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# HTML5 Overview

조영일



# 배경

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- ▶ 작업 기간
  - ▶ 2006년~2014년
- ▶ 취지
  - ▶ Browser Vendor들이 발의 (WHATWG)
    - ▶ Google, Microsoft, Apple, Mozilla, Opera, ...
  - ▶ 하위 호환성 보장하고
  - ▶ 스펙과 구현의 차이를 줄이는 표준을 만들어보자!
  - ▶ 나중에 W3C를 끼워주어 HTMLWG에 copyright가 존재하는 형태로 발표



# 자세한 스펙

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- ▶ 다음 문서를 참고할 것
  - ▶ <http://www.w3.org/TR/html5>
  - ▶ <http://developers.whatwg.org>



# 새로 도입되는 특징

---

- ▶ 언어 정의 기반으로 DOM을 사용
  - ▶ html/text
  - ▶ application/xhtml+xml, application/xml
- ▶ Browsing Context
  - ▶ 사용자에게 제공되는 document 객체를 둘러싼 환경
    - ▶ ex) window 객체에 속한 여러 document 중에 어떤 것이 active한가?
  - ▶ cross-document navigation, session history 개념 도입
- ▶ 콘텐츠 모델 개념
  - ▶ HTML4의 block/inline element 대체
  - ▶ ex. <article>
- ▶ 웹접근성 강화
  - ▶ global “hidden” attribute
  - ▶ <progress>, <meter>



# 새로 도입되는 특징

---

- ▶ menu/command element
- ▶ origin 개념의 도입을 통한 보안 강화
  - ▶ resource의 출처
  - ▶ ex) (scheme, host, port)
- ▶ Offline web application
- ▶ Editable content
  - ▶ “contenteditable” attribute
  - ▶ <http://html5demos.com/contenteditable>
- ▶ Drag & Drop
  - ▶ “draggable” attribute
  - ▶ <http://www.html5rocks.com/tutorials/dnd/basics/>
  - ▶ <http://html5demos.com/drag>



# 새로 도입되는 특징

---

- ▶ attributes in <iframe>

- ▶ sandbox

- ▶ set of extra restriction

- ▶ values

- allow-same-origin

- allow-top-navigation

- allow-forms

- allow-scripts

- ▶ seamless

- ▶ parent와 동일한 browsing context로 렌더링



# DOM 처리

---

- ▶ DOM tree 탐색
  - ▶ document.images
    - ▶ embeds, links, forms, scripts
  - ▶ document.getElementsByTagName(**ClassName**(classes))
  - ▶ **element**.getElementsByTagName(**ClassName**(classes))
  - ▶ Element.cssElementMap
- ▶ DOM 추가
  - ▶ document.open(...)
  - ▶ document.close()
  - ▶ document.write(...), document.writeln(...)
  - ▶ element.**outerHTML** = value
  - ▶ element.insertAdjacentHTML(...)



---

▶ HTML5 Elements





# <html>

---

- ▶ Root element
  - ▶ <!DOCTYPE html>
  - ▶ <html lang="en">



# <figure>

---

- ▶ to annotate illustrations, diagrams, photos, code, ...
  - ▶ <figure id="l4">
    - ▶ <figcaption>Listing 4. The primary core interface API declaration.</figcaption>
    - ▶ <pre>
    - ▶ <code>interface PrimaryCore { boolean verifyDataLine(); void sendData(in sequence<byte> data); void initSelfDestruct(); }</code>
    - ▶ </pre>
  - ▶ </figure>
  - ▶ <figure>
    - ▶ 
    - ▶ <figcaption>Exhibit A. The alleged <cite>rough copy</cite> comic.</figcaption>
  - ▶ </figure>



# <section>

---

- ▶ Generic section of document or application
- ▶ typically with heading
  - ▶ <section>
    - ▶ <h1>Red Delicious</h1>
    - ▶ <p>These bright red apples are the most common found in many supermarkets.</p>
  - ▶ </section>



# <article>

---

- ▶ for each post, to mark up the threading
  - ▶ <article>
    - ▶ <h1> <a href="http://bacon.ex.com/?blog=109431"> Bacon on a crowbar </a> </h1>
    - ▶ <article>
      - <header> <strong>t3yw</strong> 12 points 1 hour ago</header>
      - <p>I bet a narwhal would love that.</p>
      - <footer> <a href="?pid=29578">permalink</a> </footer>
    - ▶ </article>
  - ▶ </article>



# <aside>

---

- ▶ section of page
- ▶ tangentially related to other side content
  - ▶ <aside>
    - ▶ <h1>Switzerland</h1>
    - ▶ <p>Switzerland, a land-locked country in the middle of geographic Europe, has not joined the geopolitical European Union, though it is a signatory to a number of European treaties.</p>
  - ▶ </aside>



# <hgroup>

---

- ▶ heading of section
  - ▶ <hgroup>
    - ▶ <h1>**Dr. Strangelove**</h1>
    - ▶ <h2>Or: How I Learned to Stop Worrying and Love the Bomb</h2>
  - ▶ </hgroup>



# <header>

---

- ▶ group of introductory or navigational aids
  - ▶ <header>
    - ▶ <hgroup>
      - <h1>Scalable Vector Graphics (SVG) 1.2</h1>
      - <h2>W3C Working Draft 27 October 2004</h2>
    - ▶ </hgroup>
    - ▶ <dl>
      - <dt>This version:</dt>
      - <dd><a href="http://www.w3.org/TR/2004/WD-SVG12-20041027/">http://www.w3.org/TR/2004/WD-SVG12-20041027/</a></dd>
      - <dt>Previous version:</dt>
      - <dd><a href="http://www.w3.org/TR/2004/WD-SVG12-20040510/">http://www.w3.org/TR/2004/WD-SVG12-20040510/</a></dd>
    - ▶ </dl>
  - ▶ </header>



# <footer>

---

- ▶ information about writer, related documents, copyright, ...
  - ▶ <ARTICLE>
    - ▶ <H1>My Favorite Trains</H1>
    - ▶ <P>I love my trains. My favorite train of all time is a Köf.</P>
    - ▶ <P>It is fun to see them pull some coal cars because they look so dwarfed in comparison.</P>
    - ▶ <FOOTER>
      - <P>Published <TIME PUBDATE DATETIME="2009-09-15T14:54-07:00"></TIME></P>
    - ▶ </FOOTER>
  - ▶ </ARTICLE>
  - ▶ <FOOTER>
    - ▶ <NAV>
      - <P><A HREF="/credits.html">Credits</A> — <A HREF="/tos.html">Terms of Service</A> — <A HREF="/index.html">Blog Index</A></P>
    - ▶ </NAV>
    - ▶ <P>Copyright © 2009 Gordon Freeman</P>
  - ▶ </FOOTER>





# <nav>

---

- ▶ section containing navigation links
  - ▶ <nav>
    - ▶ <ul>
      - <li><a href="/">Home</a></li>
      - <li><a href="/events">Current Events</a></li>
      - ...more...
    - ▶ </ul>
  - ▶ </nav>



# <small>

---

- ▶ Side comments
  - ▶ <dl>
  - ▶ <dt>Single room
  - ▶ <dd>199 € <small>breakfast included, VAT not included</small>
  - ▶ <dt>Double room
  - ▶ <dd>239 € <small>breakfast included, VAT not included</small>
  - ▶ </dl>



<s>

---

- ▶ No longer accurate nor relevant contents
  - ▶ <p>Buy our Iced Tea and Lemonade!</p>
  - ▶ <p><s>Recommended retail price: \$3.99 per bottle</s></p>
  - ▶ <p><strong>Now selling for just \$2.99 a bottle!</strong></p>



## <cite>

---

- ▶ Title of a work
  - ▶ <p>According to the Wikipedia article **<cite>HTML</cite>**, as it stood in mid-February 2008, leaving attribute values unquoted is unsafe. This is obviously an over-simplification.</p>
- ▶ A key part of any citation
- ▶ Not a quote



<q>

---

- ▶ Phrasing content quoted from another source
  - ▶ <p>The man said <q>Things that are impossible just take longer</q>. I disagreed with him.</p>



## <dfn>, <abbr>

---

- ▶ Definition of a term & abbreviation
  - ▶ `<p>The <dfn id=gdo><abbr title="Garage Door Opener">GDO</abbr></dfn> is a device that allows off-world teams to open the iris.</p>`
  - ▶ `<!-- ... later in the document: -->`
  - ▶ `<p>Teal'c activated his <abbr title="Garage Door Opener">GDO</abbr> and so Hammond ordered the iris to be opened.</p>`



# <time>

---

- ▶ Date or time
  - ▶ `<time class="dtstart" datetime="2007-10-05">October 5</time>` - `<time class="dtend" datetime="2007-10-20">19</time>`
- ▶ `time.valueAsDate`
  - ▶ in milliseconds



# <math>, \dots, <var>

---

- ▶ Mathematical expression with variables
  - ▶ *<figure>*
    - ▶ *<math>*
      - *<mi>a</mi> <mo>=</mo>*
      - *<msqrt>*
        - *<msup><mi>b</mi><mn>2</mn></msup>*
        - *<mi>+</mi>*
        - *<msup><mi>c</mi><mn>2</mn></msup>*
      - *</msqrt>*
    - ▶ *</math>*
    - ▶ *<figcaption> Using Pythagoras' theorem to solve for the hypotenuse <var>a</var> of a triangle with sides <var>b</var> and <var>c</var> </figcaption>*
  - ▶ *</figure>*





## < samp >

---

- ▶ Sample from a program
  - ▶ < p >The computer said < **samp** >Too much cheese in tray two< /**samp** > but I didn't know what that meant.< /p >



## <kbd>

---

- ▶ User input in keyboard or voice
  - ▶ <p>To make George eat an apple, press  
<**kbd**> <**kbd**>Shift</**kbd**> + <**kbd**>F3</**kbd**> </**kbd**> </  
p>



# <mark>

---

- ▶ text marked or highlighted
  - ▶ `<p lang="en-US">Consider the following quote:</p>`
  - ▶ `<blockquote lang="en-GB">`
  - ▶ `<p>Look around and you will find, no-one's really <mark>colour</mark> blind.</p>`
  - ▶ `</blockquote>`
  - ▶ `<p lang="en-US">As we can tell from the <em>spelling</em> of the word, the person writing this quote is clearly not American.</p>`



# <ruby>, <rt>, <rp>

---

- ▶ 동아시아 서체를 위한 ruby annotation

- ▶ <ruby>漢<rt>かん</rt>字<rt>じ</rt></ruby>

かん じ

... 漢字 ...

- ▶ <ruby>汉<rt>hàn</rt>字<rt>zì</rt></ruby>

hàn zì

... 汉字 ...

- ▶ <ruby>漢 <rp>(</rp><rt>かん</rt><rp>)</rp> 字  
<rp>(</rp><rt>じ</rt><rp>)</rp> </ruby>



# <bdi>, <bdo>

---

- ▶ Bidirectional text formatting

- ▶ <ul>

- ▶ <li>User <bdi>jcranmer</bdi>: 12 posts.

- ▶ <li>User <bdi>hober</bdi>: 5 posts.

- ▶ <li>User <bdi> إيان </bdi>: 3 posts.

- ▶ </ul>

- ▶ The proposal is to write English, but in reverse order. "Juice" would become "<bdo dir=rtl>Juice</bdo>"



# <wbr>

---

- ▶ Line break opportunity

- ▶ `<p>So then he pointed at the tiger and screamed "there<wbr>is<wbr>no<wbr>way<wbr>you<wbr>are<wbr>ever<wbr>going<wbr>to<wbr>catch<wbr>me"!</p>`



# <audio>

---

- ▶ audio player
  - ▶ [http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5\\_audio\\_loop](http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5_audio_loop)
- ▶ attributes
  - ▶ autoplay
  - ▶ controls: 컨트롤 표시
  - ▶ loop
  - ▶ preload: 미리 스트림 데이터를 받아놓을 수 있음
  - ▶ src



# <video>

---

- ▶ video player
  - ▶ [http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5\\_video\\_poster](http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5_video_poster)
  - ▶ 예제에서 poster 애트리뷰트를 지워볼 것
- ▶ attributes
  - ▶ audio: 음성 소거(muted)
  - ▶ autoplay
  - ▶ controls
  - ▶ height, width
  - ▶ loop
  - ▶ poster: 비디오를 대표하는 이미지 지정
  - ▶ preload
  - ▶ src





# <progress>

---

- ▶ progressive bar

- ▶ [http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5\\_progress\\_max](http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5_progress_max)

- ▶ attributes

- ▶ max

- ▶ value



# <meter>

---

- ▶ meter bar

- ▶ [http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5\\_meter](http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5_meter)
- ▶ [http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5\\_meter\\_high\\_low\\_optimum](http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5_meter_high_low_optimum)

- ▶ attributes

- ▶ form
- ▶ high, low
- ▶ max, min: 0.0~1.0
- ▶ optimum
- ▶ value



# <canvas>

---

- ▶ 그림판

- ▶ [http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5\\_canvas\\_height\\_width](http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5_canvas_height_width)

- ▶ attributes

- ▶ height

- ▶ width



# <menu>

---

- ▶ 리스트 형태의 메뉴
  - ▶ [http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5\\_menu\\_label](http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5_menu_label)
- ▶ attributes
  - ▶ label: 화면에 표시되는 이름
  - ▶ type: context/toolbar/list



# <command>

---

- ▶ command button
- ▶ 일반 메뉴 항목 또는 체크박스, 라디오버튼 형태
  - ▶ [http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5\\_command\\_radiogroup](http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5_command_radiogroup)
- ▶ attributes
  - ▶ checked
  - ▶ disabled
  - ▶ icon
  - ▶ label
  - ▶ radiogroup
  - ▶ type: checkbox/command/radio



# <details>, <summary>

---

- ▶ 요약과 상세설명

- ▶ [http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5\\_details\\_open](http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5_details_open)

- ▶ attributes

- ▶ open: should be visible



# <datalist>

---

- ▶ select box + input box
  - ▶ [http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5\\_datalist](http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5_datalist)



# <keygen>

---

- ▶ key pair generator field
  - ▶ [http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5\\_keygen](http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5_keygen)
- ▶ private key is stored, public key is sent to server
- ▶ attributes
  - ▶ autofocus
  - ▶ challenge
  - ▶ disabled
  - ▶ form
  - ▶ keytype: rsa/other
  - ▶ name





# <output>

---

- ▶ result of calculation
  - ▶ [http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5\\_output](http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5_output)
- ▶ attributes
  - ▶ for: id
  - ▶ form
  - ▶ name



# <input>

---

## ▶ 새로운 속성

- ▶ tel
- ▶ search
- ▶ url
- ▶ email
- ▶ datetime, date, month, time, datetime-local
- ▶ number
- ▶ range
- ▶ color



# <map>, <area>

---

- ▶ image map

- ▶ [http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5\\_area](http://www.w3schools.com/html5/tryit.asp?filename=tryhtml5_area)

- ▶ attributes of map

- ▶ name

- ▶ attributes of area

- ▶ alt, href, hreflang, type, target

- ▶ coords

- ▶ media: projection/print/screen/..., and/or/not 조합

- ▶ rel: 링크와 문서와의 관계 표현

- ▶ shape: rect(angular)/circ(ular)/poly(gon)

---



# <ins>

---

- ▶ addition to the document
  - ▶ <aside>
    - ▶ <ins datetime="2005-03-16T00:00Z">
      - <p> I like fruit. </p>
    - ▶ </ins>
    - ▶ <ins datetime="2005-03-16T00:00Z">
      - Apples are <em>tasty</em>.
    - ▶ </ins>
    - ▶ <ins datetime="2007-12-19T00:00Z">
      - So are pears.
    - ▶ </ins>
  - ▶ </aside>



# <del>

---

- ▶ removal from the document

- ▶ <h1>To Do</h1>

- ▶ <ul>

- ▶ <li>Empty the dishwasher</li>

- ▶ <li><del datetime="2009-10-11T01:25-07:00">Watch Walter Lewin's lectures</del></li>

- ▶ <li><del datetime="2009-10-10T23:38-07:00">Download more tracks</del></li>

- ▶ <li>Buy a printer</li>

- ▶ </ul>



# 달라진 elements

---

- ▶ <a> without href
- ▶ <address>
- ▶ <b>
- ▶ <hr>
- ▶ <i>
- ▶ <label>
- ▶ <menu>
- ▶ <small>
- ▶ <strong>



# 빠진 elements

---

- ▶ <basefont>
- ▶ <big>
- ▶ <center>
- ▶ <font>
- ▶ <s> ???
- ▶ <strike>
- ▶ <tt>
- ▶ <u>
- ▶ <frame>
- ▶ <frameset>
- ▶ <noframes>
- ▶ <acronym> → <abbr>
- ▶ <applet> → <object>
- ▶ <isindex> → <form>
- ▶ <dir> → <ul>



---

▶ HTML5 Attributes

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# Global Attributes

---

- ▶ class
- ▶ id
- ▶ title
- ▶ contenteditable
- ▶ contextmenu
- ▶ draggable
- ▶ dropzone



# Global Attributes

---

- ▶ accesskey
  - ▶ [http://w3schools.com/html5/tryit.asp?filename=tryhtml5\\_global\\_accesskey](http://w3schools.com/html5/tryit.asp?filename=tryhtml5_global_accesskey)
- ▶ dir
  - ▶ [http://w3schools.com/html5/tryit.asp?filename=tryhtml5\\_global\\_dir](http://w3schools.com/html5/tryit.asp?filename=tryhtml5_global_dir)
- ▶ hidden
  - ▶ [http://w3schools.com/html5/tryit.asp?filename=tryhtml5\\_global\\_hidden](http://w3schools.com/html5/tryit.asp?filename=tryhtml5_global_hidden)
- ▶ lang
  - ▶ [http://w3schools.com/html5/tryit.asp?filename=tryhtml5\\_global\\_lang](http://w3schools.com/html5/tryit.asp?filename=tryhtml5_global_lang)
- ▶ spellcheck
  - ▶ [http://w3schools.com/html5/tryit.asp?filename=tryhtml5\\_global\\_spellcheckstyle](http://w3schools.com/html5/tryit.asp?filename=tryhtml5_global_spellcheckstyle)
- ▶ tabindex
  - ▶ [http://w3schools.com/html5/tryit.asp?filename=tryhtml5\\_global\\_tabindex](http://w3schools.com/html5/tryit.asp?filename=tryhtml5_global_tabindex)



---

▶ HTML5 Events

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# Events

---

- ▶ Window Event Attributes
  - ▶ onbeforeprint/afterprint
  - ▶ onfocus/blur
  - ▶ onhaschange
    - ▶ when the document has change
  - ▶ onload/unload/beforeunload
    - ▶ document loading
  - ▶ onmessage
    - ▶ when the window becomes visible
  - ▶ ononline/offline
  - ▶ onpageshow
  - ▶ onpopstate
    - ▶ when the window's history changes
  - ▶ onredo/undo
  - ▶ onresize
  - ▶ onstorage



# Events

---

- ▶ Form Events
  - ▶ onfocus/blur
  - ▶ onchange/formchange
    - ▶ element or form
  - ▶ oncontextmenu
  - ▶ oninput/forminput
    - ▶ element or form
  - ▶ oninvalid
  - ▶ onselect
  - ▶ onsubmit



# Events

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- ▶ Keyboard Events

- ▶ onkeydown/press/up

- ▶ Mouse Events

- ▶ onclick/dbclick

- ▶ ondrag/dragend/dragleave/dragover/dragstart/drop

- ▶ onmousedown/move/out/over/up/wheel

- ▶ onscroll

- ▶ scrollbar



# Events

---

## ▶ Media Events

- ▶ onloadstart/onpause/play/playing/ended/progress/load eddata/loadedmetadata
- ▶ onabort/error/emptied/stalled/suspend/waiting/seeked /seeking
- ▶ oncanplay/canplythrough
- ▶ ondurationchange/volumechange/readystatechange/ra techange
- ▶ ontimeupdate



---

- ▶ HTML5 Technologies





# Offline

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- ▶ Application Cache
- ▶ Local Storage
- ▶ Web SQL & Indexed Database
- ▶ Online/Offline Events
- ▶ <http://www.html5rocks.com/features/offline>



# Offline Application Cache

---

## ▶ 시계

- ▶ `<!-- clock.html -- >`

- ▶ `<head>`

- `<title>Clock</title> <script src="clock.js"></script> <link rel="stylesheet" href="clock.css">`

- ▶ `</head>`

- ▶ `<body>`

- `<p>The time is: <output id="clock"></output></p>`

- ▶ `</body>`

- ▶ `/* clock.css */`

- ▶ `output { font: 2em sans-serif; }`

- ▶ `/* clock.js */`

- ▶ `setTimeout(function () { document.getElementById('clock').value = new Date(); }, 1000);`



# Offline Application Cache

---

- ▶ Offline이 되면 cache가 남아 있어도 에러 발생
- ▶ CACHE MANIFEST
  - ▶ clock.html
  - ▶ clock.css
  - ▶ clock.js
- ▶ `<html manifest="clock.appcache">`



# Web Storage

---

- ▶ key-value pair를 저장하는 공간
  - ▶ 여태까지는 cookie를 많이 이용해서 이런 정보를 저장했지만, 제한이나 부작용이 많음
- ▶ 종류
  - ▶ sessionStorage
    - ▶ for multiple transactions in different windows
  - ▶ localStorage
    - ▶ for multiple windows beyond the current session
- ▶ API
  - ▶ window.-Storage.**setItem**(key, value)
  - ▶ window.-Storage.**getItem**(key, value)
- ▶ <http://html5demos.com/storage>
- ▶ <http://dev.xguru.net/html5/#web-storage>





# Indexed Database

---

- ▶ key-value storage
- ▶ Web SQL Database가 표준으로 채택되지 못한 상황에서 대안으로 떠오르고 있는 저장 방식
- ▶ API
  - ▶ `conn = db.indexedDB.open(name, ...);`
  - ▶ `store = conn.createObjectStore(name, ...);`
  - ▶ `index = store.createIndex(name, keyPath, ...);`
  - ▶ `cursor = index.openCursor(range, direction);`
  - ▶ `cursor.key; cursor.value; cursor.continue();`
  - ▶ `cursor.close();`



# Offline & Events

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- ▶ API
  - ▶ online event
  - ▶ navigator.online
- ▶ <http://html5demos.com/offline>
- ▶ <http://html5demos.com/offline-events>



# IO & Data Management

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- ▶ Dataset
- ▶ File
- ▶ History





# Dataset

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- ▶ DOM을 제어하여 data set에 접근
- ▶ “data-” prefix를 가지는 속성의 값을 읽어내거나 변경할 수 있음
- ▶ <http://html5demos.com/dataset>
- ▶ <http://dev.xguru.net/html5/#custom-data>



# File API

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- ▶ **FileList**

- ▶ <input type="file">로 업로드된 파일을 javascript array로 사용

- ▶ **Blob**

- ▶ raw data를 바이트 구간으로 잘라낼 수 있는 객체
- ▶ slice(startbyte, endbyte)

- ▶ **File**

- ▶ FileList의 개별 인스턴스, Blob을 상속
- ▶ name/lastModifiedDate



# File API

---

## ▶ FileReader

### ▶ asynchronous file reader

- ▶ readAsArrayBuffer()
- ▶ readAsBinaryString()
- ▶ readAsText()
- ▶ readAsDataURL()

### ▶ upload 뿐만 아니라 drag-in 방식의 구현에도 사용가능

## ▶ FileError/FileException

- ▶ NOT\_FOUND / SECURITY / ABORT / NOT\_READABLE / ENCODING

### ▶ <http://html5demos.com/file-api>

### ▶ <http://www.html5rocks.com/tutorials/file/dndfiles>

---



# History

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- ▶ 세션 히스토리
  - ▶ browsing context에 포함된 문서들의 연속
  - ▶ 활용 예: 동영상을 보다가 다음 페이지로 갔다가 되돌아와도 재생되던 그 위치부터 다시 재생할 수 있음
- ▶ API
  - ▶ window.history
  - ▶ history.go()
  - ▶ history.back() / forward()
  - ▶ history.pushState() / replaceState()
- ▶ <http://html5demos.com/history>



# Communication

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- ▶ GeoLocation
- ▶ WebSocket
- ▶ PostMessage
- ▶ WebWorkers



# GeoLocation

---

- ▶ API
  - ▶ navigator.geolocation
  - ▶ geolocation.getCurrentPosition(callback)
  - ▶ geolocation.watchPosition(callback)
    - ▶ requests repeated position updates
  - ▶ geolocation.clearWatch()
- ▶ <http://html5demos.com/geo>
- ▶ <http://dev.xguru.net/html5/#geolocation>



# WebSocket

---

- ▶ API

- ▶ `onopen()`, `onclose()`, `onmessage()`, `onerror()`
- ▶ `send()`
- ▶ `close()`

- ▶ <http://html5demos.com/web-socket>

- ▶ <http://dev.xguru.net/html5/#web-sockets>



# WebSocket

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- ▶ EasyWebSocket
  - ▶ <http://easywebsocket.org/>





# PostMessage

---

- ▶ cross-document messaging
- ▶ API
  - ▶ sender
    - ▶ `window.postMessage(message, targetOrigin)`
  - ▶ receiver
    - ▶ MessageEvent handler (`onmessage` or `'message'`)
    - ▶ `event.origin`: sender's address
- ▶ <http://html5demos.com/postmessage>
- ▶ <http://html5demos.com/postmessage2>



# PostMessage

---

- ▶ Channel Messaging
  - ▶ cross-browsing contexts messaging
  - ▶ MessageChannel은 2개의 MessagePort를 이용한 양방향 pipe로 구성됨
- ▶ API
  - ▶ `port.postMessage(message, ports)`
  - ▶ `port.start()`
  - ▶ `port.close()`



# WebWorkers

---

- ▶ API for running background scripts
- ▶ Characteristics
  - ▶ long-running
  - ▶ relatively heavy-weight
  - ▶ high start-up performance cost
  - ▶ high per-instance memory cost
- ▶ Example
  - ▶ <http://www.whatwg.org/demos/workers/primes/page.html>



# WebWorkers

---

- ▶ page.html

- ▶ `<p>The highest prime number discovered so far is:  
<output id="result"></output></p>`
- ▶ `<script>`
  - ▶ `var worker = new Worker('worker.js');`
  - ▶ `worker.onmessage = function (event) {`
    - ▣ `document.getElementById('result').textContent = event.data;`
  - ▶ `};`
- ▶ `</script>`



# WebWorkers

---

- ▶ worker.js
  - ▶ var n = 1;
  - ▶ search: while (true) {
    - ▶ n += 1;
    - ▶ for (var i = 2; i <= Math.sqrt(n); i += 1)
      - if (n % i == 0)
        - continue search;
    - ▶ // found a prime!
    - ▶ postMessage(n);
  - ▶ }



# WebWorkers

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- ▶ <http://html5demos.com/worker>
- ▶ <http://html5demos.com/non-worker>



# UI

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- ▶ Drag & Drop
- ▶ CSS3 features
- ▶ Graphics



# Drag & Drop

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- ▶ draggable 속성이 부여된 element를 drag & drop하는 기능
- ▶ 이벤트
  - ▶ drag , drop , dragstart , dragend , dragenter , dragleave , dragover
  - ▶ 멀티 터치나 제스처에 대한 이벤트도 구현 중
- ▶ 구현 방법
  - ▶ dragstart할 때, e.dataTransfer.**setData()**
  - ▶ drop할 때, e.dataTransfer.**getData()**
- ▶ <http://html5demos.com/drag>
- ▶ <http://dev.xguru.net/html5/#drag-and-drop>





# CSS3 Features

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- ▶ General Presentation

- ▶ <http://dev.xguru.net/html5/#css3-title>

- ▶ Transition

- ▶ <http://dev.xguru.net/html5/#css-transitions>

- ▶ 2D Transformation

- ▶ <http://dev.xguru.net/html5/#css-transforms>

- ▶ 3D Transformation

- ▶ <http://www.html5rocks.com/features/presentation>



# CSS3 Features

---

## ▶ WebFonts

### ▶ @font-face {

▶ font-family: 'Tangerine';

▶ src: url('tangerine.ttf');

▶ }

### ▶ Google Font API & Fonts Directory

▶ [http://code.google.com/intl/ko-KR/apis/webfonts/docs/getting\\_started.html#Quick\\_Start](http://code.google.com/intl/ko-KR/apis/webfonts/docs/getting_started.html#Quick_Start)

▶ <http://www.google.com/webfonts>



# Graphics

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- ▶ 2D Canvas

- ▶ `<canvas>`

- ▶ WebGL

- ▶ <http://www.khronos.org/webgl/wiki/Tutorial>
  - ▶ <http://developersnote.blogspot.com/2010/11/webgl-tutorial-lesson-0.html>
  - ▶ [http://learningwebgl.com/blog/?category\\_name=lessons](http://learningwebgl.com/blog/?category_name=lessons)

- ▶ SVG

- ▶ <http://www.w3schools.com/svg/default.asp>

- ▶ SMIL

- ▶ <http://www.w3schools.com/smil/default.asp>



# 확장 기능

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- ▶ 스펙에 포함되는 다양한 기능
  - ▶ Server-sent Events
  - ▶ Media Type Sniffing
  - ▶ MathML
  - ▶ CSS는 계속 진화 중



# References

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- ▶ [http://www.w3schools.com/html5/html5\\_reference.asp](http://www.w3schools.com/html5/html5_reference.asp)
- ▶ <http://www.wacapps.net/web/portal/wac-2.0-spec>
- ▶ <http://www.smashingmagazine.com/2011/02/11/the-bright-near-future-of-css/>
- ▶ <http://code.google.com/p/svgweb/>
- ▶ <http://www.alistapart.com/articles/cross-platform-scalable-vector-graphics-with-svgweb/>
- ▶ <http://www.alistapart.com/articles/svg-with-a-little-help-from-raphael/>



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▶ End of Presentations

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▶