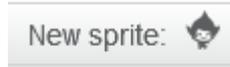




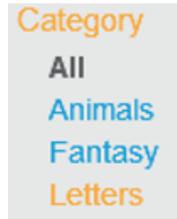
HOW TO MAKE A PIANO IN SCRATCH

Begin by deleting the Scratch cat!

Choose a new sprite from library and choose your text style.



then select

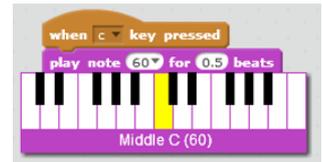


Letters

As we're making a piano, let's start with **C**

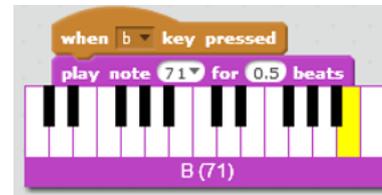
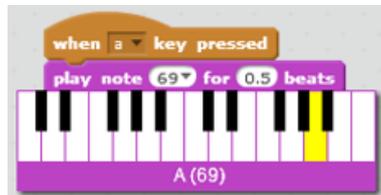
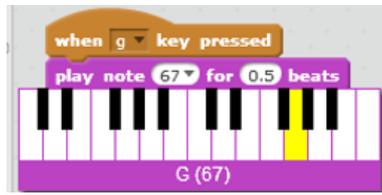
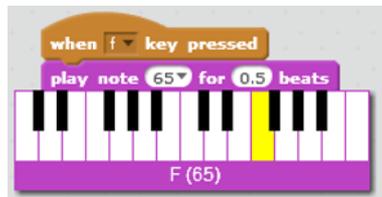
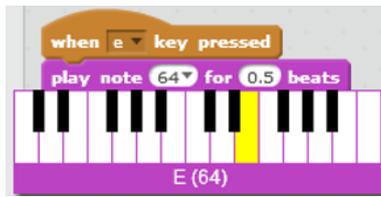
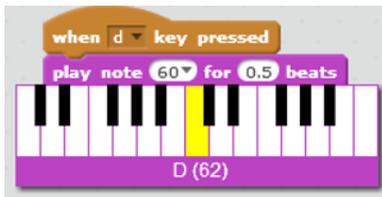


These are the code blocks that we need to make our letter **C** play the note middle **C** – or note 60 on the midi keyboard. Now press the **C** key and the note will play!



Now, we need notes **D, E, F, G, A** and **B**.

Find each letter sprite in the library and add similar code to the **C** sprite. Like this...



Now you're ready to play your first song! Let's try Frere Jacques. These are the notes...

C D E C C D E C

E F G E F G

G A G F E C G A G F E C

C G C C G C

Make sure that you SAVE your work!

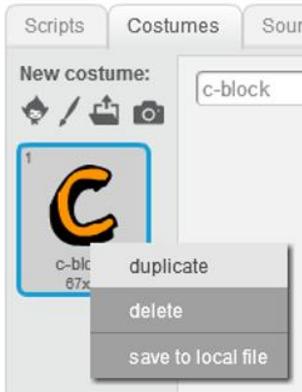
ScratchPiano_1.sb



FLASHING PIANO KEYS!

Let's add some code to make our piano keys flash when they are played!

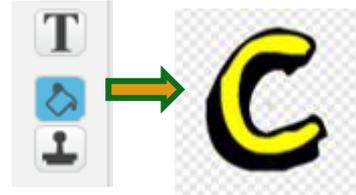
First, we need to give each sprite a second costume. Let's start with the **C** note.



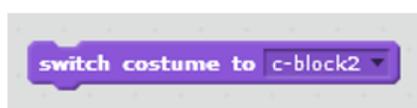
Select the sprite.
Select *Costumes*.
Select *duplicate*.



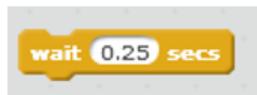
Now you have two sprites.
Let's edit the second sprite.
Use the paint pot to change the colour



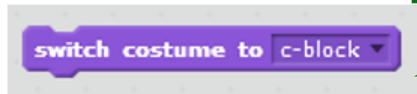
Now we need some new code blocks to make the sprite change costume when the key is pressed.



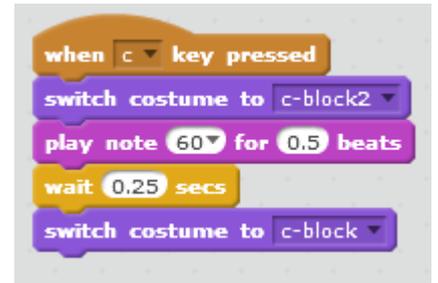
This code blocks says: *Put on the second costume*



This code blocks says: *How long to wear this costume*



This code blocks says: *Put on the first costume*



This is how your code looks

Once you're happy that your code is working you can amend each sprite in a similar way.

Do you notice a small problem?

Sometimes the sprites are wearing the wrong costume! We can easily fix this by telling the sprites which costume to put on at the start. We'll use this code block.



Add a new code block to each sprite to make sure that the 'correct' costume is selected at the start, like this:

Make sure that you SAVE your work!

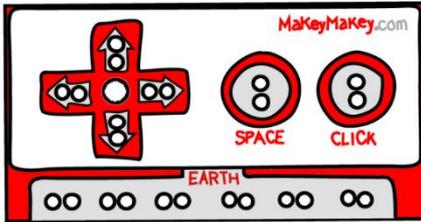
ScratchPiano_2.sb



LET'S MAKE THIS PHYSICAL!

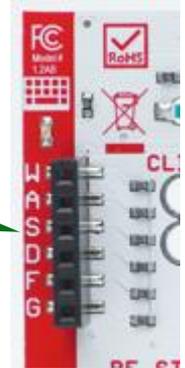
Let's make our code physical by making a keyboard and using a Makey Makey to play our piano.

The Makey Makey looks like this.



Hmmm, I don't see any letters for our keys and I don't see enough connectors for our piano – we need to connect 7 piano notes. We will have to change our code just a little.

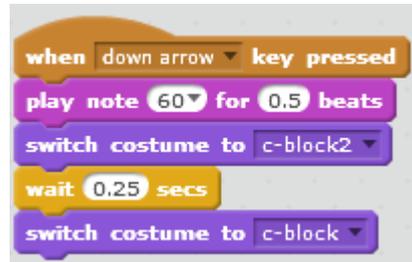
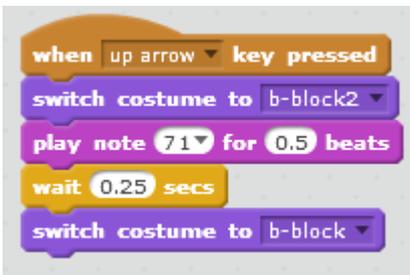
On the back of the Makey Makey there are some 'sockets' where we can insert jumper wires, like this:



We can use A, D, F and G here for our notes and then use up, down and left on the front for B, C and E.

We'll also need a physical keyboard – but we'll get to that. Let's change our code first.

We only need to change the code for the notes B, C and E. Like this:



Now it's time to make our keyboard! You will need:

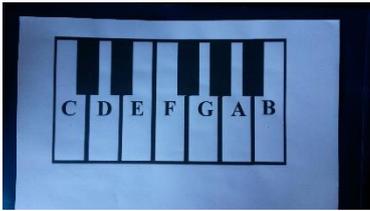
- 1 sheet A4 paper
- 1 sheet A4 card (optional)
- Aluminium foil
- Scissors
- glue

You can get as fancy as you want; you can make something that looks like a real keyboard or just write the musical notes on a sheet of paper. Or just attach pieces of tin foil to the croc clips...or get even more creative! Putting a person on the end of the croc clips also works, touch their hand to play the piano keys!



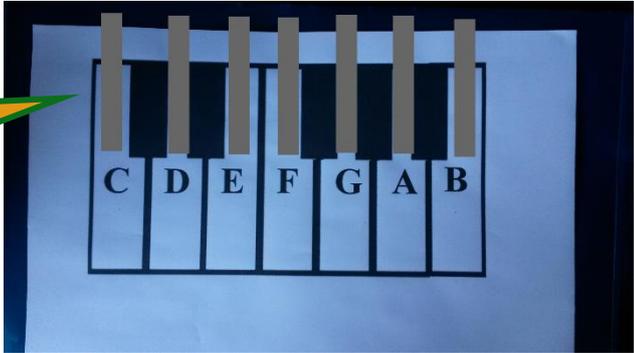
MAKE A MAKEY MAKEY PIANO!

You can use anything to make a piano – fruit, tin foil...anything that will conduct.



You can easily find an image of piano keys on the Internet.

To make a simple piano. Stick strips of foil to the paper. Make sure the strips go all the way to the top of the paper – so the croc clips can connect.



If you want to make something a little stronger, you can stick the image of the piano keys to card. Then, make a small slit on each key and feed the strip of foil through from the back.



Slit cut in card, foil comes through from back

Foil runs down back of card, through slit to the front

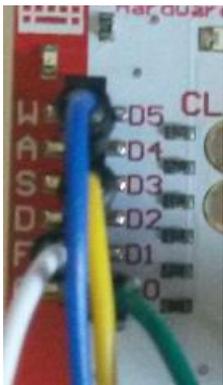


Now we can wire up the Makey Makey to our piano keys. Turn the Makey Makey over so that you are working on the back.

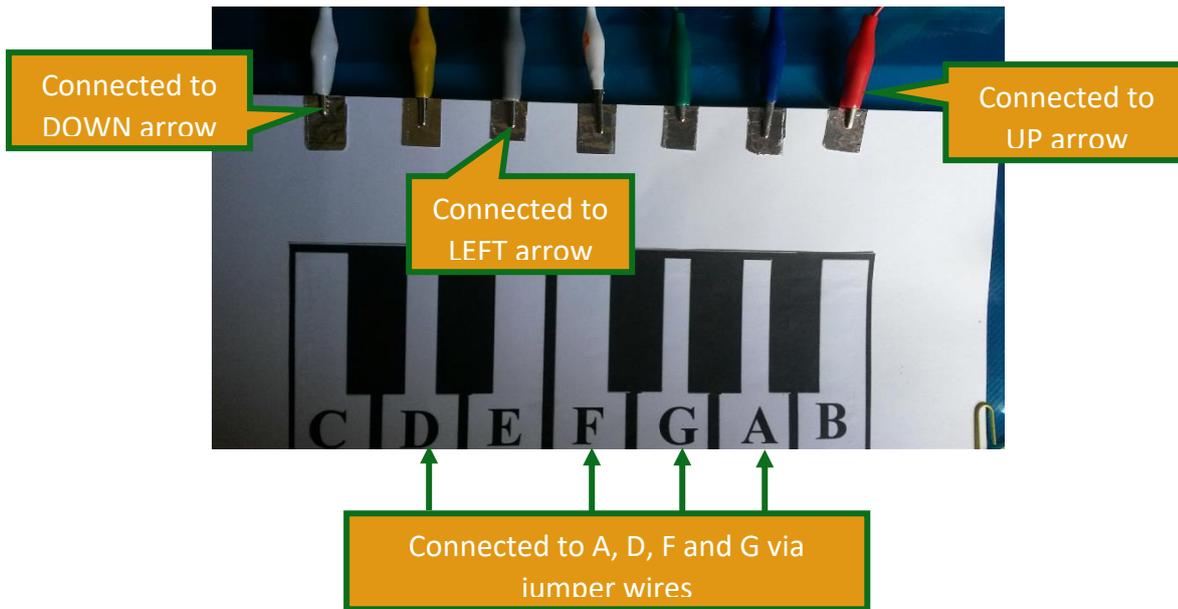
Connect jumper wires to the **A**, **D**, **F** and **G** sockets on the back of the Makey Makey. It helps if you use the same colour croc clips to connect to the other end of the jumper wires.



Remember, we have to connect **B** to the up arrow – red in this photo. Connect **C** to the down arrow – white in this photo and **E** to the left arrow – grey in this photo. (Don't forget, you are working on the back of the Makey Makey so left is on the 'wrong' side!).



Connect the croc clips from the Makey Makey to the foil coming from the piano keys.



Connect your Makey Makey to your computer. (It may take a couple of minutes for the driver to install if this is the first time you have used it). You have already tested and checked your piano. It should play the correct notes when you press the up, down, left arrows and A, D, F and G keys. Now, you can 'play' your piano keys by touching the foil...

Hmmm....not working? Just one more thing to do. You must connect a croc clip to the *EARTH* and hold the other end as you touch the keys to complete the circuit. I always try to use black for the *EARTH* so that I know which croc lead it is.

Want to see a video of my piano? Follow this link:
<http://tinyurl.com/y896963m>

