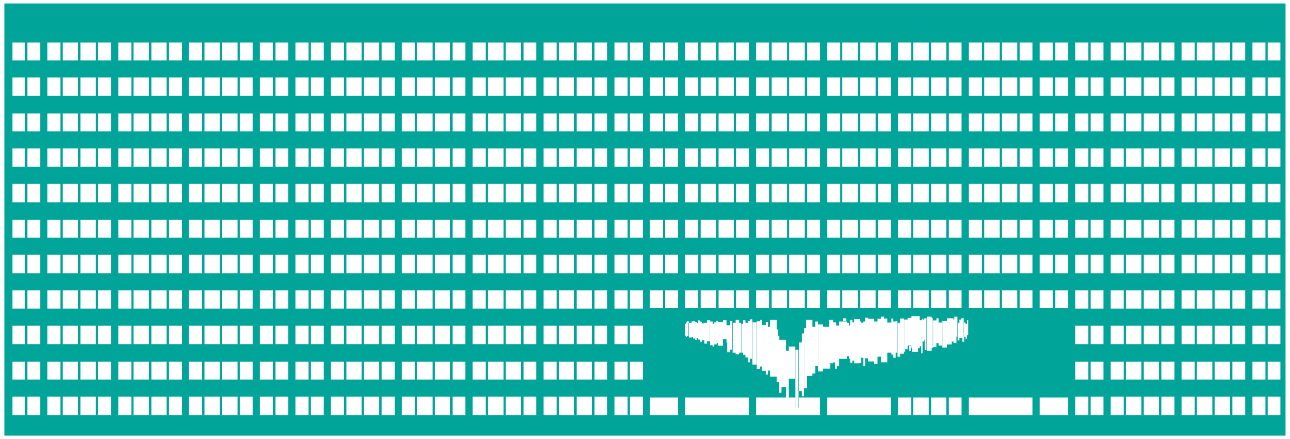
VSB TECHNICAL UNIVERSITY OF OSTRAVA | FACULTY OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE | DEPARTMENT OF COMPUTER SCIENCE

API detection AJAX (JSON) & SSE



TAMZ 1

Lab 6

See: http://diveintohtml5.info/detect.html

Platform & Device fragmentation

- Not all APIs and HTML-5 features are available on all platforms and/or devices
  - i.e. Android browser < Android 4.4 → no WebSockets
  - Unlike in JavaME, we can emulate some APIs in other ways → we use polyfills (web shims) in JavaScript instead
    - shim → application API compatibility workaround library
    - Apache Cordova may add native code and JS interface
  - Some sites compile compatibility and workaround lists
    - http://html5please.com/, http://caniuse.com/
- We need either to ignore missing APIs (disable parts of code) or provide a workaround
  - Server supplies browser-adjusted code directly
  - Detection is done on Client through JavaScript

API Detection on server

- Done by analyzing the sent HTTP headers and cookies
    - User-Agent: header for browser detection
        - e.g. in PHP: $_SERVER['HTTP_USER_AGENT'];
    - Accept-Language: detect user's prefered languages
        - e.g. to select first offered language in PHP:
          $lng = substr($_SERVER['HTTP_ACCEPT_LANGUAGE'], 0, 2);
    - Accept-Charset: character sets in browser (nowadays: */*)
- May be used to supply required code modifications without client-side processing/detection
    - e.g. we can supply polyfills directly
- Some projects exist for existing frameworks
    - UA-parser framework for many programming languages, to extract information normally available in JS BOM
        - https://github.com/tobie/ua-parser
    - e.g. Detector (Beta) for PHP/JS, which is working with Modernizr (see later)

API Detection in JavaScript

1. Check if given API object is present:
   - if (typeof(Storage) !== "undefined") { … };
2. Check if a method is implemented/propery is present:
   - if(window.addEventListener) { … }
   - return localStorage != null
3. Check if given element is supported in a method:
   - var elem = document.createElement('canvas');
   - return !!elem.getContext; // !! – force true/false value
4. Check if some API which extends BOM is present:
   - if ('geolocation' in navigator) { … }//or navigator.geolocation
5. Check if a built-in verification function returns true/false
   - if (supports_video()) { … }
6. Check for input type support inside a function:
   - var i = document.createElement("input");
     i.setAttribute("type", "color");
     return i.type !== "text";

Is there an easier feature detection?

- Yes, there is – the **Modernizr** http://www.modernizr.com/
  - In <head> section of <html class="no-js"> add e.g.: <script src="js/modernizr.dev.js"></script>
  - In your JavaScript code, you just write **Modernizr.feature**:
    - if(Modernizr.geolocation) { … }
    - if (Modernizr.input.placeholder) { … }
    - if (!Modernizr.inputtypes.date) { … }
  - It is also possible to use Modernizr classes inside of CSS:
    - MY_SELECTOR { … }
      .detected_class MY_SELECTOR { … }
  - Conditional script loading is possible (uses yepnope.js)
  - If you need detection of non-core features, you can use builder: http://modernizr.com/download/
- Tests to show the features may be executed in the browser, URL: https://browserleaks.com/features

Extending Modernizr

- You can write your own detection routines/tests, e.g.

```
define(['Modernizr'], function( Modernizr ) {
  Modernizr.addTest('eventsource', 'EventSource' in window);
});
```

- You can conditionally load external script:
  - Polyfills (but some work only on desktop) available at:
    https://github.com/Modernizr/Modernizr/wiki/HTML5-Cross-browser-Polyfills
  - Usage of loading (includes yepnope.js):

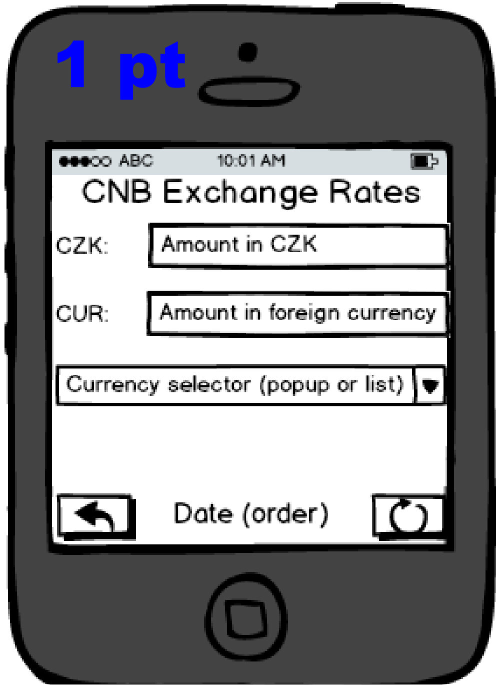
```
Modernizr.load({
  test: Modernizr.svg,
  yep : 'js/svg_images.js',
  nope: 'js/png_images_polyfill.js',
  both: [ 'js/script1.js', 'js/script2.js' ],
  complete: function () { … }
});
```

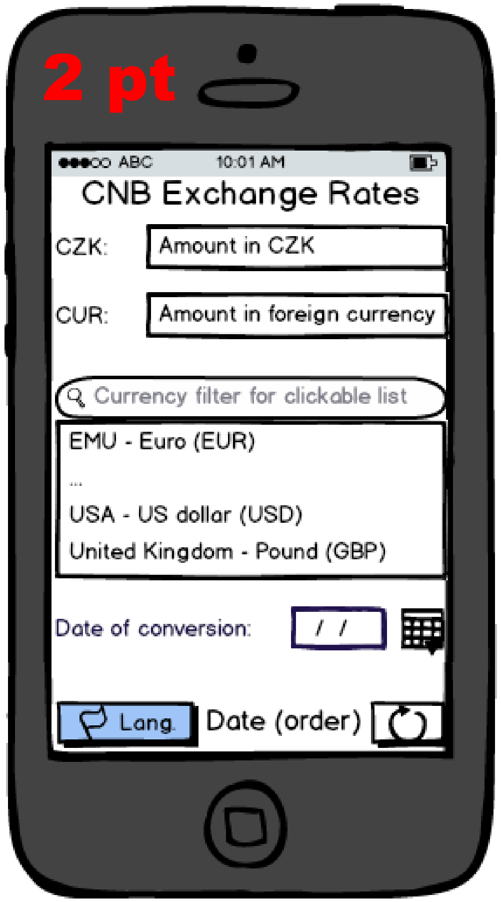
- Detection results: **true**, **false**, "probably" (codec), "maybe"

Task (1-2.5 points)

Create application which will convert currencies on-the-fly (when something changes) based on current exchange rates provided by CNB (1pt):

- URL for downloading JSON(P) data to use: http://linedu.vsb.cz/~mor03/TAMZ/cnb_json.php
  - Optional arguments (**+1pt** when using date, lang and list with buttons to select currency):
    - date=YYYY-MM-DD – which date to use
    - lang={en|cs} – language, def.: browser
    - sse={y|n} – generates SSE event stream instead of JSON (**+0.5b** if used as well)
    - callback=*function* – JSONP callback
- The application reacts each time input changes
  - The currency label CUR: changes to current currency **code**, the selection should list **country** and **curr**ency names (**_label**)
  - Exchange rate (CZK ↔ CUR) = **rate/unit**





Example of received JSON data

```
date: "2019-03-18",
order: "54",
data: [
{
    country_label: "Australia",
    curr_label: "dollar",
    unit: "1",
    code: "AUD",
    rate: "16.028"
}, … ],
labels: ["Country", "Currency", "Amount", "Code", "Rate"],
lang: "en", cached: false }
```