Brain Game

Novice Scratch PDF

Introduction

In this project you'll learn how to create a times table quiz, in which you have to get as many answers correct as you can in 30 seconds.

```
<iframe allowtransparency="true" width="485" height="402" src="http://scratch.mit.edu/projects/embed/42225768/?autostart=false" frameborder="0"></iframe>
<img src="brain-final.png">
```

Step 1: Creating questions

Let's start by creating random questions for the player to answer.

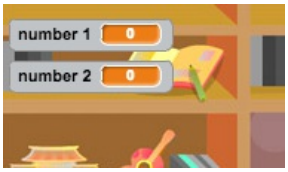
Activity Checklist

- [ ] Start a new Scratch project, and delete the cat sprite so that your project is empty. You can find the online Scratch editor at jumpto.cc/scratch-new.

- [ ] Choose a character and a backdrop for your game. You can choose any you like! Here's an example:

screenshot

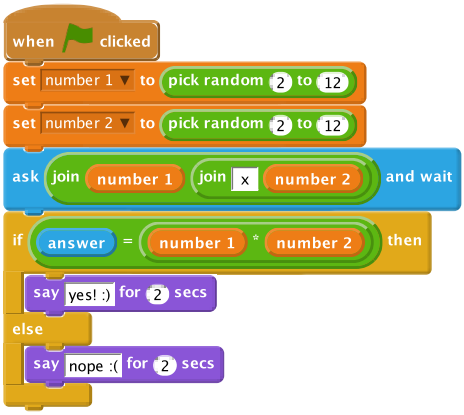
- [ ] Create 2 new variables called number 1 and number 2. These variables will store the 2 numbers that will be multiplied together.



screenshot

- [ ] Add code to your character, to set both of these variables to a random number between 2 and 12.

- [ ] You can then ask the player for the answer, and let them know if they were right or wrong.



- [ ] Test your project fully, by answering one question correctly and one with the wrong answer.
- [ ] Add a forever loop around this code, so that the player is asked lots of questions.
- [ ] Create a countdown timer on the stage, using a variable called time. The 'Balloons' project has instructions for making a timer (in step 6) if you need help!
- [ ] Test your project again - you should be able to continue asking questions until the time runs out.

Save your project

Challenge: Changing costumes

Can you change your character's costumes, so that they respond to the player's answer?

screenshot

Challenge: Adding a score

Can you add a score to your game? You can add a point for every correct answer. If you're feeling mean, you could even reset the player's score to 0 if they get a question wrong!

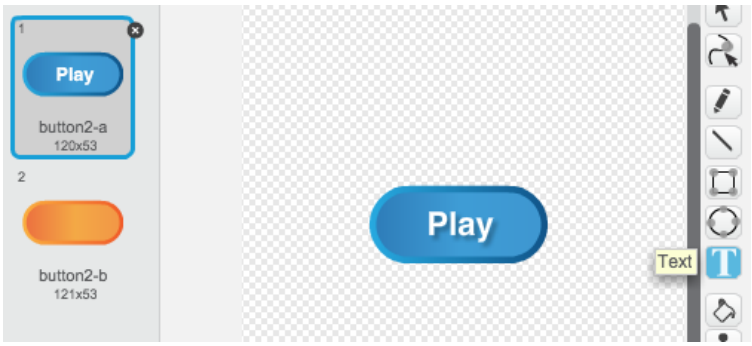
Save your project

Step 2: Multiple games

Let's add a 'play' button to your game, so that you can play lots of times.

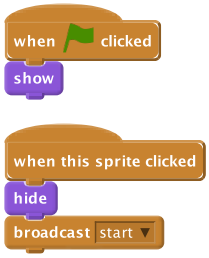
Activity Checklist

- [ ] Create a new 'Play' button sprite, which your player will click to start a new game. You can draw it yourself, or edit a sprite from the Scratch library.



screenshot

- [ ] Add this code to your new button.



This code shows the play button when your project is started. When the button is clicked, it is hidden and then broadcasts a message that will start the game.

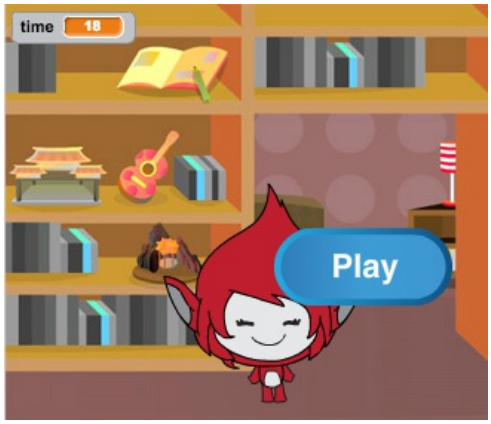
- [ ] You'll need to edit your character's code, so that the game starts when they receive the `start` message, and not when the flag is clicked.

  Replace the `when flag clicked` code with `when I receive start`.

screenshot

- [ ] Click the green flag and then click your new play button to test it. You should see that the game doesn't start until the button is clicked.

- [ ] Did you notice that the timer starts when the green flag is clicked, and not when the game starts?



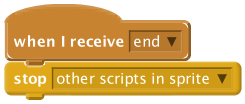
screenshot
Can you fix this problem?

- [ ] Click on the stage, and replace the stop all block with an end message.

screenshot

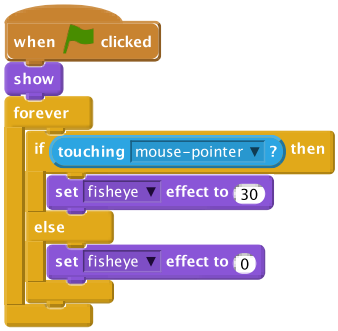
- [ ] You can now add code to your button, to show it again at the end of each game.

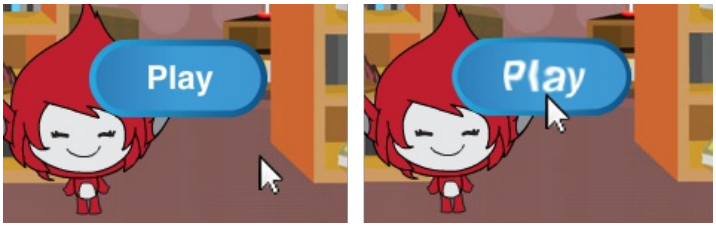
- [ ] You'll also need to stop your character asking questions at the end of each game:



- [ ] Test your play button by playing a couple of games. You should notice that the play button shows after each game. To make testing easier, you can shorten each game, so that it only lasts a few seconds.

- [ ] You can even change how the button looks when the mouse hovers over it.





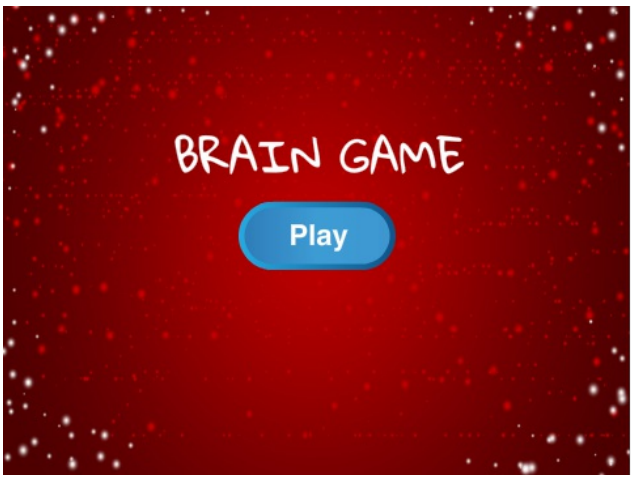
screenshot

Save your project

Challenge: Start screen

Can you add another backdrop to your stage, which will become your game's start screen? You can use the when I receive start and when I receive end blocks to switch between backdrops.

You can also show and hide your character, and even show and hide your timer by using these blocks:



screenshot

Save your project

Step 3: Adding graphics

Instead of your character just saying `yes! :)` or `nope :(` to the player, let's add some graphics that will let the player know how they are doing.

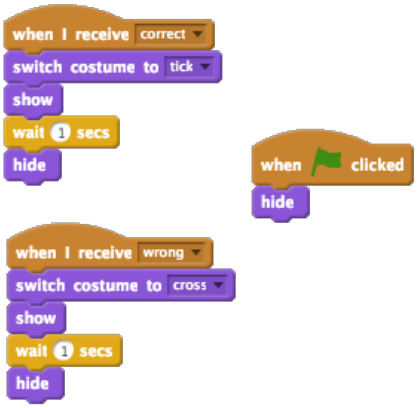
- [ ] Create a new sprite called 'Result', containing both a 'tick' and a 'cross' costume.

screenshot

- [ ] Change your character's code, so that instead of telling the player how they did, it broadcasts `correct` and `wrong` messages instead.

screenshot

- [ ] You can now use these messages to show the 'tick' or 'cross' costume. Add this code to your new 'Result' sprite:



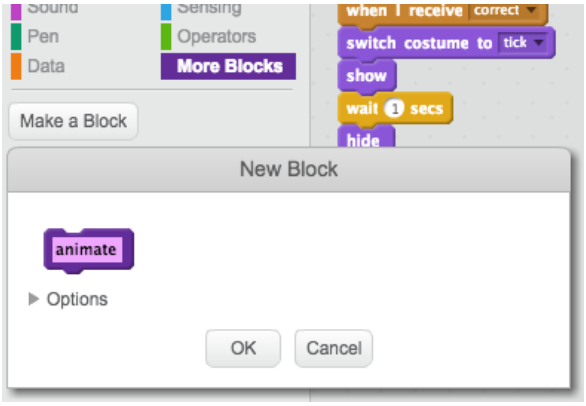
screenshot

- [ ] Test out your game again. You should see a tick whenever you get a question correct, and a cross whenever you get one wrong!

screenshot

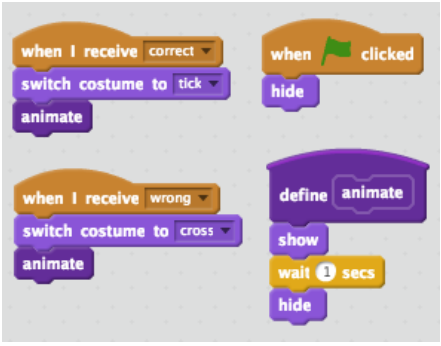
- [ ] Have you noticed that the code for when I receive correct and when I receive wrong is nearly identical? Let's create a function to make it easier for you to make changes to your code.

  On your 'Result' sprite, click More Blocks, and then 'Make a Block'. Create a new function called animate.



screenshot

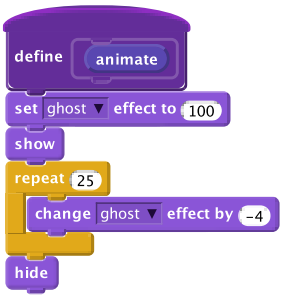
- [ ] You can then add the animation code into your new animation function, and then just use the function twice:



screenshot

- [ ] Now, if you want to show the tick and the cross for a longer or shorter time, you only need to make one change to your code. Try it!

- [ ] Instead of just showing and hiding the tick and the cross, you could change your animation function, so that the graphics fade in.



Save your project

Challenge: Improved animation

Can you improve the animation of your graphics? You could code the tick and cross so that they fade out as well as fade in. Or, you could use other cool effects:

screenshot

Save your project

Challenge: Sound and music

Can you add sound effects and music to your game? For example:

- [ ] Playing a sound when the player gets an answer right or wrong;
- [ ] Adding a ticking sound to your countdown timer;
- [ ] Playing a sound when the time is up;

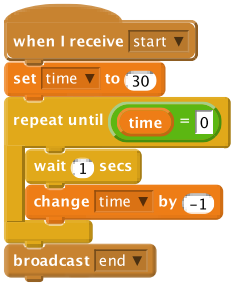
- [ ] You could also constantly play music on a loop (if you're not sure how to do this, step 4 of the 'Rock Band' project will help you).

Save your project

Challenge: Race to 10 points

Can you change your game, so that instead of answering as many questions as they can in 30 seconds, the player has to see how quickly they can get 10 questions correct?

To do this, you'll only need to change your timer code. Can you see what needs to be changed?



Save your project

Challenge: Instruction screen

Can you add an instructions screen to your game, telling your player how to play the game? You'll need an 'Instructions' button, and another stage background.

screenshot

You may also need a 'Back' button to take you to the main menu.

Save your project