JQuery

jan.schulz@devugees.org

1. Agenda

1. Introduction to JQuery
2. The six core functions of JQuery
3. Benefits of JQuery
4. Introduction to NPM
5. $() and jQuery()
6. Selectors
7. DOM Manipulation
8. DOM Traversal
9. Filter
10. Chaining
11. Native DOM Objects
12. Events
13. Event Delegation
14. Plugins

1. Introduction to JQuery

- Is a JavaScript library
  - Not a framework
- Automates a bunch of common VanillaJS tasks
  - „1 Line of Code“
- 10 years old
- Cross-Browser Functionality

1. Introduction to JQuery

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2. Six Core Functions

1. Access DOM elements

$(‘div‘)

-> access all DIV elements on the page

2. Six Core Functions

2. Modify the appearance of a page

$(‘div‘).addClass(‘highlight‘);

-> add class highlight to all divs

$(‘div‘).removeClass(‘highlight‘);

-> remove class highlight from all divs

2. Six Core Functions

3. Alter the content of a page

$(‘div‘).append(‘ Hallo World ‘);

-> adds a div with Hallo World to all divs

2. Six Core Functions

4. Animate web page changes

$(‘div‘).fadeOut();

-> each div on the page fades out and disappears

$(‘div‘).slideUp();

-> each div on the page slides up and disappears

2. Six Core Functions

5. Retrieve data from the server

$(‘div‘).load(‘content.html‘);

-> loads the content of an HTML files into a div

2. Six Core Functions

6. Respond to user interaction

```
$(‘div‘).click( function() {
      alert(‘Hallo World‘);
});
```

-> when clicking on any div, alert Hallo World

3. Benefits of JQuery

1. **Minimal Code**
   - Jquery operates on **sets of elements**
2. **Large Library**
   - Wide variety of inventive and useful modules
3. **Strong community**
   - Stack Overflow = Your new best friend
4. **Cross-Browser Support**
   - Chrome, Firefox, IE, Safari
5. **AJAX Support**
   - Easier than in VanillaJS

3. Benefits of JQuery

- Biggest benefit:

Everybody uses it.

4. Introduction to NPM

- NPM = **Node Package Manager**
  - Manages (Mainly Installs and Removes) packages for **NodeJS** applications
- NodeJS = Serverside JavaScript
  - More on that later ...
- Let us install watch-http-server

  sudo npm install –g watch-http-server

5. $() and jQuery()

- $() is a synonym for jQuery()
- $() or jQuery()
  - selects a DOM element
  - wraps jQuery functionality around it
  - returns it

5. $() and jQuery()

- $() is a synonym for jQuery()
- $() or jQuery()
  - selects a DOM element
  - wraps jQuery functionality around it
  - returns it
- **It is not the native JavaScript Object for DOM**

6. Selectors

- Most Used Basic Selectors

Selector	Description
*	Selects all elements
.CLASSNAME	Selects all elements with a specific class = CLASSNAME
#IDNAME	Select one element with a specific id = IDNAME
TAG1 TAG2	Selects all TAG2 elements which are children to TAG1 i.e. **li a** would give all anchor-tags within
TAG1 > TAG2	Selects all TAG2 elements which are **direct children** to TAG1 i.e. **li > a** would give all anchor-tags within as
TAG.CLASSNAME	Selects all TAG elements which have the class CLASSNAME
TAG#IDNAME	Selects all TAG elements which have the class IDNAME
TAG1 + TAG2	Selects the first adjacent TAG2 element after the TAG1 element
TAG1, TAG2	Selects all Tags with TAG1 and all tags with TAG2

6. Selectors

- Advanced Selectors

Selector	Description
TAG:gq(0)	Selects all elements of TAG which have index > 0
TAG:eq(0)	Selects all elements of TAG which have index = 0
TAG:lt(2)	Selects all elements of TAG which have index < 0
TR:even	Selects all elements of TR which have even index
TR:odd	Selects all elements of TR which have odd index
TR:nth-child(even)	Selects all elements of TR which have even index
TR:nth-child(odd)	Selects all elements of TR which have odd index
TD:contains(‘Hallo‘)	Selects all elements of TD which contain a string ‘Hallo‘

7. DOM Manipulation

- Add and Remove Elements
- Change Attributes
- Update the content of elements
- Edit the CSS of an element

7. DOM Manipulation

- Add and Remove Elements
  - **ELEM.append(‘ ‘)**
  - **ELEM.remove()**
- Change Attributes
  - **ELEM.attr(‘id‘, ‘newId‘)**
  - **ELEM.removeAttr(‘style‘)**
- Update the content of elements
  - **ELEM.html( )**
  - **ELEM.text( )**
- Edit the CSS of an element
  - **ELEM.css(‘font-size‘, ’12px‘);**

7. DOM Manipulation

- Add DOM Elements relative to selected elements
  - **ELEM.after(‘ hi ‘)**
  - **ELEM.before(‘ hi ‘)**
  - **ELEM.append(‘ hi ‘)**

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- Add DOM Elements relative to selected elements
  - **ELEM.after(‘ hi ‘)**
  - **ELEM.before(‘ hi ‘)**
  - **ELEM.append(‘ hi ‘)**

=

  - **$(‘ hi ‘).insertAfter(ELEM)**
  - **$(‘ hi ‘).insertBefore(ELEM)**
  - **$(‘ hi ‘).appendTo(ELEM)**

7. DOM Manipulation

- Question:

  What is the difference between

  after() and append()?

7. DOM Manipulation

- Question:

  What is the difference between
  ELEM.after(x) and ELEM.append(x)?

append(): always puts an element x inside of ELEM at latest place.

after(): puts an element x next to ELEM.

7. DOM Manipulation

- ELEM.remove()
  - Removes the element from the DOM
- ELEM.detach()
  - Removes the element from the DOM and keeps all data associated with it, i.e. CSS changes
- ELEM.empty()
  - Deletes the inner HTML of the element

8. DOM Traversal

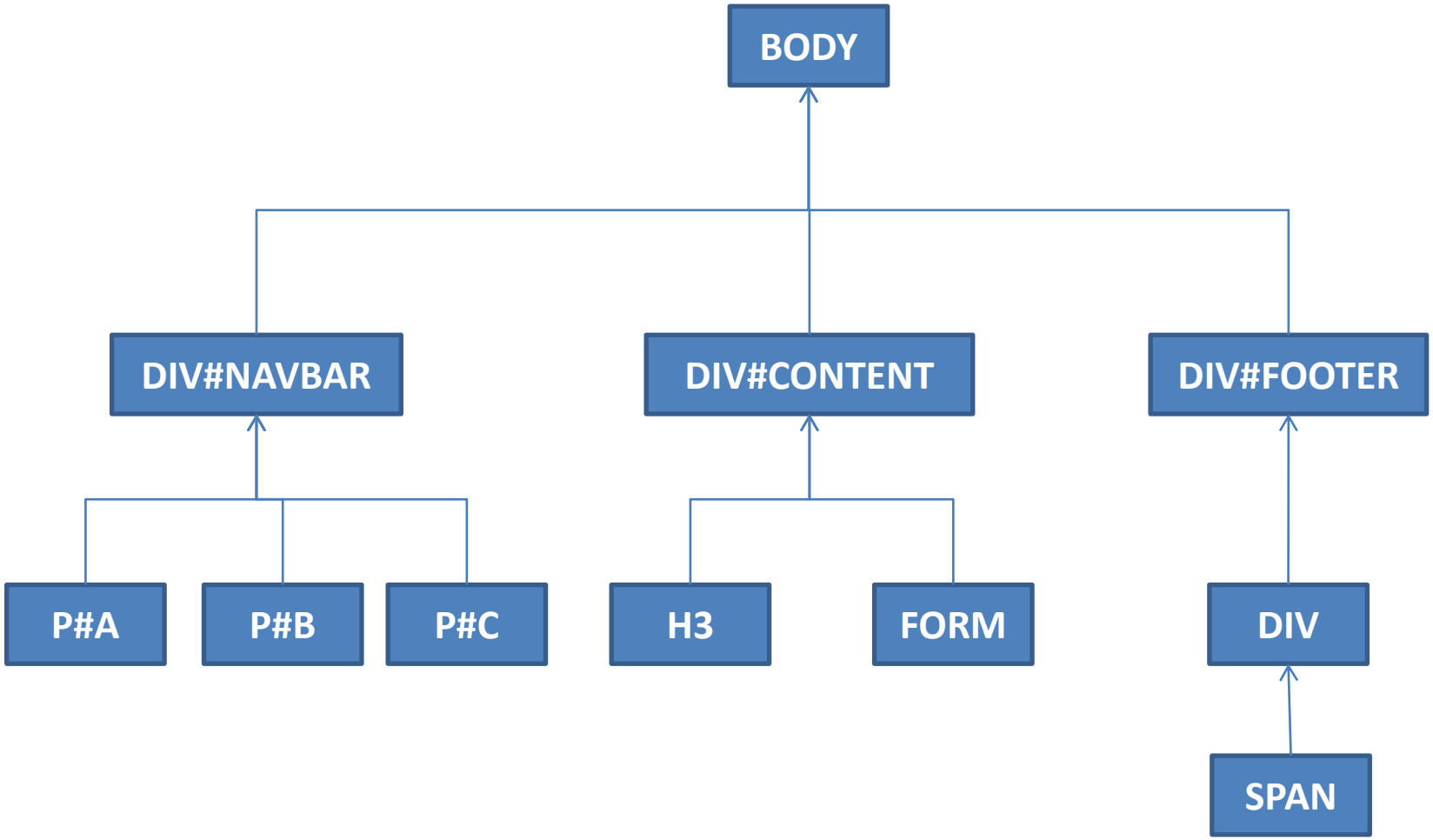
- Each selected Element can be a starting point for further DOM traversal
  - Traversal = Walking along a path
- An **element A** can be
  - Parent
  - Child
  - Direct Sibling (by having the same direct parent)
  - Indirect Sibling (by having the same indirect parent)

... To an **element B**

8. DOM Traversal

$(**E**).parent()
    -> gives the direct parent of **E**
$(**E**).parents()
    -> gives all parents of **E**
$(**E**).children()
    -> gives all children of **E**
$(**E1**).parentsUntil(**E2**)
    -> gives all parent elements from **E1** to **E2**
      except **E1** and **E2**
$(**E1**).closest(**E2**)
    -> either the closest sibling or the closest
      parent that matches E2

8. DOM Traversal



8. DOM Traversal

$(**E**).next()
    -> gives the next direct sibling of **E**
$(**E**).prev()
    -> gives the previous direct sibling of **E**
$(**E**).nextAll()
    -> gives **all** next direct siblings of **E**
$(**E**).prevAll()
    -> gives **all** previous direct siblings of **E**
$(**E**).siblings()
    -> gives **all** siblings, including **E**

8. DOM Traversal

$(**E**).nextAll().first()

-> gives the **first** direct sibling of **E**

$(**E**).nextAll().last()

-> gives the **last** direct sibling of **E**

9. Chaining

- Each Jquery selector returns an Object that methods, too
- Calling a methods returns an Object again (and again, ...)

$(‘div.hallo‘).parent().closest(‘p‘).find(‘h3.world‘)

10. Filter

- Define a function that filters out selected DOM elements
- If the function returns true, the element is considered

$(**E**).filter(function() { return true; })
-> considers all **E**, no filter

$(‘a‘).filter(function() {
if (this.hostname.indexOf(‘google‘) !== -1)
return true;
});
-> Selects all Links that point to Google

11. Native DOM Objects

- Jquery does not return native DOM Objects, since it returns a Jquery wrapper around it
- Nevertheless, Native DOM Objects can be extracted using Jquery

```
var el = $('div')[0];
var el = $('div').get(0);
```

12. Events

- User-Driven events
  - Clicks
  - Keyboard Actions
  - …
- System-Driven events
  - Page load complete
  - Video completes playing
  - …

13. Event Delegation

- When creating an event for an element **E**,

  E needs to exist
- What if we create another element **E2** for which we want to have the same event that is attached to **E**?

14. Plugins

- Awesome Jquery webapps are very often not made from scratch
  - They use **plugins** written by other coders
- Plugin?

14. Plugins

- Awesome Jquery webapps are very often not made from scratch
  - They use **plugins** written by other coders
- Plugin: **In Jquery**, a plugin is simply a new method you use to extend the Jquery prototype object
- Fictional examples:
  - $(‘div.hallo‘).flame()
  - $(‘div.hallo‘).hop()
  - $(‘div.hallo‘).makeCool()

14. Plugins

- Before you implement something by yourself, take a look at the plugins made by other developers
- Go to: https://plugins.jquery.com
- Look for the plugin „slick“ and try it out!

14. Plugins

- Create our own plugin?

14. Plugins

- Create our own plugin?
  - Extend the Jquery prototype object

14. Plugins

- Task:

  Create a visually appealing website that presents a topic which you like (hobby, interest, book, ...). The only requirements are that the website uses Jquery and one plugin from www.jquerycards.com of your choice.

  Prepare to present your result and your code!