

## Exercise 1: JavaScript and DOM basics

A JavaScript program can change the HTML and CSS in a web page through the Domain Object Model (DOM). DOM is the API for JavaScript programs to access the html document.

In order to be able to change an HTML element in JavaScript you need to look up the corresponding DOM element. The whole html document is represented by DOM-object document which contains and all the elements on a tree structure (DOM tree).

A JavaScript program can react to HTML events (like click, mouseover) by setting an event handler for the event in the DOM object. The handler is a function that is run then whenever the event occurs on the element.

It is often impossible to see in the web page if an error has occurred in JavaScript. The error messages are output only in the browser concole. For that reason a JavaScript programmed needs to constantly keep the browser console visible. You can print debug messages to the console to make the program execution visible quickly.

### Programming exercise

The exercise template laskuri.html has an element with id laskuri. Modify the JavaScript program in the template to increase the value of the counter whenever the element is clicked.

Next add functionality to set the background of the element blue for even counter values and red for odd values.

Feel free to style the page as pretentious as you like!

### Questions

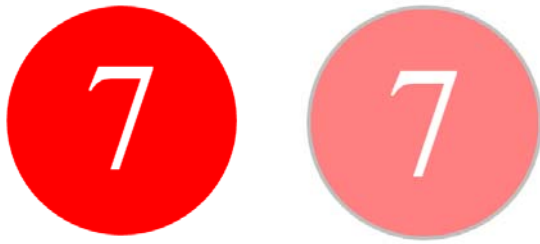
1. How can you find the concole in different browsers (IE, Firefox, Chrome)? How do you output to the console?
2. How can you include JavaScript in an html page? Mention three different ways.
3. Why is JavaScript code usually placed in a separate file?
4. An html document contains the following element:  
`<div id="active">Click me!</div>`  
Write JavaScript statements to
  - a) fetch the DOM object for the element
  - b) add function clicked() as event handler for click event to the element
  - c) change the html content of the element to "I've been clicked"
  - d) change the text color to grey
5. What other html events there are than click? List five that you find most useful and explain them briefly.
6. CSS properties of elements can be accessed and changed in JavaScript but their names in DOM are slighly different from the CSS names. There are simple rules for name conversion, explain them and give some examples.

### Bonus

Challenge yourself to get to the next level!

1. Reset button: Add an element for resetting the counter, define and add an event handler in the same way as in the exercise.

2. Visualization for click: Change the counter styles to visualize when the button is being pressed and change them back when it is released. Hint: in the example below a grey border is added and the opacity of the element has been reduced.



3. Forget templates! Do it your way.

### Submission

- Document with the name(s) of the author(s) and answers to all the questions
- Link a web page that contains the working program

Assess your learning and give feedback about the exercise in the text field on the submission form.

### Hints

- There is a template for the page in the course folder. The comments in the template provide guidance.
- W3Schools JavaScript Tutorial is a good source for this exercise:  
<http://www.w3schools.com/js/default.asp>
- There's also a JavaScript DOM tutorial: [http://www.w3schools.com/js/js\\_htmlDOM.asp](http://www.w3schools.com/js/js_htmlDOM.asp).
- This might be of use too: <http://www.dummies.com/web-design-development/javascript/convertting-css-property-names-to-javascript/>