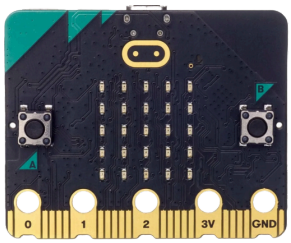


Hello!

ROCK, PAPER, SCISSORS MACHINE

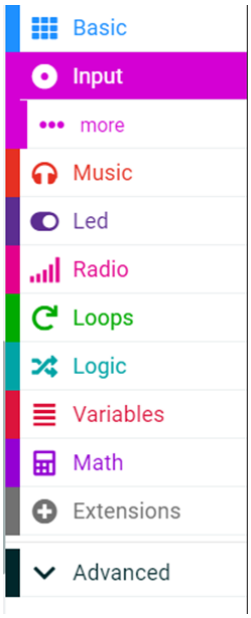
My name is Andy and I'm going to explain how to make your very own 'rock, paper, scissors' machine on a BBC Microbit.

To make our rock, paper, scissors machine we're going to need something called an input. Inputs are an important part of a code and are what happens first so the computer knows to start the code.

So when you click the "take a photo" button on a camera- that's the input which tells the code to take a picture to start.

The input for our rock, paper, scissors machine is going to be shaking the microbit.

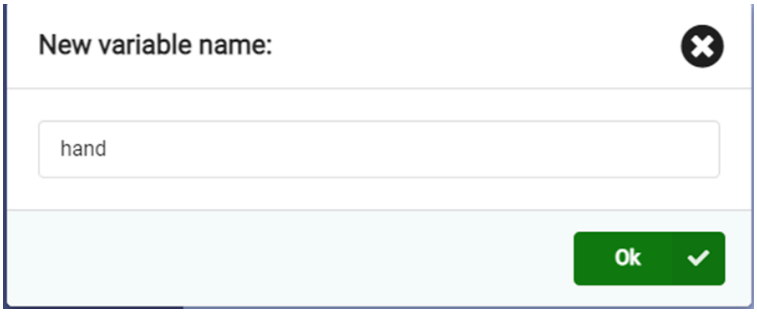
Head over to the menu and click on **input.**



In there you will see lots of different ones but the one we want is **on shake** - this will tell our Microbit that when we shake it, we want it to run the code that we're about to create.

At the moment our Microbit won't do anything when we shake it because we haven't got any code... We better changed that. Head to **variables** and select "**make a new variable.**

We're going to call our variable **hand.**



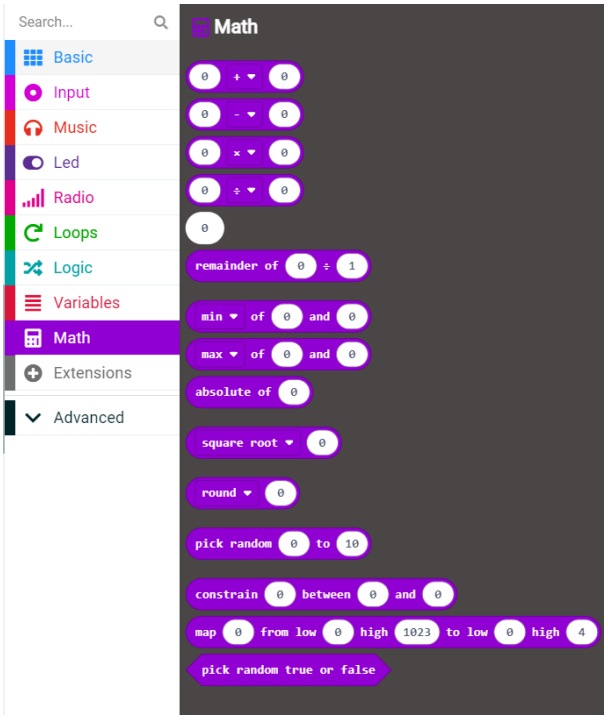
Click ok and the box will seemingly disappear. If you click back onto the variables menu again you will see some more things for us to play with. The one we need for now is **set hand to 0**. And we're going to pop that into our code.

It wants to snap between **on shake**. Consider this "on shake" like a sandwich. The "on shake" is our bread and everything we put inside is our tasty filling.

When we shake our Microbit now it will set hand to 0. Not the most impressive code, but code nevertheless. Congratulations, you've written some code- pats on the eyebrows all around.

It's time to make our code look extremely fancy, and get our Microbit to start doing things.

Head across to the **math** option and select **pick random 0 to 10.**

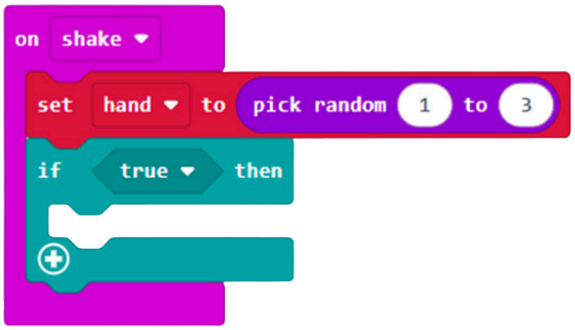


With pick random on the screen drag it over the '0', so it drops over it and you'll be left with set hand to pick random 0-10.

Next we're going to **change the numbers to 1 and 3** by clicking in the white boxes.

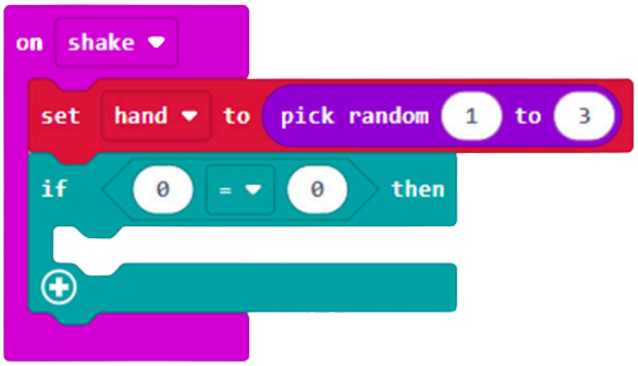
At the moment all our Microbit is doing is picking a random number between 1 and 3 when we shake it. We now need to tell it to do something when it has chosen a number.

Go to the **logic menu** and select **if true then,** it's the top option so hopefully you don't have any trouble finding it. With that on our main coding section we're going to place it below **set hand to pick random 1 to 3.**



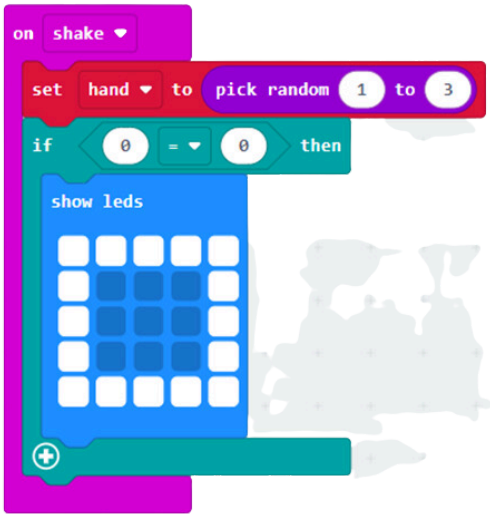
Go back to the **logic menu** and you'll see a little subheading comparison. The top option is there is **0 = 0** and that's the instruction we need.

Take this and drag it over the true bit so it clicks in over it. Here's what our even fancier code will now look like



One of my favourite things about the Microbit is that they have LED lights on the front and you can tell your Microbit which ones you want to turn on at certain times. And that's exactly what we're going to do now.

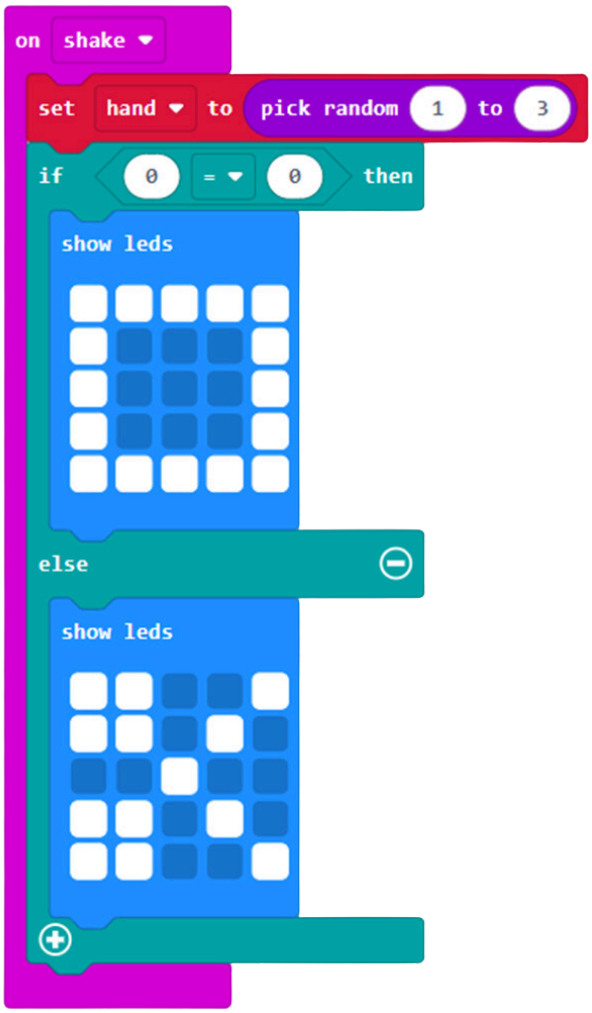
Go to the **basic menu** and select **show LED**- it's big a blue with lots of squares on. We're going to place that in between if and the + symbol. We need these LED's to now light up like a hand. You might have your own idea, but just in case you need some inspiration



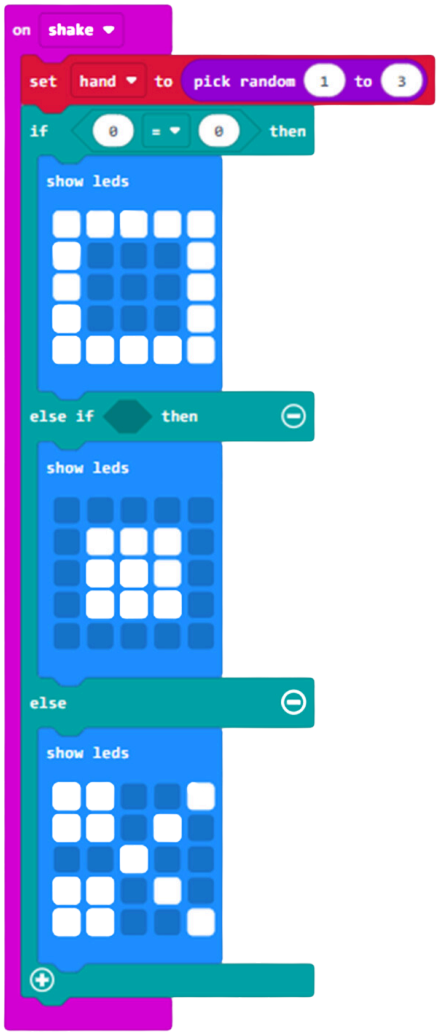
You'll be glad to hear- well read- that the hardest bit of the code is done. It's a lot of copying now.

The first thing we're going to do is click on the little **+ underneath the show LEDS**. This will add an else bit to the bottom.

Head back to the **basic menu** and grab another **show LEDS** and put it underneath our new else instruction. On this show LEDS we want to make them look like scissors.



Time to click that **+** icon again. This will do something unexpected and another instruction will appear in the middle. And this one will be called else if. Time for our **third show LEDS**, I'm sure you know where it is by now. And we want this one to look like rock.

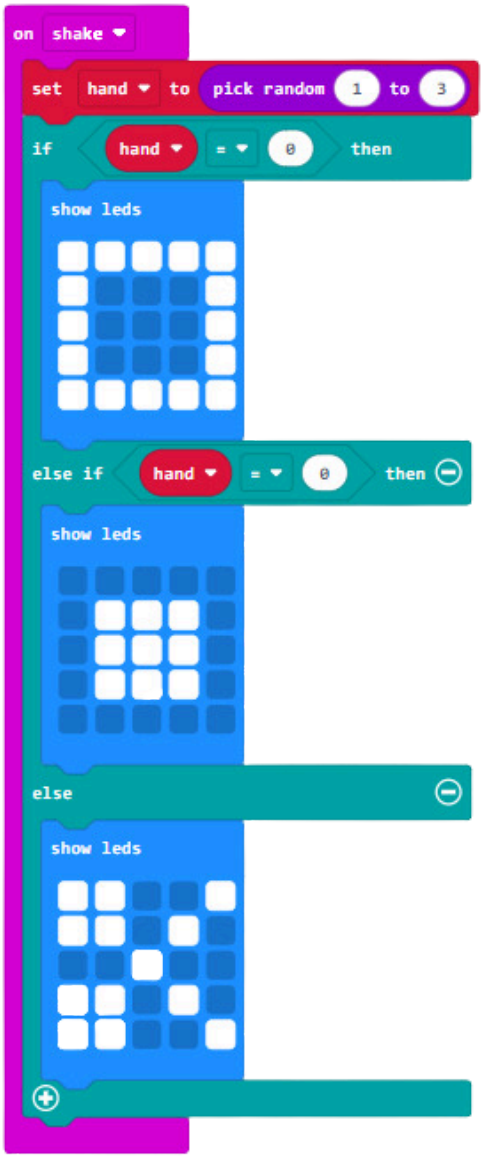


Okay, we're onto our final step before we're ready to go.

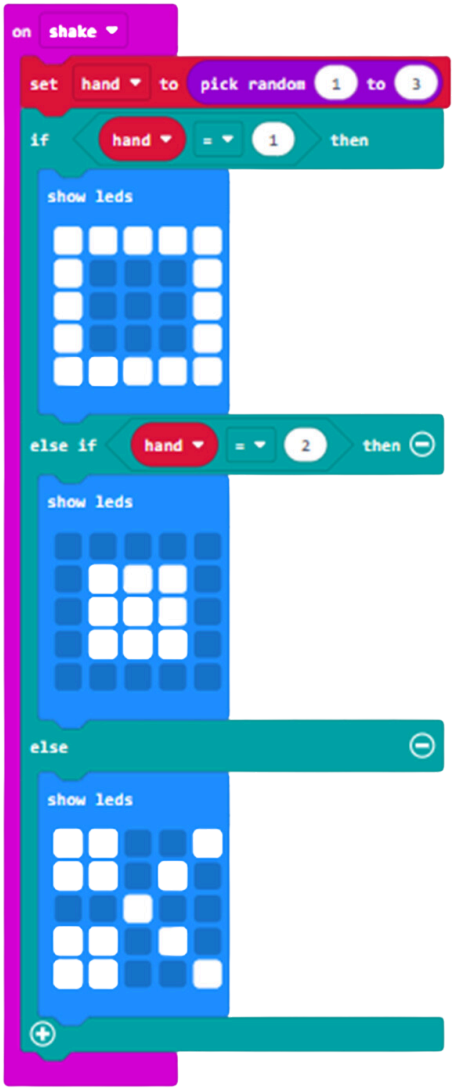
We need to go back to the **logic menu** and get another **0 = 0** instruction.

For this one, we're going to put in the blank space between 'if and them. You'll need to click, hold, and drag it into there so it clicks into place.

You want to put these hand buttons from our variable menu over the two 0s.



Last step (I mean it this time)- we need to finish off our instructions and change some numbers. **Change the top 0 to 1 and the bottom 0 to 2.**



This will tell our Microbit all the instructions we need it to.
When we shake the Microbit it will choose a number between 1 and 3.

If it selects 1 it will show the image of our “hand”.
If it selects 2 it will show the image of our “rock”
If it selects 3 it will show the image of our “scissors”.

To get the code onto the Microbit- plug in your Microbit using the wire and a folder will pop up called “Microbit” (if it doesn’t then click on a folder icon and you’ll see it on the left-hand side. Then click download on the coding page.

This will download the file. Once it has click and hold it and drag it into the Microbit folder. The Microbit will flash and once it stops flashing- the program has been uploaded.

Challenge time!

Congratulations on successfully creating your own rock, paper, scissors machine. Here are a few extra challenges if you want to really test yourself. If you're struggling with creating a radio function then scan the QR code to take you to a video where I'll give you some help.

- Think of other tools that could replace rock, paper and scissors or invent new rules.
- Use the micro:bit radio function to make a game that knows if you won or lost by communicating with your friend’s micro:bit.