

[**the** academy_of_code]

Music Tech

<https://taoc.ie/musictech>

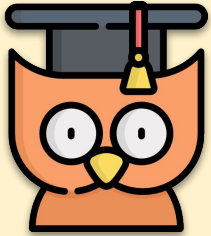
[Lesson 1 - 11/12 June](#)

[Lesson 2 - 1/2 July](#)

[Lesson 3 - 23/24 July](#)

[Extra Activities](#)

Lesson 1 - Looping in a DAW

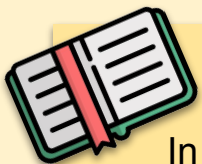


Learning Outcomes:

- We will learn the basics of a DAW (Digital Audio Workstation)
- Introduction to Looping
- Making our First song with loops



“To hell with the rules. If it sounds right, then it is”
- Eddie Van Halen



Music Technology

In this lesson, we’re going to take a break from the usual to take a look at how music is made digitally using a **DAW** (Digital Audio Workstation) to create a **Multi-track** composition with **Loops**. Along the way, we’ll be looking at some links between this and what we have already learned and learn how to upload background music and sound effects for use in Scratch and Processing.

It should come as no surprise to you to learn that all the music we listen to (apart from solo pieces) are **multi-track** compositions. By this we mean that they are made of multiple tracks, drums, guitars, vocals, synths etc. A **Digital Audio Workstation** allows us to organise all our tracks in a timeline, an easy and linear way to organise our creative flow.

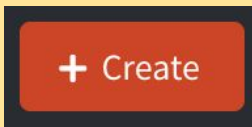


Making your First Beats

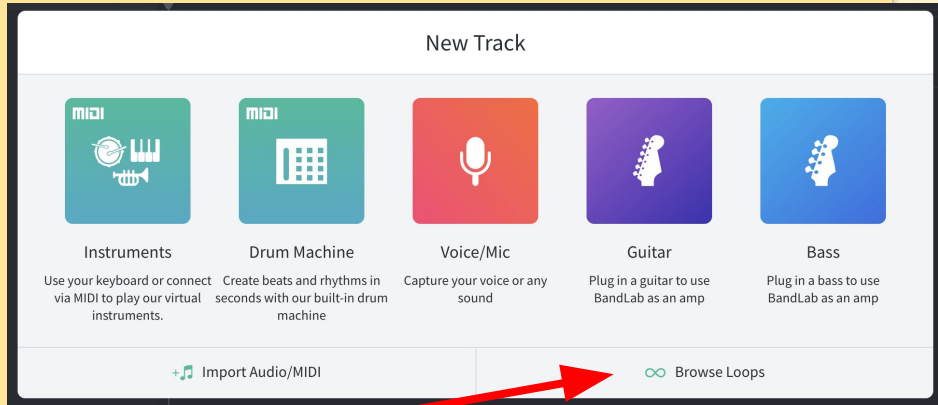
1 Go to www.taoc.ie/bandlab

2 Email: **damienaoc@gmail.com** Password: **student**


3 To get things going, you should click create

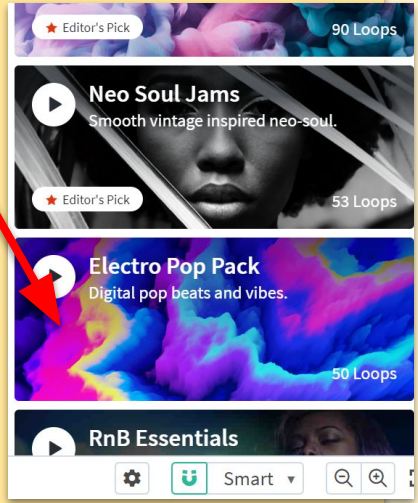


then *Browse Loops*.

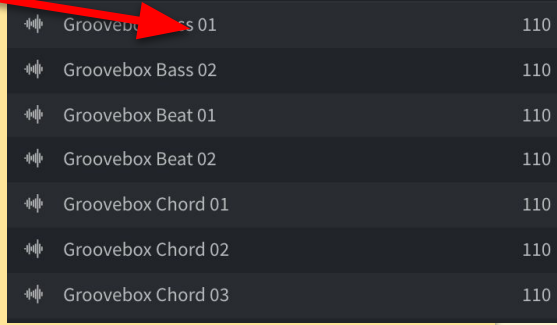


4 Pick a genre (style) of music to take your loops from. Make sure to preview first!

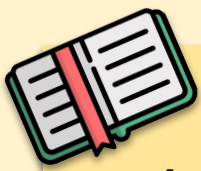
5 Have a listen through the samples and find ones you Like. Then drag the sound into the Play Area. As before, make sure to preview first by clicking “”



6 Start building up your first track with different loops; guitars, bass lines, beats and keys. **NB DONT** put different instruments on the same horizontal line! Make new tracks for each one!

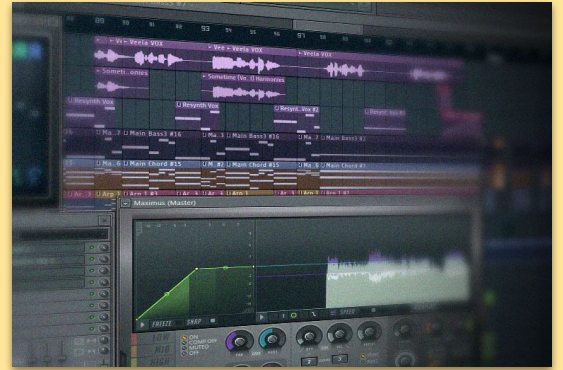


7 If you've made something you're happy with, click *Download* and *Mixdown to* to save it to your USB drive.



The DAW - Digital Audio Workstation

A digital audio workstation (DAW) is an electronic device or app used for recording, editing and producing audio files. Some popular types include *Ableton Live*, *Pro Tools*, *Cubase* and *FL Studio*. They all look different but most have the same general features.



Over the next few lessons, we're going to be creating music on Bandlab, a free online DAW.

Add Track
Add a track to your mix to record on

Playback controls

BPM (Track Speed)

Master Volume

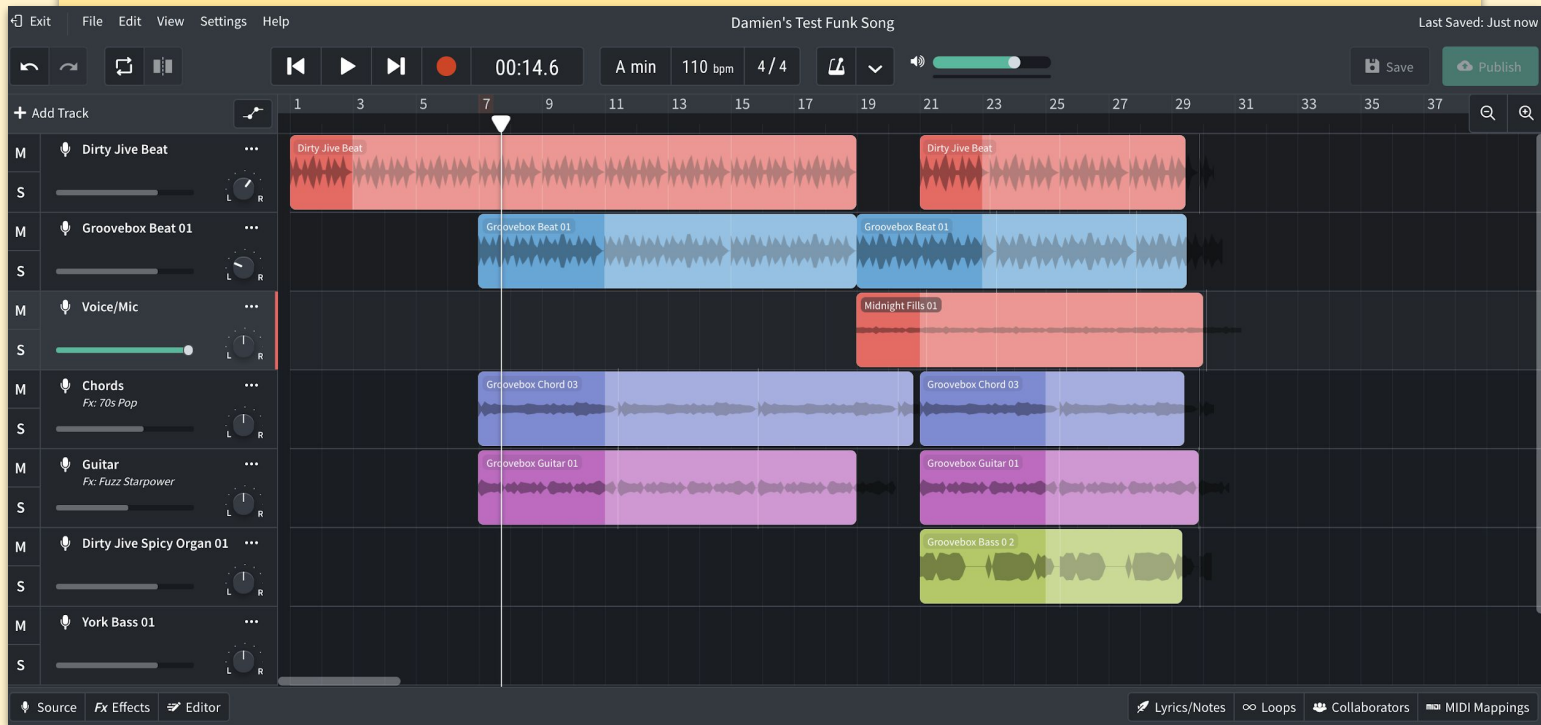
Zoom in/out (close the loop bank to see this)

Tracks
Change individual volumes, Add effects (FX), mute/solo tracks

Audio/Midi Clips

Play Area
Where you organise your sounds

Loop Pack Bank

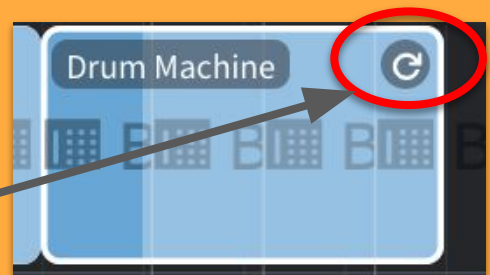


A good workflow should look something like what's above remembering not to mix different samples in different track lines (ie have all the snare drums/bass/piano parts on the same line etc.)



Expert Tip

To extend a clip without having to copy and paste repeatedly, drag this icon as long as you need



Track controls

Add a new Track

Volume Automation
(for changing volume levels mid track)

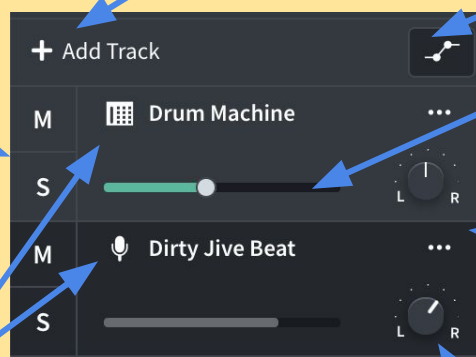
Mute/Solo Track

Track Volume Bar

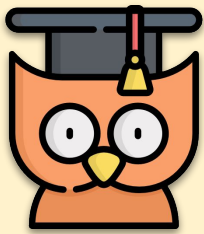
FX and Settings
Track Effects and settings

Track Type and Names
Digital Instruments/
Sound Files

Stereo Settings
Puts track in
Left/Right Speaker



Lesson 2 - Mixing Tracks



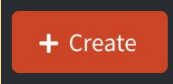
Learning Outcomes:

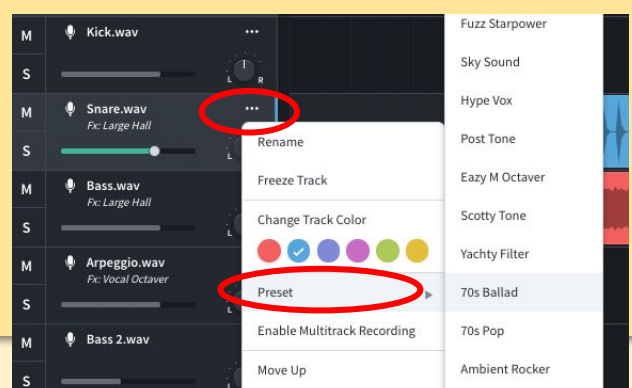
- We will learn the basics of a DAW (Digital Audio Workstation)
- Mixing another artist's tracks

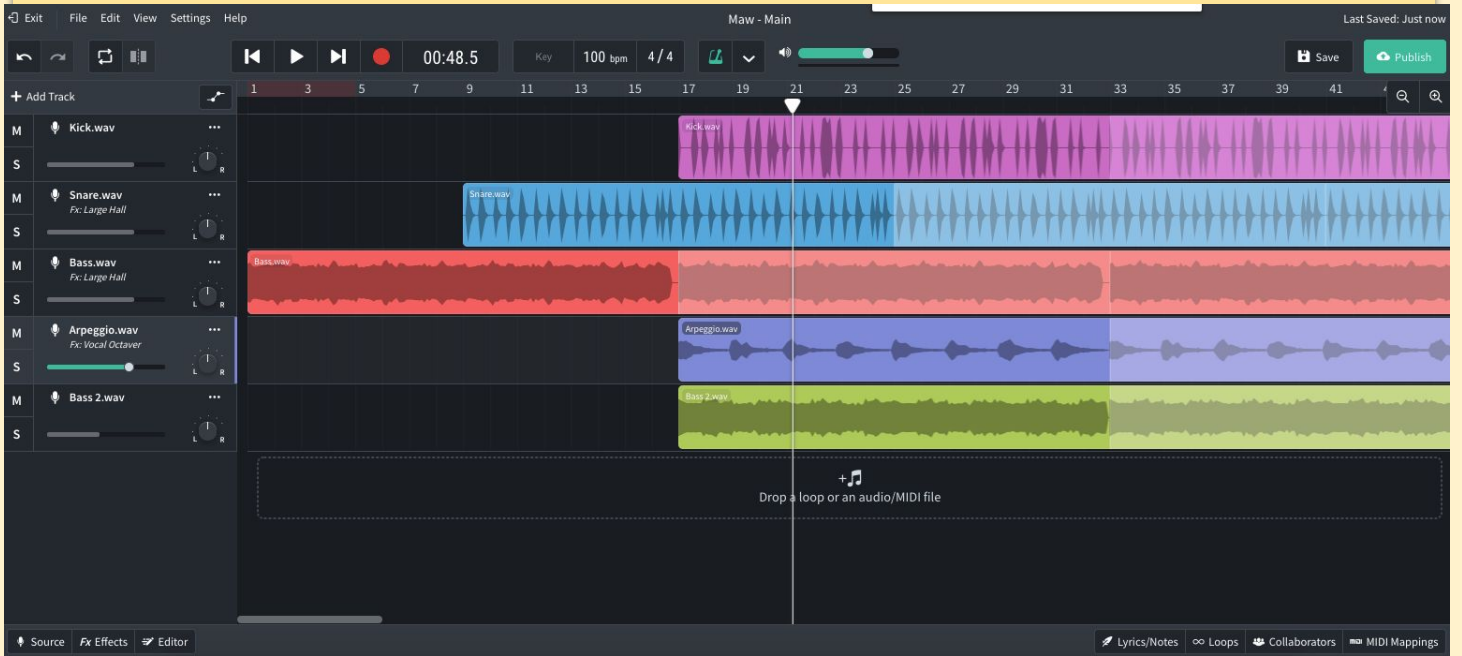


Lets get Creating!

The track we're going to be working with today is called '*Maw the Dragon*', a Synthwave/"Stranger Things" style electronic song recorded at 100BPM. You can listen to a finished version of the song [here](#).

- 1 Download the samples for *Maw The Dragon* <https://taoc.ie/maw>
- 2 Log in to www.taoc.ie/bandlab with your account, or with the details below
Email: **damienaoc@gmail.com** Password: **student**
- 3 Click  to begin mixing *Maw the Dragon*
- 4 Set the BPM to **100BPM**. The tracks were recorded at 100BPM, so they'll sound best at this tempo.
- 5 As the **mixing engineer** you need to come up with a **2 minute mix** of the song. Think about starting out with just one instrument, maybe just a Kick drum or a synth. **Don't** put different samples on different tracks. Have a different track for each instrument!
- 6 Add effects to the tracks like reverb, distortion, chorus or whatever else sounds good. Remember - less is more!



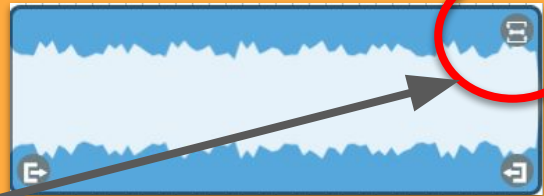


A good workflow should look something like what's above remembering not to mix different samples in different track lines (ie have all the snare drums/bass/piano parts on the same line etc.)



Expert Tip

To extend a clip without having to copy and paste repeatedly, drag this icon as long as you need



Track controls

Mute/Solo Track

Volume Bar

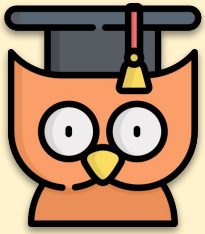


Track Options
For settings
and Effects

Track Type
Digital Instruments/
Sound Files

Stereo Settings
Puts track in
Left/Right Speaker

Lesson 3 - Mixing for Code Projects



Learning Outcomes:

- We will mix a track to use in a coding project
- Successfully importing the track in Scratch/ Processing



Your Task

Your task today is to mix an **8-bit (or other) style track** for use in a game, animation or mini-project in Scratch or Processing (upper-primary secondary).

Featured Projects

Fire Dance
whatserface

journey 3D
-DoubleBubble-

アクション
ステージ
メーカー
tyeda1225

Succulent Boutique |
tallwinds

La forêt aux nampignons
samuelbenoit

Featured Studios

Choose your own Adven
Choose your own Adven

Pen Art Palace
• Pen Art Palace •

Tongue Twisterz!
Tongue Twisterz!

The Railroad Studio
The Railroad Studio

The Ch
The Ch

```
toilet_finished  
toilet_finished | Processing 2.2.1  
Java  
{  
  image(toilet, 120, 100);  
  flush(flushNow);  
  
  // check for click  
  if (mousePressed)  
  {  
    if (mouseX > 300 && mouseX < 340 &&  
        mouseY > 190 && mouseY < 205 && flushNow == false)  
    {  
      flushNow = true;  
      flush.rewind();//make sure it starts at the beginning  
      flush.play();  
    }  
  }  
}
```

Check out the 'how to' instructions on the next page

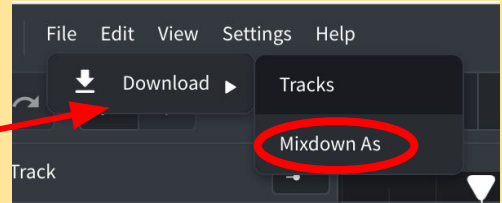


Playing Sounds in Scratch (Primary)

If you have made music on Bandlab and want to get it going as background music in Scratch, here's what you need to do:

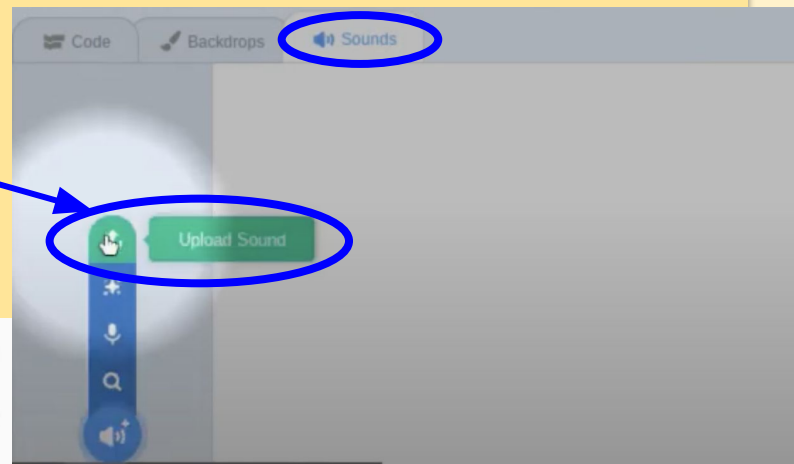
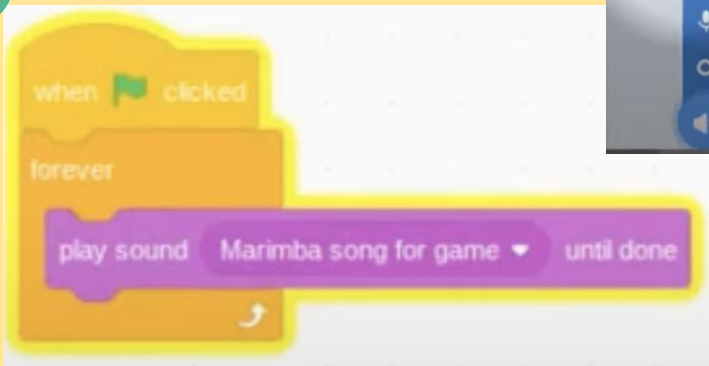
1 First download it from Bandlab.

File > Download > Mixdown As



2 Next, upload it to Scratch

3 Then try using code like this:

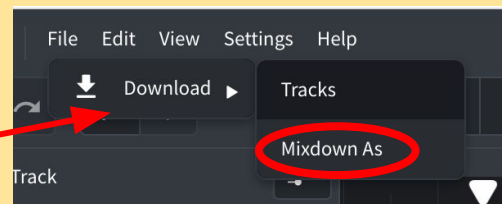


Playing Sounds in Processing (Upper Primary & Secondary)

For getting sounds working in Processing for use in games or animations:

1 First, download it from Bandlab.

File > Download > Mixdown As



2 Next, follow the instructions at www.taoc.ie/soundout or check out how we do it in [Grade 6 Unit 2](#) (using a different library). You will need to download the **Sound/Minim Library** in Processing, something which most of us won't have done before. You'll also need to **save a Processing project file** and put your WAV/MP3 inside there and load it in in Processing similar to how you would load in an image. You'll find all the code you need to get sounds working is in the link above.



Tasks for Processing (Upper Primary & Secondary)

The aim is to create the skeleton of a game and fill out the background music and sound effects. This should include some of the following.

1. Normal game music
2. Boss or special event music
3. Action sound effects, e.g. shooting, jumping, running.
4. Different music for when an enemy appears
5. A success sound upon picking something up
6. A game over sound
7. Menu screen music
8. Using the spritesheets, time the

1 Make the music fade in and fade out when it is switching between tracks. An example: <https://gist.github.com/shiffman/7603264>

2 Change the music as you play the game

3 Use the documentation to find more functions that you can use:

<http://code.compartmental.net/minim/>



Adding a Virtual Instruments

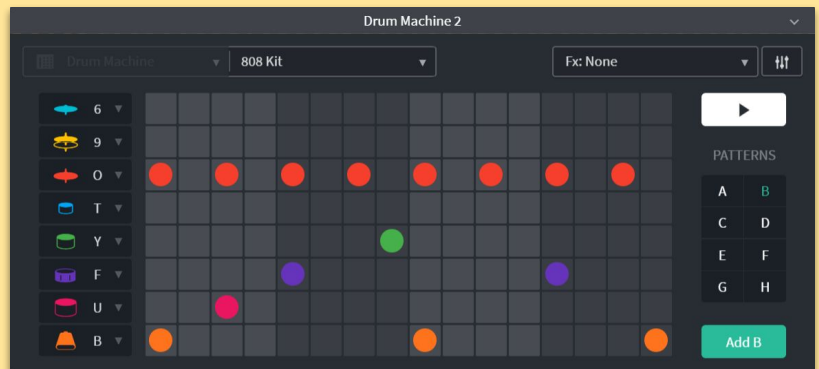
Most good DAW come with some built in virtual instruments so that you can record instruments without actually having to own any of them.

Open the drum machine by pressing Add Track



+ Add Track

Select **Drum Machine** and have a play around to see what beats you can make.



Change sample sounds

by selecting different sounds from the dropdown menus on the left.



Finished?

The artist who recorded *Maw the Dragon* has recorded a second track called *Origin* which is also recorded at 100BPM. It is intended to be released on the same EP/Album as *Maw the Dragon*. Mix *Origin* in the same style as *Maw the Dragon*, using similar effects. Follow the same steps as before.

- 1 Set the DAW to **100BPM** (same as *Maw the Dragon*)
- 2 Download the **Samples** used to make *ORIGIN* [at this link](#).
- 3 As the **mixing engineer** you need to come up with a **2 minute mix** of the song. Think about starting out with just one instrument, maybe just a Kick drum or a synth. Don't put different samples on different tracks. Have a different track for each instrument you use!

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Extra Activities

- Incredibox
- Splice Beat Maker
- Chrome Music Lab
- Beetik



Multitracking - *Incredibox*

Let's begin with a cool game called *Incredibox*. There's no need for any prior music knowledge for this or any explanation, but it allows you to build **multitrack songs** with an endless supply of variations. All of the samples are **beatboxed**, a style of music made only with the mouth.

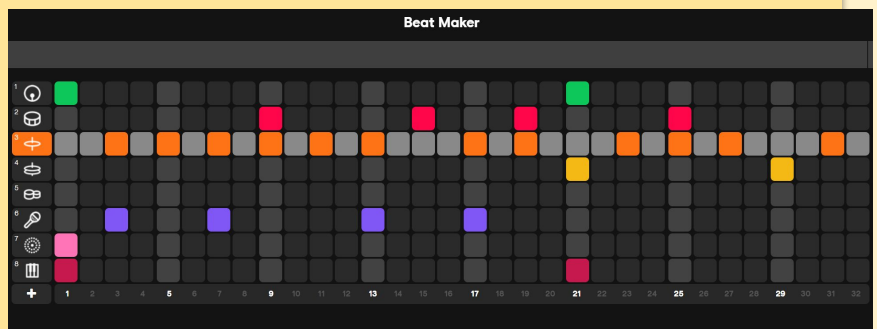


Give it a go at the following link -> www.taoc.ie/incred



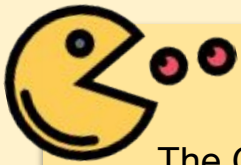
Multitracking - *Splice*

Incredibox is super fun and easy to use, but we're going to have a look at another app called *Splice* which, compared to *Incredibox*, is a way of creating **loops** that is a little more similar to what's the professional world. Give it a go, creating you own composition switching on and off and adding different virtual instruments.



Give it a go here - www.taoc.ie/beats

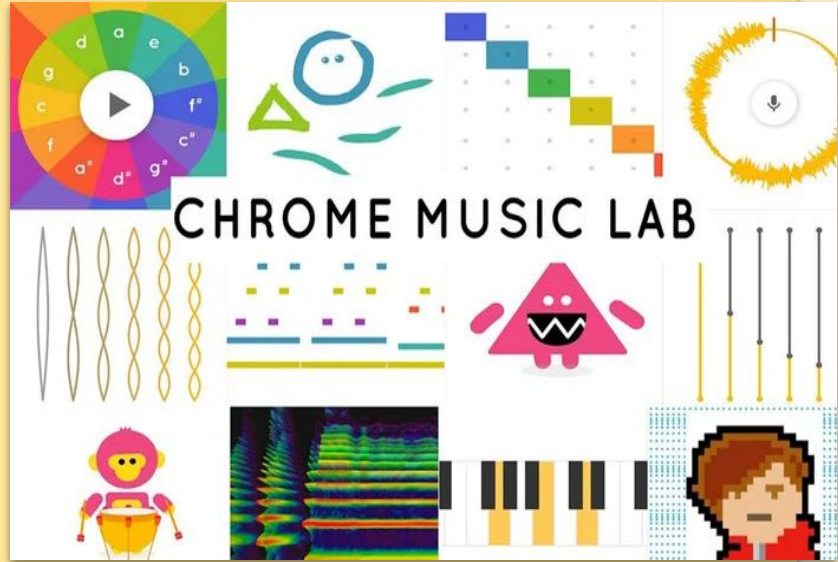
Note: Change the project by pressing the arrow under the *Sign In* button.



Coding with Music I

The Chrome Music Lab

hosts a selection of musical tools including a coded oscillator which teaches you about the basics of synth/sound waves. Build songs and mess with other music tech tools and animations. Maybe you'll get some inspiration for some of your own coding projects.



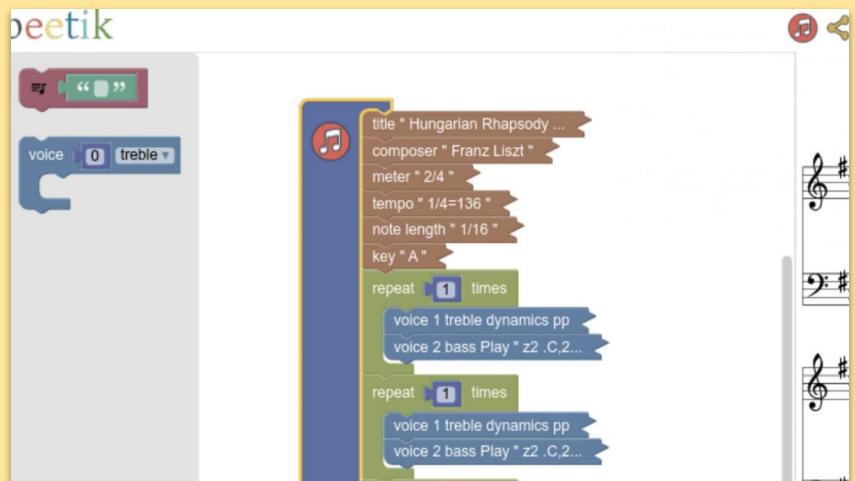
Give it a go at the following link -> <https://musiclab.chromeexperiments.com/>



Coding with Music II

In this activity, we will reconstruct a small part of Franz Liszt's Hungarian Rhapsody No. 2. Use the buttons at the top to play the music and proceed to the next step as you go along.

Pay attention to how the music evolves as you recompose it. This may seem tricky, but take time to look at the tutorials before each steps which tells you what to do.



Give it a go at the following link -> <http://beetik.net/rhapsody?lang=en&level=1>

Run Code



Check Code

Share

Help (This tells you what to do!)