

DOM in JavaScript II: Advanced Techniques

Course code: JS_DOM2

Only the javascript APIs built into modern browsers are what turn a web page into a full-fledged web application, whether it's graphics, interactivity, data handling, or reading inputs from the real world. The possibilities are limited only by security and privacy or hardware performance.

What we will teach you

- Working with user accessed files
- Storing data in the browser
- Improved form validation in HTML5
- Webcam and microphone input
- Javascript and CSS animations
- Working with graphics (canvas, video)
- Manipulating browser history for SPA
- Working with data from other domains (CORS)
- Running more complex calculations in separate threads (Worker)
- Service worker (resource caching, offline applications)
- Fetch API basics (modern successor to AJAX)
- Uploading files to server
- Responding to page scrolling, lazy-loading

Required entry-level skills

- Knowledge of JavaScript at the level of the JS_PROG2 course and DOM at the level of the JS_DOM1 course.

Course Outline

Modules

- Module Types
- Lazy loading

Cookies and Web Storage Basics

- Cookies
- Creating and Reading Cookies
- Cookie Options and Limitations
- Security Considerations and Limitations
- Local Storage
- Data Storage
- Data Loading
- Data Deletion
- Limitations and Security Considerations
- Session Storage
- Differences between Local Storage and Session Storage
- Usage Examples

Working with User Accessed Files

- `<input type="file">`, Native drag&drop in HTML5
- FileList, File, FileReader and URL API
- Previewing an image before uploading
- FormData API (uploading data to the server)

Session History Management ("History API")

- How to preserve user experience when changing page content
- Back button treatment in AJAX applications

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- History. pushState, history. replaceState
- popstate event on window object

Storing data in browser

- treatment of page refresh button (F5)
- WebStorage (localStorage)
- IndexedDB

Working with animations

- API for working with CSS3 animations
- requestAnimationFrame

Working with graphics

- <canvas> in 2d context - Programmable image

Retrieving input from webcam and microphone

- getUserMedia and related APIs

Improved form validation in HTML5

- new form element and attribute types
- Constraint and Validation API

Working with data from other domains (CORS)

- Cross-Origin Resource Sharing
- use for AJAX, canvas and external files

Fetch API basics (modern successor to AJAX)

JavaScript in separate threads (Worker)

Service worker (resource caching, offline applications)

Response to page scrolling, lazy-loading

- Intersection Observer

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