

Code a boat race

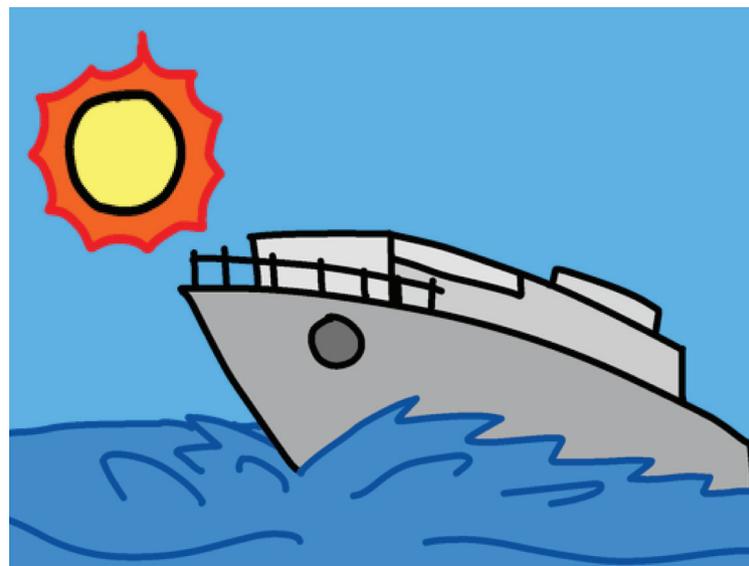
Build a speedboat game and challenge your friends.

What you will need:

- A computer
- Scratch

How does it work?

This project uses a free, online coding language called Scratch. By creating programs using Scratch, you can improve your problem-solving skills. This activity teaches you how to create different costumes and change the colours. Take it further by adding sound effects to your game.



Move your boat

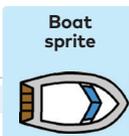
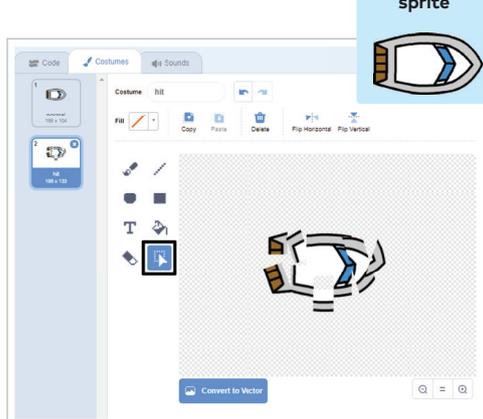
```

when green flag clicked
  switch costume to normal
  point in direction 0
  go to x: -190 y: -150
  forever loop
    if distance to mouse-pointer > 5 then
      point towards mouse-pointer
      move 1 steps
    if touching color brown ? then
      switch costume to hit
      say Noooooo! for 2 seconds
      switch costume to normal
      point in direction 0
      go to x: -190 y: -150
    if touching color yellow ? then
      say YEAH! for 2 seconds
  stop all
  
```



- 1 Go to rpf.io/boat-race-starter-on to open the starter project in Scratch.
- 2 Select the boat sprite and build the script above. Drag the colour-coded blocks from the list on the left-hand side of the screen and snap them together in the coding area in the middle. To be able to select the "hit" costume, you will first have to create it. Follow the instructions in the next part of the project and return to fix this block.
- 3 To select the correct colours for the "touching colour" blocks, click on the colour circle and select the eyedropper tool at the bottom. Then click on the appropriate object (barrier or beach).
- 4 Check your code by clicking the green flag. Your boat should follow your mouse pointer.

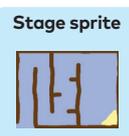
Create a "hit" costume



- 1 Now, you need to change your boat sprite, so it smashes into smithereens when it crashes into the side barriers.
- 2 To do this, you need to create a new costume for the boat sprite. Go to the costumes tab at the top left of the page. Right-click on the boat icon and select duplicate. Rename the new costume "hit".
- 3 Now, click on the "hit" icon. Use the select tool (highlighted above) to drag a box over a small part of the boat. This selects a section of the boat, allowing you to move or rotate it. Repeat this until it looks like the boat has broken up into pieces.

Add a timer

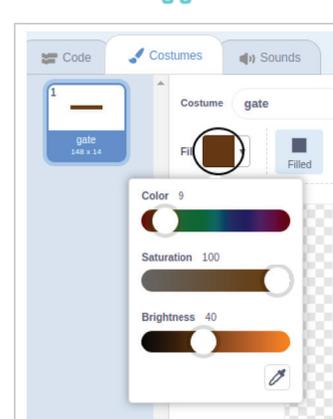
- 1 To add a timer, you will need to click on to the stage sprite. Then create a new variable. Scroll down to the bottom of the list and click "Make a variable". Label the variable "time", making sure to select "for all sprites".
- 2 Build this script (right) to time how long it takes to complete the race.



```

when green flag clicked
  set time to 0
  forever loop
    wait 0.1 seconds
    change time by 0.1
  
```

Add a revolving gate



- 1 You can also make your game a little harder by adding a revolving gate.
- 2 Create a new sprite by clicking on the cat icon at the bottom right-hand side of the page. Choose something that looks like a rectangle (we selected a paddle). Change the name of the new sprite to "gate" then head to the costume tab (top left of the page).
- 3 You need to change the colour of your gate sprite by clicking the "fill" button. The colour needs to be 9, saturation 100 and brightness 40. Name the costume "gate" and head back to the coding area.
- 4 Build this script (right) for the new sprite. Now, test your game and see if you can avoid crashing in the spinning gate of doom.

```

when green flag clicked
  forever loop
    turn 1 degrees
  
```

The Raspberry Pi Foundation is a UK-based educational charity working to put the power of computing and digital making into the hands of people all over the world. Discover more step-by-step coding projects at rpf.io/scienceandnature

