



Catch the Dots



Introduction

In this project you'll learn how to create a game, in which you have to match up coloured dots with the correct part of the controller.

```
<iframe allowtransparency="true" width="485" height="402" src="http://scratch.mit.edu/projects/embed/44942820/?autostart=false" frameborder="0"></iframe>

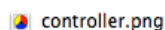
```

Step 1: Creating a controller

Let's start by creating a controller, that will be used to collect dots.

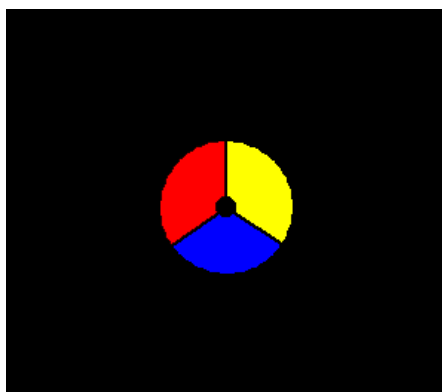
✓ Activity Checklist

- ☐ Start a new Scratch project, and delete the cat sprite so that your project is empty. You can find the online Scratch editor at jump.to/cc/scratch-new.
- ☐ For this project, you should have a 'Project Resources' folder, containing the controller image you can use. Make sure that you can find this folder, and ask your club leader if you can't find it.



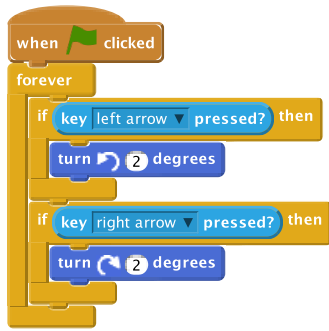
screenshot

- ☐ From this 'Project Resources' folder, import 'controller.png' as a new sprite. If you don't have this image you can draw it yourself! You should also make the stage black. Here's how your stage should look:

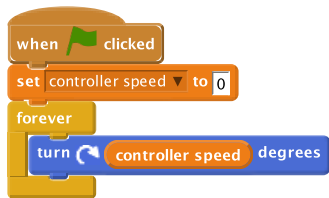


screenshot

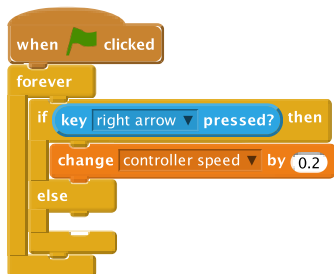
- ☐ You can move your controller really easily, by turning it left or right when the arrows are pressed:



- ☐ Test out your controller – it should spin left and right.
- ☐ Although this code works, it would be much better if the controller sped up and slowed down gradually. To do this, delete the code you just created for your controller, and create a new variable called **controller speed**.
- ☐ Add this code to your controller, to make it repeatedly use the **controller speed** to move:

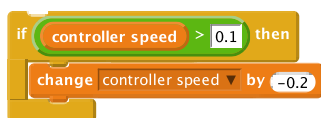


- ☐ At the moment, this code won't move the controller, as the speed has been set to 0! Create a separate script in your controller that increases the speed when the right arrow is pressed.



- ☐ Have you noticed that there's a gap in the code above? You will need to add some code to slow down the controller if the right arrow key isn't pressed. However, you only want to slow down the controller until the speed gets back down to 0, otherwise it'll start spinning backwards.

Here's the code you should add:



Here's how your controller code should look:



screenshot

- ☐ Test your project again. If you hold down the right arrow key your controller should speed up. Let go of the key and your controller should gradually slow down.

Save your project

Challenge: Spinning left

Duplicate the entire controller script for spinning to the right. Can you modify this duplicated code so that your controller spins to the left when the left arrow key is held down?

You'll need to change some of the numbers in the code! (Hint: the controller will spin to the left if the **controller speed** variable has a negative value.)

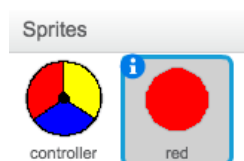
Save your project

Step 2: Collecting dots

Let's add dots to the game that the player will collect with their controller.

Activity Checklist

- ☐ Create a new sprite called 'red'. This sprite should be a small red dot.

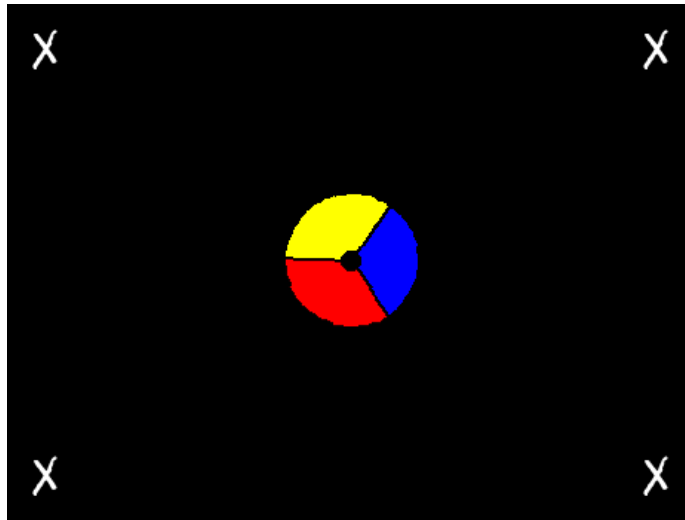


screenshot

- ☐ Add this script to your 'red' dot sprite, to create a new dot clone every few seconds:

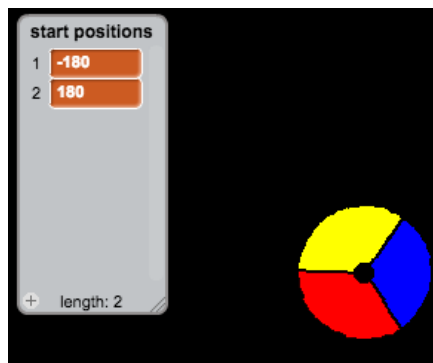


- ☐ When each clone is created, you want it to appear in one of the 4 corners of the stage.



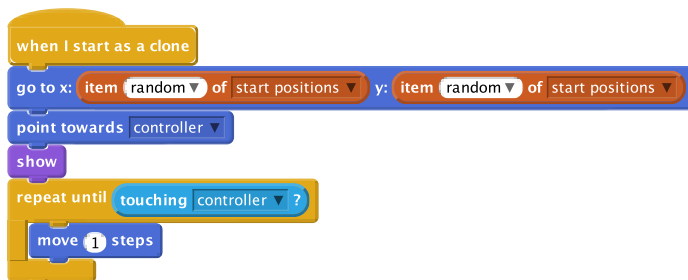
screenshot

To do this, first create a new list variable called **start positions** and click the (+) to add in the values **-180** and **180**.



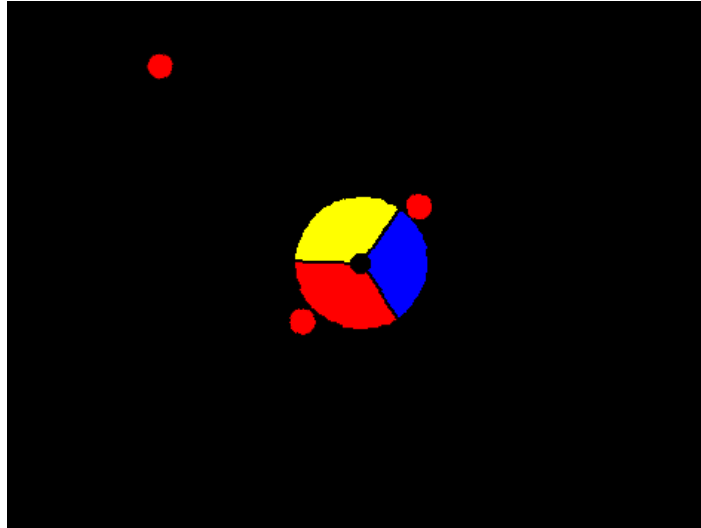
screenshot

- ☐ You can use these 2 list items to pick a random corner of the stage. Add this code to the 'dot' sprite, so that each new clone moves to a random corner and then slowly moves towards the controller.



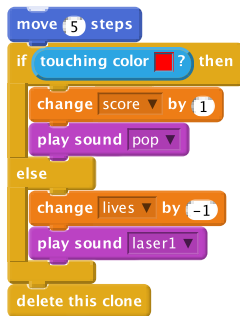
The code above chooses either **-180** or **180** for the x and y positions, meaning that each clone starts in one corner of the stage.

- ☐ Test your project. You should see lots of red dots appear in each corner of the screen, and move slowly towards the controller.



screenshot

- ☐ Create 2 new variables called **lives** and **score**.
- ☐ Add code to your stage to set the **lives** to 3 and the **score** to 0 at the start of the game.
- ☐ You need to add code to the end of your red dot's **when I start as a clone** code, so that either 1 is added to the player's **score** if the colours match, or 1 is taken from the player's **lives** if the colours don't match.



- ☐ Add this code to the end of your stage's script, so that the game ends when the player loses all of their lives:



- ☐ Test your game to make sure this code works as expected.

Save your project

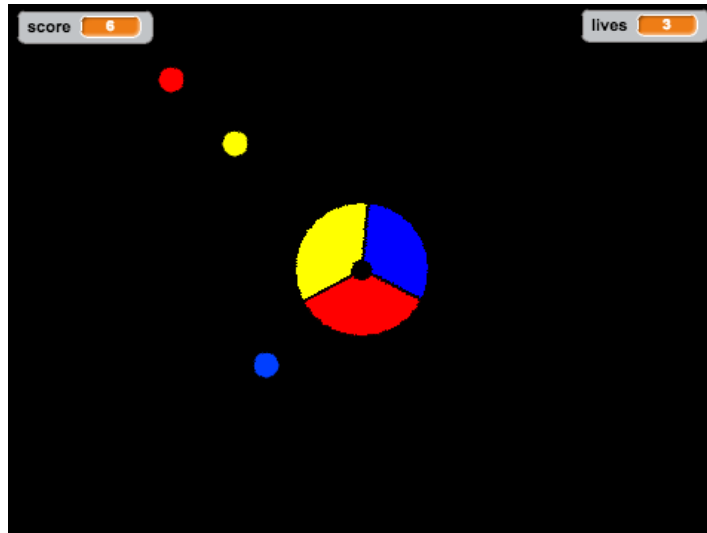
Challenge: More dots

Duplicate your 'red' dot sprite twice, and name the two new sprites 'yellow' and 'blue'.



screenshot

Edit these sprites (including their code), so that each coloured dot has to match the correct colour on the controller. Remember to test your project, making sure you gain points and lose lives at the right times, and that your game isn't too easy or too hard!



screenshot

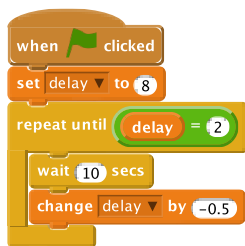
Save your project

Step 3: Increasing the difficulty

Let's make the game get more difficult the longer the player survives, by slowly reducing the delay between dots appearing.

Activity Checklist

- ☐ Create a new variable called `delay`.
- ☐ On your stage, create a new script that sets the delay to a high number, and then slowly reduces the delay time.



Notice that this is very similar to how a game timer works!

- ☐ Finally, you can use this `delay` variable in your red, yellow and blue dots' scripts. Remove the code that waits a random number of seconds between creating clones, and replace it with your new `delay` variable:



- ☐ Test your new `delay` variable, and see whether the delay between dots reduces slowly. Does this work for all 3 coloured dots? Can you see the value of the `delay` variable reducing?

Save your project

Challenge: Faster moving dots

Can you improve your game by adding a **speed** variable, so that the dots start off moving 1 step at a time, and steadily get faster and faster? This will work in a very similar way to the **delay** variable used above, and you can use this code to help you.

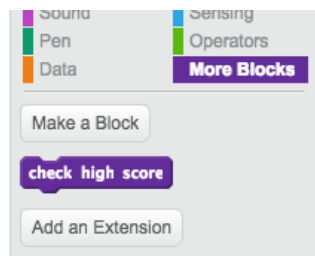
Save your project

Step 4: High score

Let's save the high score, so that players can see how well they're doing.

Activity Checklist

- ☐ Create a new variable called **high score**.
- ☐ Click on your stage, and create a new custom block called **check high score**.



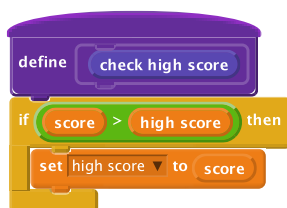
screenshot

- ☐ Just before the end of the game, add in your new custom block.



screenshot

- ☐ Add code to your custom block to store the current **score** as the **high score** if it's the highest score so far:



- ☐ Test the code you've added. Play your game to check whether the **high score** is updated correctly.

Save your project

Challenge: Improve your game!

Can you think of ways to improve your game? For example, you could create special dots that:

- ☐ double your score;
- ☐ slow down the dots;
- ☐ hide all the other dots on the screen!

Save your project

Challenge: Game menu

Can you add a menu (with buttons) to your game? You could add an instructions screen, or a separate screen for showing the high score. If you need help with this, the 'Brain Game' project will help you.

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