Martin B. Nielsen, MBNDATA

Meetup February 2019

APEX Front end development

Ballerup, 2019

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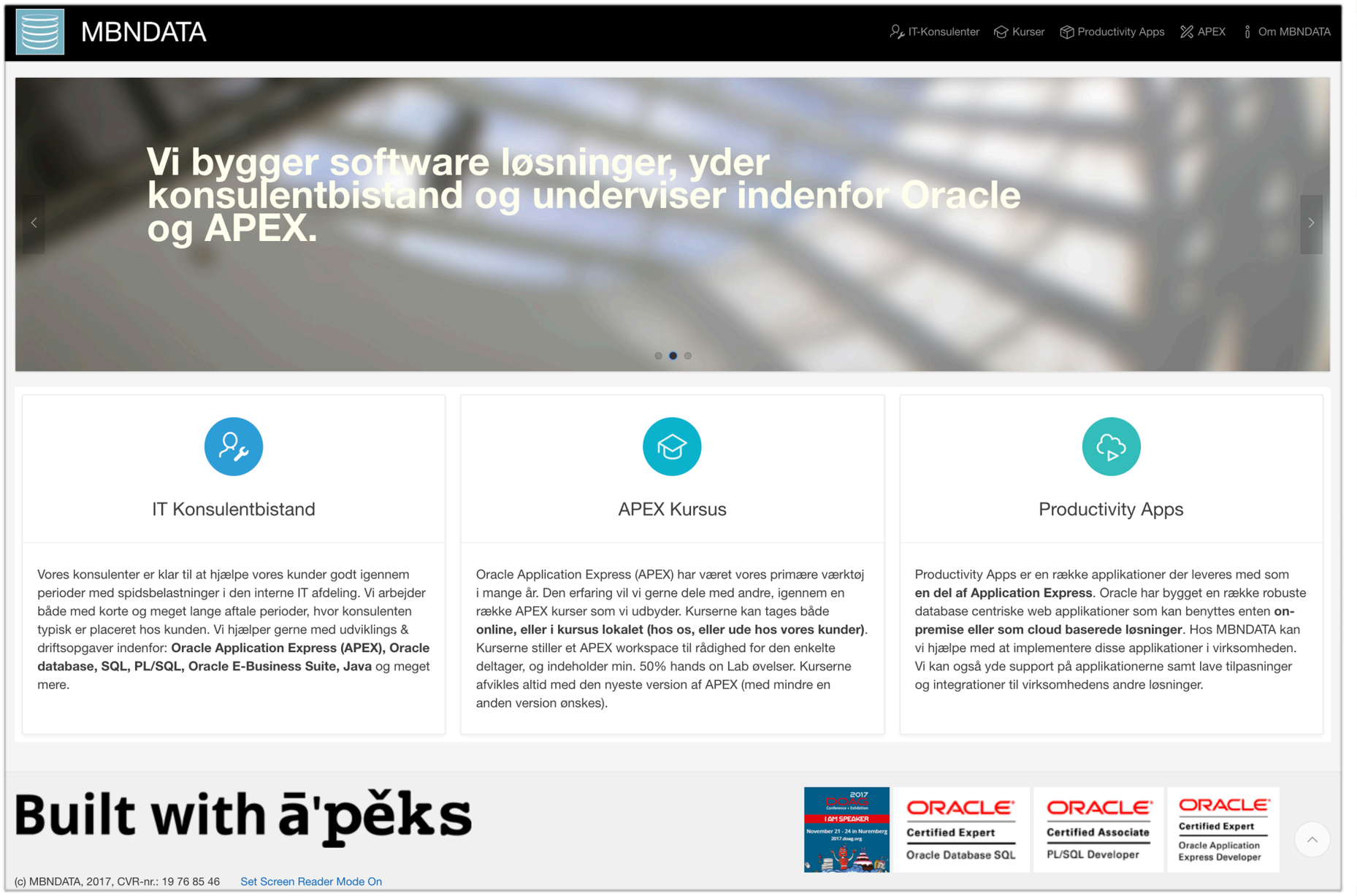
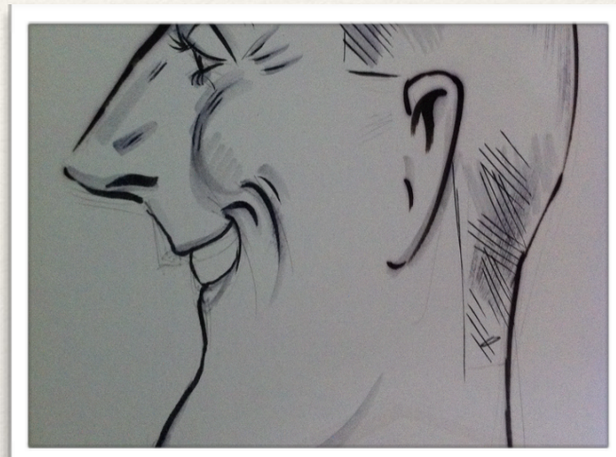
APEX Full Stack Developer





Martin B. Nielsen

MBNDATA

MBNDATA, Havnegade 2,2, DK-4300 Holbæk
Tel.: +45 40 98 96 37, E-mail: martin@mbndata.dk
www.mbndata.dk

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APEX Test Workspace

APEX 18.2

http://apex.oracle.com

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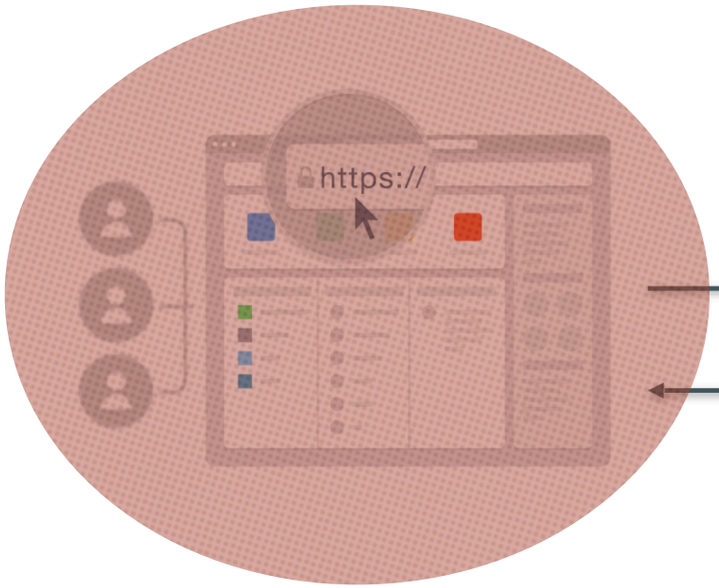
APEX Architecture

Oracle Application Express

3 Tier Architecture







Backend:
DBA, Datamodelling,
SQL, PL/SQL

Data Schemas

Oracle APEX Engine

Oracle Database

APEX, CSS, JavaScript

Webservices, Java

Browser

Mid Tier

Database Tier

ORDS = Oracle REST Data Services

ORACLE

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Front End - APEX



Styling

- Theme
- Theme Style
- Templates
- Theme-roller
- Live template options

Client side logic

- Dynamic Actions

Demo - APEX Front end



Front End - Custom



Styling

{less}

stylus

Sass

GET STYLING WITH

CSS

Client side logic

JavaScript



TypeScript

CoffeeScript

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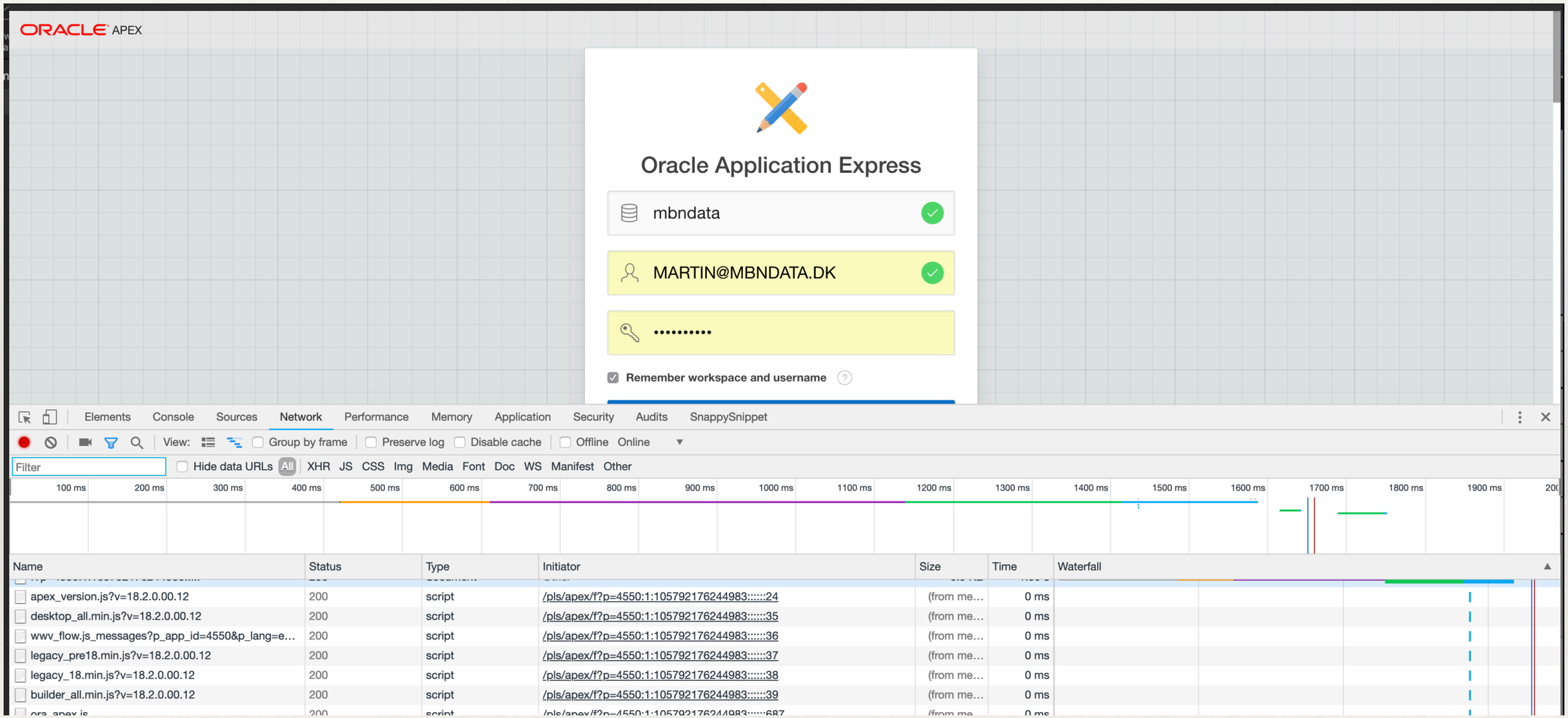
Browser Devtools





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CSS Primer - Selectors

Selectors

```
.class {
  font-weight: bold;
}
```

`div`	Element
`.class`	Class
`#id`	ID
`[disabled]`	Attribute
`[role="dialog"]`	Attribute

Combinators

`.parent .child`	Descendant
`.parent > .child`	Direct descendant
`.child + .sibling`	Adjacent sibling
`.child ~ .sibling`	Far sibling

Pseudo-classes

`:target`	eg, `h2#foo:target`
`:disabled`	
`:focus`	
`:active`	
`:nth-child(3)`	3rd child
`:nth-child(3n+2)`	2nd child in groups of 3
`:nth-child(-n+4)`	
`:nth-last-child(2)`	
`:nth-of-type(2)`	

Attribute selectors

`[role="dialog"]`	= Exact
`[class~="box"]`	~= Has word
`[class|="box"]`	|= Exact or prefix (eg, `value-`)
`[href$=".doc"]`	$= Ends in
`[class*="-is-"]`	*= Contains

Pseudo-class variations

`:first-of-type`	
`:last-of-type`	
`:nth-of-type(2)`	
`:only-of-type`	
`:first-child`	
`:last-child`	
`:nth-child(2)`	
`:only-child`	

CSS Primer - Properties

background-clip
background-color
background-image
background-origin
background-position
background-repeat
background-size
border
border-bottom
border-bottom-color
border-bottom-left-radius
border-bottom-right-radius
border-bottom-style
border-bottom-width
border-collapse
border-color
border-image
border-image-outset
border-image-repeat
border-image-slice
border-image-source
border-image-width
border-left
border-left-color
border-left-style
border-left-width
border-radius
border-right
border-right-color
border-right-style
border-right-width
border-spacing
border-style
border-top
border-top-color
border-top-left-radius
border-top-right-radius

‹ Home Next ›

CSS Properties

Search..

A

align-content	Specifies the alignment between the lines inside a flexible container when the items do not use all available space
align-items	Specifies the alignment for items inside a flexible container
align-self	Specifies the alignment for selected items inside a flexible container
all	Resets all properties (except unicode-bidi and direction)
animation	A shorthand property for all the *animation*-* properties
animation-delay	Specifies a delay for the start of an animation
animation-direction	Specifies whether an animation should be played forwards, backwards or in alternate cycles
animation-duration	Specifies how long an animation should take to complete one cycle
animation-fill-mode	Specifies a style for the element when the animation is not playing (before it starts, after it ends, or both)
animation-iteration-count	Specifies the number of times an animation should be played
animation-name	Specifies a name for the @keyframes animation
animation-play-state	Specifies whether the animation is running or paused
animation-timing-function	Specifies the speed curve of an animation

B

backface-visibility	Defines whether or not the back face of an element should be visible when facing the user

SASS Primer

https://sass-lang.com/guide

```
sass --watch app/sass:public/stylesheets
```

Sass would watch all files in the `app/sass` folder for changes, and compile CSS to the `public/stylesheets` folder.

Variables

Think of variables as a way to store information that you want to reuse throughout your stylesheet. You can store things like colors, font stacks, or any CSS value you think you'll want to reuse. Sass uses the `$` symbol to make something a variable. Here's an example:

SCSS SYNTAX Sass SCSS ⇒ CSS

```
$font-stack:    Helvetica, sans-serif;
$primary-color: #333;

body {
  font: 100% $font-stack;
  color: $primary-color;
}
```

When the Sass is processed, it takes the variables we define for the `$font-stack` and `$primary-color` and outputs normal CSS with our variable values placed in the CSS. This can be extremely powerful when working with brand colors and keeping them consistent throughout the site.

CSS Demo

JavaScript Primer

1. Javascript Native
2. Namespaces
3. JQuery
4. APEX Javascript API

JavaScript Compatibility

http://kangax.github.io/compat-table/es6/

		Compilers/polyfills						Desktop browsers												Se
	98%	56%	71%	71%	50%	68%	17%	5%	11%	96%	96%	98%	98%	98%	98%	98%	99%	99%	95%	59%	97%	97%	98
Feature name ▸	Current browser	Traceur	Babel 6 + core-js 2	Babel 7 + core-js 2	Closure 2019.01	Type-Script + core-js 2	es6-shim	Konq 4.14[1]	IE 11	Edge 17	Edge 18	FF 60 ESR	FF 64	FF 65	CH 71, OP 58	CH 72, OP 59	SF 11.1	SF 12	XS6	JXA	Node >=6.5 <7[3]	Node >=8.10 <9[3]	Node >=10.9 <11[3]
Optimisation																							
proper tail calls (tail call optimisation) ▸	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	2/2	2/2	2/2	0/2	0/2	0/2	0/2
Syntax																							
default function parameters ▸	7/7	4/7	4/7	4/7	5/7	5/7	0/7	0/7	0/7	7/7	7/7	7/7	7/7	7/7	7/7	7/7	7/7	7/7	7/7	0/7	7/7	7/7	7/7
rest parameters ▸	5/5	4/5	3/5	3/5	2/5	4/5	0/5	0/5	0/5	5/5	5/5	5/5	5/5	5/5	5/5	5/5	5/5	5/5	5/5	0/5	5/5	5/5	5/5
spread syntax for iterable objects ▸	15/15	15/15	13/15	13/15	11/15	14/15	0/15	0/15	0/15	15/15	15/15	15/15	15/15	15/15	15/15	15/15	15/15	15/15	15/15	11/15	15/15	15/15	15/15
object literal extensions ▸	6/6	6/6	6/6	6/6	5/6	6/6	0/6	0/6	0/6	6/6	6/6	6/6	6/6	6/6	6/6	6/6	6/6	6/6	6/6	5/6	6/6	6/6	6/6
for..of loops ▸	9/9	9/9	9/9	9/9	6/9	9/9	0/9	0/9	0/9	9/9	9/9	9/9	9/9	9/9	9/9	9/9	9/9	9/9	9/9	8/9	9/9	9/9	9/9
octal and binary literals ▸	4/4	2/4	4/4	4/4	2/4	4/4	2/4	0/4	0/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4
template literals ▸	5/5	4/5	4/5	4/5	3/5	3/5	0/5	0/5	0/5	5/5	5/5	5/5	5/5	5/5	5/5	5/5	5/5	5/5	5/5	5/5	5/5	5/5	5/5
RegExp "y" and "u" flags ▸	6/6	4/6	4/6	4/6	0/6	0/6	0/6	0/6	0/6	6/6	6/6	6/6	6/6	6/6	6/6	6/6	5/6	6/6	2/6	0/6	6/6	6/6	6/6
destructuring, declarations ▸	22/22	20/22	21/22	21/22	20/22	21/22	0/22	0/22	0/22	22/22	22/22	22/22	22/22	22/22	22/22	22/22	22/22	22/22	21/22	19/22	22/22	22/22	22/22
destructuring, assignment ▸	24/24	23/24	24/24	24/24	22/24	24/24	0/24	0/24	0/24	24/24	24/24	24/24	24/24	24/24	24/24	24/24	24/24	24/24	24/24	21/24	24/24	24/24	24/24
destructuring, parameters ▸	24/24	19/24	21/24	21/24	20/24	21/24	0/24	0/24	0/24	23/24	24/24	24/24	24/24	24/24	24/24	24/24	24/24	24/24	23/24	18/24	24/24	24/24	24/24
Unicode code point escapes ▸	2/2	1/2	1/2	1/2	1/2	1/2	0/2	0/2	0/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2
new.target ▸	2/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	0/2	2/2	2/2	2/2

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JavaScript Primer

If - Else

```
if ((age >= 14) && (age < 19)) {        // logical condition
    status = "Eligible.";               // executed if condition is
} else {                                // else block is optional
    status = "Not eligible.";           // executed if condition is
}
```

Switch Statement

```
switch (new Date().getDay()) {      // input is current day
    case 6:                         // if (day == 6)
        text = "Saturday";
        break;
    case 0:                         // if (day == 0)
        text = "Sunday";
        break;
    default:                        // else...
        text = "Whatever";
}
```

Variables

```
var a;                          // variable
var b = "init";                 // string
var c = "Hi" + " " + "Joe";     // = "Hi Joe"
var d = 1 + 2 + "3";            // = "33"
var e = [2,3,5,8];              // array
var f = false;                  // boolean
var g = /()/;                   // RegEx
var h = function(){};           // function object
const PI = 3.14;                // constant
var a = 1, b = 2, c = a + b;    // one line
let z = 'zzz';                  // block scope local variable
```

Strict mode

```
"use strict";   // Use strict mode to write secure code
x = 1;          // Throws an error because variable is not declared
```

Values

```
false, true                     // boolean
18, 3.14, 0b10011, 0xF6, NaN    // number
"flower", 'John'                // string
undefined, null , Infinity      // special
```

Operators

```
a = b + c - d;      // addition, substraction
a = b * (c / d);    // multiplication, division
x = 100 % 48;       // modulo. 100 / 48 remainder = 4
a++; b--;           // postfix increment and decrement
```

Bitwise operators

Basics

On page script

```
<script type="text/javascript">  ...
</script>
```

Include external JS file

```
<script src="filename.js"></script>
```

Functions

```
function addNumbers(a, b) {
    return a + b; ;
}
x = addNumbers(1, 2);
```

Edit DOM element

```
document.getElementById("elementID").innerHTML = "Hello World!";
```

Output

```
console.log(a);             // write to the browser console
document.write(a);          // write to the HTML
alert(a);                   // output in an alert box
confirm("Really?");         // yes/no dialog, returns true/false dep
prompt("Your age?","0");    // input dialog. Second argument is the
```

Comments

```
/* Multi line
   comment */
// One line
```

Data Types

```
var age = 18;                               // number
var name = "Jane";                          // string
var name = {first:"Jane", last:"Doe"};      // object
var truth = false;                          // boolean
var sheets = ["HTML","CSS","JS"];           // array
var a; typeof a;                            // undefined
var a = null;                               // value null
```

Objects

```
var student = {                 // object name
    firstName:"Jane",           // list of properties and values
    lastName:"Doe",
    age:18,
    height:170,
    fullName : function() {     // object function
       return this.firstName + " " + this.lastName;
    }
};
student.age = 19;               // setting value
student[age]++;                 // incrementing
```

Loops

For Loop

```
for (var i = 0; i < 10; i++) {
    document.write(i + ": " + i*3 + "<br />");
}
var sum = 0;
for (var i = 0; i < a.length; i++) {
    sum + = a[i];
}               // parsing an array
html = "";
for (var i of custOrder) {
    html += "<li>" + i + "</li>";
}
```

While Loop

```
var i = 1;                      // initialize
while (i < 100) {               // enters the cycle if statement is
    i *= 2;                     // increment to avoid infinite loop
    document.write(i + ", ");   // output
}
```

Do While Loop

```
var i = 1;                      // initialize
do {                            // enters cycle at least once
    i *= 2;                     // increment to avoid infinite loop
    document.write(i + ", ");   // output
} while (i < 100)               // repeats cycle if statement is tru
```

Break

```
for (var i = 0; i < 10; i++) {
    if (i == 5) { break; }          // stops and exits the cycle
    document.write(i + ", ");       // last output number is 4
}
```

Continue

```
for (var i = 0; i < 10; i++) {
    if (i == 5) { continue; }       // skips the rest of the cycle
    document.write(i + ", ");       // skips 5
}
```

Strings

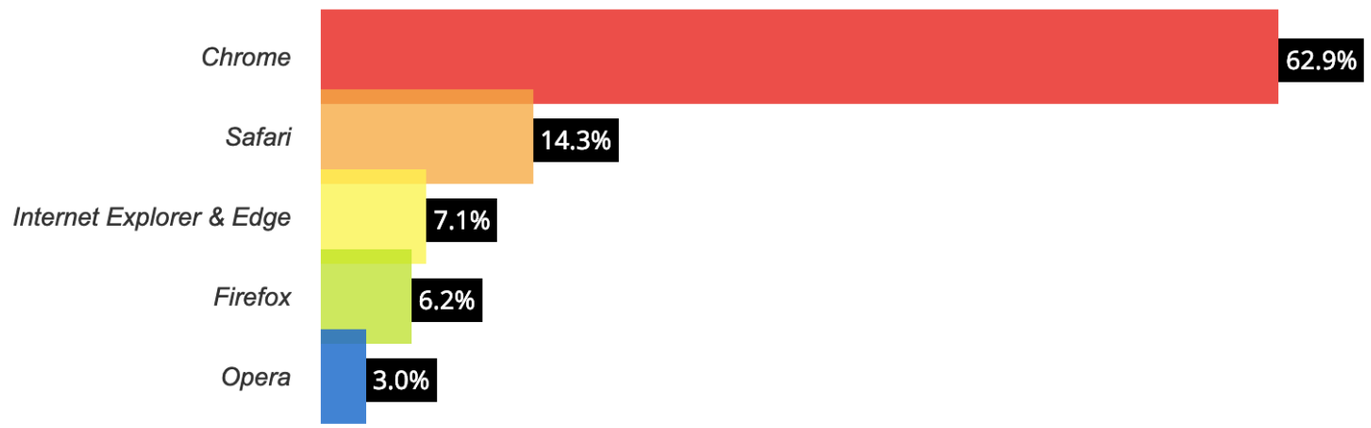
```
var abc = "abcdefghijklmnopqrstuvwxyz";
var esc = 'I don\'t \n know';   // \n new line
var len = abc.length;           // string length
abc.indexOf("lmno");            // find substring, -1 if doesn't cor
abc.lastIndexOf("lmno");        // last occurance
abc.slice(3, 6);                // cuts out "def", negative values c
abc.replace("abc","123");       // find and replace, takes regular e
abc.toUpperCase();              // convert to upper case
abc.toLowerCase();              // convert to lower case
```

JavaScript Compatibility

Browser & Platform Market Share
December 2018

January 2019
December 2018
November 2018
October 2018
September 2018
August 2018
July 2018
June 2018
May 2018
April 2018
March 2018
February 2018
January 2018
December 2017
November 2017
October 2017

Web Browser Market Share — View Monthly Trends



Top 10 Web Browsers

1	Chrome 70	21.71%
2	Chrome 71	20.13%
3	Safari 12	8.89%
4	Safari 11	3.26%
5	IE 11	3.03%
6	Chrome 63	2.06%
7	Firefox 63	1.93%
8	UC 12	1.91%
9	Firefox 64	1.86%
10	Chrome 69	1.83%

Top 10 Platforms

1	Windows 10	16.62%
2	Android 8	14.06%
3	Windows 7	13.81%
4	Android 7	9.65%
5	iOS 12	9.40%
6	Android 6	7.83%
7	Android 5	6.02%
8	Mac OS X	3.92%
9	iOS 11	3.24%
10	Android 4	2.81%



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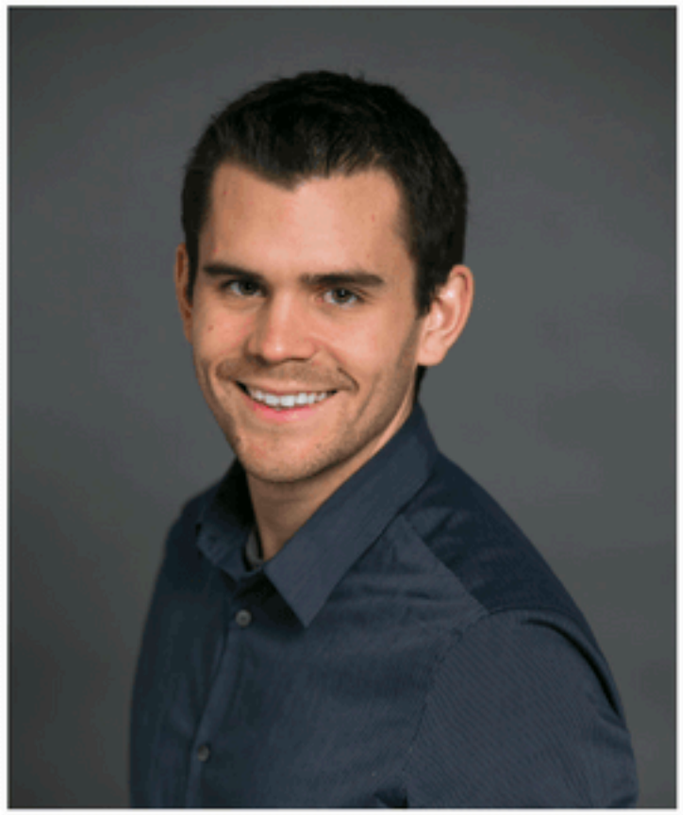
https://www.w3counter.com/globalstats.php?year=2018&month=12

JavaScript Demo

APEX Nitro

https://github.com/OraOpenSource/apex-nitro



APEX NITRO

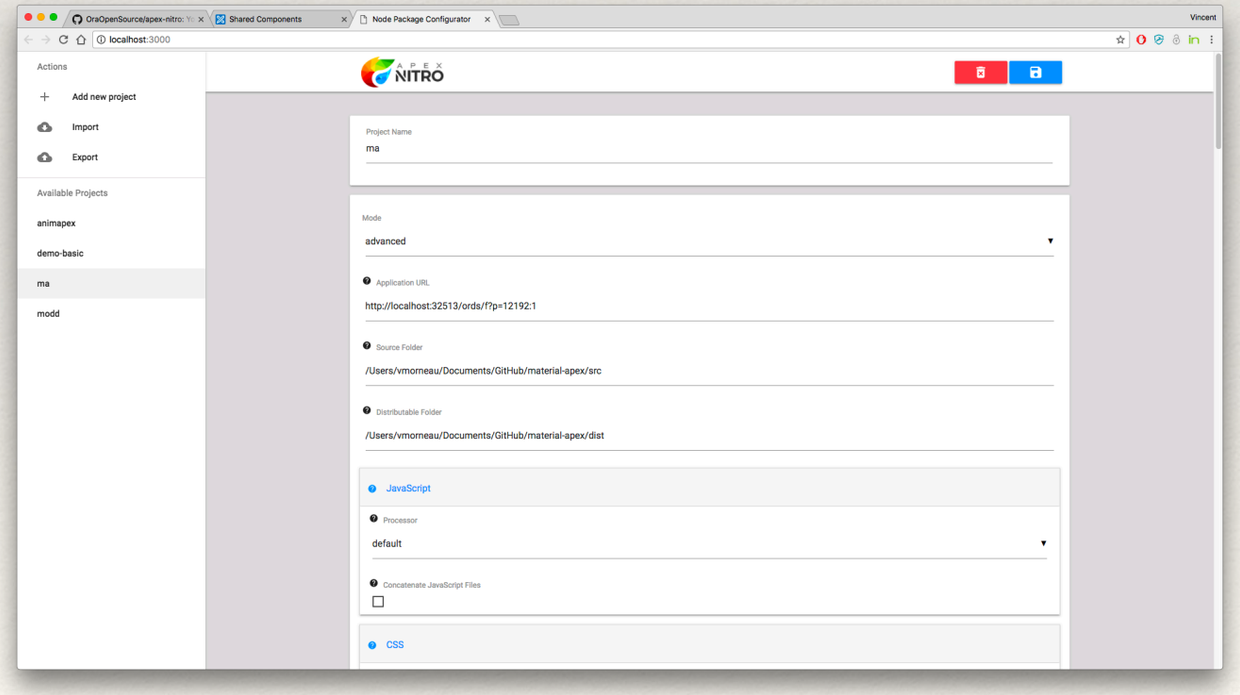
APEX Nitro

What APEX Nitro does

- Browser Synchronization
- File Minification
- File Concatenation
- Source Mapping
- Error Handling
- CSS Preprocessing
- CSS Auto-Prefixer
- Theme Roller Customization

APEX Nitro - Setup

1. Install node (npm)
2. npm install -g apex-nitro
3. apex-nitro config <project>



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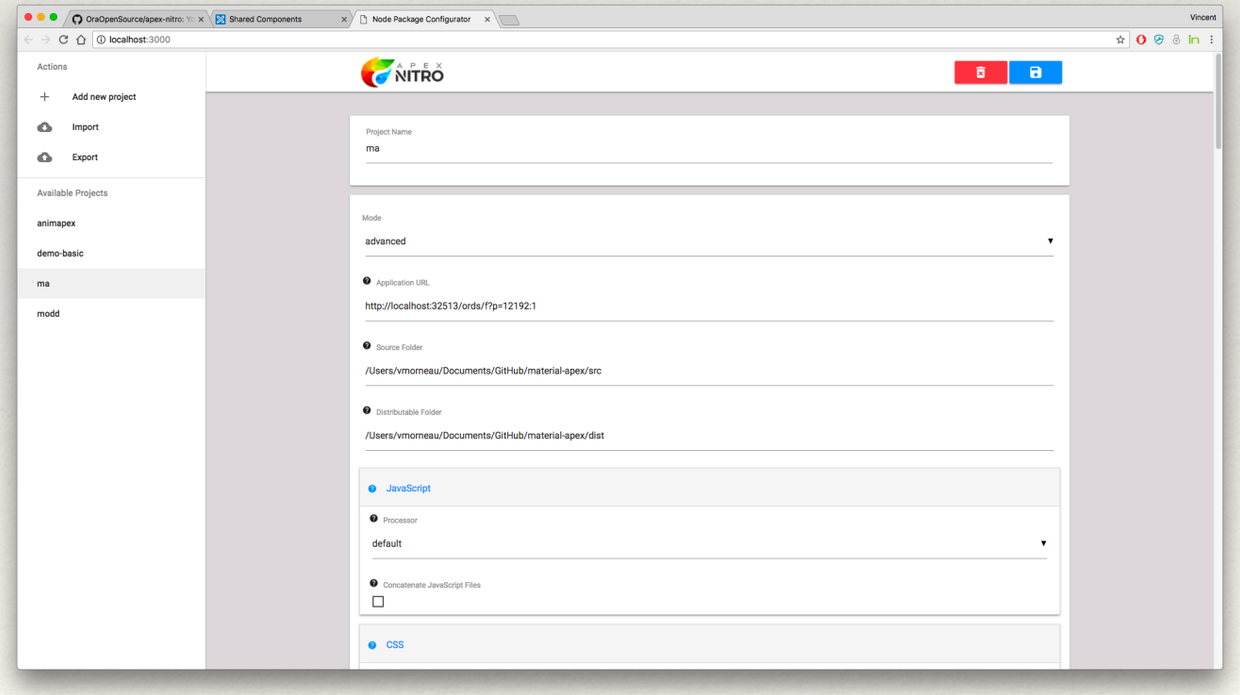
APEX Nitro - Setup

1. Install node (npm)
2. npm install -g apex-nitro
3. apex-nitro config <project>
4. Configure you APEX Application



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Nitro Demo

Thank You

Questions ?



Oracle APEX 19.1 Early Adopter

https://apexea.oracle.com/

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