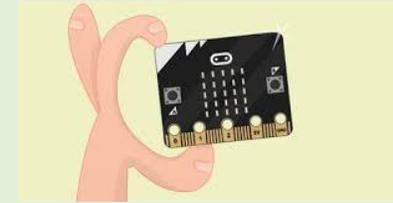


# Rock, Paper, Scissors (Accelerometer)

## Objectives:

Create a simple game with the micro:bit using the accelerometer feature.  
Use logic (conditional) blocks in coding to represent all possible outcomes.



1. Open Microsoft MakeCode Editor <https://makecode.microbit.org/#>
2. Start a New Project +
3. Title the project: Rock Paper Scissors
4. Follow the **what** and **how** directions to create a rock, paper, scissors game.



**Did You Know?** An accelerometer is an electromechanical device used to measure acceleration forces. The micro:bit is capable of detecting a variety of movements and vibrations. Acceleration is the measurement of the change in velocity, or speed divided by time.

What am I doing?	How will I do it?
<p><b>Create images and a directive for the on start block.</b></p> <ul style="list-style-type: none"> <li>• This step can be optional as it is not needed to run the game, but can act as a signifier to let you know what is loaded onto the micro:bit.</li> <li>• Create images using the <b>show leds</b> block to represent a rock, a piece of paper, and scissors.</li> <li>• Add the word SHAKE using the <b>show string</b> block to give directions for the game.</li> </ul>	<p><b>On start</b></p> <p><b>Basic &gt; show leds</b> (create rock image)  <b>Basic &gt; show leds</b> (create paper image)  <b>Basic &gt; show leds</b> (create scissor image)  <b>Basic &gt; show string</b> &gt; SHAKE</p> <p><i>Tip: Blocks can be duplicated or deleted by right clicking on them.</i></p> 

**Use the on shake block to create the rock, paper, scissors game.**

- The **on shake** block utilizes the micro:bits accelerometer.
- Create a variable called hand.
- **Set the hand** block to **pick a random** number between 1 and 3. This will allow for the three possibilities (rock, paper, or scissors).

**Input > on shake**

**Variables >** (make a variable called hand)

**Variables > Set hand to**

**Math > pick random (1, 3)** (Insert into set hand to)



**Use logic statements to create the rules/parameters of the game.**

- Logic blocks can be used to create the conditions for written code using **if/then/else**.
- Since the condition of our game is based on numbers, add a **comparison** block into the logic block. ( $0 = 0$ ). Then change the condition by adding the variable hand and 1. 1 will represent rock.
- Duplicate the **show led** block from the on start block for the rock and place it in the open **then** location. (Right click on it.)
- Since there are three possible outcomes or conditions, you will set up three conditions. The (+) at the end of the block allows you to add multiple conditions as needed. Click (+) to add two additional conditions.
- Duplicate the **show led** block from the **start block** for paper and place it in the open **else if** location.
- Create a **comparison ( $0 = 0$ )** block for paper. Use the variable **hand** and the number 2.
- Duplicate the **show leds** block for scissors and place it in the **else** location.
- All of the above code tells the micro:bit which image to display if a particular random number (1, 2, or 3) is selected.

(continued from above)

**Logic > if/then/+**

**Logic > comparison ( $0 = 0$ )**

**Variable > hand** (place where the first 0 is located)

(type a 1 where the second 0 is located)

(duplicate the **show led** for rock)

(place in the open area for **then**)

(click on the (+) twice)

(duplicate the **show led** for paper)

(place in the open **else if** location)

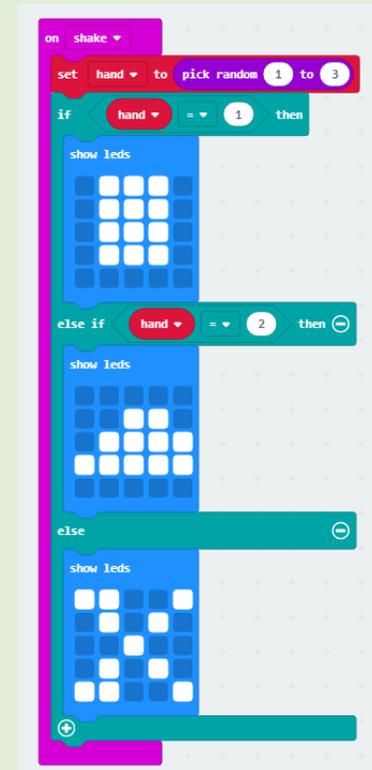
**Logic > comparison ( $0 = 0$ )**

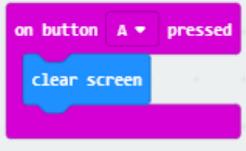
**Variable > hand** (place where the first 0 is located)

(type a 2 where the second 0 is located)

(duplicate the **show led** for scissors)

(place in the open **else** location)



<p><b>Create a clear screen button.</b></p> <ul style="list-style-type: none"> <li>• Add a <b>on button A pressed</b> block.</li> <li>• Place a clear screen block.</li> <li>• This will allow the screen to be cleared after each turn and ready for the next shake.</li> </ul>	<p><b>Input &gt; on button A pressed</b>  <b>Basic &gt; more&gt; clear screen</b></p> 
<p><b>Download game to the micro:bit.</b></p>	<p>Connect the micro:bit to the USB port on the computer using the USB cable.  Find the microbit-Welcome.hex file in the downloads folder.  Drag and drop onto MICROBIT (D:) – this will be located under This PC.</p>
<p><b>Play Rock, Paper, Scissors.</b></p>	<p>Connect micro:bit to a power source (battery pack). Find a friend and shake your micro:bit. Compare results then press button A to clear the screen and play again.</p>