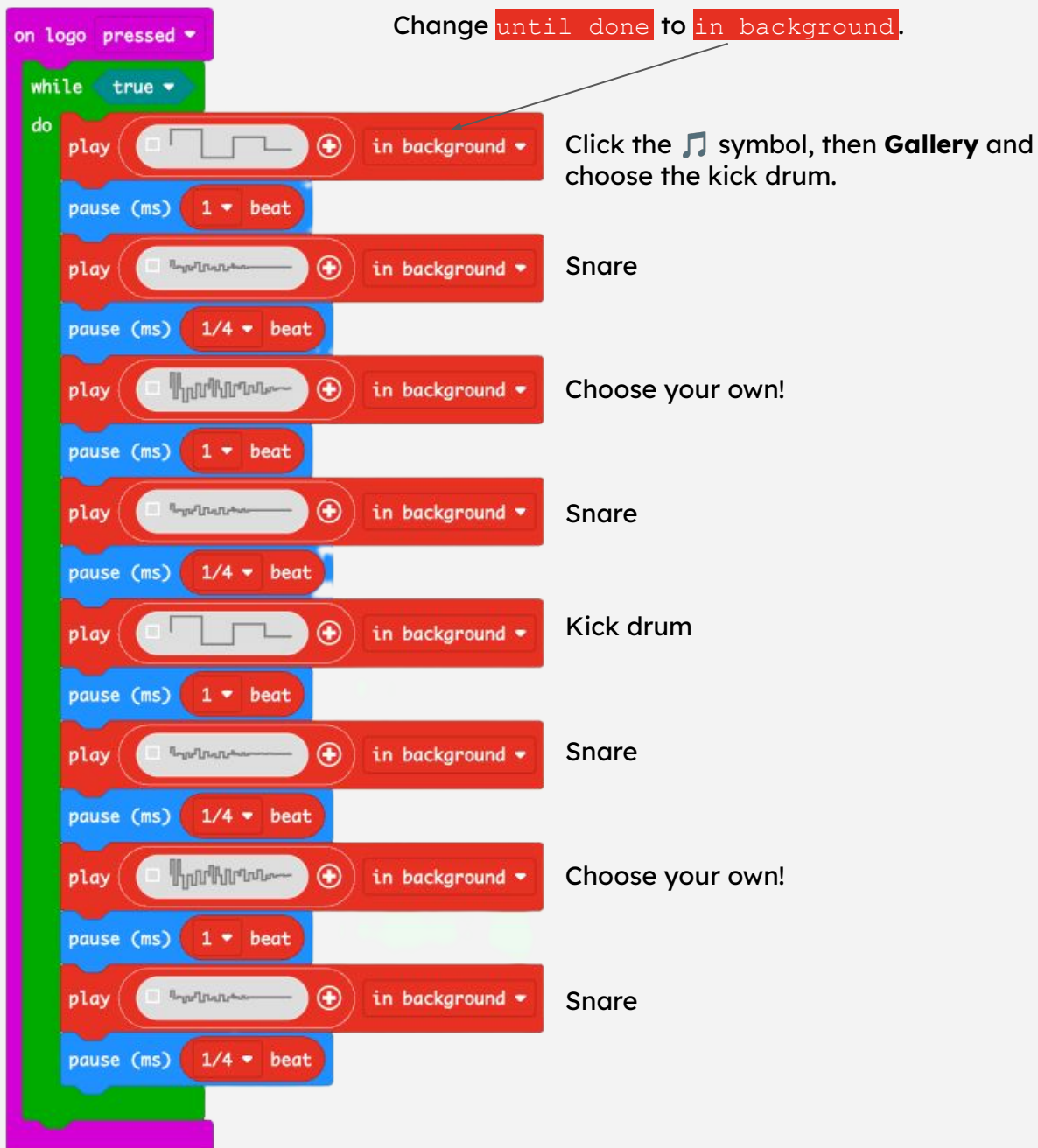
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Challenge: micro:bit V2 drum loop

The micro:bit V2 has drum sounds you can use. These are not available for the micro:bit V1.

Create a **new project** and set the tempo.

```
on start
  set tempo to (bpm) 120
```

Trigger the drums!

```
on logo pressed ▼
  while true ▼
  do
    play [▢ ⌐⌐⌐] ⊕ in background ▼
    pause (ms) 1 ▼ beat
    play [▢ ~~~~] ⊕ in background ▼
    pause (ms) 1/4 ▼ beat
    play [▢ ~~~~] ⊕ in background ▼
    pause (ms) 1 ▼ beat
    play [▢ ~~~~] ⊕ in background ▼
    pause (ms) 1/4 ▼ beat
    play [▢ ⌐⌐⌐] ⊕ in background ▼
    pause (ms) 1 ▼ beat
    play [▢ ~~~~] ⊕ in background ▼
    pause (ms) 1/4 ▼ beat
    play [▢ ~~~~] ⊕ in background ▼
    pause (ms) 1 ▼ beat
    play [▢ ~~~~] ⊕ in background ▼
    pause (ms) 1/4 ▼ beat
```

Change `until done` to `in background`.

Click the 🎵 symbol, then **Gallery** and choose the kick drum.

Snare

Choose your own!

Snare

Kick drum

Snare

Choose your own!

Snare

Try: Change the tempo and add some bass tones on button presses.
Test: Press the touch logo and listen to your beat.

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Challenge: Light and movement

The micro:bit V2 has drum sounds you can use. These are not available for the micro:bit V1.

Use the `light level` value to control sound tones with light.

```
on button A ▾ pressed
    play tone (light level) for (1 ▾ beat) in background ▾
```

Test:
Press the button a few times. Move your hand over the micro:bit to hear each tone change.

Use the `acceleration (mg) x` value to change the tone as you move your micro:bit.

```
on button A ▾ pressed
    play tone (acceleration (mg) x ▾) for (1 ▾ beat) in background ▾
```
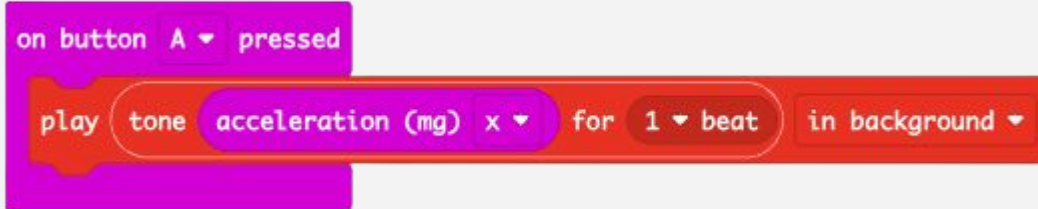
Test:
Press the button a few times. Shake your micro:bit as you do to hear the tones change.

Share your tune with us by sending us a video of your Code Club playing it!

{code club}