



KAUNAS**CODING**SCHOOL

BOOTCAMP

Laurynas Antanavičius

I LYGIS INFRASTRUKTŪRA

JRANKIAI - PILNAS RINKINYS

- **Image editor** - Photoshop, Gimp, Pixelmator, Sketch
- **Text editor** - Atom, Brackets, Sublime text
- **Version control system** - Git
- **Virtual machine** - Virtualbox, Vagrant
- **Provisioning** - Ansible, Puppet, Chef
- **Command line** - Terminal, Cygwin
- **File transfer** - FTP, SSH
- **Local server** - WAMP/MAMP, Browsersync, PHP server
- **Package managers** - NPM, Gulp, Bower, Yarn

JRANKIAI - KO MUMS REIKĘS

- **Editorius Atom** - <http://atom.io>
- Virtualbox - <https://www.virtualbox.org/wiki/Downloads>
- Vagrant - <https://www.vagrantup.com/downloads.html>
- Git - <https://www.sourcetreeapp.com/>
- **Github account** - <http://github.com>
- **Github desktop app** - <https://desktop.github.com/>
- Naršyklė Chrome - <https://www.google.com/chrome/browser/desktop/>
- **Package manager NodeJS (7.4 versija)** - <https://nodejs.org/en/>
- Apache + MySql + PHP serveris - <https://www.mamp.info/en/downloads/>
- **Frontend serveris Browser-sync** - <https://www.browsersync.io/>

RAŠYMAS - EDITORIUS

<https://atom.io>

Editorius + Katalogų navigacija + Git integracija + Plugins + Multiple-languages

<http://brackets.io/>

<https://www.sublimetext.com/>

RAŠYMAS - TAISYMAS

<https://atom.io/packages/linter>

<https://atom.io/packages/linter-htmlhint>

<https://atom.io/packages/linter-csslint>

<https://atom.io/packages/linter-jshint>

GIT + GITHUB

WINDOWS + MAC SETUP

<https://desktop.github.com/>

BROWSERSYNC

WINDOWS + MAC SETUP

<https://nodejs.org/en/download/>

<https://www.browsersync.io/>

GIT

Pilnas tutorial

<https://www.atlassian.com/git/tutorials/>

Trumpas Git pavyzdys

<https://try.github.io>

KAPOS?



2 LYGIS

HTTP

UNIFORM RESOURCE LOCATOR

protocol://hostname:port/path-and-file-name

ftp://www.ftp.org/docs/test.txt

mailto:user@test101.com

news:soc.culture.Singapore

telnet://www.nowhere123.com/

UNIFORM RESOURCE LOCATOR

GET /index.html?firstName=Yaakov



name/value pairs separated by &
Example: ?first=Yaakov&last=Chaikin

KAS ĮVYKSTA ĮVEDUS ADRESĄ,
AR PASPAUDUS NUORODĄ

REQUEST

```
GET /docs/index.html HTTP/1.1
Host: www.nowhere123.com
Accept: image/gif, image/jpeg, */*
Accept-Language: en-us
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1)
(blank line)
```

RESPONSE

HTTP/1.1 200 OK

Date: Sun, 18 Oct 2009 08:56:53 GMT
Server: Apache/2.2.14 (Win32)
Last-Modified: Sat, 20 Nov 2004 07:16:26 GMT
ETag: "10000000565a5-2c-3e94b66c2e680"
Accept-Ranges: bytes
Content-Length: 44
Connection: close
Content-Type: text/html
X-Pad: avoid browser bug

```
<html><body><h1>It works!</h1></body></html>
```

TOP STATUS KODAI

<https://http.cat/>

200 OK

301 redirect

302 redirect

404 not found



VISAS KELIAS

1. Jvedam URL-> <http://www.delfi.lt/verslas/verslas/seime-alkoholio-akcizo-didinimas.d?id=73108944>
2. Naršklė perduoda ->
PROTOCOL: http
HOST: delfi.lt
PORT: 80
GET: verslas/verslas/seime-alkoholio-akcizo-didinimas.d?id=73108944

ĮSITERPIA DNS

3. DNS sujungia su tikruoju serveriu ->
IP: 91.234.200.114

SERVERIS ATSAKO

4. Serveris gauna užklausą GET: verslas/verslas/seime-alkoholio-akcizo-didinimas.d?id=73108944
, atsako
STATUS CODE: 200 OK ir prideda HTML turinį

SERVERIO VIDUJE

- 4.1. Web servisas pvz. Apache, Nginx - nukreipia į direktorija kur yra PHP servisas
- 4.2. PHP - kreipiasi į MySql servisą ir perduoda informaciją
“select a.id a.content from article a where a.id=73108944”
- 4.3. PHP sugeneruoja HTML puslapį pagal verslas.php šabloną ir įdeda SQL rezultatus

VARTOTOJAS LAUKIA

5. Naršyklė gauna HTML turinį, siunčia kitas papildomas užklausas, kad gautų CSS, JS failus
6. Po truputį gaunant kiekvieną failą, vaizdas yra papildomas, kol galutinai užkraunamas puslapis

DALYVIAI

Browser -> Network -> DNS ->
-> Server (Web service, Backend service, Database service)
-> HTML+CSS+JS
-> Browser

Web service tiesiogiai grąžina failus, jei nėra tarpinio Backend ar Database serviso

AIBĖ PROBLEMŲ

Nei vienas puslapis nesikraus jei DNS neveiks

Jei DNS įrašuose bus neteisingai įvestas serverio IP

Jei neveiks Web servisas, nenukreips į Backend App

Jei neveiks Backend App, nesugeneruos HTML

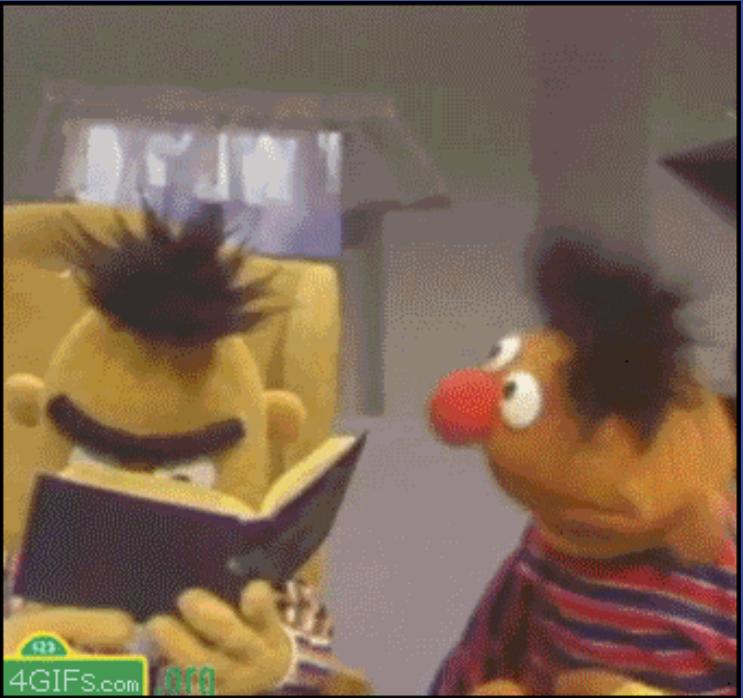
Jei neveiks SQL, negražins įrašų



JEI NEVEIKIA PAS MUS LOKALIAI

1. Ar teisingai įvestas adresas?
2. Ar paleistas Web servisas (browser-sync)?
3. Ar į teisingą direktorių nukreipia Web servisas?
+ jei tai backend aplikacija
4. Ar mūsų programa veikia?
5. Ar programa supranta adresą?
6. Ar teisingi prisijungimai prie DB?
7. Ar nėra klaidų, kurios neleistų sugeneruoti HTML?

3 LYGIS FRONTEND



FRONT-END

Kompiuterio ar programos dalis, tiesiogiai prieinama vartotojui ir liežianti prieiti prie kitų įrenginių ar programų

Front-end web development, also known as client-side development is the practice of producing HTML, CSS and JavaScript for a website or Web Application so that a user can see and interact with them directly. The challenge associated with front end development is that the tools and techniques used to create the front end of a website change constantly and so the developer needs to constantly be aware of how the field is developing.

FRONT-END VS FRONT END VS FRONTEND VS CLIENT-SIDE

Sinonimai, apibūdinantys tą patį darbo aspektą

FRONT-END PROGRAMAVIMAS

HTML, CSS ir JavaScript kodo programavimas tinklapiui
ar web aplikacijai, kad vartotojas galėtų ja naudotis
tiesiogiai

WEBSITE VS WEB APP / WEB APPLICATION

- Informacnio pobūdžio vs Kita funkcija
- Pasiekama per browser
- Nuo paprastų statinių svetainių iki verslo aplikacijų
(Facebook, Gmail)

KAS YRA FE DEV

Išdėstymas - fiksuotas, prisitaikantis (responsive)

Stilius - spalva, dydis, forma, šriftai

Turinys - tekstai, ikonos, nuotraukos, video, dokumentai

Informacijos įvedimas - formos, įvedimo, pasirinkimo laukeliai, mygtukai

Animacija - elementų, puslapio, 3D animacija

Interakcija - Mouse, Touch, Keyboard, Camera, Mic, GPS

KAS NÉRA FE DEV

Algoritmai
Duomenų bazės
Asinchroniškas programavimas
Serverio aplikacijos
Serverio priežiūra

KĄ REIKIA ŽINOTI



ASPEKTAI

- HTML + CSS + JavaScript
- Photoshop / Sketch
- Browser'iu skirtumai
- Rezoliucijų skirtumai

HTML STANDARTAS

<http://www.w3.org/TR/html/>

4 LYGIS
HTML

HTML STANDARTAS

<http://www.w3.org/TR/html/>

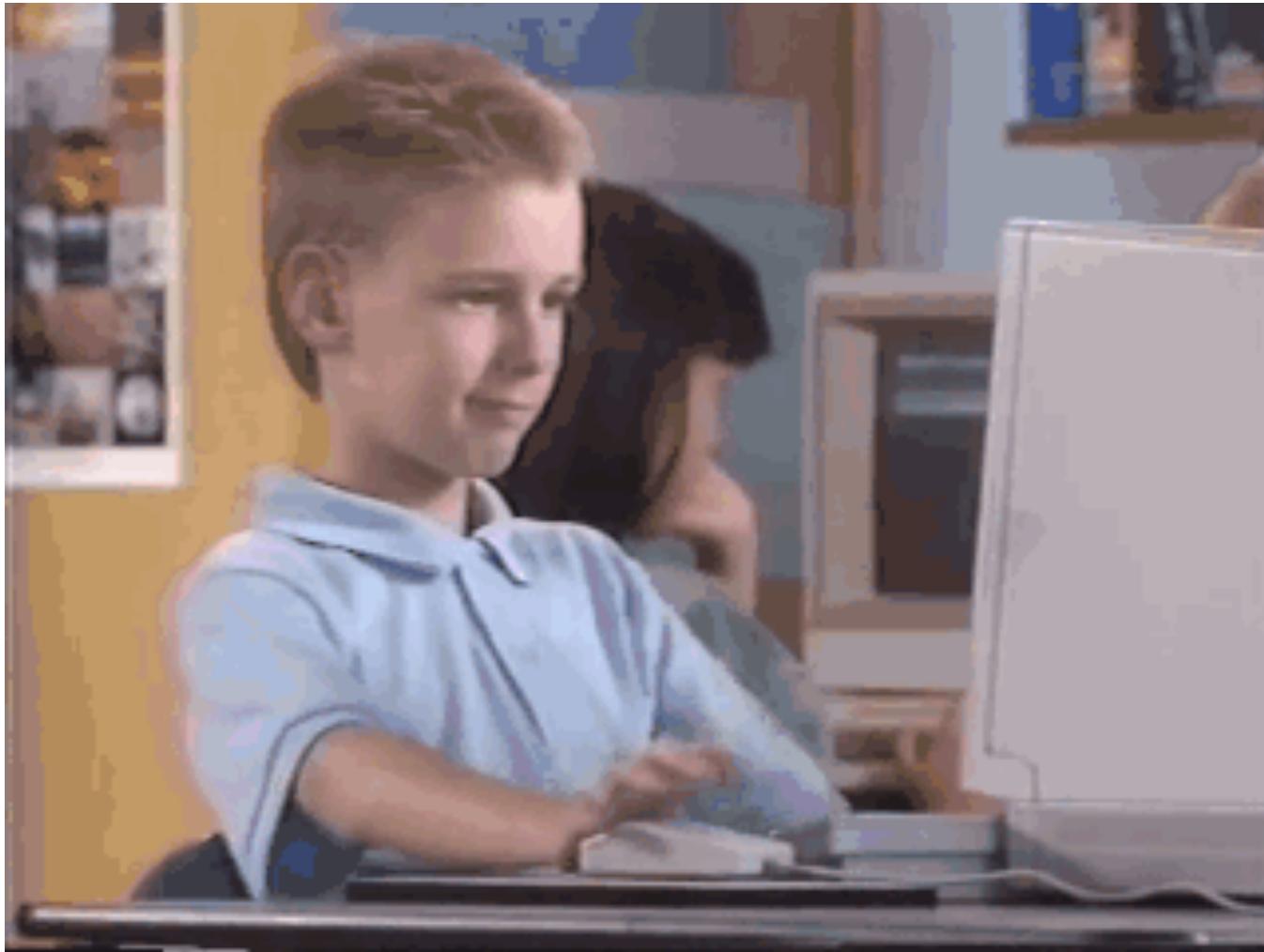
KAIP ATRODO HTML BE CSS?

<http://info.cern.ch/>

<http://www.pmichaud.com/toast/>

<http://edition.cnn.com/US/OJ/>

<http://home.mcom.com/home/welcome.html>



```
└ DOCTYPE: html
  └ <html>
    └ <head>
      └ #text: ↵
      └ <title>
        └ #text: Sample page
      └ #text: ↵
      └ #text: ↵
    └ <body>
      └ #text: ↵
      └ <h1>
        └ #text: Sample page
      └ #text: ↵
      └ <p>
        └ #text: This is a
        └ <a href="demo.html">
          └ #text: simple
        └ #text: sample.
      └ #text: ↵
      └ #comment: this is a comment
      └ #text: ↵ ↵
```

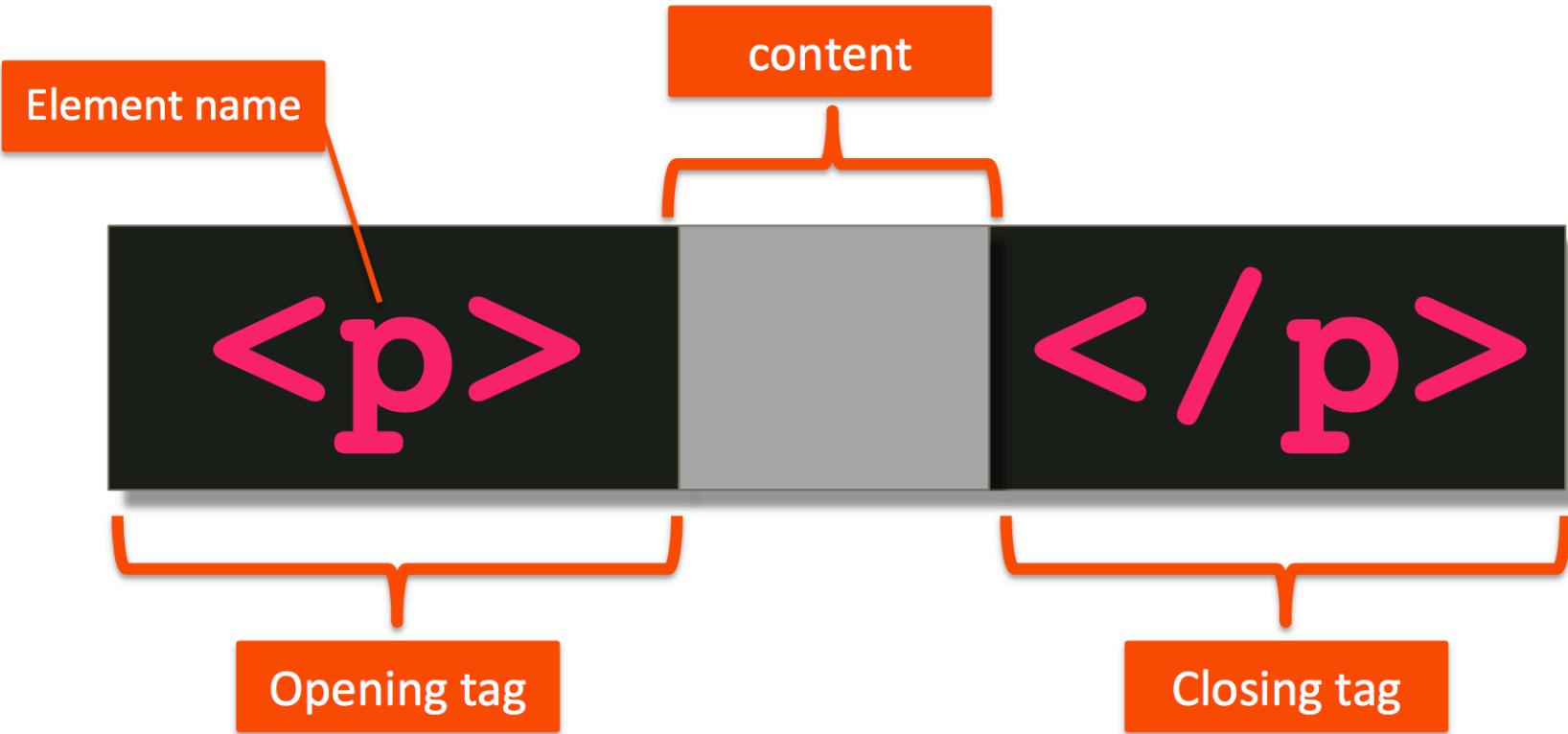
The screenshot shows a web browser window with a sample page titled "Sample page". The page content is "This is a simple sample." with a link to "simple". The browser's developer tools are open, specifically the Elements and Styles panels.

Elements Panel:

- Selected element: `<body>`
- Element tree:
 - `<!DOCTYPE html>`
 - `<html>`
 - `<head>`
 - `<title>Sample page</title>`
 - `</head>`
 - `<body> = $0`
 - `<h1>Sample page</h1>`
 - `<p>`
 - `"This is a "`
 - `simple`
 - `" sample."`
 - `</p>`
 - `<!-- this is a comment -->`
 - `</body>`
 - `</html>`

Styles Panel:

- Selected element: `<body>`
- Style Attribute: No Properties — Click to Edit
- Media: all
 - `<body>`
 - User Agent Stylesheet
 - `display: block;`
 - `margin-top: 8px;`
 - `margin-right: 8px;`
 - `margin-bottom: 8px;`
 - `margin-left: 8px;`



Line Break

A diagram illustrating the HTML tag
. It consists of a black rectangular box containing the pink text "
". A red bracket at the bottom indicates that it is a single-line tag. An orange callout box labeled "Line Break" points to the text inside the box.

Only opening tag

Horizontal Rule

<hr>

A diagram illustrating the HTML tag <hr>. It consists of a black rectangular box containing the pink text "<hr>". A red bracket at the bottom indicates that it is a single-line tag. An orange callout box labeled "Horizontal Rule" points to the text inside the box.

Only opening tag

No space allowed

Must have space

No space allowed

```
<p id="myId"></p>
```

Attribute
name

Attribute
value

```
<p onclick="alert('hi')"></p>
```

Outer double quotes

Inner single
quotes

Periodic Table of the Elements

 Root element

Metadata and scripting

Embedding content

Text-level semantics

Grouping content

Forms

Document sections

Tabular data

Interactive elements

DOCTYPE

Root elementai

<!DOCTYPE html>

<html>

<head>

<body>

RELATIVE VS ABSOLUTE

http://localhost:3000/index.html

Root relative - /index.html

Context relative - index.html

..../images/huotrauka.jpg

METADATA

Puslapio pavadinimas <title>

Meta informacija <meta>

Domeno nurodymas <base> ! sprendžia problemas su
nuorodomis, tačiau geriau vengti

Įtraukiami failai <link> !pagrinde CSS

CSS <style> !nerekomenduotina naudoti

Javascript <script> !rekomenduojama dėti į <body> apačią
Rodomas tekstas, jei išjugtas JS <noscript> !nebūtinės

TEKSTO ELEMENTAI

Paragrafas teksto <p>

Nuoroda <a>

Bold, italic, underline , <i>, <u>

Semantiniai pažymėjimai stipresnis tekstas, paryškintas tekstas
, !jei naudojama kažkokia spalvų ir paryškinimų
kombinacija

Kodas tekste <code>

Žodžio pažymėjimas !jei reikia pakeisti kažkurį žodį sakinyje

LENTELĖS

Lentelė <table>

Lentelės antraštė, turinys, poraštė

<thead>, <tbody>, <tfoot>

Lentelės eilutė <tr>

Lentelės celė <td>

FORMOS

Forma <form>

Laukelių rinkinys <fieldset>

Laukelio etiketė <label>

Pasirenkamasis laukelis <select>, <option>, <optgroup>

Įvedimo laukelis <input>

Kelių eilučių įvedimo laukas <textarea>

Mygtukas <button> !tik formose

MEDIA ELEMENTAI

Nuotraukos

Puslapio įtraukimas <iframe>

Animacija <canvas>

Video <video>

Audio <audio>

TURINIO GRUPAVIMAS, IŠDÉSTYMAS

Konteineriai <div>

Sarašai ,

Sarašo elementai

Teksto paragrafai <p>

Eilutės pabaiga
 !naudoti jei kitaip
išspresti neįmanoma

DOKUMENTO SKYRIAI, SEKCIJOS

Antraščių pavadinimai <h1> - <h6>

Visus šiuos elementus galima pakeisti <div>

Antraštės grupė <hgroup>

Antraštė <header>

Sekcijos <section>

Navigacija <nav>

Straipsnis <article>

Paraštė <footer>

Šoninės juostos <aside>

KITA EGZOTIKA

Daug kitų egzotinių elementų
Pusė jų praktiškai retai naudojami
Sarašas jų pagal paskutinį HTML standartą (pridėti
nuorodą)

5 LYGIS
CSS

CSS STANDARTAS

<http://www.w3.org/TR/CSS2/>

CROSS-X

Cross-browser - Chrome, Internet Explorer, Safari, Firefox

Cross-platform - Windows, Mac, iPhone, Android

Cross-device - Desktop, Tablet, Mobile

BROWSER'IAI

Universalioji platforma, tačiau turi daug skirtumų

<http://caniuse.com>

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

REZOLIUCIJOS

[https://www.w3counter.com/globalstats.php?
year=2016&month=9](https://www.w3counter.com/globalstats.php?year=2016&month=9)

[https://analytics.wikimedia.org/dashboards/browsers/
#all-sites-by-browser](https://analytics.wikimedia.org/dashboards/browsers/#all-sites-by-browser)

ĮRENGINIAI IR NARŠYKLĖS

SAUSIS 2017

// WIN or MAC

Chrome

Firefox

// WIN

IE 11 (not updated automatically)

IE Edge

// MAC

Safari

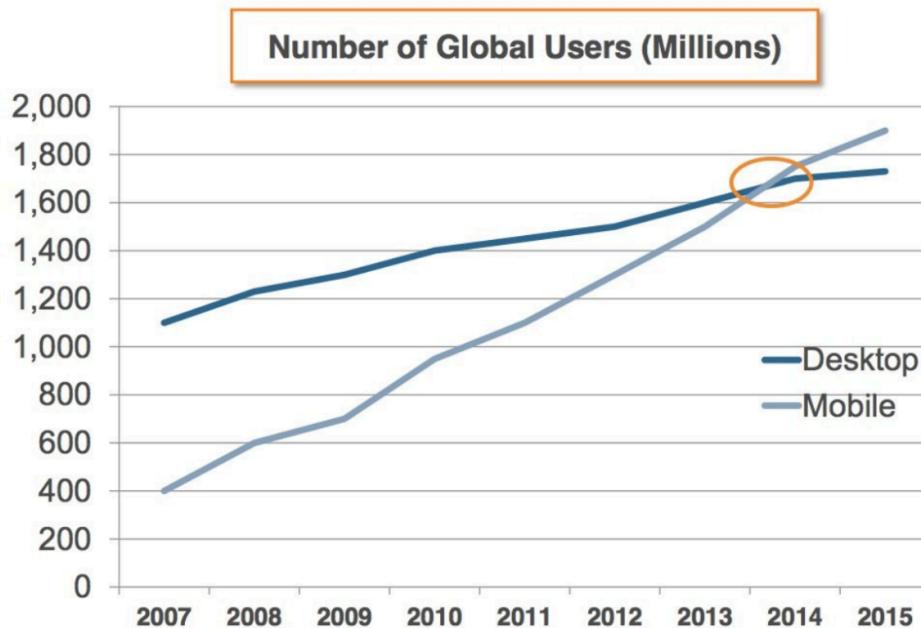
// iPad or Android

Safari or Chrome

// iPhone

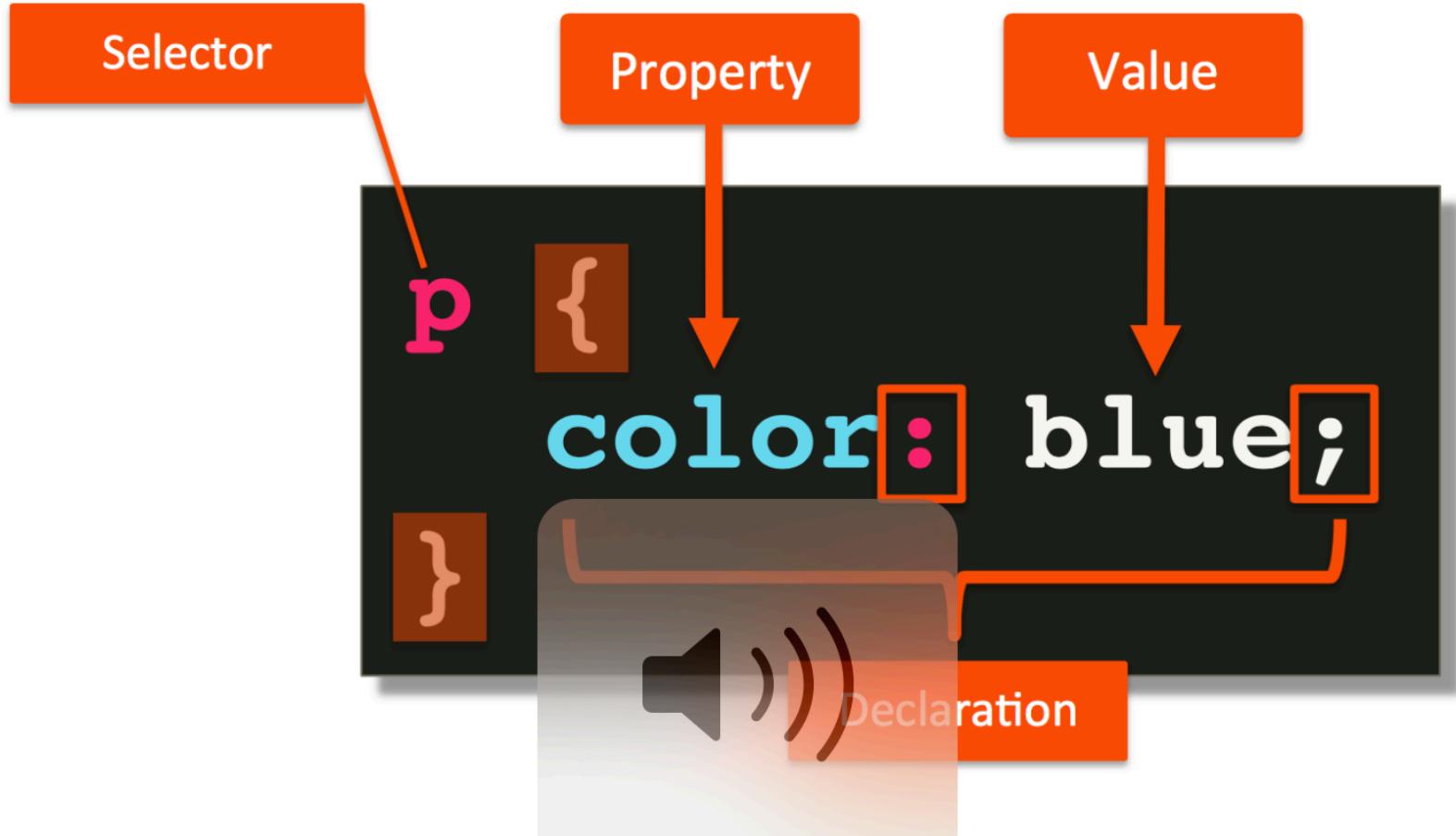
Safari or Chrome

KODÉL REIKIA TAI ŽINOTI?



CASCADING STYLE SHEETS

Leidžia keisti visą puslapio išvaizdą
Dažniausiai aprašoma atskiruose failuose, kad
lengva būtų keisti ir pritaikyti kitiems elementams
Nekeičia HTML struktūros, gali tik paslėpti
elementus
Gali reaguoti į lango rezoliuciją



Zero or More
Declarations
are allowed

```
p {  
    color: blue;  
    font-size: 20px;  
    width: 200px;  
}
```

```
p {  
    color: blue;  
    font-size: 20px;  
    width: 200px;  
}  
  
h1 {  
    color: green;  
    font-size: 36px;  
    text-align: center;  
}  
  
...
```



Stylesheet

6 LYGIS

HTML + CSS SELECTORS

Defined with .

```
.blue {  
  color: blue;  
}
```

Used without

Blue text

```
...  
<p class="blue">...</p>  
<p>...</p>  
<div class="blue">...</div>  
...
```

Unaffected

Blue text

Defined with #

```
#name {  
    color: blue;  
}
```

Unaffected

```
...  
<p>...</p>  
<div id="name">...</div>  
...
```

Used without

Blue text

Separate selectors
with commas

```
div, .blue {  
  color: blue;  
}
```

```
...  
<p class="blue">...</p>  
<p>...</p>  
<div>...</div>  
...
```

Blue text

Blue text

Every p that has **class="big"**

```
p.big {  
    font-size: 20px;  
}
```

Every **p** that is inside (at any level) of **article**

```
article p {  
    color: blue;  
}
```

```
article > p {  
  color: blue;  
}
```

The diagram illustrates how a CSS selector like `article > p` matches elements within an `article` container. The code snippet shows the CSS rule on the left and the corresponding DOM structure on the right. Orange arrows point from the selector's parts to specific elements in the DOM. The first arrow points from the `>` symbol to the first `p` element under the first `article`. The second arrow points from the closing brace of the CSS rule to the second `p` element under the second `article`. The text "Unaffected text" is highlighted in orange boxes to indicate that other `p` elements and the entire structure of the second `article` are not selected by this rule.

```
<article>...  
  <p>...</p>  
</article>  
...  
<p>...</p>  
<article>...  
  <div><p>...</p></div>  
</article>
```

Unaffected text

Unaffected text

```
selector:pseudo-class {  
    ...  
}
```

- :link**
- :visited**
- :hover**
- :active**
- :nth-child(...)**

PARAŠIAU TAISYKLEĘ, BET JI NEVEIKIA



CSS ELEMENTŲ TVARKA

style="..."	ID	Class, pseudo-class, attribute	# of Elements
1	0	0	0

```
<h2 style="color: green;">
```

CSS PAŽYMĖJIMŲ KIEKIS

style="..."

ID

Class, pseudo-class, attribute

of Elements

0

0

0

2

```
div p { color: green; }
```

CSS SVARBA

```
dXv #myParag {  
    color: blue;  
}
```

?

```
div.big p {  
    color: green;  
}
```

0 1 0 X

0



0 0 1 2



CSS EILĖS TVARKA

```
dXv #myParag {  
    color: blue;  
}
```

?

```
div.big p {  
    color: green;  
}
```

0 1 0 X
0



0 0 1 2



KELETAS NAUDINGŲ NUORODŲ

[https://www.smashingmagazine.com/2014/09/
balancing-line-length-font-size-responsive-web-design/](https://www.smashingmagazine.com/2014/09/balancing-line-length-font-size-responsive-web-design/)

<https://validator.w3.org/>

<http://alistapart.com/article/sensibleforms>

7 LYGIS

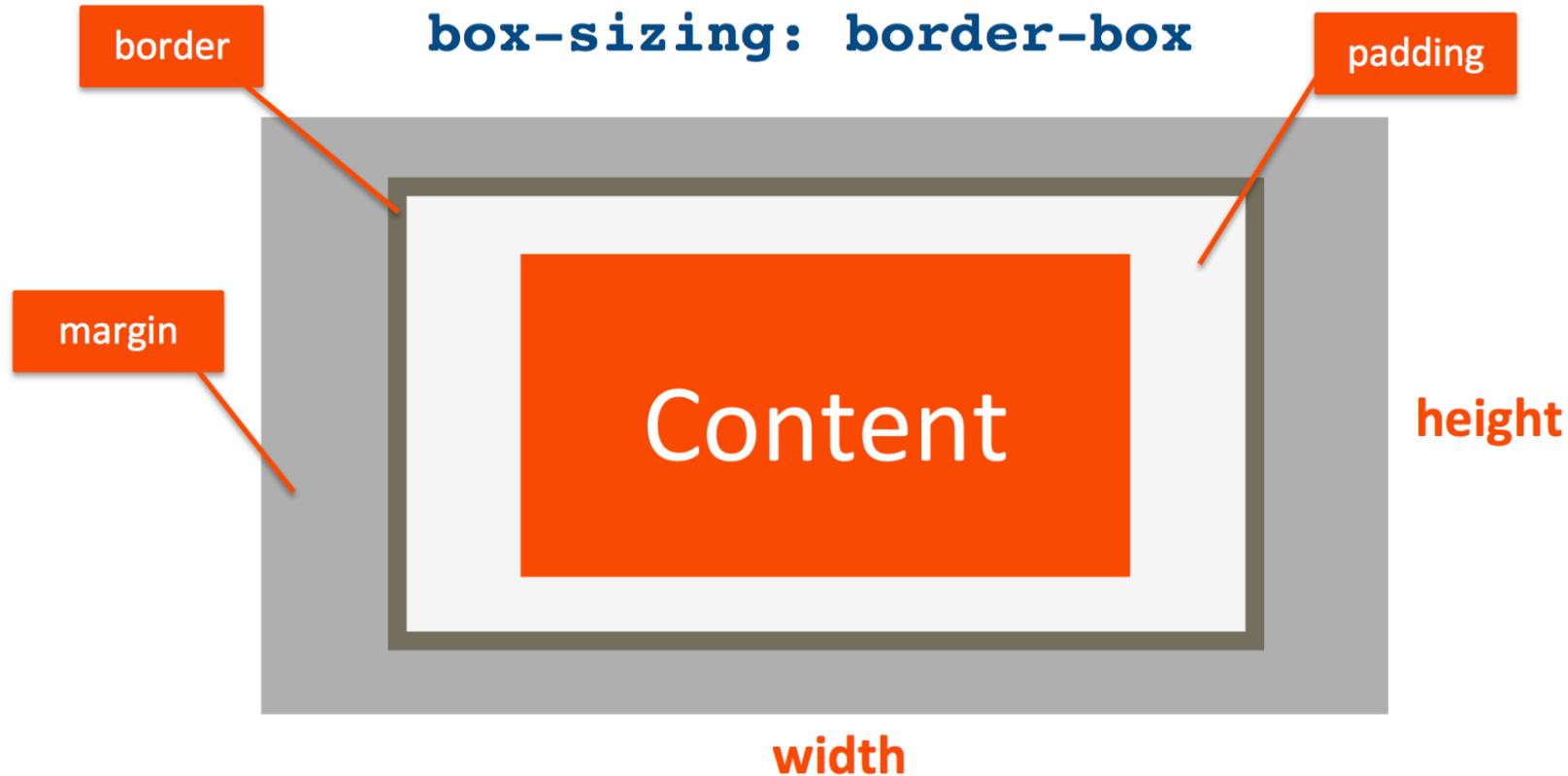
HTML + CSS IŠDĖSTYMAS

JS STANDARTAS

(ECMAScript® 2016)

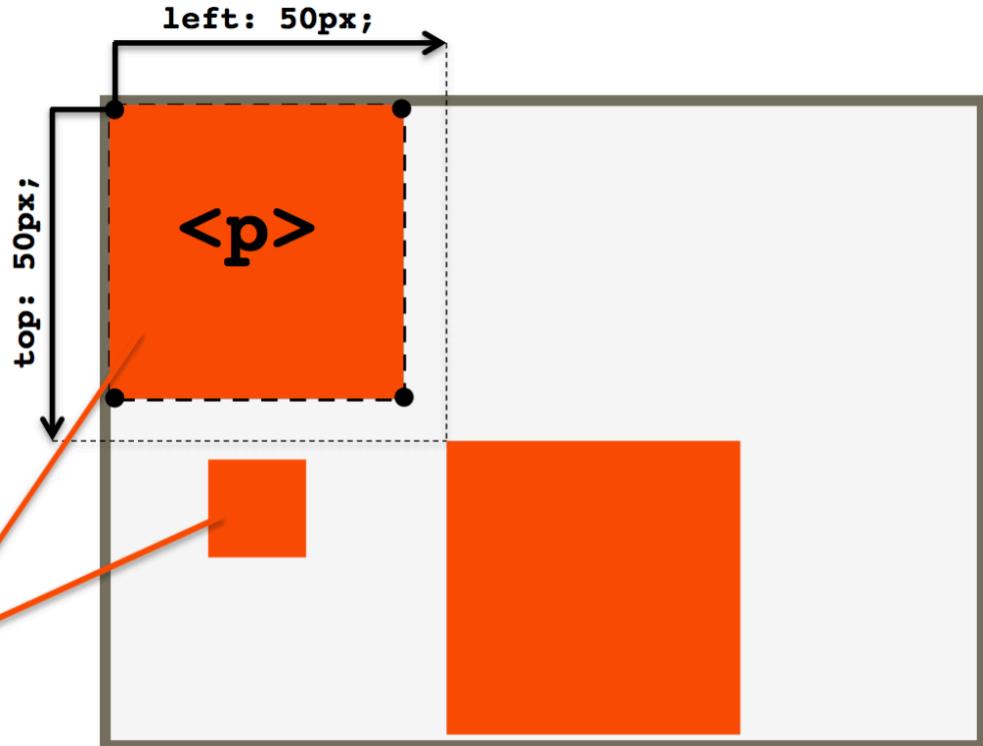
<https://tc39.github.io/ecma262/2016/>

BOX MODEL



RELATIVE POZICIJA

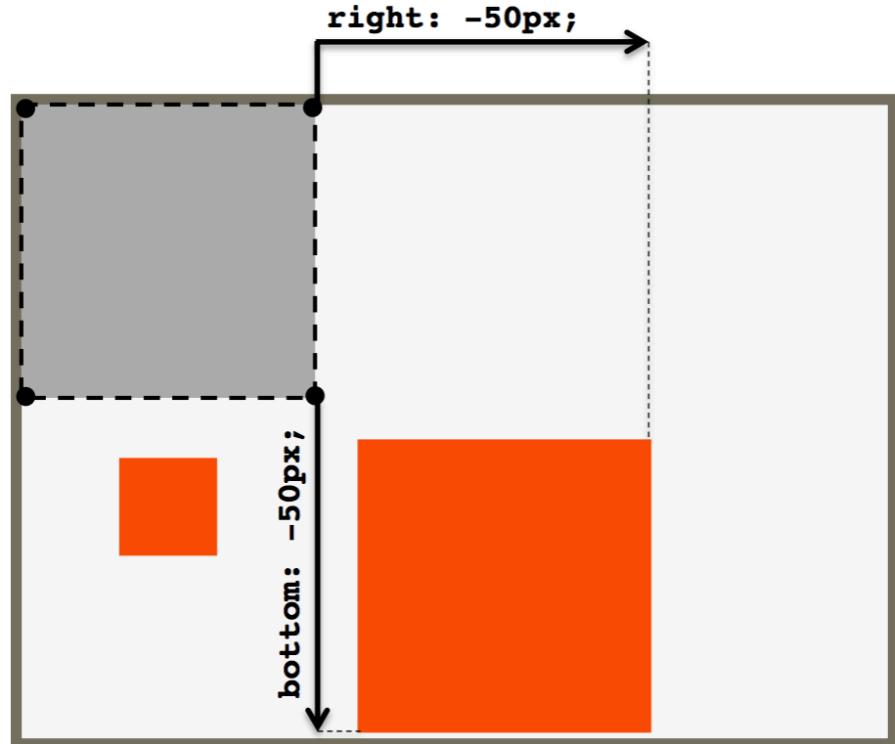
```
p {  
  position: relative;  
  top: 50px;  
  left: 50px;  
}
```



Normal document flow
remains

TOP, LEFT, BOTTOM, RIGHT (TAIP PAT IR SU NEIGIAMOMIS REIKŠMĖMIS)

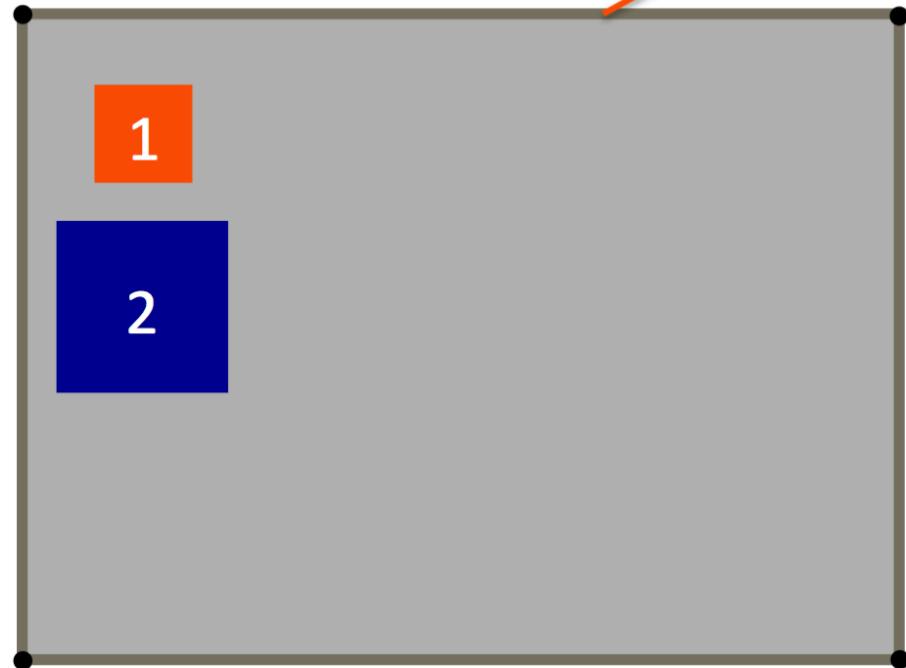
```
p {  
    position: relative;  
    bottom: -50px;  
    right: -50px;  
}
```



ABSOLUTE SKAIČIUJAMA NUO ARČIAUSIO TĖVINIO RELATIVE ELEMENTO

```
p { /* #1 */  
}
```

position: relative;



ELEMNTAS IŠIMAMAS IŠ REGULIARAUS FLOW

```
p { /* #1 */  
  position: absolute;  
}
```

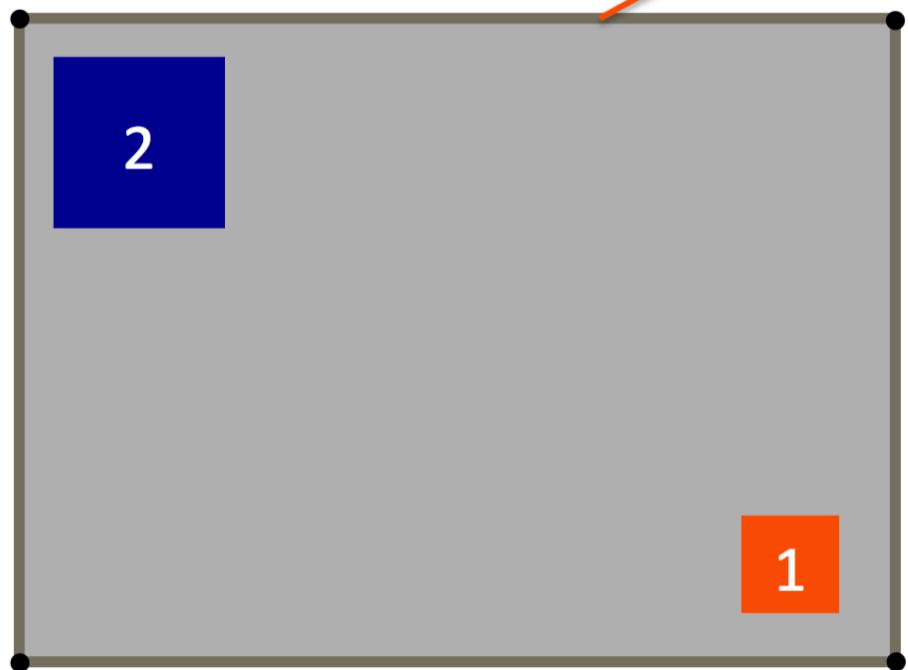
position: relative;



VERTINAMA PAGAL TÉVINĮ ELEMENTĄ

position: relative;

```
p { /* #1 */  
    position: absolute;  
    bottom: 10px;  
    right: 10px;  
}
```



MEDIA QUERIES

Media Feature (resolves to true or false)

```
@media (max-width: 767px) {  
  p {  
    color: blue;  
  }  
}
```

If TRUE,
styles within
curly braces
apply.

MEDIA QUERY GALIMYBÈS

```
@media (max-width: 800px) {...}
```

```
@media (min-width: 800px) {...}
```

```
@media (orientation: portrait) {...}
```

```
@media screen {...}
```

```
@media print {...}
```

MEDIA QUERY KOMBINACIJOS

Devices with width within a range

```
@media (min-width: 768px) and (max-width: 991px) {...}
```

Comma is equivalent to OR:

```
@media (max-width: 767px) , (min-width: 992px) {...}
```

MEDIA QUERY CSS KOMBINAVIMAS

```
p { color: blue; } /* base styles */  
...  
@media (min-width: 1200px) {  
...  
}  
  
@media (min-width: 992px) and (max-width: 1199px) {  
...  
}  
...
```



THE WHITE SUPPLY
ALL NEW
TOMORROW 10PM

TLC

4GIFS.com

7 LYGIS

JAVASCRIPT

KINTAMIEJI

```
var message = "hi";
```

Person Object

name

firstName: "Yaakov",
lastName: "Chaikin",

value

name

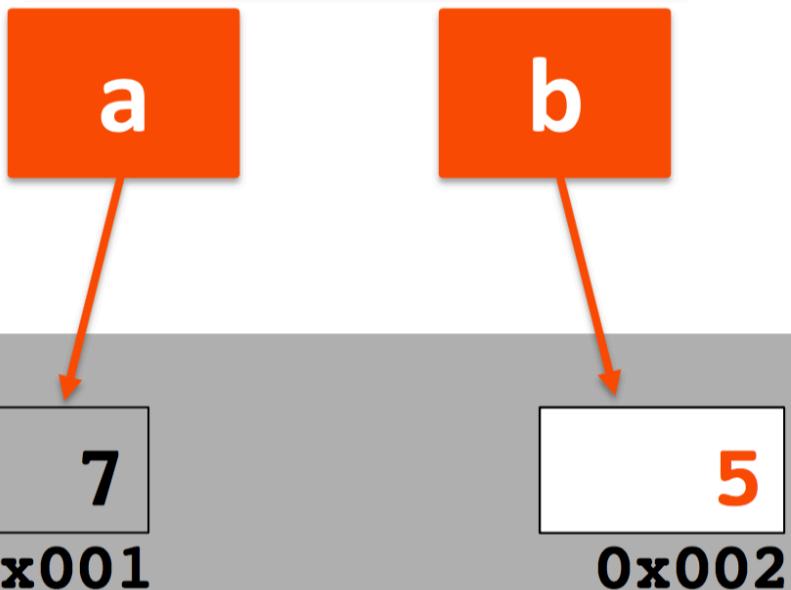
social: {

linkedin : "yaakovchaikin",
twitter: "yaakovchaikin",
facebook: "CourseraWebDev"

}

value

Passed by value



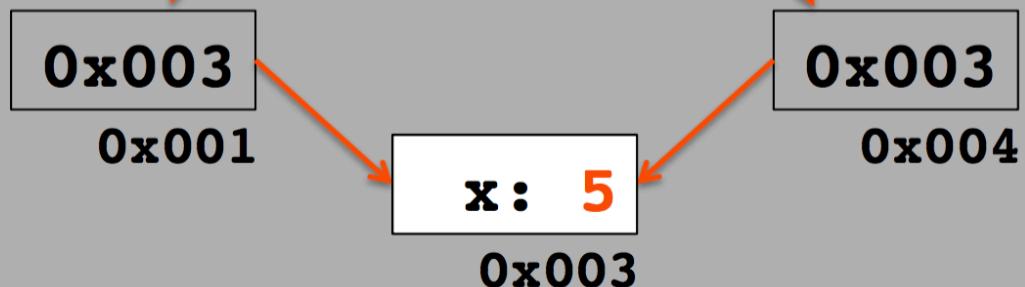
```
var a = 7;  
var b = a;  
b = 5;
```

memory

Passed by reference

a b

```
var a = {x: 7};  
var b = a;  
b.x = 5;
```



JAVASCRIPT TIPAI

OBJECT vs PRIMITIVE

BOOLEAN

UNDEFINED

NULL

NUMBER

STRING

FUNKCIJOS

```
function a () {  
    ...  
}
```

Function name

FUNKCIJŲ DEKLARACIJA

```
function a () {...}
```

```
var a = function () {...}
```

Value of function assigned,
NOT the returned result!

No name defined

FUNKCIJŲ VYKDYMAS

```
function a () {...}
```

Defines function

```
a();
```

Executes function (aka invokes function)

FUNKCIJŲ ARGUMENTAI

Arguments defined without 'var'

```
function compare (x, y) {  
    return x > y;  
}
```

SCOPE LOCAL

```
// code here can not use carName

function myFunction() {
    var carName = "Volvo";

    // code here can use carName

}
```

SCOPE GLOBAL

```
var carName = "Volvo";  
  
// code here can use carName  
  
function myFunction() {  
    // code here can use carName  
  
}
```

Global

```
var x = 2;  
A();
```

Function A

```
var x = 5;  
B();
```

Even though
'B' is called
within 'A'

'B' is defined
within Global

Function B

```
console.log(x);
```

Result: x = 2

GLOBAL VS LOCAL

```
var myFunction = function () {
    var name = 'Todd';
    console.log(name); // Todd
};

// Uncaught ReferenceError: name is not defined
console.log(name);
```

FUNCTION SCOPE

```
var myFunction = function () {  
    var name = 'Todd';  
    console.log(name); // Todd  
};  
// Uncaught ReferenceError: name is not defined  
console.log(name);
```

PAVELDIMUMAS

```
// Scope A
var myFunction = function () {
    // Scope B
    var name = 'Todd'; // defined in Scope B
    var myOtherFunction = function () {
        // Scope C: `name` is accessible here!
    };
};
```

PAVELDIMUMAS

```
// Scope A
var myFunction = function () {
    // Scope B
    var name = 'Todd'; // defined in Scope B
    var myOtherFunction = function () {
        // Scope C: `name` is accessible here!
    };
};
```

EILIŠKUMAS

```
var myFunction = function () {
    var name = 'Todd';
    var myOtherFunction = function () {
        console.log('My name is ' + name);
    };
    console.log(name);
    myOtherFunction(); // call function
};

// Will then log out:
// `Todd`
// `My name is Todd`
```

DESIGN PATTERNS

this & that

Immediately Invoked Function Expressions (IIFE)

Closure pattern

Module pattern

Callbacks

“use strict”

THIS

```
var myFunction = function () {
    console.log(this); // this = global, [object Window]
};

myFunction();

var myObject = {};
myObject.myMethod = function () {
    console.log(this); // this = Object { myObject }
};

var nav = document.querySelector('.nav'); // <nav class="nav">
var toggleNav = function () {
    console.log(this); // this = <nav> element
};
nav.addEventListener('click', toggleNav, false);
```

THIS PROBLEMAS

```
var nav = document.querySelector('.nav'); // <nav class="nav">
var toggleNav = function () {
  console.log(this); // <nav> element
  setTimeout(function () {
    console.log(this); // [object Window]
  }, 1000);
};
nav.addEventListener('click', toggleNav, false);
```

THAT SPRENDIMAS

```
var nav = document.querySelector('.nav'); // <nav class="nav">
var toggleNav = function () {
  var that = this;
  console.log(that); // <nav> element
  setTimeout(function () {
    console.log(that); // <nav> element
  }, 1000);
};
nav.addEventListener('click', toggleNav, false);
```

CLOSURE

```
var sayHello = function (name) {          sayHello('Todd'); // nothing happens, no errors, just silence...
  var text = 'Hello, ' + name;
  return function () {
    console.log(text);
  };
};
```

```
var helloTodd = sayHello('Todd');
helloTodd(); // will call the closure and log 'Hello, Todd'
```

CALLBACK

```
function showMessage(message){  
    setTimeout(function(){  
        alert(message);  
    }, 3000);  
}  
  
showMessage('Function called 3 seconds ago');
```

CALLBACK

```
function fullName(firstName, lastName, callback){  
    console.log("My name is " + firstName + " " + lastName);  
    callback(lastName);  
}  
  
var greeting = function(ln){  
    console.log('Welcome Mr. ' + ln);  
};  
  
fullName("Jackie", "Chan", greeting);
```

CALLBACK

```
function fullName(firstName, lastName, callback){  
    console.log("My name is " + firstName + " " + lastName);  
    callback(lastName);  
}  
  
fullName("Jackie", "Chan", function(ln){console.log('Welcome Mr. ' + ln)});
```

IIFE

```
(function () {  
    alert('Woohoo!'); // transformuoja ī expression  
}());
```

```
var sayWoohoo = function () {  
    alert('Woohoo!'); // jau yra function expression  
}();
```

Tai nėra globalios funkcijos

PRIVĀCIOS FUNKCIJOS

```
(function () {
    var myFunction = function () {
        // do some stuff here
    };
})();

myFunction(); // Uncaught ReferenceError: myFunction is not defined
```

METODAI IR PUBLIC FUNKCIJOS

```
// define module
var Module = (function () {
    return {
        myMethod: function () {

        },
        someOtherMethod: function () {

        }
    };
})();

// call module + methods
Module.myMethod();
Module.someOtherMethod();
```

```
var Module = (function () {
    var myModule = {};
    var privateMethod = function () {
        };

    myModule.publicMethod = function () {
        };

    myModule.anotherPublicMethod = function () {
        };

    return myModule; // returns the Object with public methods
})();

// usage
Module.publicMethod();
```