# Shake, Code & Battle: micro:bit Rock Paper Scissors

## Overview

In this engaging project, you'll learn how to program your micro:bit to play Rock Paper Scissors using a combination of buttons, gestures, and the LED display. We'll start by understanding the basic game logic and how to represent rock, paper, and scissors using different inputs. You'll discover how to use random selection for the computer's choice, display game outcomes using animations, and keep track of scores. Through this project, you'll develop fundamental coding concepts like variables, conditionals, and loops while creating something fun and interactive. By the end, you'll have a fully functional game that you can play with friends or challenge the computer – all powered by your micro:bit!

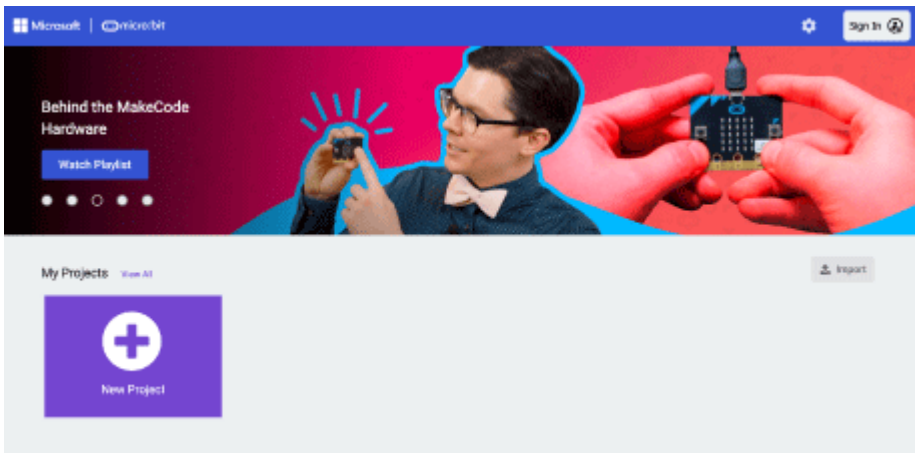
> NOTE
> You do not need a micro:bit to do this tutorial you can use the simulator built into the MakeCode editor.

## What you will Learn

- [ ] How to create and use a Variable
- [ ] How to use the micro:bit on shake function
- [ ] How to display images/shapes on the LED matrix
- [ ] How to use conditional if/else statements
- [ ] How to use comparison operators
- [ ] How to randomise choices

## Navigating to MakeCode

1. Open your favourite browser ( we recommend Google Chrome) or if you are using a mobile phone or tablet open the micro:bit app.
2. Within the address bar of the browser type makecode.microbit.org or on a tablet or phone press create code.



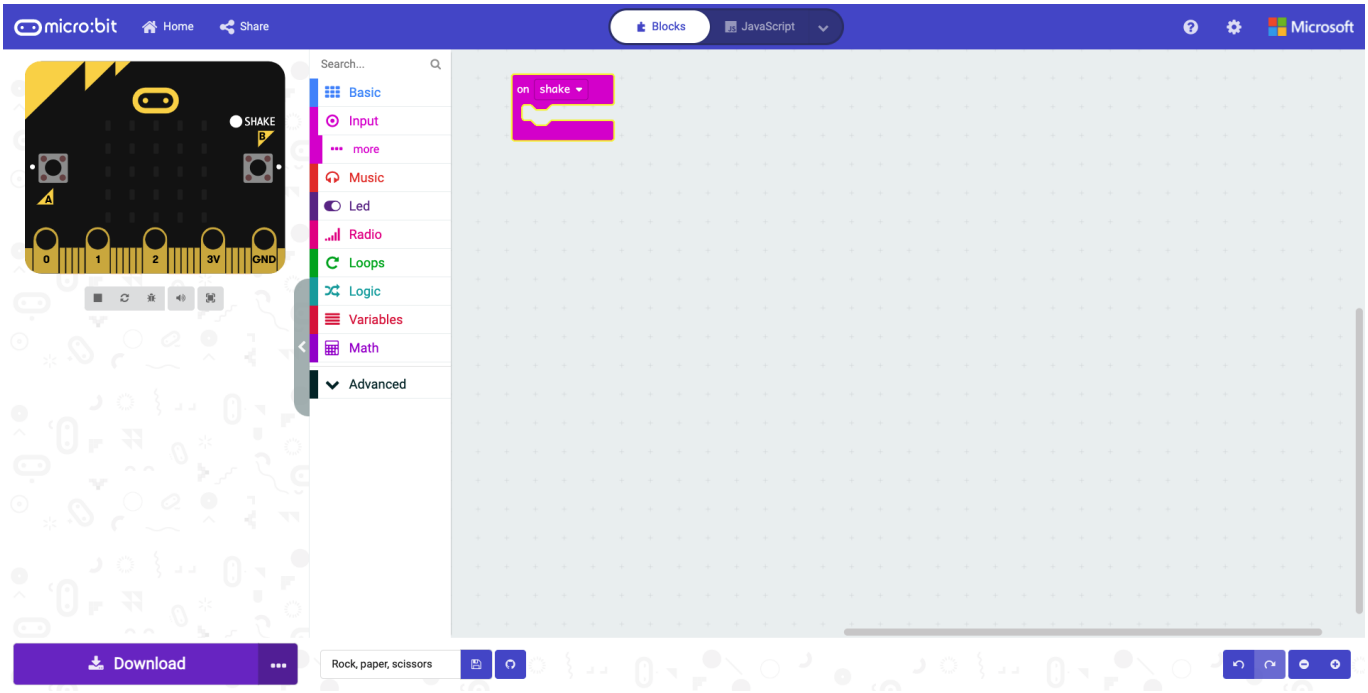

3. Select **New Project** and give it the name Rock paper scissors.

We are now ready to start coding!

## Setting up the Code Area

1. Select and drag the `on start` block to the left of the screen and drop it on the bin.
2. Select and drag the `forever` block to the left of the screen and drop it on the bin.
3. Select Input. Select and drag the `on shake` block to the code area and drop it.

Your code area should look like this:




## Creating a Variable

> WHAT IS A VARIABLE
> Think of a variable as a box that stores information that can be used throughout our program. We give variables a descriptive name so we and others can understand what is going on within our program.

1. Select Variables. Select make a variable...
2. Type choice and select OK or press enter on your keyboard.

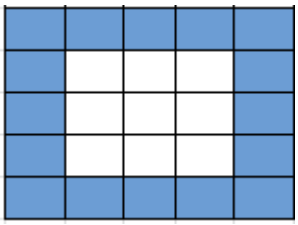
## Set Choice to

1. Select Variables. Select and drag a `set choice to 0` block to the code area and attach it within the `on shake` block.
2. Select Math. Select and drag a `pick random 0 to 10` block to the code area and attach it within the **0** of the `set choice to` block.
3. Select **10** and type **2**.

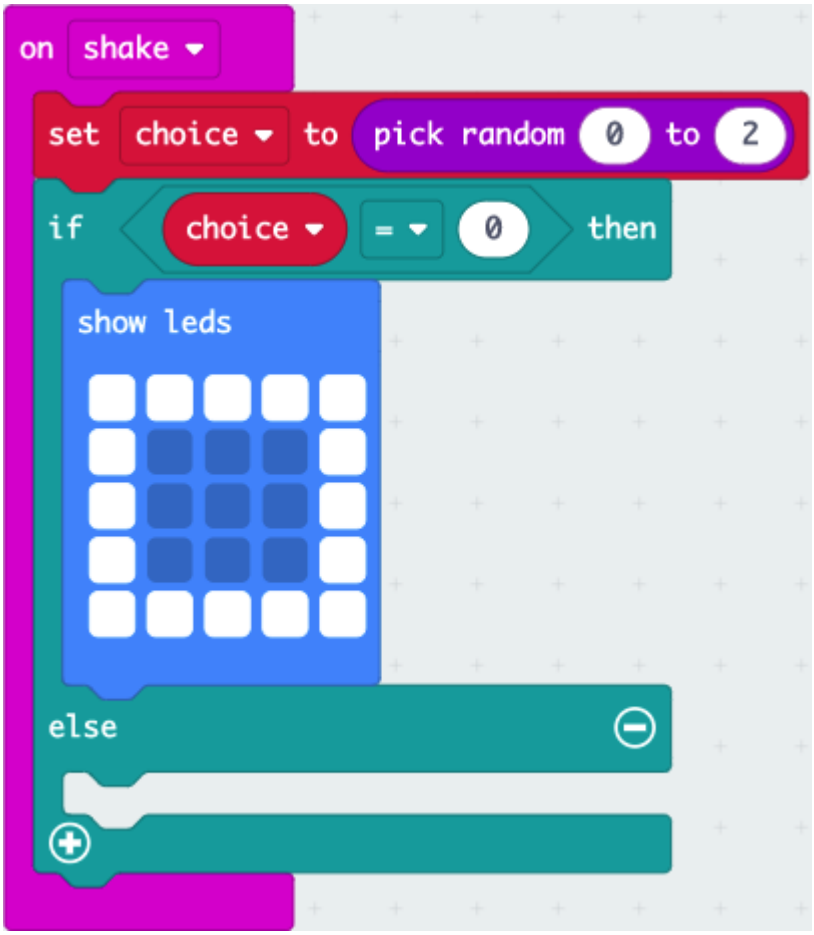
Your code should look like this:


## If Condition

1. Select Logic. Select and drag an `if true then else` block to the code area and attach it under `set choice to pick random from 0 to 2` block.
2. Select Logic. Select and drag a `0 = 0` block to the code area and attach it within the **true** of the `if then` block.
3. Select Variables. Select and drag a `choice` block to the code area and attach it within the first **0** of the `if 0 = 0 then` block.
4. Select Basic. Select and drag a `show leds` block to the code area and attach it within the `if choice = 0` then block.
5. Make the following pattern by selecting the squares to represent paper.

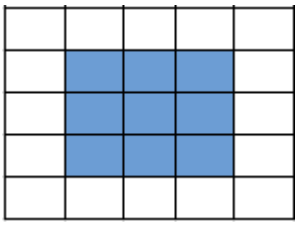


Your code shoud look like this:

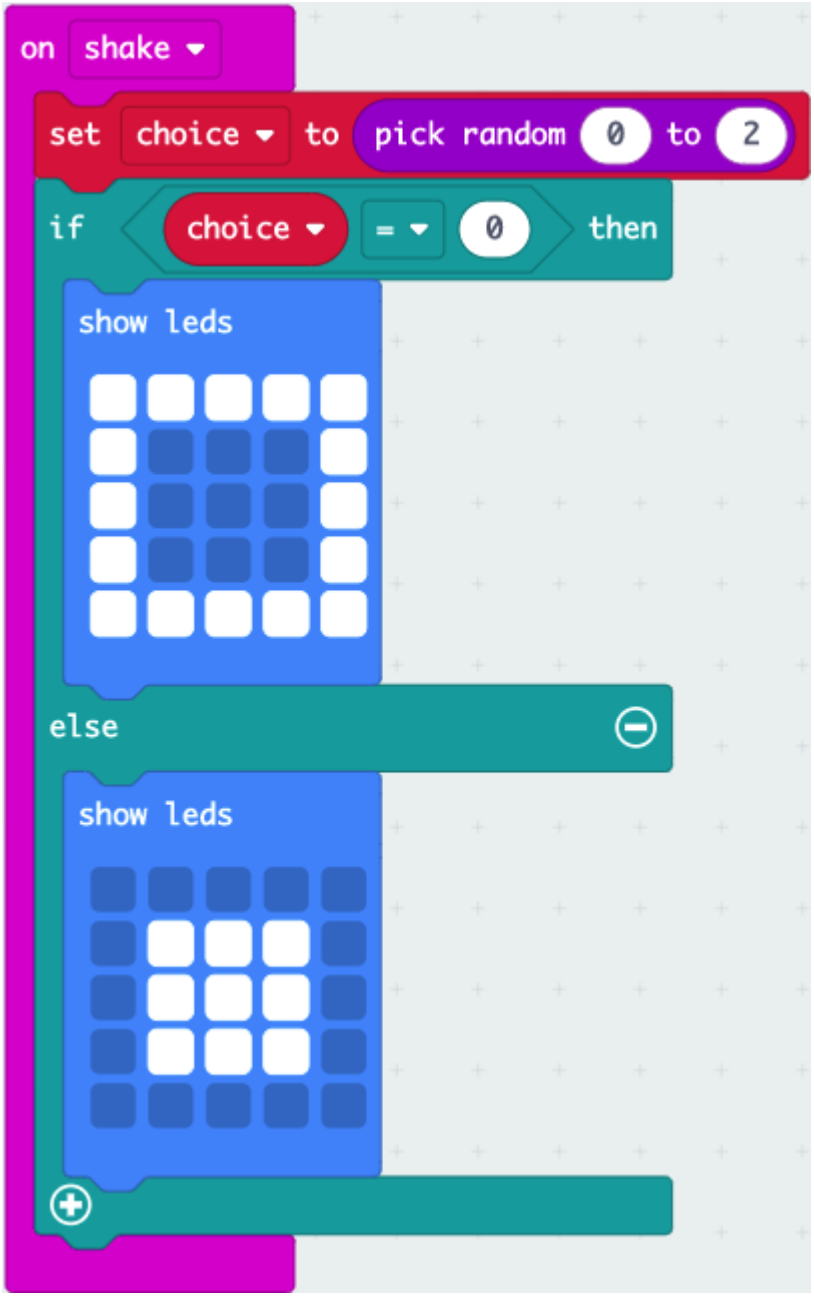



## Else Condition

1. Select Basic. Select and drag a `show leds` block to the code area and attach it within the `else` block.
2. Make the following pattern by selecting the squares to represent rock.

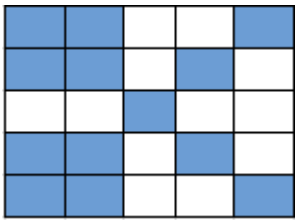


Your code should look like this:

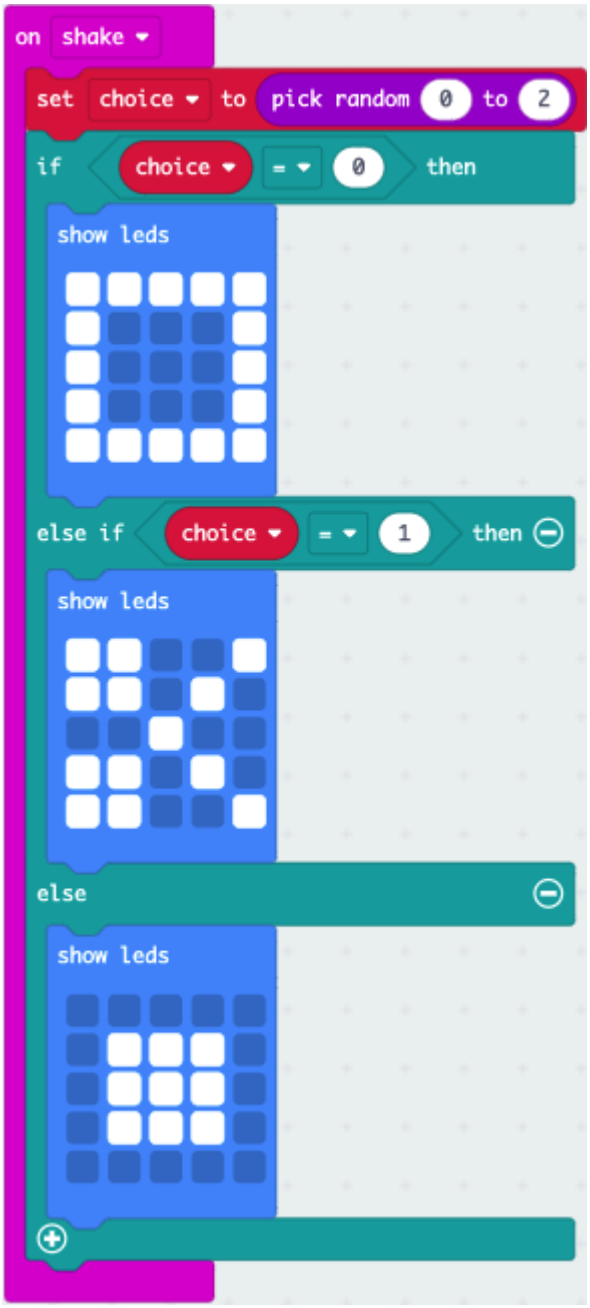



## If Else Condition

1. Select the **+** sign below **else**.
2. Select Logic. Select and drag a `0 = 0` block to the code area and attach it within the **blank** of `else if then` block.
3. Select Variables. Select and drag a `choice` block to the code area and attach it within the first **0** of the `else if` block.
4. Select **0** and type **1**.
5. Select Basic. Select and drag a `show leds` block to the code area and attach it within the `else if choice = 1 then` block.
6. Create the following pattern to represent scissors.



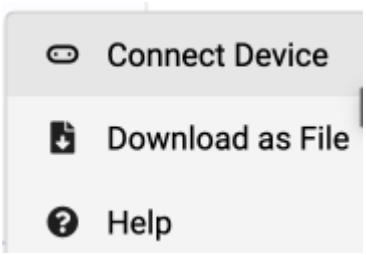
Your code should look like this:




## Downloading the code to the micro:bit

1. Select the **3 dots** next to **Download**.

2. Select **pair device** a pop-up will come on screen to show you how to connect the micro:bit to the computer. Select **pair device** again.




3. Select **BBC micro:bit xxxx** and Select **connect**.


4. Select Download.


Well done you have created your very own Rock Paper Scissors game for the micro:bit.

Now that we have downloaded our code, let's find out how to play.

## How to Play

### Web Browser

Using the micro:bit simulator you can drag the mouse over it an see it move or there is a dot with shake next to it, you can select this and it will simulate a shake.

### Using the micro:bit

Once you have downloaded the code to your micro:bit you can shake the micro:bit and see a rock, paper or scissors image appear on it.