Rock, Paper or Scissors Game using micro:bit

COMPUTING & INFORMATION TECHNOLOGY

Make the micro:bit start the game when you shake it

From the input menu, choose the block shown below.
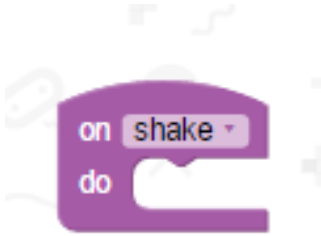
Add a new variable to store the user's random choice

From the Variables and Maths section, choose the blocks below. Click on the middle of the purple variable (called item when you first drag it in) and choose rename and give it an appropriate name (example shown). Change the maximum possible number from 4 to 2. As it starts from zero, this will give the three possible choices: rock (0), paper (1) and scissors (2).
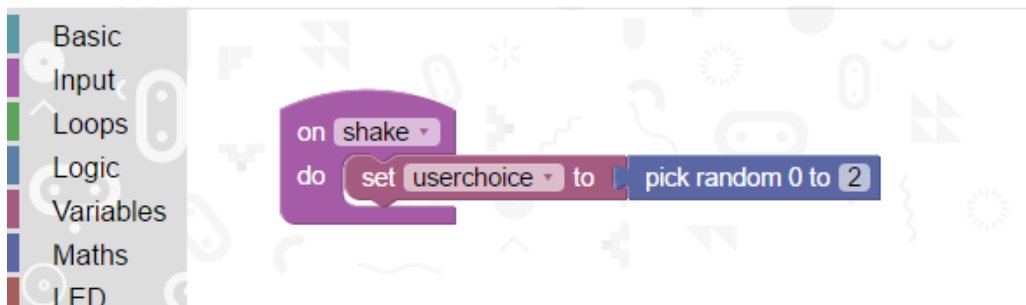
Show the user what their choice is as an image

From the Logic section, drag an IF block onto the canvas. This will allow us to check whether the choice is 0, 1 or 2 and show the icon of the choice on the micro:bit display.
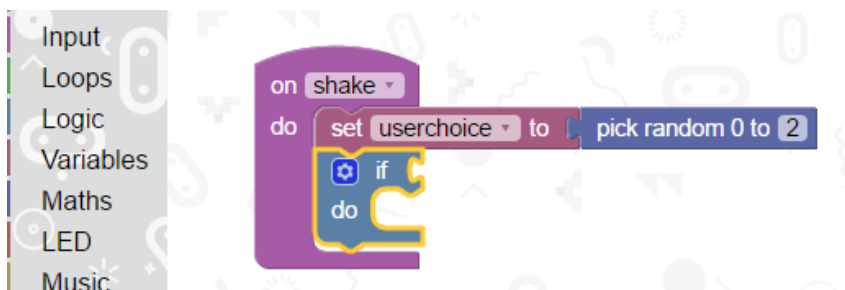
Next, add an equals block (logic), variable value (variables) and show leds (basic) to the 'do' part of the IF block. Tick the boxes (1,1); (1,2); (1,3); (2,1); (2,2); (2,3); (3,1); (3, 2) and (3,3) to create the image of the rock.

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on shake
do set userchoice to pick random 0 to 2
    if userchoice = 0
    do show leds
        0 1 2 3 4

Click on the blue cog to open the block customiser and drag in and elseif and else block. These blocks will allow us to show the paper (1) and scissors (2) images using the LEDs.

on shake
do set userchoice to pick random 0 to 2
    if userchoice = 0
    do show leds
        0 1 2 3 4

else if   if
else

on shake
do set userchoice to pick random 0 to 2
    if userchoice = 0
    do show leds
        0 1 2 3 4
    else if
    do
    else

else if   if
                else if
else   else

Add the equals and variable blocks to the elseif line and change the value from 0 to 1 (paper). Add the show LEDs block and change it so that it displays the pattern below. Then, for the else condition (which covers anything other than 0 or 1) show the scissors pattern.

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on shake
do set userchoice to pick random 0 to 2
    if userchoice = 0
    do show leds
        0 1 2 3 4
    else if userchoice = 1
    do show leds
        0 1 2 3 4
   else show leds
        0 1 2 3 4

You could also add the 'show string' block to provide a prompt to show what the image means, and add a pause so that the image displays for 2 seconds.

Adding a variable to store the computers choice

Drag in the set block (variables) and pick random (maths) and place underneath the pause block. Then add a show string (basic) block to display "RESULT" on the display.
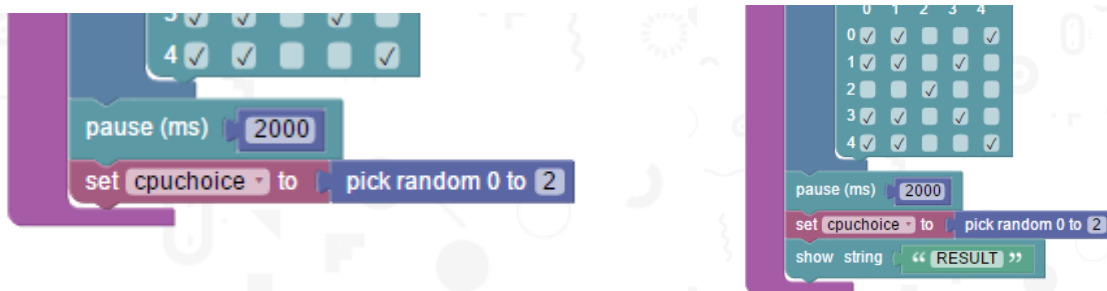
Deciding Who Wins

We now need to create the code for the logic of who wins. Each option has been, in our heads, assigned a number: Rock = 0, Paper = 1 and Scissors = 2.

Winning combinations for the user:

- IF you are rock (0) AND the CPU is scissors (2) OR
- IF you are paper (1) AND the CPU is rock (0) OR
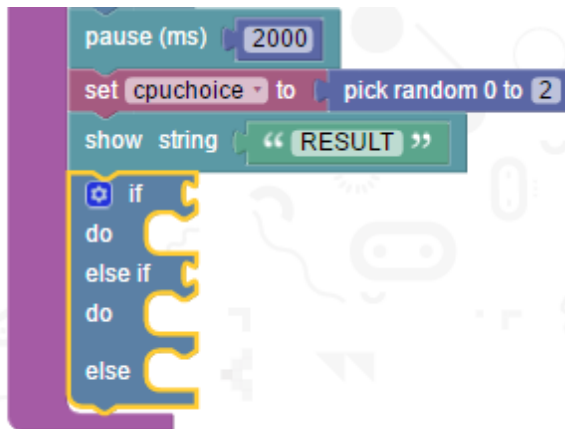- IF you are scissors (2) AND the CPU is paper (1)

Winning combinations for the CPU:

- IF CPU is rock (0) and you are scissors (2) OR
- IF CPU is paper (1) and you are rock (0) OR
- IF CPU is scissors (2) and you are paper (1)

Drawing combinations:

- IF you AND the CPU are rock OR
- IF you AND the CPU are scissors OR
- IF you AND the CPU are scissors OR

Drag in an IF block (logic) and add the elseif and else conditions (blue cog).

Now select the blocks to create the combinations shown above. The example below is for the first combination for the user winning (IF you are rock (0) AND the CPU is scissors (2)).
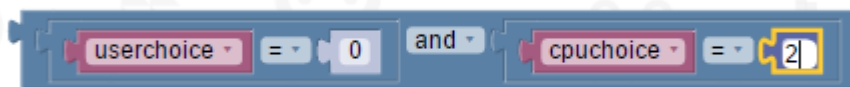
Build these for both winning combinations (NOT THE DRAWING COMBINATIONS) but do not add them to the main code, yet.

Time-saving Tip: Right mouse click on the space just below 'and' and click duplicate.
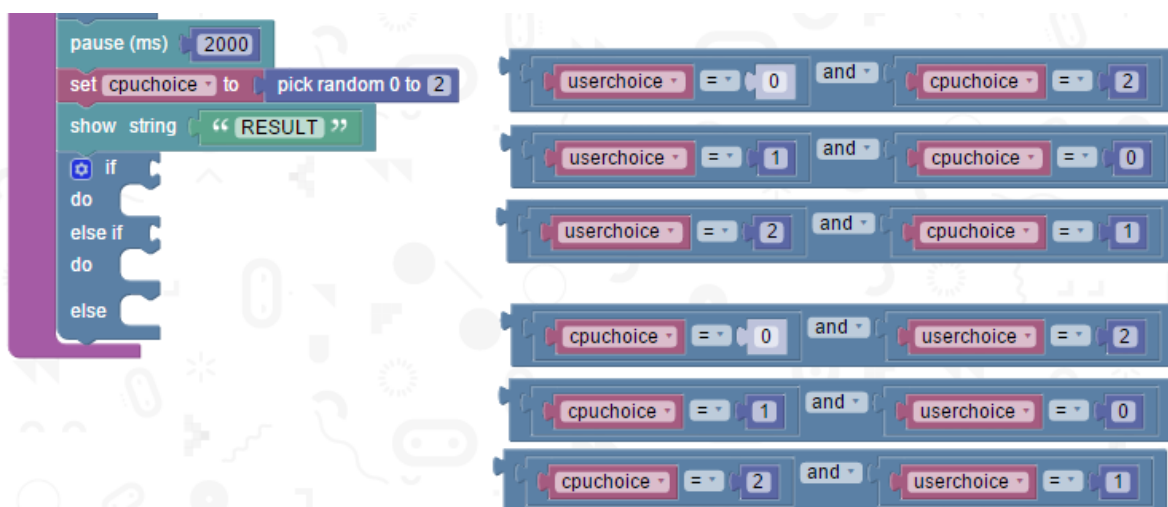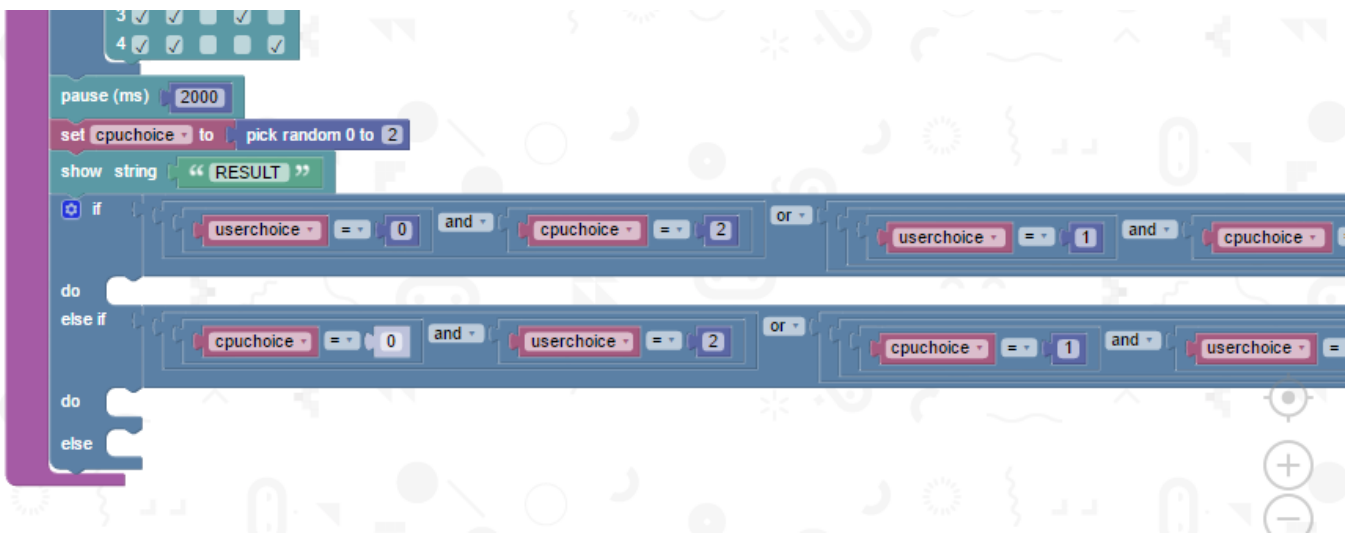
Combine each set of 3 using an OR block (logic).

Tip: The OR block on has two slots, combine it with another OR slot to give you three slots.
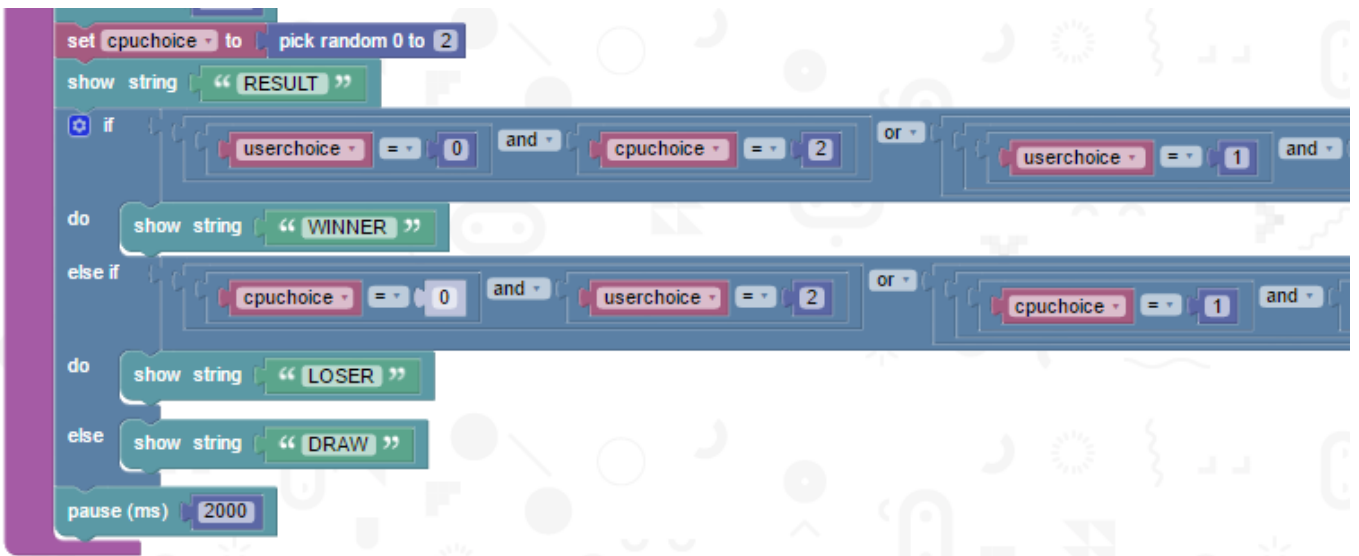

Add the two long OR blocks to the IF and ELSEIF lines.

Output to the display who wins

Use the show string block to display either "WINNER", "LOSER" or "DRAW" depending on the outcome.

CHALLENGE

A problem with this game is that you do not see what the computer is. Add some code to display what the computer has chosen and display this on screen after the result has been shared.

SUPER CHALLENGE

Add a scoring system to track how many wins the user has.