Web Technologies

Lab session 3

JavaScript

- JavaScript is the programming language of HTML and the Web
- Languages of the Web
  - HTML defines content
  - CSS defines layout
  - JavaScript defines **behavior**
- https://www.w3schools.com/js

JavaScript: Overview

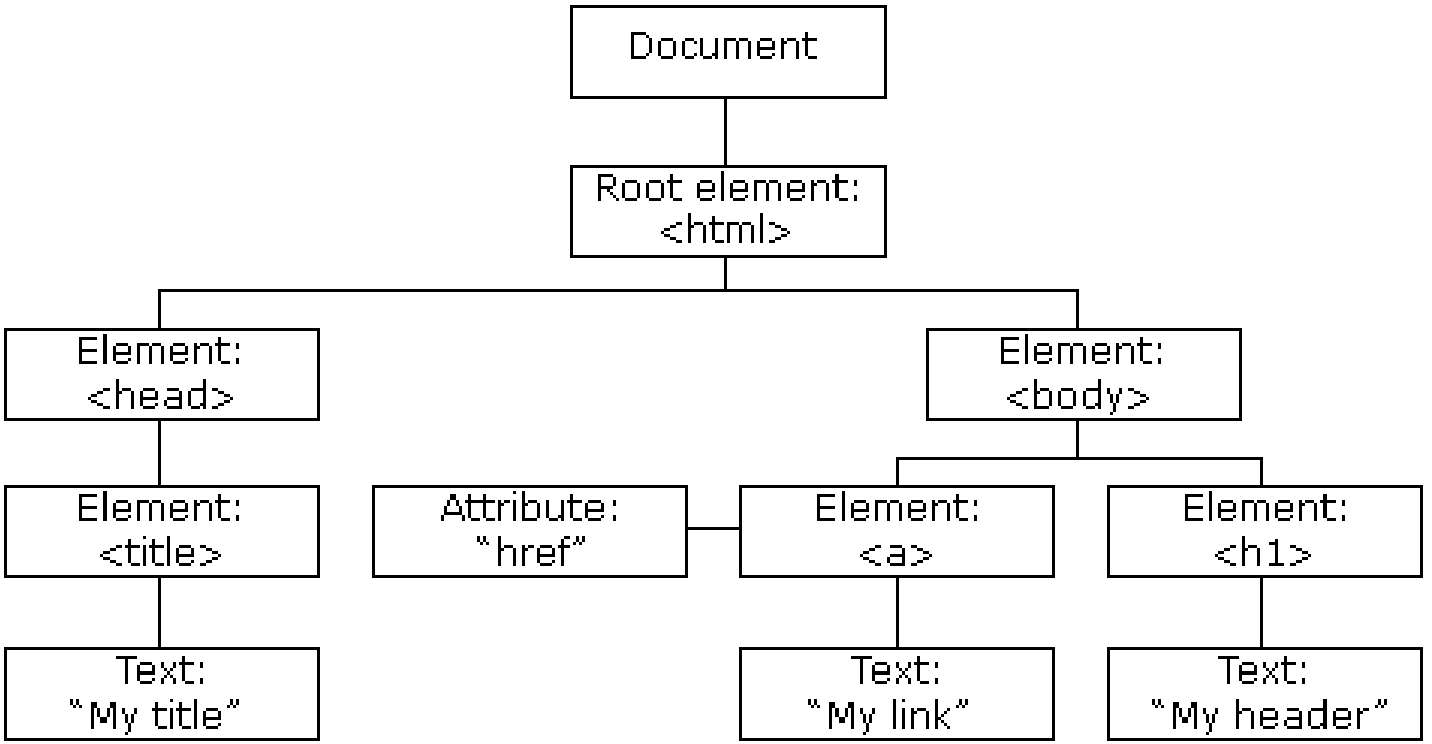
- *General purpose* programming language
  - **Runs in browser**
  - Runs in dedicated runtime environments (NodeJS)
- Manipulate HTML and CSS
  - Content
  - Attributes
  - Add/remove DOM nodes

JavaScript: Overview

- JS can be put anywhere in the HTML page
  - HTML element <script>
  - Recommended to place it at the end of <body>
    - improves page loading speed
  - Recommended to place it in external *.js files and include it in HTML
- JS sometime behaves differently as you expect
  - Running in strict mode reduces the probability of such quirks: `"use strict";` Strict mode allows you to write better code: commands provided in bad syntax become errors
  - https://www.w3schools.com/js/js_strict.asp

JavaScript: DOM

- When a web page is loaded, the browser creates a Document Object Model (DOM)



https://www.w3schools.com/js/js_htmldom.asp

JavaScript: DOM and BOM

- DOM is a standard for how to **get**, **change**, **add**, or **delete** HTML elements
  - Global variable `document` represents the web page
- **BOM**: Browser Object Model
  - Means to access some browser functions from JS
  - Not standardized, but *all* browsers support it
  - Global variable `window`

JavaScript: ES6

- The new JavaScript version: ECMAScript 6
- Many new features and improved language
- Variables: stop using `var`, use `let` and `const`
- Arrow functions: `[1, 2, 3].map(x => x*x)`
- String interpolation `console.log(`${1+1}`)`
- Default function parameters
- Many more: http://es6-features.org

JavaScript: jQuery

- jQuery is a JS library that simplifies DOM interactions
- jQuery uses **selectors like CSS** to select elements and **perform actions** on them
- Resources
  - https://www.w3schools.com/jquery
  - https://jquery.com, http://try.jquery.com/

JavaScript: jQuery

- Including jQuery (https://code.jquery.com)

```
<script src="https://code.jquery.com/jquery-3.3.1.min.js"
  integrity="sha256-FgpCb/KJQlLNfOu91ta32o/NMZxltwRo8QtmkMRdAu8="
  crossorigin="anonymous"></script>
```

- Using jQuery

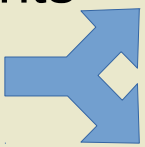
```
$("p").hide()
$(".myclass").hide()
$("#first").val("New value")
$("button").click(() => console.log("You clicked.")))
```

Assignment 1: Complete JS App

- When the user provides the first name, the last name and the role, the participant should be added to the list (table) of participants
- When the user double-clicks on a participant (row), the participant should be removed from the list
  - The user should be prompted to confirm the removal: use `confirm` to prompt the user

Web technologies

Added participants



The list of class participants.

First name	Last name	Role
Aleš	Smrdel	Lecturer
David	Jelenc	Teaching assistant
Marija	Novak	Student

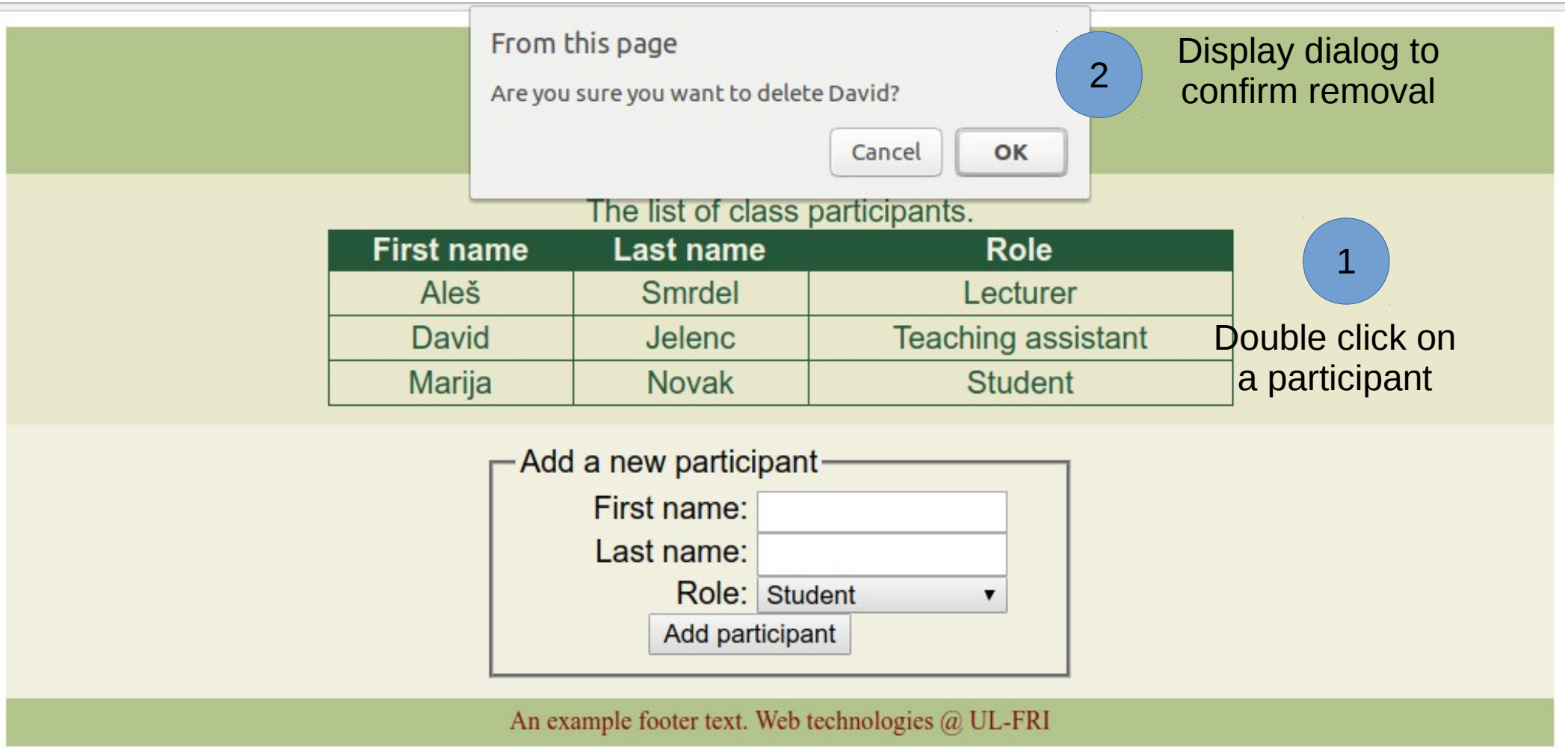
Add a new participant

First name:

Last name:

Role: Student

Add participant


From this page
Are you sure you want to delete David?
Cancel
OK
2
Display dialog to confirm removal
The list of class participants.
First name
Last name
Role
Aleš
Smrdel
Lecturer
David
Jelenc
Teaching assistant
Marija
Novak
Student
1
Double click on a participant
Add a new participant
First name:
Last name:
Role:
Student
Add participant
An example footer text. Web technologies @ UL-FRI
3
Remove participant if confirmed

Assignment 2: Persistence

- Problem: If you refresh the page, data is lost
- Solution: use HTML5 `localStorage` to save the contents
  - https://www.w3schools.com/html/html5_webstorage.asp
- Some hints
  - Represent each participant as an object with four properties: `id, first, last, role`
    - The `id` should be an integer that increases with each participant
  - Add participants to an array, and save the array to `localStorage`
  - Since `localStorage` cannot save arrays, encode the array as JSON and save the JSON to `localStorage`:
    - `JSON.stringify([1, 2, 3])`
    - `JSON.parse(stringToBeParsed)`