# Reaction

## Introduction

SAMPLE

You are going to create a 2-player game to see who has the fastest reactions. The game will work by showing an image after a random amount of time - whoever presses their button first is the winner.

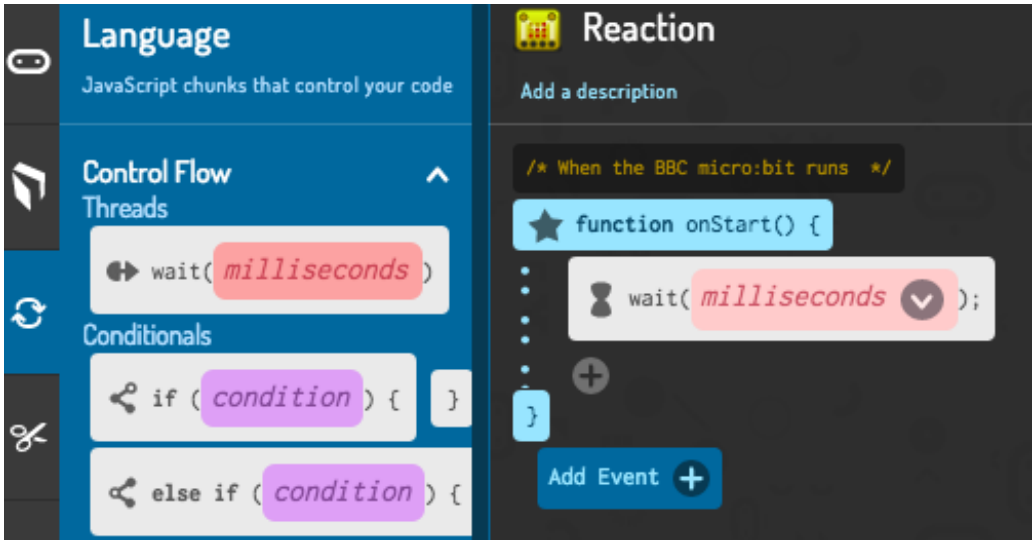
## Step 1: Wait for it!

Let's start by displaying an image after a random amount of time.

### Activity Checklist

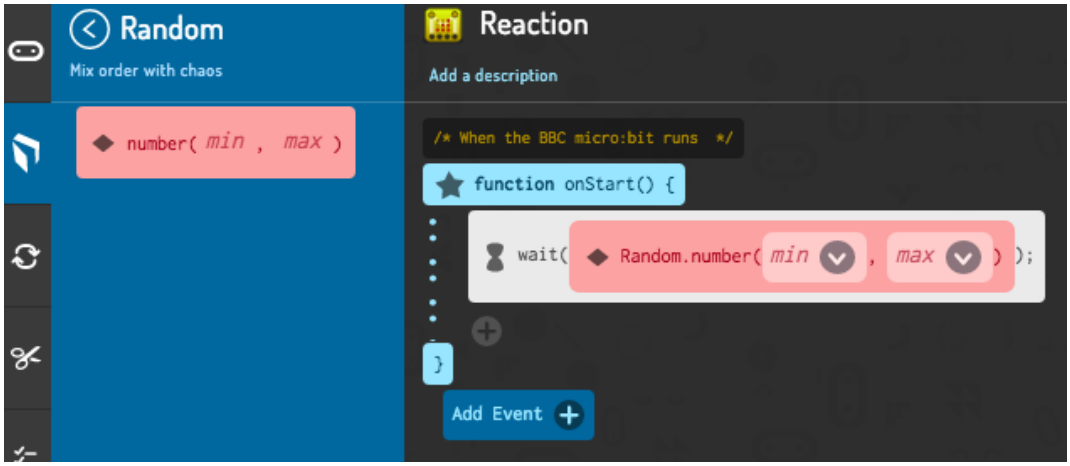
- [ ] Go to **jumpto.cc/mb-new** to start a new project in the Code Kingdoms editor. Call your new project 'Reaction'.
- [ ] Before displaying an image, the game should wait for a random amount of time.

Click the 'Control' tab, and drag a `wait` block into the `onstart()` event.



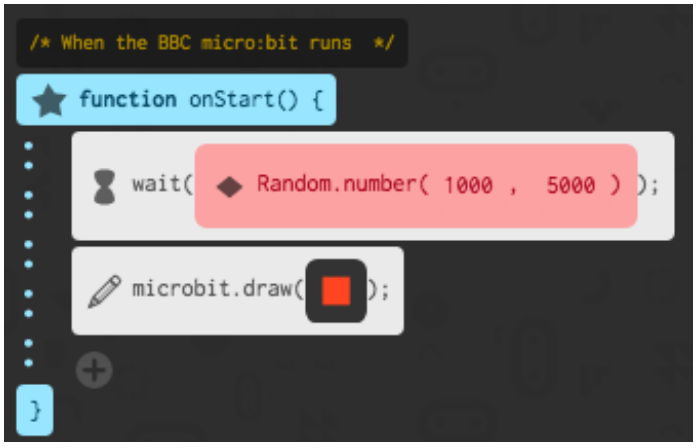

- [ ] Click 'Library' and then 'Random', and drag the `number` block inside

your `wait` block.




- [ ] Choose a minimum and maximum time that your game should wait. Remember that 1000ms is 1 second, so 1000 and 5000 will wait between 1 and 5 seconds.


- [ ] After waiting, your game should show an image so that players know when to press their button.



- [ ] Click ‘run’ to test your project. You should see your image appear after a random delay.

## Challenge: Choose your own image

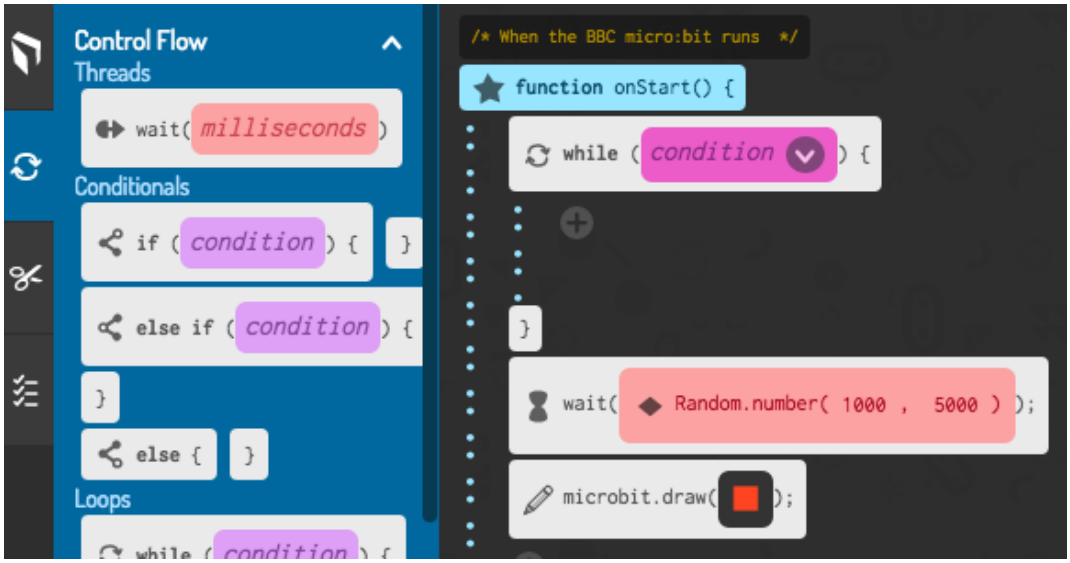
Can you change the image that’s displayed?

# Step 2: Multiple rounds

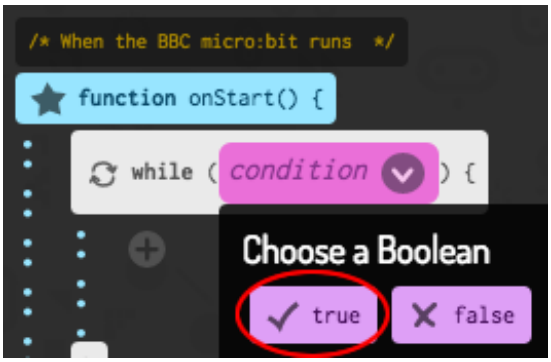
So far your players can only play once. Let’s fix that!

## Activity Checklist

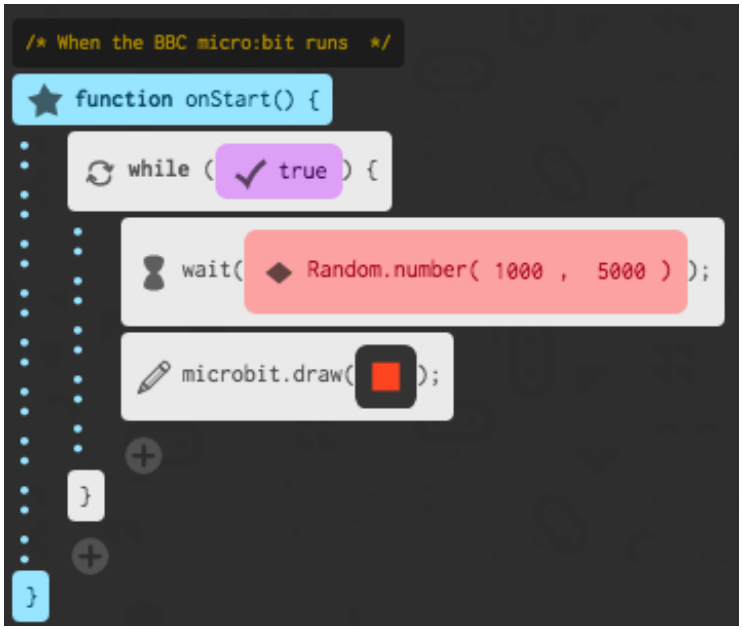
- [ ] Click the ‘Control’ tab, and drag a `while` loop at the start of your code.




- [ ] Click `condition` inside your `while` loop, and choose `true` so that your game repeats forever.




- [ ] Drag your code for waiting and displaying an image inside your `while` loop.




- [ ] Add code at the end of your `while` loop to display your image for 1 second and then clear the display.


- [ ] Test your project. You should see your image appear randomly and then disappear.

### Challenge: Choose your own delay

Change the numbers in your `random` block. You can speed up your game to make it harder, or slow it down to add suspense!

## Step 3: Waiting for a winner

Let's add code to wait until a button is pressed.

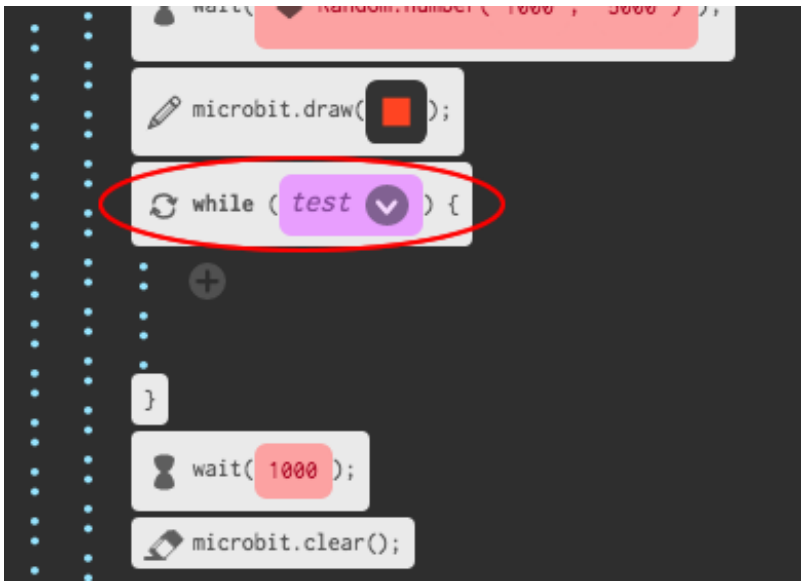
## Activity Checklist

- [ ] After displaying an image, you'll need to wait until someone presses their button.

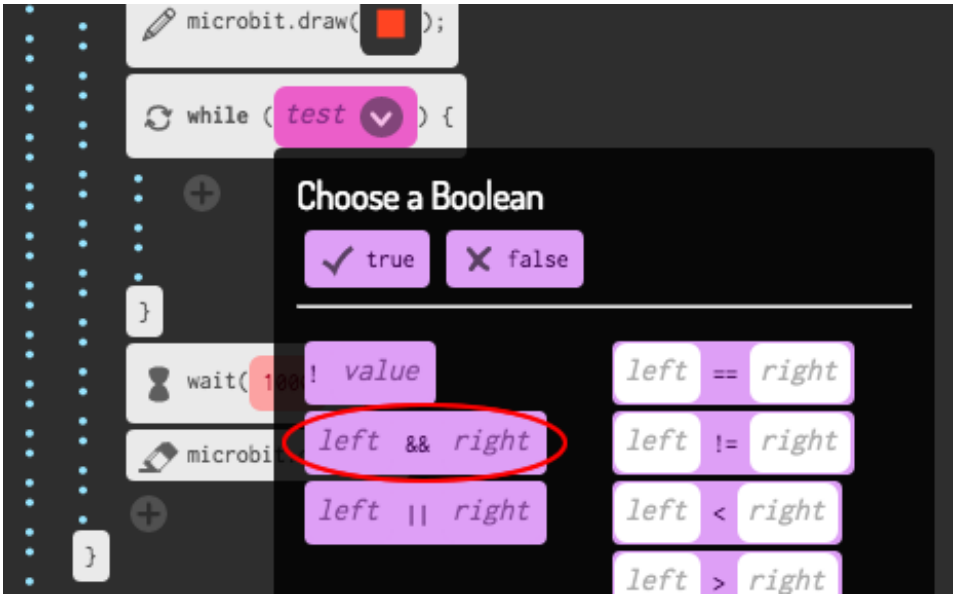
Another way of saying this is that you'll need to wait as long as button button A

**and** button B have **not** been pressed.

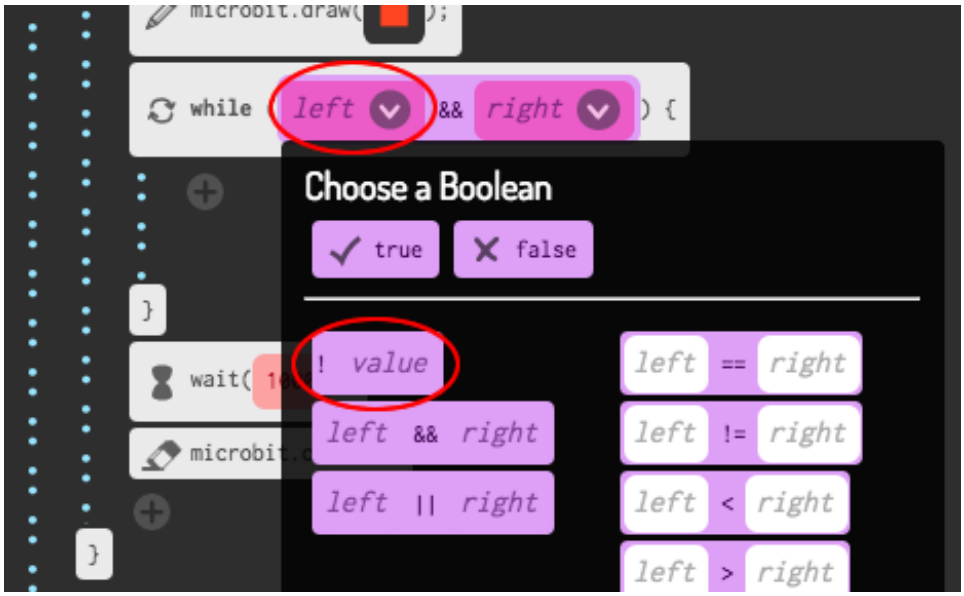
To do this, add a `while` loop from the 'Control' section. The `while` loop should be added in just after the `draw` block.



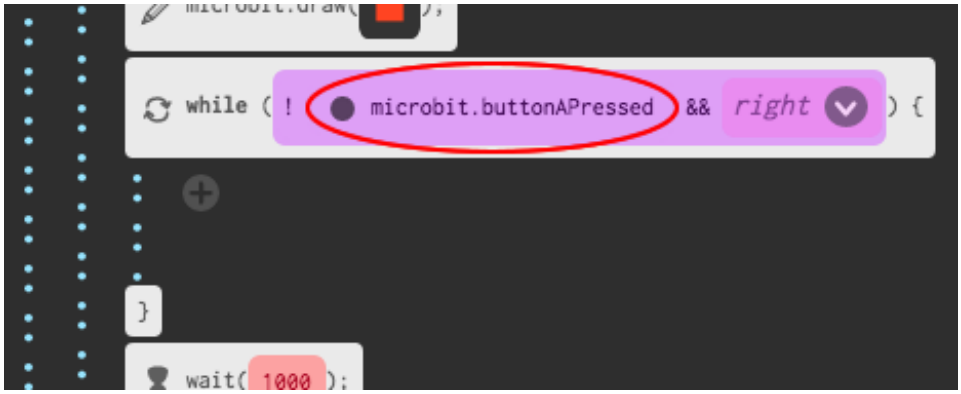

- [ ] Click the arrow inside your `while` loop and choose `left && right`. (`&&` means '**and**').



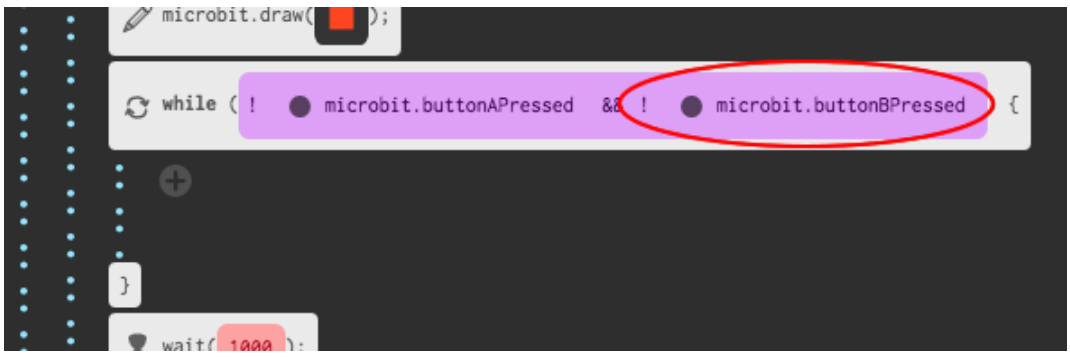

- [ ] Click the arrow inside the `left` part of your `while` loop and `! value` (`!` means **not**).



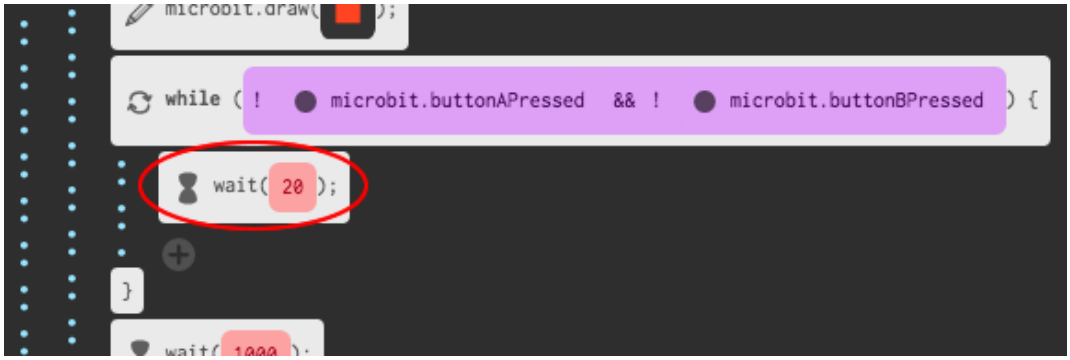

- [ ] Click on the main code section, and drag a `buttonAPressed` block into on top of the `value` part of your `while` loop.




- [ ] Repeat the 2 steps above to add `! button B` into the `right` side of your while loop.



- [ ] You can then add a very short (20ms) delay, so that your `while` loop waits as long as a button hasn't been pressed.



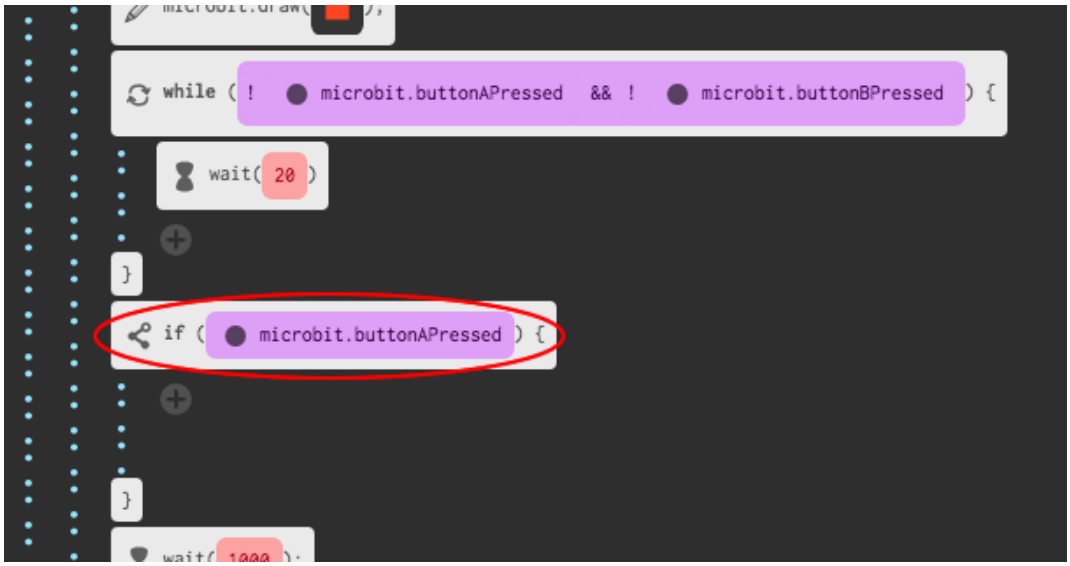

- [ ] Test your project. Your game should now display an image and then wait as long as buttons A **and** B have **not** been pressed.

## Step 4: Who is the fastest?

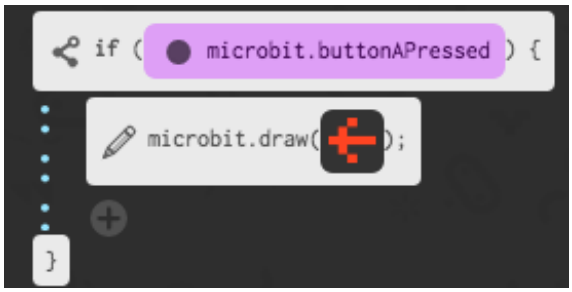
Let's find out who pressed their button first.

## Activity Checklist

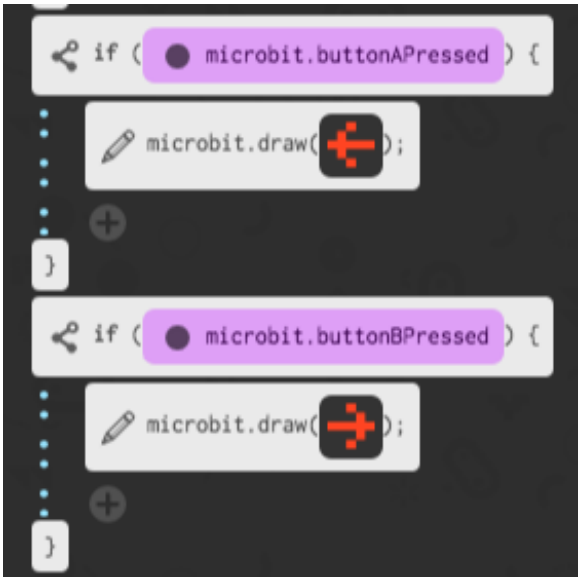
- [ ] If button A was pressed, we want to point to player A. To do this, add an `if` block after your `while` loop, and replace `test` with `buttonAPressed`.




- [ ] You can then use the `draw` block to show an arrow pointing to player A.




- [ ] You should also do the same for button B.




## Challenge: Keep score

Can you use 2 variables called `playerA` and `playerB` to keep track of both player's score?

You'll need to set both scores to 0 at the start of the game, and add 1 to whichever player wins each round.