

JavaScript: jQuery

Introduction

- jQuery is a cross-browser JavaScript library, which aims to simplify JavaScript programming
- It is free, open-source software
- 65% of the top 10 million highest-trafficked sites use jQuery (Wikipedia)
- Core features include:
 - DOM element selection and manipulation
 - Handling events
 - Creating animations
 - Ajax applications
- W3School jQuery references: <http://www.w3schools.com/jquery/>

Why jQuery?

JavaScript

```
function changeBackground(color) {  
  
    document.body.style.background=color;  
  
}
```

jQuery

```
$('body').css('background','#ccc');
```

Advantages of jQuery

- Separation of JavaScript and HTML
- Brevity and clarity
- Elimination of cross-browser incompatibilities
- Extensibility

(Source: Wikipedia)

Getting Started

- Download the development version from <https://code.jquery.com/jquery-3.1.1.min.js>
- Reference the jQuery library with the HTML `<script>` tag

```
<head>  
  <script src="jquery-3.1.1.min.js"></script>  
</head>
```

or

```
<head>  
  <script src="https://code.jquery.com/jquery-3.1.1.min.js"></script>  
</head>
```

Which version to use?

- Factors to consider:
 - Support in older browsers (IE 6-8)
 - File size (compressed vs. uncompressed)
 - Other packages in your web application that use jQuery

jQuery Syntax

- Basic Syntax

`$(selector:filter).action()`

\$ stands for
a jQuery
object

Selecting
elements

Filtering
selected
elements

A jQuery
action to be
performed
on the
element(s)

Basic Selectors

Selector	Selects
<code>\$("tagName")</code>	All <i>tagName</i> elements
<code>\$("tag1, tag2")</code>	All tag1 and tag2 elements
<code>\$("#idValue")</code>	The element with the <i>id value</i>
<code>\$(".className")</code>	All elements with class <i>className</i>
<code>\$("tag.className")</code>	<i>Tag</i> elements that have class <i>className</i>
<code>\$("*")</code>	All elements in the page
<code>\$(this)</code>	The element with the current focus

Basic Filters

Filter	Selects
:first	First of the given selector type
:last	Last of the given selector type
:focus	The element that currently has the focus
:contains(text)	Elements that contains text

Basic actions for manipulating HTML

Method	Explanation
<code>text("txt")</code>	Set or return the text content of selected elements
<code>html()</code>	Set or return the content of selected html elements (including tags)
<code>val()</code>	Set or return the value of a form input element
<code>append()</code> / <code>prepend()</code>	Insert content at the end/beginning of the selected elements (inside the selected element)
<code>after()</code> / <code>before()</code>	Insert content after/before the selected elements

Basic Events

- The document ready event fires after the document is finished loading (is ready)

```
$(document).ready(function(){  
    //code here//  
})
```

A simplified version
(recommended)



```
$(function(){  
    //code here//  
})
```

jQuery event actions

Event	Example
click()	<code>\$("p").click(function(){ ... })</code>
mouseenter()	<code>\$("p").mouseenter(function(){ ... })</code>
mouseleave()	<code>\$("p").mouseleave(function(){ ... })</code>
hover()	<code>\$("p").hover(function1(){...}, function2(){...})</code>
change()	<code>\$("input").change(function(){ ... })</code>
submit()	<code>\$("#target").submit(function(){ ... })</code>

jQuery Manipulating CSS

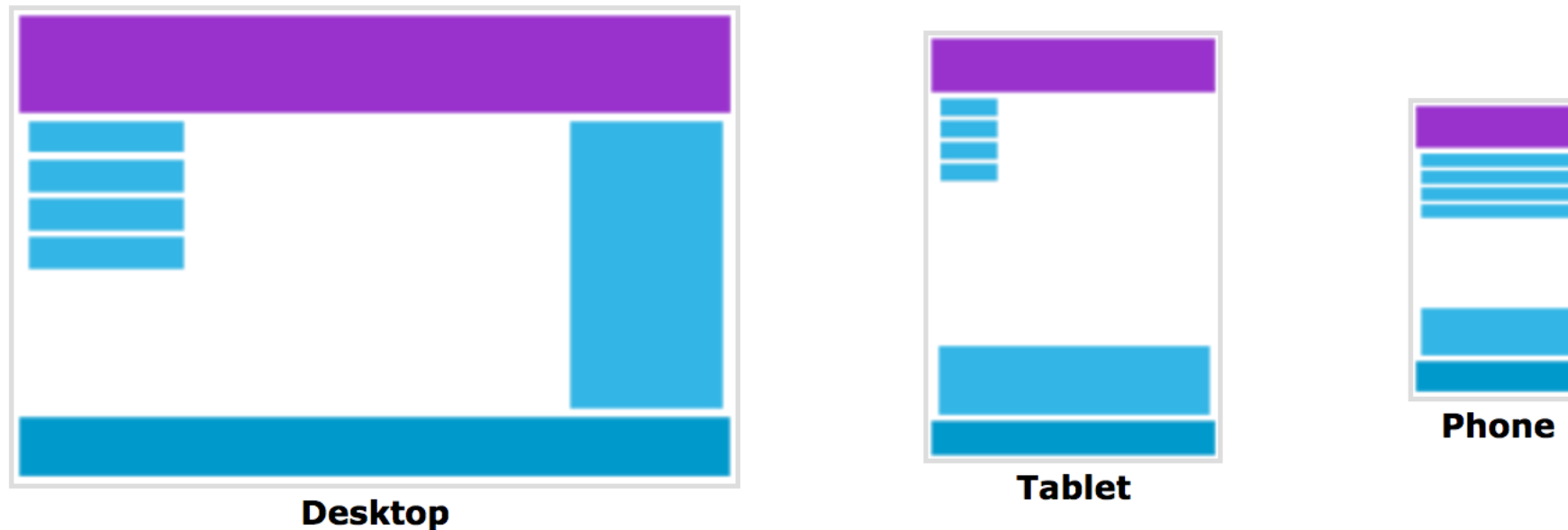
Method	Explanation
<code>addClass("className")</code>	Add class attributes with value=className to selected element(s)
<code>removeClass("className")</code>	Remove a specific class attribute from selected elements
<code>hasClass("className")</code>	Return True if the selected elements have the specified className
<code>css("css property")</code>	Return the css property value of the first selected element
<code>css("css property", "value")</code>	Set a specified css property with the given value for all selected elements

Demo: Rewrite the Running Clock Demo with jQuery

Responsive Web Design (RWD) and Bootstrap

What is Responsive Web Design (RWD)

- Responsive web design makes your web page look good and have the same user experience on all devices.
- Responsive web design uses only HTML and CSS to resize, hide, shrink, enlarge, or move the content to make a web page look good on any screen.
- It is a cost effective alternative to mobile applications.



- Source: https://www.w3schools.com/css/css_rwd_intro.asp

RWD Solutions

- Viewport
- CSS media queries
- Grid systems

Viewport

- The viewport is the user's visible area of a web page.
- The viewport varies depending on the size of the device screen
- By including the following <meta> viewport element in your web page, the browser will automatically sets the width of the page to the screen-width of the device:

`<meta name="viewport" content="width=device-width, initial-scale=1.0">`

- You should include the meta element in all your HTML pages from now on
- Potential problems that may cause bad UX:
 - An element can be wider than the viewport;
 - No guarantee that content will look good on all screens.

CSS Media Queries

- CSS media queries allow you to decide what a page should look like depending on the media type being used to display the page
- A media type can be screen, print, handheld, braille, and speech
- CSS styles that apply to all media types is declared by **@media all**
- Example:
- Disadvantages:
 - Lengthy code;
 - Can't cover all possible devices.
- Resource: <http://www.howtcreate.co.uk/tutorials/css/mediatypes>

```
<style type = "text/css">
  @media all
  {
    body { background-color: steelblue; }
    h1   { font-family: verdana, helvetica, sans-serif;
          color: palegreen; }
    p    { font-size: 12pt;
          color: white;
          font-family: arial, sans-serif; }
  } /* End @media all declaration. */
  @media print
  {
    body { background-color: white; }
    h1   { color: seagreen; }
    p    { font-size: 14pt;
          color: steelblue;
          font-family: "times new roman", times, serif; }
  } /* End @media print declaration. */
</style>
```

Grid Systems

- A fluid grid system is the most commonly used in RWD.
- For example, W3's CSS grid system is a fluid grid that supports 12 columns
- The columns will re-arrange automatically depending on the screen size
- Example:

```
<div class="w3-row">
  <div class="w3-col m4 l3">
    <p>12 columns on a small screen, 4 on a medium screen, and 3 on a large screen.
  </p>
</div>
<div class="w3-col m8 l9">
  <p>12 columns on a small screen, 8 on a medium screen, and 9 on a large screen.
</p>
</div>
</div>
```

- Source: https://www.w3schools.com/w3css/w3css_grid.asp

RWD and Bootstrap

- Bootstrap is an open-source frontend web framework, also known as UI toolkit, for designing web applications.
- The latest version is Bootstrap 4 (beta).
- We use Bootstrap 5.2.3.
- Download the Bootstrap framework from <https://getbootstrap.com/docs/5.2>

Demo: Responsive Design Using Bootstrap

- Getting started
 - Navigation bar (nav)
 - Dropdown menu
 - Grid system
 - Carousel
-
- Reference: <https://getbootstrap.com/docs/5.2>