

Creating your own JavaScript objects

We are now on the final JavaScript video before you start work on coding the piano app to turn it into a game, using your newly acquired programming skills!

In this video, Steve explains how you can create your own JavaScript objects. It is a longer video than you have used before – over eight minutes – so it may take you longer to get through than just one session. We have provided the code that Steve starts with (the carObject JavaScript code) to make it easier for you. You can download this from the Resource Bank on the website. We have also provided the HTML code (car.html) but would prefer you to try to create your own. The screenshots below show you exactly how to write the 41 lines of code in this file.

Step 1: Downloading or writing your own code for the carObject function (Video start – 3.23)

Watch the first three minutes and 23 seconds of the video before looking at your own code. Make sure you understand what Steve has done here.

1. He has created an object 'car' which has a brand, a model and a colour. He then uses the 'this' syntax to define the properties of the object (that is, the brand, model and colour). He also uses the same 'this' command to define another property of the car object, the speed.
2. He also creates two methods for the object, one is accelerate and the other is brake, using the 'this' command again. The difference between the property and the method is that the method requires a function (inside a function) which makes the object do something. In this case, accelerate or slow down.
3. He uses a conditional 'if' to determine what happens to the object (whether it speeds up or slows down) and also limits the speed to 100 for acceleration and zero for braking.

Either create this code for yourself, or use our downloadable text file (note, this is text only and hasn't been set for the JavaScript language) in Notepad++. When you set the language for this document, select **JavaScript**. Make sure you understand the syntax Steve has used here and what each line of code will do before moving on. Your code should look like the screenshot on the right.

```
1 function car(brand, model, colour)
2 {
3   this.brand = brand;
4   this.model = model;
5   this.colour = colour;
6   this.speed = 0;
7
8   this.accelerate = accelerate;
9   this.brake = brake;
10
11  function accelerate(increase)
12  {
13    this.speed += increase;
14    if (this.speed > 100) this.speed = 100;
15  }
16
17  function brake(decrease)
18  {
19    this.speed -= decrease;
20    if (this.speed < 0) this.speed = 0;
21  }
```

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Step 2: Creating the first section of HTML code (video 3.24 – 4.35)

Steve now moves to a second file, written in HTML. This code refers to the JavaScript file you have already created ('carObject.js'). Watch the video as Steve explains the code to you. Stop the video at around 4 minutes 30 seconds and try creating the first 21 lines of code that you can see on the video at that point. We have supplied the code for this, in case you need it, but it would be good for you to try to write your own! Good practice...

Note, there is some of the code that can't be seen at the end of lines 15 and 16. This should read "is speeding up"; at the end of line 15 and '=message;' at the end of line 16.

Step 3: Creating the second section of HTML code (video 4.35 to 4.41)

When you have created the top 21 lines of code, let the video play on for a few seconds and then stop it again. Now you can see the bottom of the file, with lines 22 to 41 displayed. Before you listen to Steve explaining the code, complete your Notepad++ document with the rest of the code. Note that lines 25 and 26 can't be fully seen. These should end "is slowing down"; for line 25, and '=message;' for line 26 (without the apostrophes, of course, for line 26). Your completed code should look like the screenshots below.

```
1 <html>
2 <head>
3 <script src="carObject.js"></script>
4 <script>
5 var car1 = new car("Ford ", "Focus ", "Blue ");
6 var car2 = new car("Vauxhall ", "Astra ", "Red ");
7
8 function speedUp(car)
9 {
10     var speedo = document.getElementById(car.model);
11     var message;
12
13     car.accelerate(10);
14     speedo.value = car.speed;
15     message = car.colour + car.brand + car.model + "is speeding up";
16     document.getElementById("messageBox").innerHTML = message;
17 }
18 function slowDown(car)
19 {
20     var speedo = document.getElementById(car.model);
21     var message;
22
23     car.brake(10);
24     speedo.value = car.speed;
25     message = car.colour + car.brand + car.model + "is slowing down";
26     document.getElementById("messageBox").innerHTML = message;
```

The screenshot above shows the first 26 lines of code.



```
22
23     car.brake(10);
24     speedo.value = car.speed;
25     message = car.colour + car.brand + car.model + "is slowing down";
26     document.getElementById("messageBox").innerHTML = message;
27 }
28 </script>
29 </head>
30 <body>
31 <input type="button" value="<" onclick="slowDown(car1)"/>
32 <meter id="Focus" min="0" max="100" value="0"></meter>
33 <input type="button" value=">" onclick="speedUp(car1)"/>
34 <br>
35 <input type="button" value="<" onclick="slowDown(car2)"/>
36 <meter id="Astra" min="0" max="100" value="0"></meter>
37 <input type="button" value=">" onclick="speedUp(car2)"/>
38 <br>
39 <p id="messageBox"></p>
40 </body>
41 </html>
```

The screenshot above shows the code from line 22 to the end.

When you have written your code, and it looks like the above, watch Steve explain how the code works from the beginning of the document through to the end. This will take you to 7 minutes into the video. Play it more than once if you need to, before you publish your code so you understand exactly what is happening here. What this code will do when published is:

1. Display on the webpage four buttons and two meters – a meter, as you will see is a long bar which will fill as the car speeds up. Each car has two buttons – one that will speed it up and the other which will slow it down. Each car has a meter which will display the speed of the car.
2. When one of the buttons is pressed, a message will be displayed which tells you which car is moving and how (e.g. it will say 'Blue Ford Focus is speeding up') because the code tells the browser to display the message when the button is pressed. The content of the message will depend on which button is pressed.

Step 4: Publishing the code and trying it out (Video 7.00 to end)

Watch the final section of the video where Steve publishes his code and checks that it works. Now save your code properly (remember, the carObject is JavaScript, and the car is HTML), and publish in Chrome to see whether you get the same result. If not, debug your code (when I first did this, I missed off a curly bracket and it didn't work!).



Remind yourself of what the code did – the meter is the long bar with the green section that gets longer when the cars speed up and shorter when they slow down. Now you have seen it working, look back at the code and make sure you understand how everything made this happen, including the JavaScript function that was the separate file.

Well done – some expert coding here! Now try to change some of the properties of the cars – the colour, model and brand can easily be changed in the code.