AN INTRODUCTION TO FRONTEND FOR BEGINNERS

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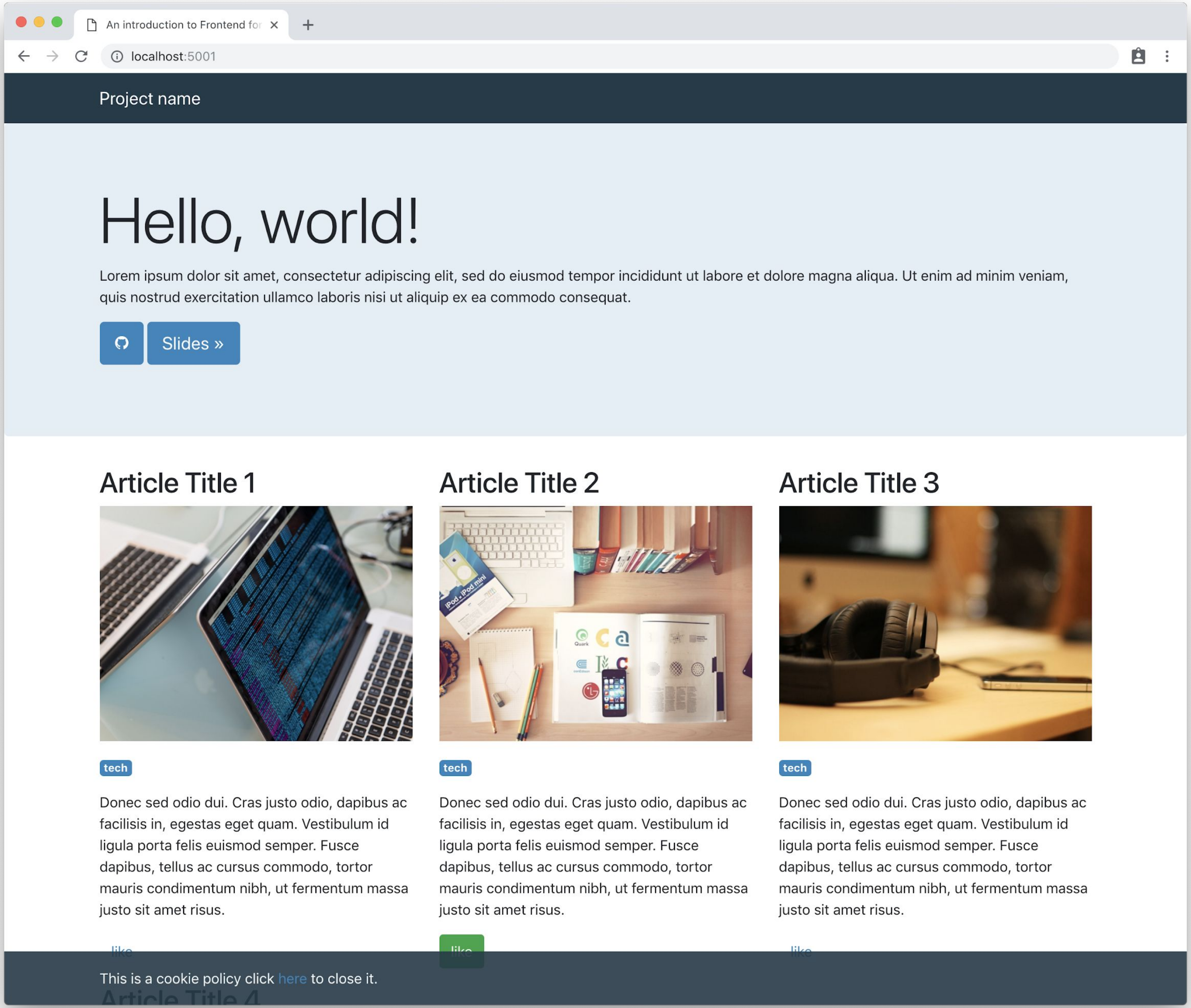
GOAL

https://git.io/vbZ3P



HTML

HTML

- The acronym “HTML” stands for Hypertext Markup Language
- It is not a programming language
- It is a markup language which describes the structure of a web page semantically
- It describes how to lay out the content of a web page using HTML elements called tags
- It tells the browser what to display.

TAG

- Each tag has a defined meaning
- It can contain other tags
- They are enclosed in angle brackets:
- Usually tags are made up of two elements: a "start tag" and an "end tag"
- The start tag may include attributes within the tag

<SPAN key="value"> testo </SPAN>

void elements (http://bit.ly/void-elements)

<INPUT key="value">

TAGs

<!DOCTYPE html>

is not an HTML tag; it is an instruction to the web browser about what version of HTML the page is written in

```
<!DOCTYPE html>
<html>
   …
```

<title> embedded in <head> tag

page title

```
<title>title is visible inside the browser tab</title>
```

<html> - <head> - <body>

base structure of an HTML document

```
<!DOCTYPE html>
<html>
   <head> … </head>
   <body> … </body>
</html>
```

<meta> embedded in <head> tag

metadata are not displayed on the page but are used by browsers or search engines

```
<meta charset="utf-8">
<meta name="description" content="Page description.">
<meta name="twitter:card" content="summary">
```

TAGs

is a generic inline container for phrasing content

this ****text is on the**** same line

this text is on the same line

<a>

link

link to ****google****

link to google

paragraph

** **this is a paragraph** **this is a paragraph** **

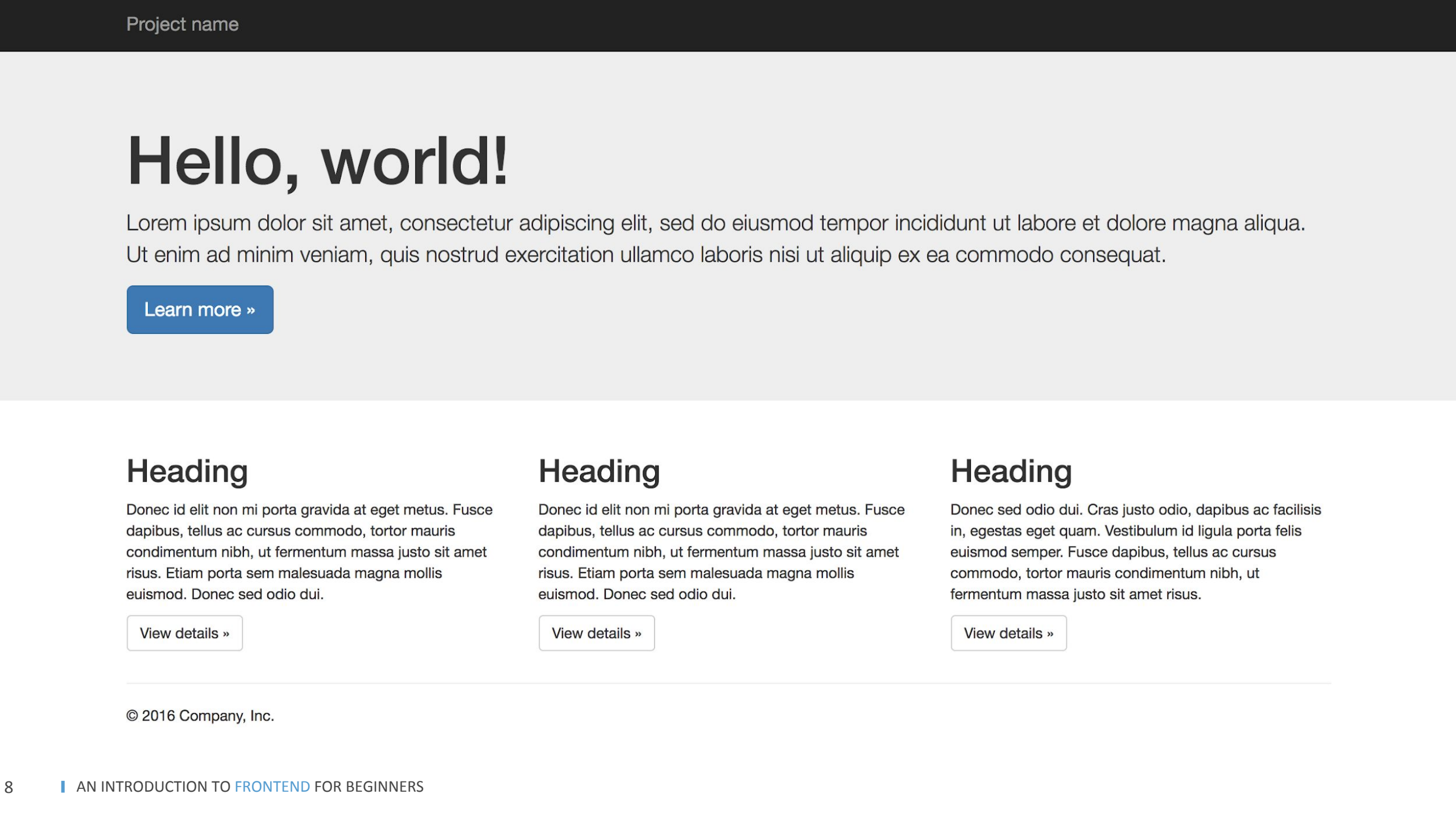
this is a paragraph

this is a paragraph

- <section>

defines a division or a section in an HTML document

```
<div>
   <div>this is a section</div>
</div>
```


Project name
Hello, world!
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.
Learn more »
Heading
Donec id elit non mi porta gravida at eget metus. Fusce dapibus, tellus ac cursus commodo, tortor mauris condimentum nibh, ut fermentum massa justo sit amet risus. Etiam porta sem malesuada magna mollis euismod. Donec sed odio dui.
View details »
Heading
Donec id elit non mi porta gravida at eget metus. Fusce dapibus, tellus ac cursus commodo, tortor mauris condimentum nibh, ut fermentum massa justo sit amet risus. Etiam porta sem malesuada magna mollis euismod. Donec sed odio dui.
View details »
Heading
Donec sed odio dui. Cras justo odio, dapibus ac facilisis in, egestas eget quam. Vestibulum id ligula porta felis euismod semper. Fusce dapibus, tellus ac cursus commodo, tortor mauris condimentum nibh, ut fermentum massa justo sit amet risus.
View details »
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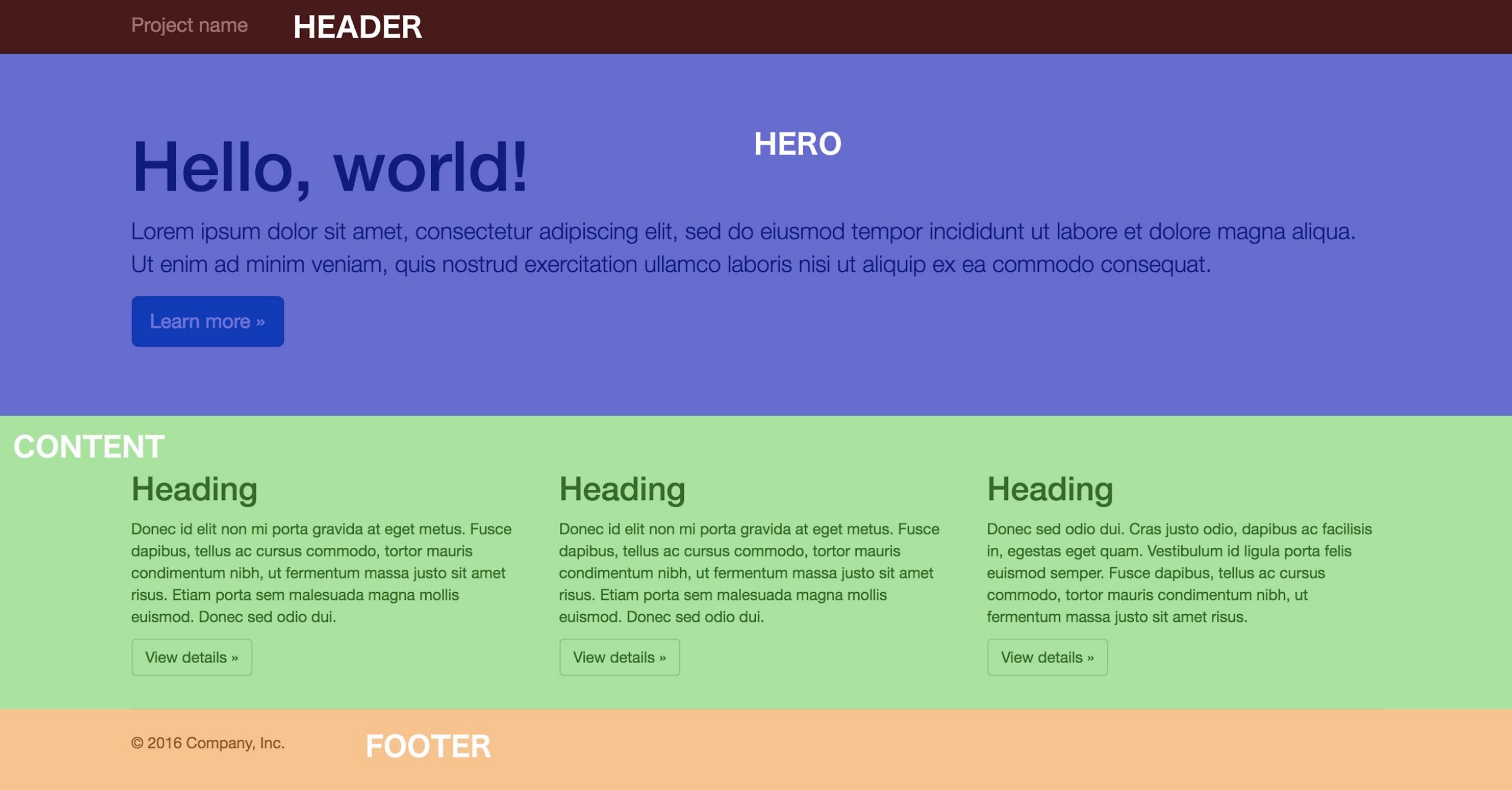
Project name
HEADER
Hello, world!
HERO
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.
Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.
Learn more »
CONTENT
Heading
Donec id elit non mi porta gravida at eget metus. Fusce dapibus, tellus ac cursus commodo, tortor mauris condimentum nibh, ut fermentum massa justo sit amet risus. Etiam porta sem malesuada magna mollis euismod. Donec sed odio dui.
View details »
Heading
Donec id elit non mi porta gravida at eget metus. Fusce dapibus, tellus ac cursus commodo, tortor mauris condimentum nibh, ut fermentum massa justo sit amet risus. Etiam porta sem malesuada magna mollis euismod. Donec sed odio dui.
View details »
Heading
Donec sed odio dui. Cras justo odio, dapibus ac facilisis in, egestas eget quam. Vestibulum id ligula porta felis euismod semper. Fusce dapibus, tellus ac cursus commodo, tortor mauris condimentum nibh, ut fermentum massa justo sit amet risus.
View details »
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FOOTER

TAGs

<h1> - <h2> - <h…> - <h6>

heading

```
<h1>Title h1</h1>
<h2>Title h2</h2>
<h3>Title h3</h3>
<h4>Title h4</h4>
<h5>Title h5</h5>
<h6>Title h6</h6>
```

Title h1

Title h2

Title h3

Title h4

Title h5

Title h6

<table> - <tr> - <td>

table – row – cell

```
<table>
  <tr>
    <td>cell A1</td>
    <td>cell A2</td>
  </tr>
</table>
```

cell A1	cell A2

 -

ordered list

```
<ol>
  <li>first item</li>
  <li>second item</li>
</ol>
```

1. first item
2. second item

 -

unordered list

```
<ul>
  <li>first item</li>
  <li>second item</li>
</ul>
```

- first item
- second item

TAGs – VOID ELEMENTS

line break

this text contains**
**a line break

this text contains
a line break

<hr>
defines a thematic break

this is a topic
<hr>
this is a different topic

this is a topic

this is a different topic

<input>
text input

<input type="text" name="firstname">

<img>
image

<img src="assets/html5.jpg">

ATTRIBUTES

<TAG>

all tags can have an **id** and a **class**

```
<div id="my-id" class="my-class my-second-class">text</div>
```

<a>

href contains a URL or a URL fragment that the hyperlink points to

```
link to <a href="https://www.google.it">google</a>
```

<input>

- name and **value** are submitted with the form data
- type specifies the type <input> element to display

```
<input type="text" name="firstname" value="">
```


the attribute **src** is mandatory and defines the image URL

```
<img src="assets/html5.jpg" alt="" title="">
```

HTML 5 NEW TAG

TAG NOT SUPPORTED IN HTML 5

<!--...-->	Define a comment
<!DOCTYPE>	Defines the document type
<a>	Defines a hyperlink href, hreflang, media, ping , rel, target, type
<abbr>	Defines an abbreviation
<acronym>	Used to define an embedded acronyms
<address>	Defines an address element
<applet>	Used to define an embedded applet
<area>	Defines an area inside an image map alt, coords, href, hreflang, media, ping, rel, shape, target, type
<article>	Defines an article cite, pubdate
<aside>	Defines content aside from the page content
<audio>	Defines sound content autobuffer, autoplay, controls, src
<b>	Defines bold text
<base>	Defines a base URL for all the links in a page href, target
<basefont>	Used to define a default font-color, font-size, or font-family for all the document
<bdo>	Defines the direction of text display dir
<big>	Used to make text bigger
<blockquote>	Defines a long quotation cite
<body>	Defines the body element
 	Inserts a single line break
	Defines a push button autofocus, disabled, form,

<datalist>	Defines a dropdown list
<dd>	Defines a definition description
<del>	Defines deleted text cite, datetime
<details>	Defines details of an element open
<dialog>	Defines a dialog (conversation)
<dfn>	Defines a definition term
<dir>	Used to define a directory list
	Defines a section in a document
<dl>	Defines a definition list
<dt>	Defines a definition term
	Defines emphasized text
<embed>	Defines external interactive content or plugin height, src, type, width
<fieldset>	Defines a fieldset disabled, form, name
<figure>	Defines a group of media content, and their caption
<font>	Used to define font face, font size, and font color of text
<footer>	Defines a footer for a section or page
<form>	Defines a form accept-charset, action, autocomplete, enctype, method, name, novalidate, target
<frame>	Used to define one particular window (frame) within a frameset
<frameset>	Used to define a frameset, which organized multiple windows (frames)
<h1> to <h6>	Defines header 1 to header 6
<head>	Defines information about the document
<header>	Defines a header for a section or page
<hgroup>	Defines information about a section in a document

<ins>	Defines inserted text cite, datetime
<keygen>	Defines a generated key in a form autofocus, challenge, disabled, form, keytype, name
<kbd>	Defines keyboard text
<label>	Defines an inline sub window for, form
<legend>	Defines a title in a fieldset
	Defines a list item value
<link>	Defines a resource reference href, hreflang, media, rel, sizes, type
<map>	Defines an image map name
<mark>	Defines marked text
<menu>	Defines a menu list label, type
<meta>	Defines meta information charset, content, http-equiv, name
<meter>	Defines measurement within a predefined range high, low, max, min, optimum, value
<nav>	Defines navigation links
<noframes>	Used to display text for browsers that do not handle frames
<noscript>	Defines a noscript section
<object>	Defines an embedded object data, form, height, name, type, usemap, width
	Defines an ordered list reversed, start
<optgroup>	Defines an option group label, disabled
<option>	Defines an option in a drop-down list disabled, label, selected, value
	Defines some types of output

<samp>	Defines sample computer code
<script>	Defines a definition list async, type charset defer, src
<section>	Defines a section cite
<select>	Defines a selectable list autofocus, disabled, form, multiple, name, size
<small>	Defines small text
<source>	Defines media resources media, src, type
	Defines a section in a document
	Defines strong text
<style>	Defines a style definition type, media, scoped
<sub>, <sup>	Defines sub/super-scripted text
<table>	Defines a table summary
<tbody>	Defines a table body summary
<td>	Defines a table cell colspan, headers, rowspan
<textarea>	Defines a text area autofocus, cols, disabled, form, maxlength, name, placeholder, readonly, readonly, required, rows, wrap
<tfoot>, <thead>	Defines a table footer / head
<th>	Defines a table header colspan, headers, rowspan, scope
<time>	Defines a date/tim datetime
<title>	Defines the document title
<tr>	Defines a table row datetime

REFERENCES

- W3C – https://www.w3.org/html
- Codecademy – https://www.codecademy.com/learn/learn-html
- MDN web docs – https://developer.mozilla.org/en/docs/Web/HTML
- w3schools – http://www.w3schools.com/TAgs

HTML
in action

http://bit.ly/fe4b-html

CSS

CSS

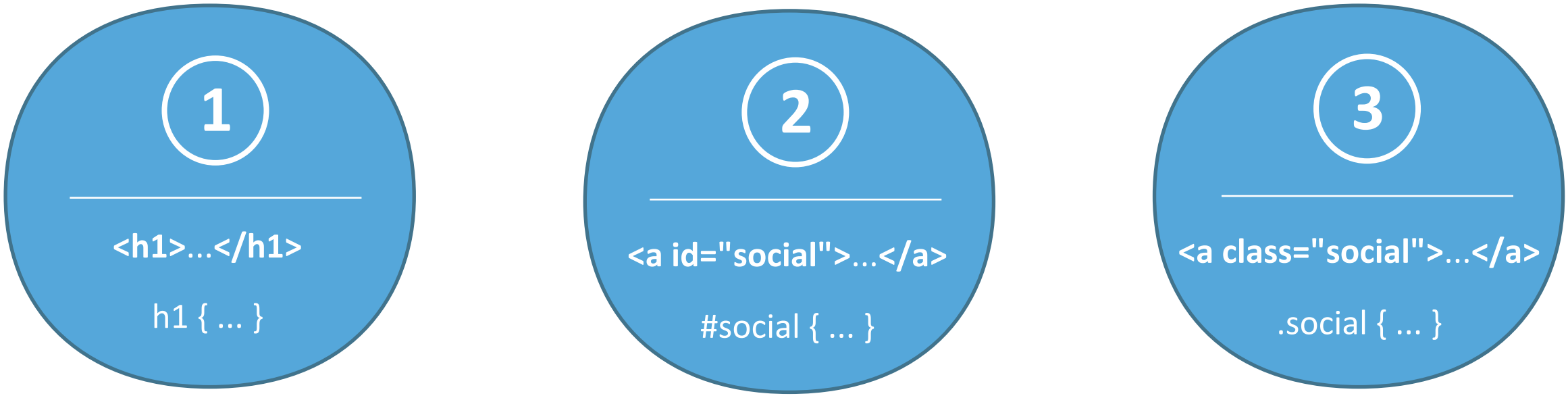
- The acronym “CSS” stands for Cascade Style Sheet
- It is not a programming language
- Used for describing the presentation of an HTML document
- Defines fonts, layout, colors, etc. of the whole page and single elements
- It tells the browser how to display informations.

CSS

A web page is styled according to a set of style rules

SELECTORS

in order to identify which elements are affected by style rules we need a selector



tag name

element ID (unique)

element class

SELECTORS PRO

further examples of how to combine selectors

div	all
div, span	and
div span	nested in
div > span	children of

.elm-class	elements with class "elm-class"
div.elm-class	all with class "elm-class"

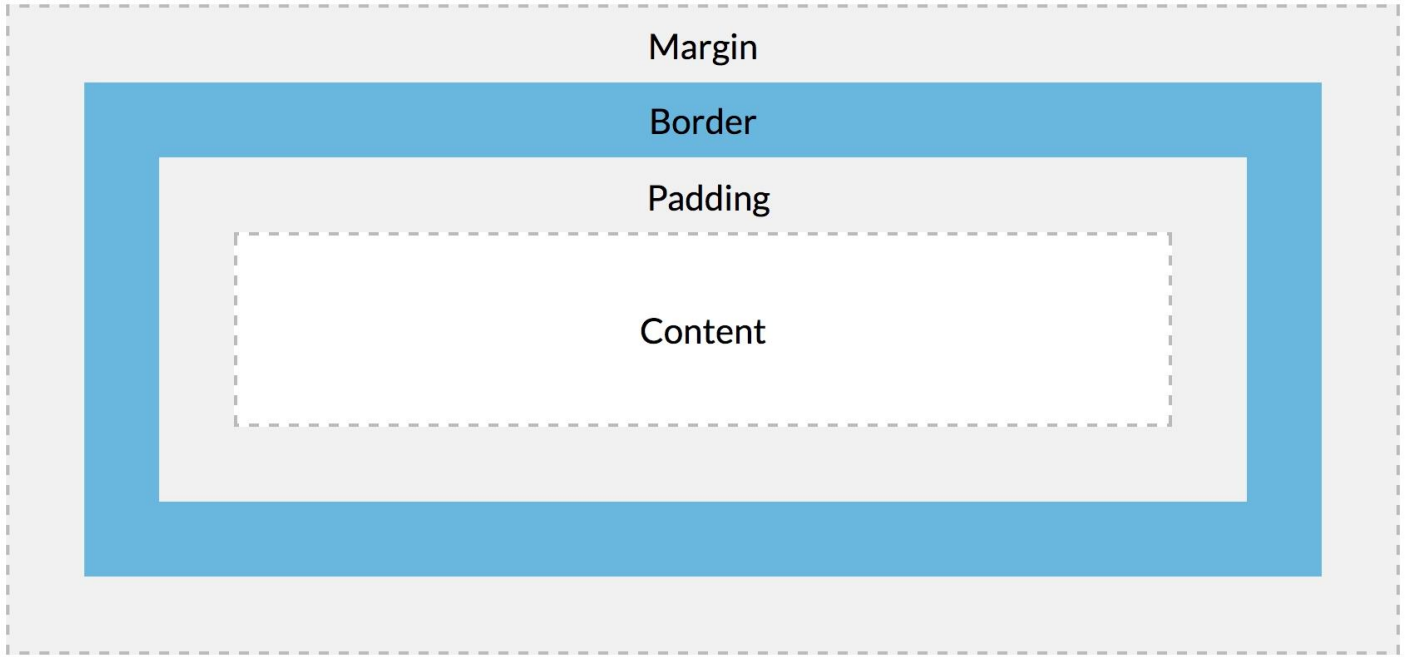
#elm-id	element with id "elm-id"
div#elm-id	with id "elm-id"

#elm-id.elm-class	element with id "elm-id" and class "elm-class"

:hover	element during mouse-over
:focus	element during focus

BOX MODEL

the CSS box model is essentially a box that wraps around every HTML element



PROPERTIES and VALUES

height: 150px;
width: 50%;

sets a width and a height to the element

padding: 10px;
padding: 10px 15px;
padding: 10px 15px 10px 10px;
padding-top: 10px; padding-right: 15px; …

increases space around the border and content of the element

border: 1px solid #F1F1F1;
border-top: 2px solid #F1F1F1;

adds a border around the element

margin: 10px;
margin: 10px 15px;
margin: 10px 15px 10px 10px;

increases the element margin

PROPERTIES PRO

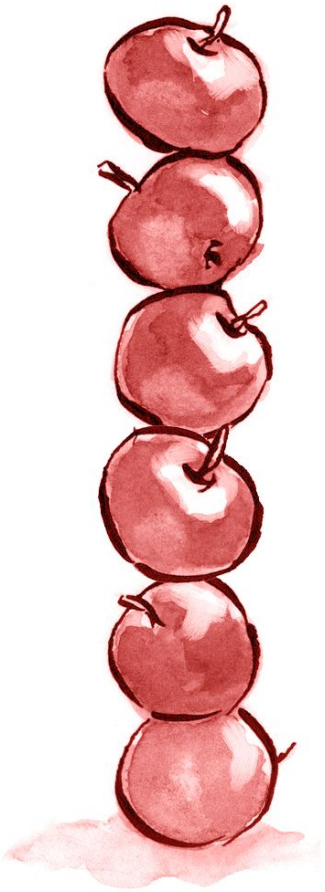
color	#FF0000
background-color	blue
background-image	url("html5.png")

text-align	left, right, center
text-shadow	1px 1px 1px blue
text-decoration	~~line-through~~, underline

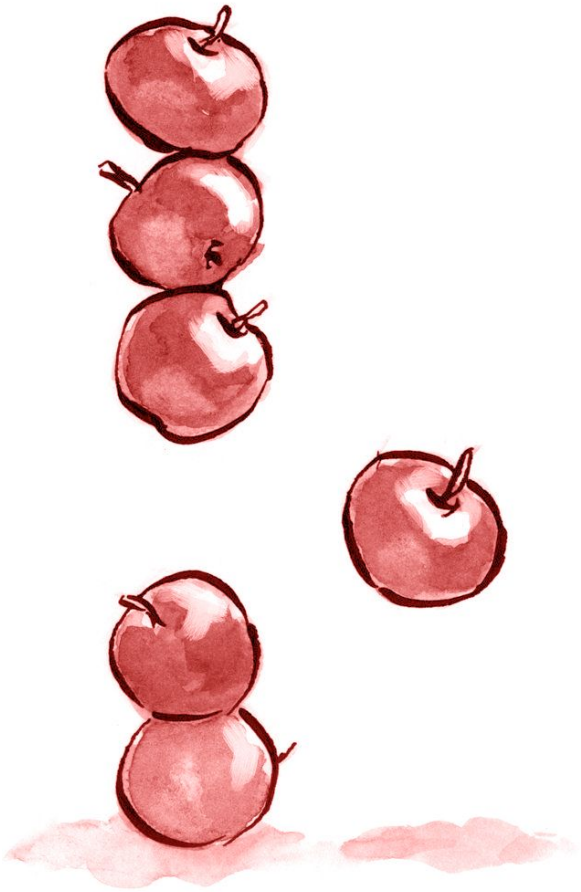
font-family	Arial, sans-serif
font-size	14px
font-weight	**bold**
font-style	*italic*

position	static, relative, absolute
top	
right	
bottom	
left	

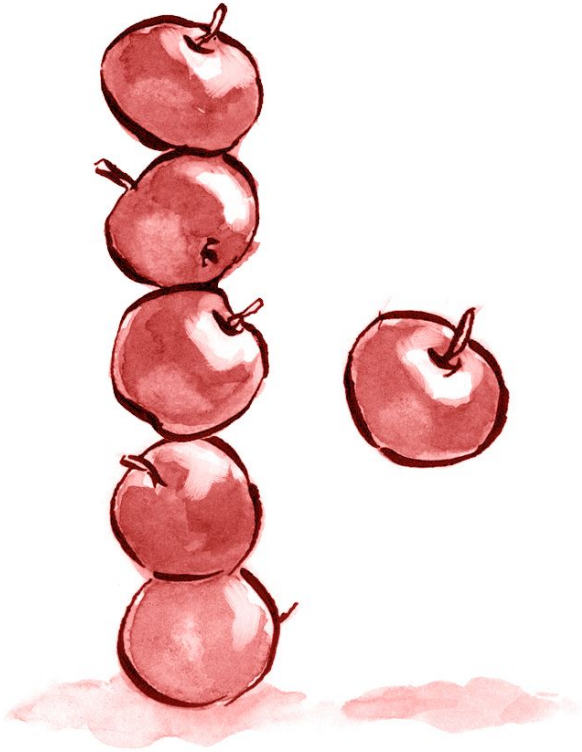
POSITIONS



Static



Relative



Absolute

DISPLAY

every HTML element has a default display value depending on what type of element it is

display: block;

 and are block elements.
A block-level element always starts on a new line and takes up the full width available.

→

** **This is a paragraph** **

** **This is another paragraph** **

display: inline;

<a> does not start on a new line and only takes up as much width as necessary

→

This **<a>**link**** does not start on a new line and only takes up as much width as necessary.

CSS Selectors

*	All elements
div	
div *	All elements within
div span	within
div, span	and
div > span	with parent
div + span	preceded by
.class	Elements of class "class"
div.class	of class "class"
#itemid	Element with id "itemid"
div#itemid	with id "itemid"
a[attr]	<a> with attribute "attr"
a[attr='x']	<a> when "attr" is "x"
a[class~='x']	<a> when class is a list containing 'x'
a[lang|='en']	<a> when lang begins "en"

CSS Colours

#789abc	RGB Hex Notation
#acf	Equates to "#aaccff"
rgb(0,-25,50)	Value of each of red, green, and blue. 0 to 255, may be swapped for percentages.

CSS Pseudo Selectors and Pseudo Classes

:first-child	First child element
:first-line	First line of element
:first-letter	First letter of element
:hover	Element with mouse over
:active	Active element
:focus	Element with focus
:link	Unvisited links
:visited	Visited links
:lang(var)	Element with language "var"
:before	Before element
:after	After element

CSS Sizes

0	0 requires no unit
Relative Sizes	
em	1em equal to font size of parent (same as 100%)
ex	Height of lower case "x"
%	Percentage
Absolute Sizes	
px	Pixels
cm	Centimeters
mm	Millimeters
in	Inches
pt	1pt = 1/72in
pc	1pc = 12pt

CSS Positioning

display	clear
position	z-index
top	direction
right	unicode-bidi
bottom	overflow
left	clip
float	visibility

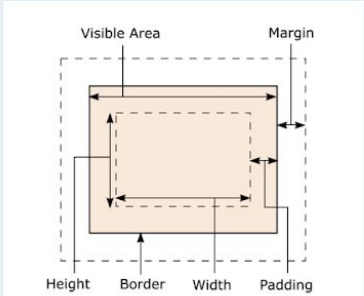
CSS Dimensions

width	min-height
min-width	max-height
max-width	vertical-align
height	

CSS Colour and Background

color	background-repeat
background	background-image
background-color	background-position
background-attachment	

CSS Box Model



CSS Boxes

margin	border-color
margin-top	border-top-color
margin-right	border-right-color
margin-bottom	border-bottom-color
margin-left	border-left-color
padding	border-style
padding-top	border-top-style
padding-right	border-right-style
padding-bottom	border-bottom-style
padding-left	border-left-style
border	border-width
border-top	border-top-width
border-bottom	border-right-width
border-right	border-bottom-width
border-left	border-left-width

CSS Text

text-indent	word-spacing
text-align	text-transform
text-decoration	white-space
text-shadow	line-height
letter-spacing	

CSS Paging

size	page-break-inside
marks	page
page-break-before	orphans
page-break-after	widows

CSS Interface

cursor	outline-style
outline	outline-color
outline-width	

CSS Aural

volume	elevation
speak	speech-rate
pause	voice-family
pause-before	pitch
pause-after	pitch-range
cue	stress
cue-before	richness
cue-after	speak-punctuation
play-during	speak-numeral
azimuth	

CSS Miscellaneous

content	list-style-type
quotes	list-style-image
counter-reset	list-style-position
counter-increment	marker-offset
list-style	

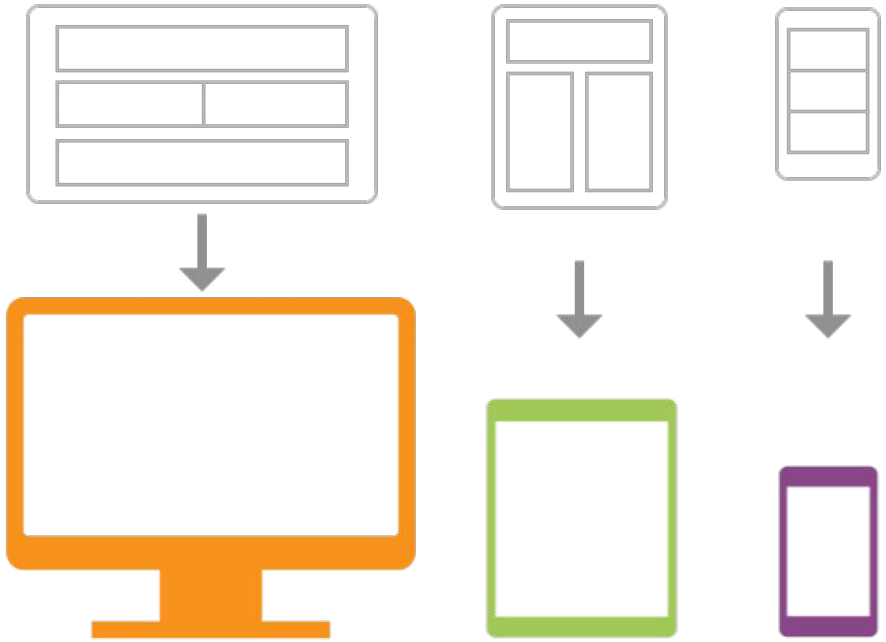
CSS Fonts

font	font-weight
font-family	font-stretch
font-style	font-size
font-variant	font-size-adjust

AWD vs RWD

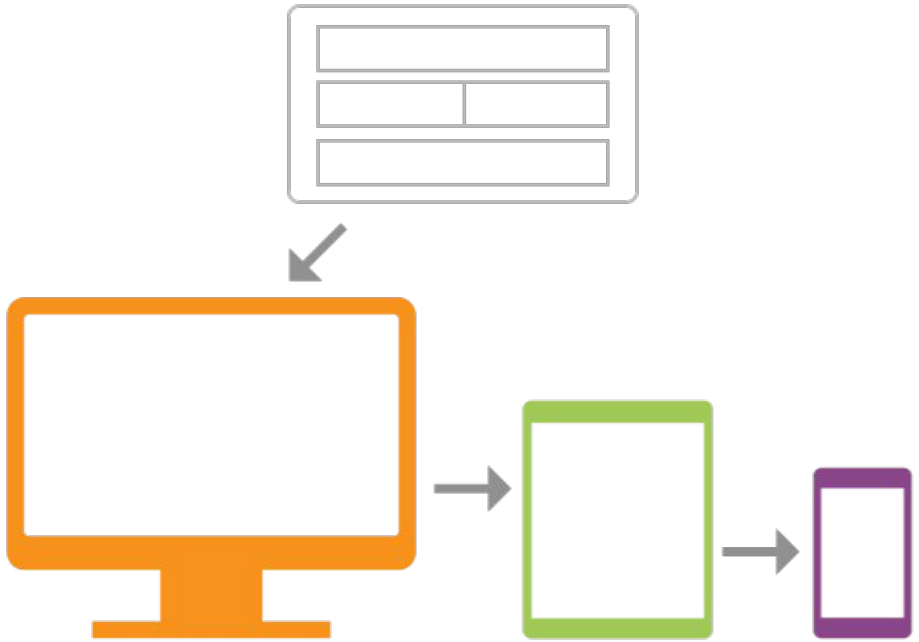
ADAPTIVE WEB DESIGN

multiple templates
specific for each device



RESPONSIVE WEB DESIGN

a single design that
adjusts to each device



RESPONSIVE WEB DESIGN

- Rule 1 – <meta name="viewport" content="width=device-width, initial-scale=1.0">
- Rule 2 – use % values instead of px
- Rule 3 – define breakpoints using media query

Media Query uses @media rule to include a set of CSS properties only if the specific condition is true

```
.col {
   width: 100%;
}

@media (min-width: 1200px) {
   .col {
      width: 50%;
   }
}
```

WHY "CASCADING" ?

the rule used is chosen by cascading down from the more general rules to the specific rule required

selector	# of ID	# of CLASS	# of TAG	specificity
#my-id	**1**	0	0	**100**
.my-class	0	**1**	0	**10**
li	0	0	**1**	**1**
ul li	0	0	**2**	**2**
li.my-class	0	**1**	**1**	**11**

```
<ul>
  <li id="my-id" class="my-class"></li>
</ul>
```

- the most specific rule is chosen
- with equal specificity, the last rule is chosen
- style-inline rules out every other rule

WHERE DO I WRITE THIS?

Style inline 

don't try this at the office

this ****text is blue****

this text is blue

<style> 

not so bad, but avoid it anyway

```
<style>
   span { color: blue; }
</style>
```

<link>

load it from file

new tag is embedded in <head> tag

<link rel="stylesheet" href="style.css">

style.css

```
span {
   color: blue;
}
```

REFERENCES

- W3C – https://www.w3.org/Style/CSS/Overview.en.html
- Codecademy – https://www.codecademy.com/learn/learn-css
- MDN web docs – https://developer.mozilla.org/en/docs/Web/CSS
- w3schools – https://www.w3schools.com/css

CSS
in action

http://bit.ly/fe4b-css

JAVASCRIPT

JAVASCRIPT

- It’s not an acronym
- It is a **scripting Object-Oriented** language
- Everything is an **object** (except **null** and **undefined**)
- It is **untyped**
- It is implemented **client-side** in **web browsers**
- It is also implemented **server-side** with **node.js**
- It makes web pages **interactive**

VARIABLES

var x = 5;

Variable names:

- Can contain **letters**, **numbers**, **$** and **_**
- Can start with a **letter**, **$** and **_**
- Are **case-sensitive** (y and Y are two different variables)

```
var myObject = {
    name: 'John',
    age: 28
};
console.log(myObject.name);
//Prints 'John'
```

```
var myUndefined;
```

```
var myString = 'Hello' + ' ' + 'World!!';
```

```
var myNumber = 3 + 5;
```

```
var myArray = ['apple', 'lime', 3];
console.log( myArray[0] );
//Prints 'apple'
```

```
var myFloat = 3.5;
```

COMPARISON OPERATORS https://mzl.la/2wCuFwX

== VS ===

A **comparison operator** compares its operands and returns a logical value based on whether the comparison is true

`3 == 3`	`true`
`"3" == 3`	`true`
`3 < 4`	`true`
`3 === 3`	`true`
`"3" === 3`	**`false`**
`3 >= 3`	`true`

LOOPS AND ITERATION https://mzl.la/2KX0uUo

Loops offer a quick and easy way to do something repeatedly

```
for ( var step = 0; step < 5; step++ ) {
    // Runs 5 times, with values of step 0 through 4.
    console.log('Walking east one step');
}
```

for

do

```
var i = 0;
do {
    i += 1;
    console.log(i);
} while (i < 5);
```

while

```
var i = 0;
while (i < 5) {
    i += 1;
    console.log(i);
};
```

FUNCTIONS https://mzl.la/2IEQd0C

function add() { … };

- Defined through keyword **function** followed by a **name** and **( )**
- The name can contain **letters**, **numbers**, **_** and **$** (just like variables)
- The **( )** can contain **arguments** separated by commas

```
function add(num1, num2) {
    return num1 + num2;
}
```

```
var add = function (num1, num2) {
    return arguments[0] + arguments[1];
}
```

```
var result = add(5, 5);  //= 10
```

SCOPE

```
// here code can't see myVariable

function myFunction() {
    var myVariable = 5;

    // here code sees myVariable
}
```

```
var myVariable = 5;

// here code sees myVariable

function myFunction() {
    // here code sees myVariable
}
```

```
// here code sees myVariable

function myFunction() {
    myVariable = 5;
}
```

CODE

```
function carouselInterchange() {
    var innerWidth = window.innerWidth,
        imgSlide = $('.item-image-carousel');

    imgSlide.each(function(index) {
        var self = $(this);

        self.attr('src', (
            (innerWidth < 768) ? self.data('src-small')
                : ( (innerWidth >= 768 && innerWidth < 992)
                ? self.data('src-medium') : self.data('src-big') )

        ));
    });
}

$(window).ready(function() {
    carouselInterchange();
});

$(window).resize(function() {
    carouselInterchange();
});
function hide(markers) {
    setMapOnAll(null, markers);
}

function show(map, markers) {
    setMapOnAll(map, markers);
}

function setMapOnAll(map, markers) {
    for (var i = 0; i < markers.length; i++) {
        markers[i].setMap(map);
    }
}

function showLayerKML() {
    layerKML.setMap(map);
```

```
$(".cbp-hrsub-inner").mouseover(function(){
    $(".carousel-indicators").removeClass('nascondi');
    $(".carousel-indicators").addClass('nascondi');
})
$(".cbp-hrsub-inner").mouseout(function(){
    $(".carousel-indicators").removeClass('nascondi');
});

$("#navbar li").mouseover(function(){
    $(".carousel-indicators").removeClass('nascondi');
    $(".carousel-indicators").addClass('nascondi');
})
$("#navbar li").mouseout(function(){
    $(".carousel-indicators").removeClass('nascondi');
});

$(".navbar-brand").mouseover(function(){
    $(".carousel-indicators").removeClass('nascondi');
})
$(".navbar-brand").mouseout(function(){
    $(".carousel-indicators").removeClass('nascondi');
});
$(".box-submenu2").mouseover(function(){
    $(".cbp-hrmenu .cbp-hrsub-inner .col-dx-menu").removeClass('nascondi');
    $(".cbp-hrmenu .cbp-hrsub-inner .col-dx-menu").addClass('nascondi');
})
$(".box-submenu2").mouseout(function(){
    $(".cbp-hrmenu .cbp-hrsub-inner .col-dx-menu").removeClass('nascondi');
});
$(".icon-list-acqua, .icon-list-energia, .icon-list-pubblica").mouseover(functi
    $(this).find(".no").removeClass('hidden');
    $(this).find(".yes").addClass('hidden');
})
$(".icon-list-acqua, .icon-list-energia, .icon-list-pubblica").mouseout(functio
    $(this).find(".no").addClass('hidden');
    $(this).find(".yes").removeClass('hidden');
});

$(".icon-list-energia").mouseover(function(){
```

MODULE PATTERN

1

```
var myModule = (function () {

}());
```

2

```
var myModule = (function () {

    var module = {};

    return module;

}());
```

3

```
var myModule = (function () {

    var module = {},
        privateVariable = 'Hello World'
        ;

    var privateMethod = function () {
        // ...
    };

    module.publicProperty = 'Foobar';

    module.publicMethod = function () {
        alert(privateVariable);
    };

    return module;

}());
```

REFERENCES

- MDN web docs – https://developer.mozilla.org/it/docs/Web/JavaScript
- Codecademy – https://www.codecademy.com/learn/introduction-to-javascript
- JavaScript Garden – http://bonsaiden.github.io/JavaScript-Garden
- w3schools – https://www.w3schools.com/js

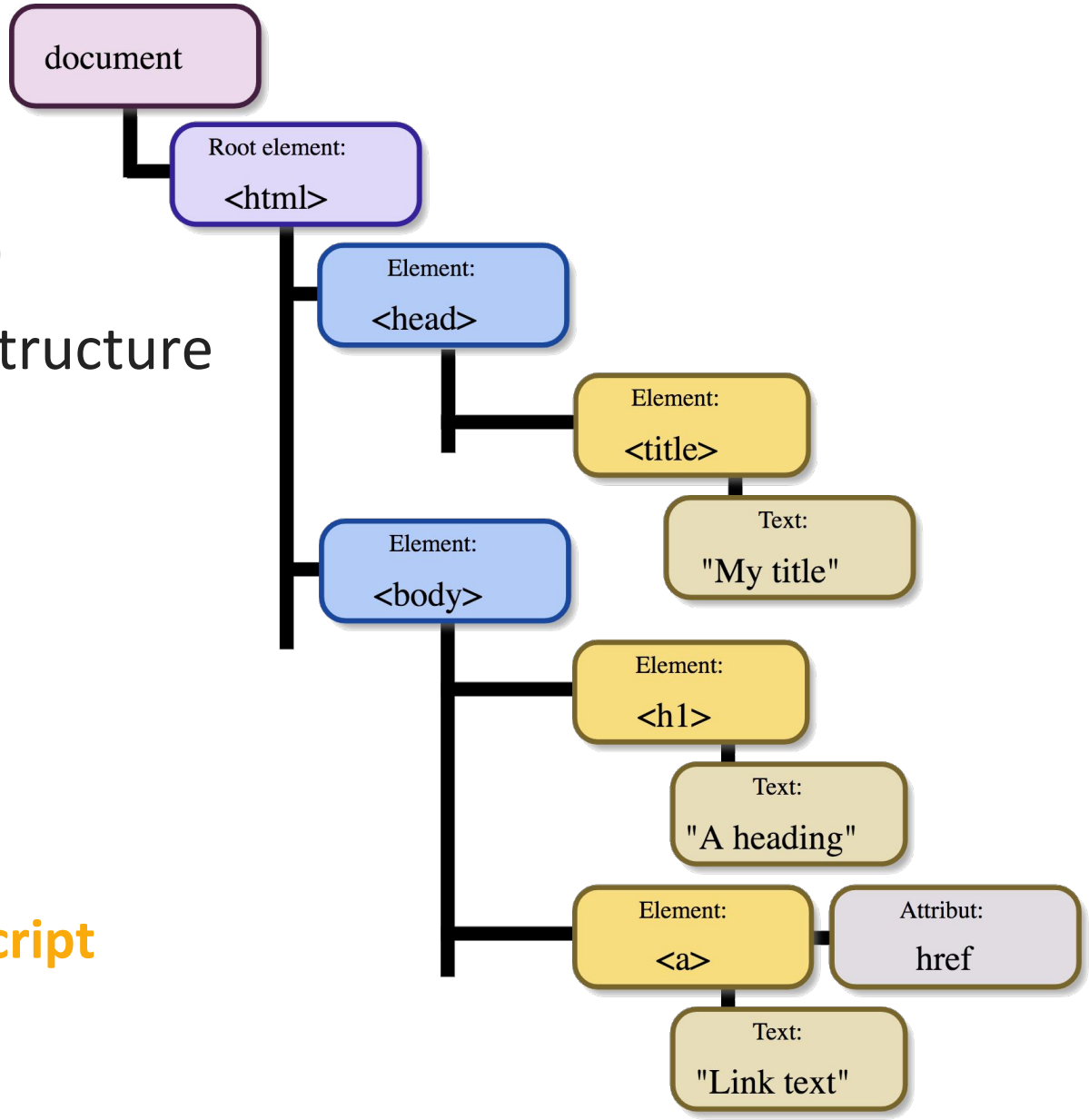
JAVASCRIPT & DOM

DOM

DOM (**Document Object Model**)

describes the HTML document as a tree structure

wherein each **node** is an **object**



- The **document** object represents your web page
- Document is made up of **nodes**
- **Element** nodes are html tags

- The HTML **DOM** can be accessed with **JavaScript**

DOM • JS FUNCTIONS

document.getElementById('my-id')

returns the element that has the ID attribute with the specified value

```
<span id="my-id">test</span>

<script>
   var element = document.getElementById("my-id");
</script>
```

document.querySelectorAll('.my-class')

returns a static NodeList representing a list of the document's elements that match the selector.

```
<span class="my-class my-class-1">test</span>
<span class="my-class my-class-2">test</span>
<script>
   var element = document.querySelectorAll(".my-class");
   // elements contains both spans.
</script>
```

document.getElementsByTagName('span')

returns a collection of all elements in the document with the specified tag name, as a NodeList object

document.getElementsByClassName('my-class')

returns a collection of all elements in the document with the specified class name, as a NodeList object

document.getElementsByName('email')

returns a collection of all elements in the document with the specified name (the value of the name attribute), as a NodeList object

document.querySelector('.my-class')

returns the first Element within the document that matches the specified selector, or group of selectors.

```
<span class="my-class my-class-1">test</span>
<span class="my-class my-class-2">test</span>
<script>
   var element = document.querySelector(".my-class");
   // element contains the first span.
</script>
```

DOM • NODE PROPERTIES

childNodes → NodeList object

returns a collection of a node's child nodes

```
<div id="my-id"><span>Hello</span> <b>World</b>!</div>

<script>
   var element = document.getElementByID("my-id");
   console.log( element.childNodes ); //= [ <span>, <b> ]
</script>
```

textContent

returns the textual content of the specified node, and all its descendants

```
<div id="my-id">Hello <b>World</b>!</div>

<script>
   var element = document.getElementByID("my-id");
   console.log( element.textContent ); //= Hello World!
</script>
```

firstChild - lastChild → Node object

returns the first and last child node of the specified node

```
<div id="my-id"><span>Hello</span> <b>World</b>!</div>

<script>
   var element = document.getElementByID("my-id");
   console.log( element.firstChild ); //= <span>
   console.log( element.lastChild ); //= <b>
</script>
```

innerHTML

returns the HTML content (inner HTML) of an element

```
<div id="my-id">Hello <b>World</b>!</div>

<script>
   var element = document.getElementByID("my-id");
   console.log( element.innerHTML ); //= Hello <b>World</b>!
</script>
```

DOM • AJAX

```
function doAjax() {
    var xhr = new XMLHttpRequest();
    xhr.open('GET', 'ajax-data.json');
    xhr.send(null);

    xhr.onreadystatechange = function () {
        if (xhr.readyState === 4) {
            if (xhr.status === 200) {
                alert(xhr.responseText);
            } else {
                alert('Error: ' + xhr.status);
            }
        }
    }
};

var ajaxElement = document.getElementById('ajax');

ajaxElement.addEventListener('click', doAjax);
```

Use XMLHttpRequest objects to interact with servers

Initializes a request

An EventHandler that is called whenever the readyState attribute changes.
readyState values are:

- UNSENT
- OPENED
- HEADERS_RECEIVED
- LOADING
- DONE

Attaches a click event to the element. When the user clicks on the element, a new ajax request will be triggered.

COMMON EVENTS
https://mzl.la/2G9oTm1

click - change
focus - blur
submit

THIS https://mzl.la/2Idy8rl

In most cases, the value of **this** is determined by how a function is called

```
function f1() {
    return this;
}

f1() === window;
//= true
```

```
var o = {
  prop: 37,
  f2: function () {
     return this.prop;
  }
};

console.log( o.f2() );
//= 37
```

```
var elm = document.getElementById('my-id');

elm.addEventListener('click', f3);

function f3(e) {
   console.log( this === e.currentTarget );
   //= true
}
```

this is set to the element the event fired from

WHERE DO I WRITE THIS?

Script inline 

don’t try this at the office

```
<a onclick="alert('Hello World!');">greet</a>
```

<script>…</script> 

not so bad, but avoid it anyway

```
<script>
   alert('Hello World!');
</script>
```

<script src="…"></script>

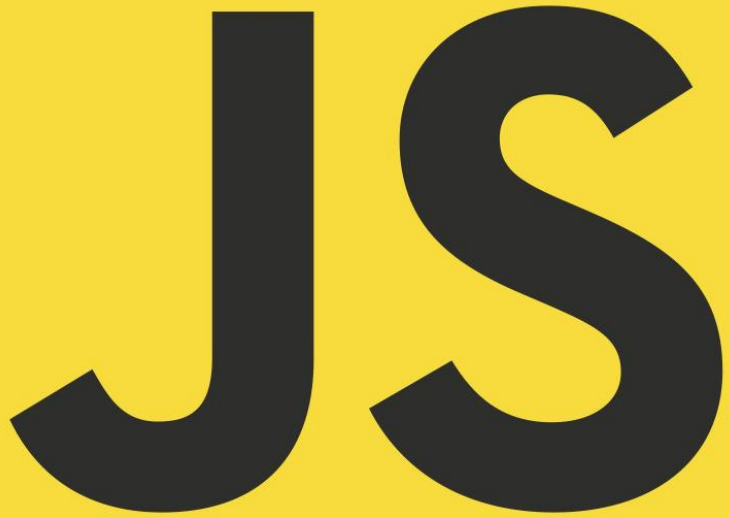
load it from file

new tag is embedded at the end of <body> tag

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

REFERENCES

- MDN web docs – https://developer.mozilla.org/en-US/docs/Web/API/Document_Object_Model
- Codecademy – https://www.codecademy.com/courses/javascript-beginner-en-gwcYv/0/1
- w3schools – https://www.w3schools.com/js/js_htmldom.asp
- What is the DOM? – https://css-tricks.com/dom/



JAVASCRIPT & DOM
in action

http://bit.ly/fe4b-js

JQUERY

JQUERY

- It is not a programming language
- It makes things like HTML document traversal and manipulation, event handling, and Ajax much simpler
- It has an easy-to-use API that works across a multitude of browsers

VERSIONI

- 1.x – support from Internet Explorer 6 (deprecated - only bug-fixing)
- 2.x – support from Internet Explorer 9 (a cleaned jQuery 1.x) (deprecated - only bug-fixing)
- 3.x – support from Internet Explorer 9

SELECTORS

jQuery uses a CSS similar syntax for matching a set of elements in a document

document.getElementById('my-id')

↓

$('#my-id')

returns the element that has the ID attribute with the specified value

document.getElementsByTagName('span')

↓

$('span')

returns a collection of all elements in the document with the specified tag name

document.getElementsByClassName('my-class')

↓

$('.my-class')

returns a collection of all elements in the document with the specified class name

document.getElementsByName('email')

↓

$('[name=email]')

returns a collection of all elements in the document with the specified name (the value of the name attribute)

API

.before(selector) - .appendTo(selector)

DOM manipulation

```
<div id="my-id"></div>

<script>
   $('#my-id').before('this text will be added before div');
</script>
```

.addClass() - .removeClass() - .attr()

attributes manipulation

```
<div id="my-id" class="my-class"></div>

<script>
   $('#my-id').addClass('new-class').removeClass('my-class');
</script>
```

.on(event, callback) - .off(event)

event handling

```
<a href="https://www.google.it" >link to google.it</a>

<script>
   $('a').on('click', function() {
      var link = $( this ).attr( 'href' );
   });
</script>
```

.hide() - .show() - .fadeOut()

animations

```
<div id="my-id">Hello World</div>

<script>
   $('#my-id').hide();
</script>
```

AJAX

```
function doAjax() {
    $.ajax({
        url: 'ajax-data.json,
        method: 'POST',
        data: {
          key: 'value',
        },
        success: function( result ) {
          alert( result );
        }
    });
};

$('#ajax').on('click', doAjax);
```

$.ajax is used to perform an asynchronous HTTP (Ajax) request.

A set of key/value pairs that configures the Ajax request. All settings are optional.

url: a string containing the URL to which the request is sent.

method: the HTTP method to use for the request (e.g. "POST", "GET", "PUT").

data: data to be sent to the server.

success: a function to be called if the request succeeds.

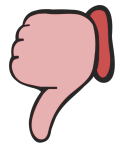
Attaches a click event to the element. When the user clicks on the element, a new ajax request will be triggered.

EVENT DELEGATION http://bit.ly/2KisqRk

Event delegation allows us to **attach** a single event listener, **to a parent element**, that will fire for all descendants matching a selector, whether those **descendants exist now or** are added **in the future**.

```
<ul id="list">
    <li>Item #1</li>
    <li>Item #2</li>
    <li>Item #3</li>
    <li>Item #4</li>
</ul>
```

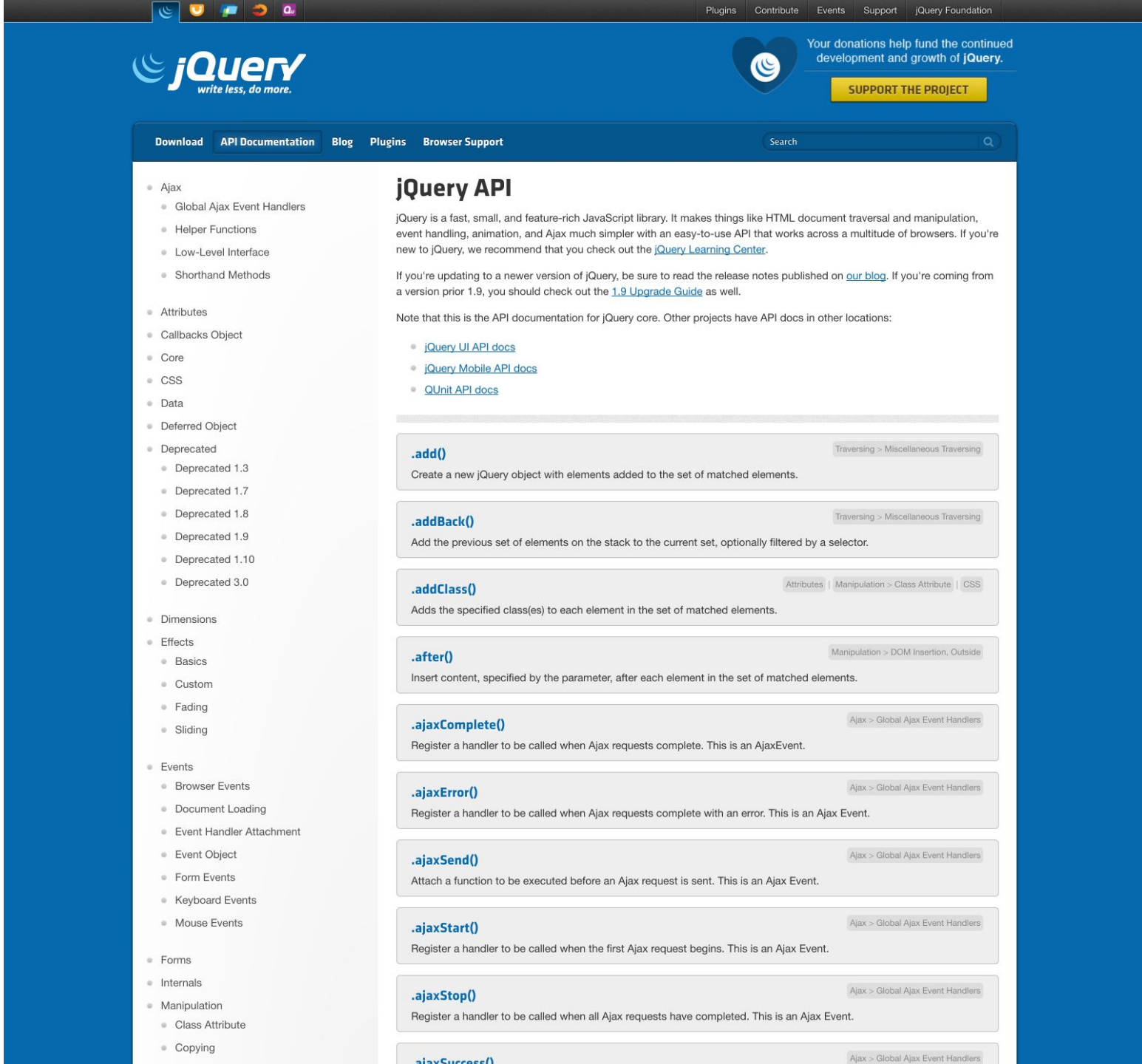
```
$('#list li').on('click', function () {
    console.log( $(this).text() );
});
```



```
$('#list').on('click', 'li', function () {
    console.log( $(this).text() );
});
```

```
$('#list').append('<li>Item #5</li>');
```

api.jquery.com



HOW DO I IMPORT IT?

Download .zip 

old method, please don’t use it

CDN

you can use it, depends on what you need

npm

downloaded as project dependency

now you can import it in your document as a JavaScript file

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

REFERENCES

- jQuery – https://jquery.com/
- jQuery API – http://api.jquery.com/

JQUERY
in action

http://bit.ly/fe4b-jquery

Bootstrap is the most popular HTML, CSS, and JS framework for developing responsive, mobile first projects on the web.

BOOTSTRAP

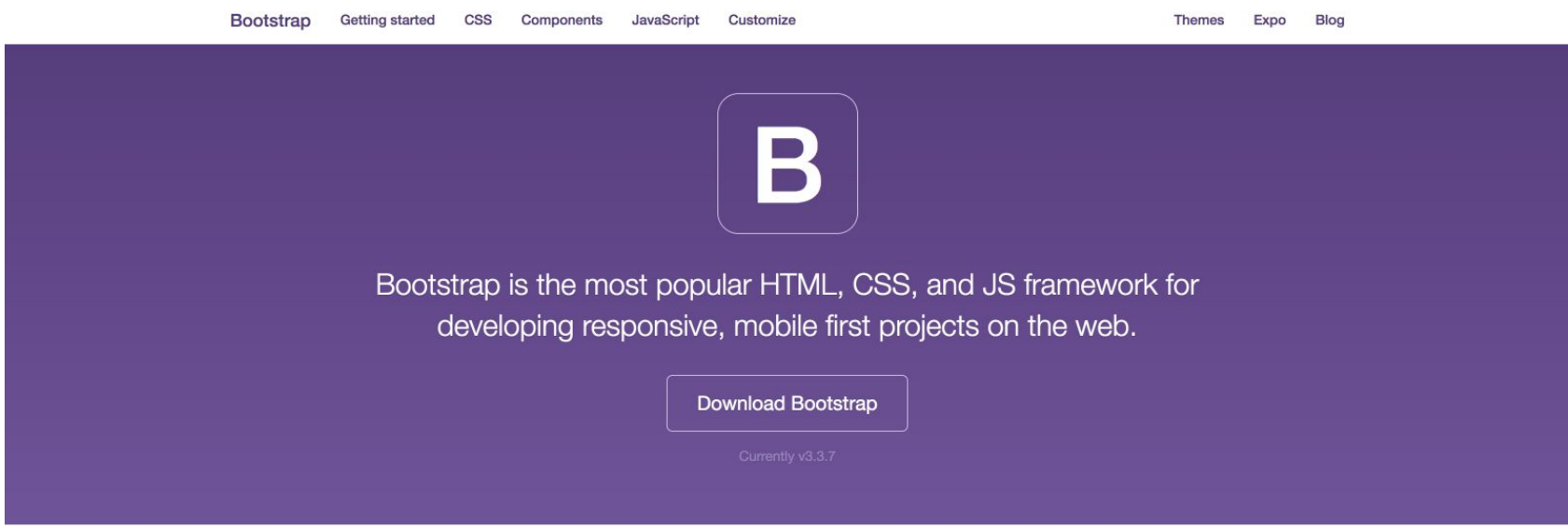
BOOTSTRAP

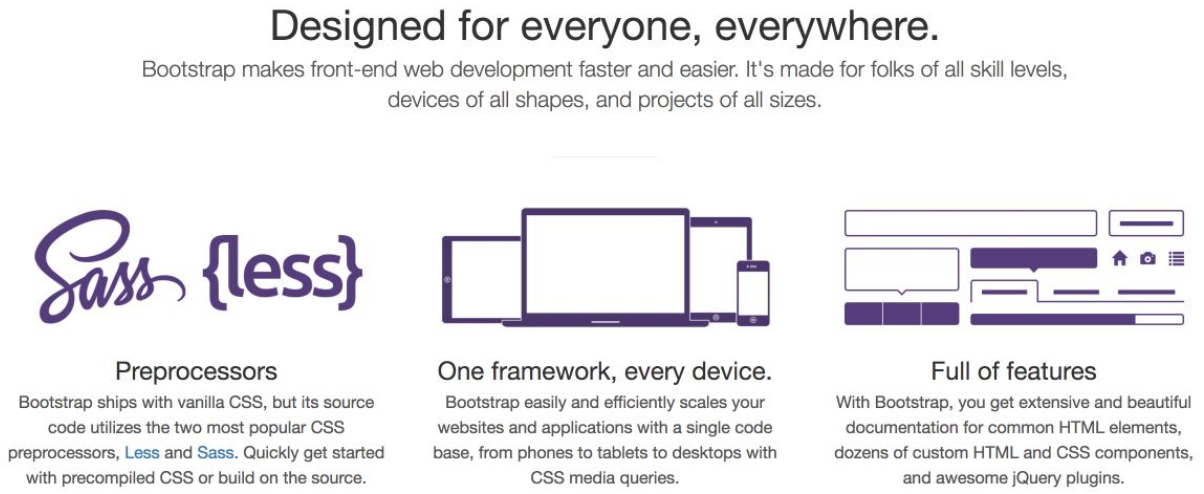
- It is not a programming language
- Bootstrap is a front-end framework for developing responsive, mobile first projects on the web
- It is made up of HTML, CSS and JavaScript
- Can be extended via lots of plugins

getbootstrap.com

is made up of 4 sections:

- GETTING STARTED
- CSS
- COMPONENTS
- JAVASCRIPT





CSS

Bootstrap has **custom classes** to quickly style tags

```
<div class="btn btn-primary">Primary</div>
```

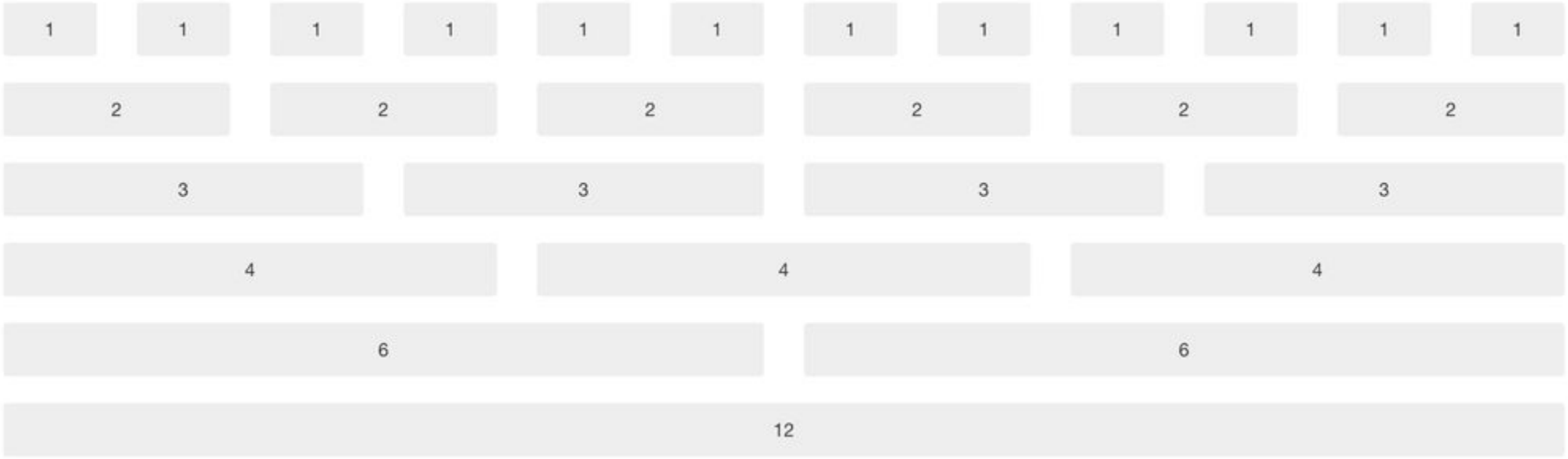

```
<div class="btn btn-primary btn-lg">Large button</div>
```


```
<input type="text" class="form-control">
```


focus

CSS • GRID SYSTEM https://getbootstrap.com/docs/3.3/css/#grid

Bootstrap includes a **fluid grid system** that appropriately scales up to **12 columns** as the device or viewport size increases



CSS • GRID SYSTEM https://getbootstrap.com/docs/3.3/css/#grid

- .row are groups of .col
- Content (text or other <tag>s) must be written inside a .col

```
<div class="row">
  <div class="col-xs-12 col-sm-6 col-md-4 col-lg-3"></div>
  <div class="col-xs-12 col-sm-6 col-md-4 col-lg-3"></div>
  <div class="col-xs-12 col-sm-6 col-md-4 col-lg-3"></div>
  <div class="col-xs-12 col-sm-6 col-md-4 col-lg-3"></div>
  <div class="col-xs-12 col-sm-6 col-md-4 col-lg-3"></div>
  <div class="col-xs-12 col-sm-6 col-md-4 col-lg-3"></div>
</div>
```

COMPONENTS

Bootstrap **offers** over a dozen **reusable components** built to provide iconography, dropdowns, input groups, navigation, alerts,

and much more

Home / Library / Data

```
<ol class="breadcrumb">
  <li><a href="/home">Home</a></li>
  <li><a href="/library">Library</a></li>
  <li class="active">Data</li>
</ol>
```

```
<div class="input-group">
  <span class="input-group-addon">$</span>
  <input type="text" class="form-control">
  <span class="input-group-addon">.00</span>
</div>
```

$ .00

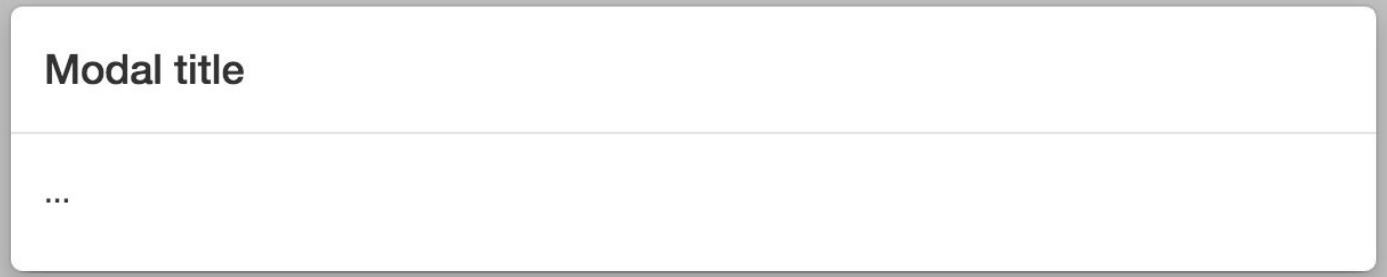
```
<div class="dropdown">
  <div class="btn btn-default dropdown-toggle">
    Dropdown <span class="caret"></span>
  </div>
  <ul class="dropdown-menu">
    <li><a href="#">Action</a></li>
    <li><a href="#">Another action</a></li>
  </ul>
</div>
```

Dropdown

Action

Another action

JAVASCRIPT



Bring Bootstrap's components to life with jQuery plugins.

```
<div class="btn btn-primary btn-lg" data-toggle="modal" data-target="#myModal">
  Launch demo modal
</div>
```

Launch demo modal

```
<div class="modal fade" id="myModal">
  <div class="modal-dialog">
    <div class="modal-content">
      <div class="modal-header">
        <h4 class="modal-title">Modal title</h4>
      </div>
      <div class="modal-body">
        ...
      </div>
    </div>
  </div>
</div>
```

HOW DO I IMPORT IT?

Download .zip 

old method, please don’t use it

CDN

you can use it, depends on what you need

npm

downloaded as project dependency

now you can import all files in your document:

```
<link rel="stylesheet" href="bootstrap/css/bootstrap.min.css">

<script src="bootstrap/js/bootstrap.min.js"></script>
```

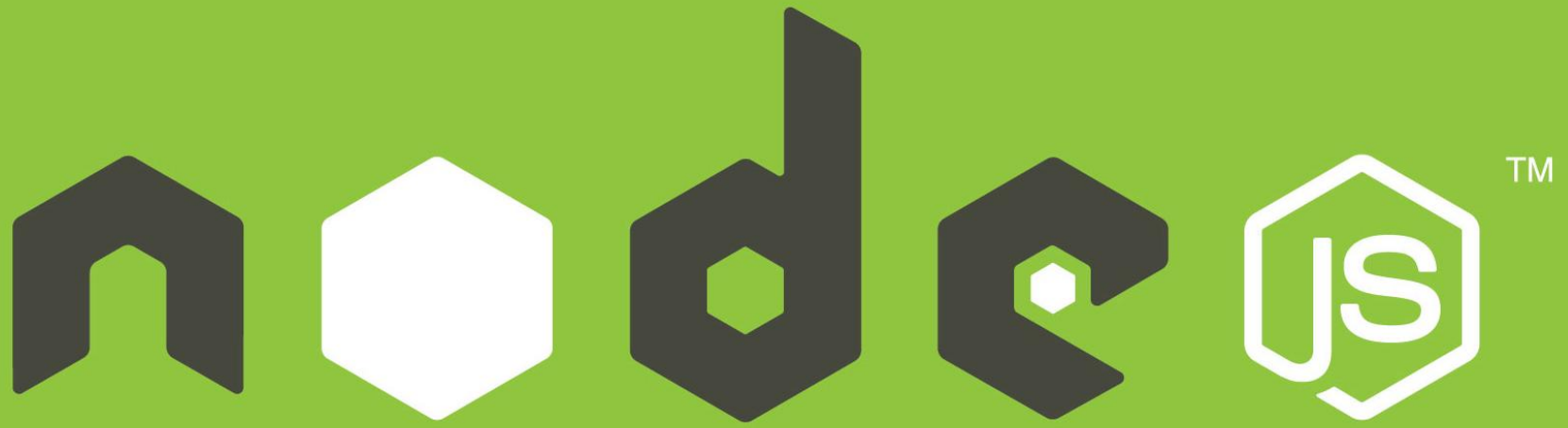
REFERENCES

- Bootstrap – https://getbootstrap.com/docs/3.3
- Github – https://github.com/twbs/bootstrap

Bootstrap is the most popular HTML, CSS, and JS framework for developing responsive, mobile first projects on the web.

BOOTSTRAP
in action

http://bit.ly/fe4b-bootstrap



NODE.JS

NODE.JS

- Node.js is a JavaScript runtime built on Chrome's V8 JavaScript engine.
- V8 is the JavaScript execution engine built for Google Chrome and open-sourced by Google in 2008.
- Node.js uses an event-driven, non-blocking I/O model that makes it lightweight and efficient
- It executes JavaScript code server-side
- There are a lot of applications today that use Node.js

APACHE

CORDOVA™

Mobile apps with **HTML**, **CSS** & **JS**

Target multiple platforms with **one code base**

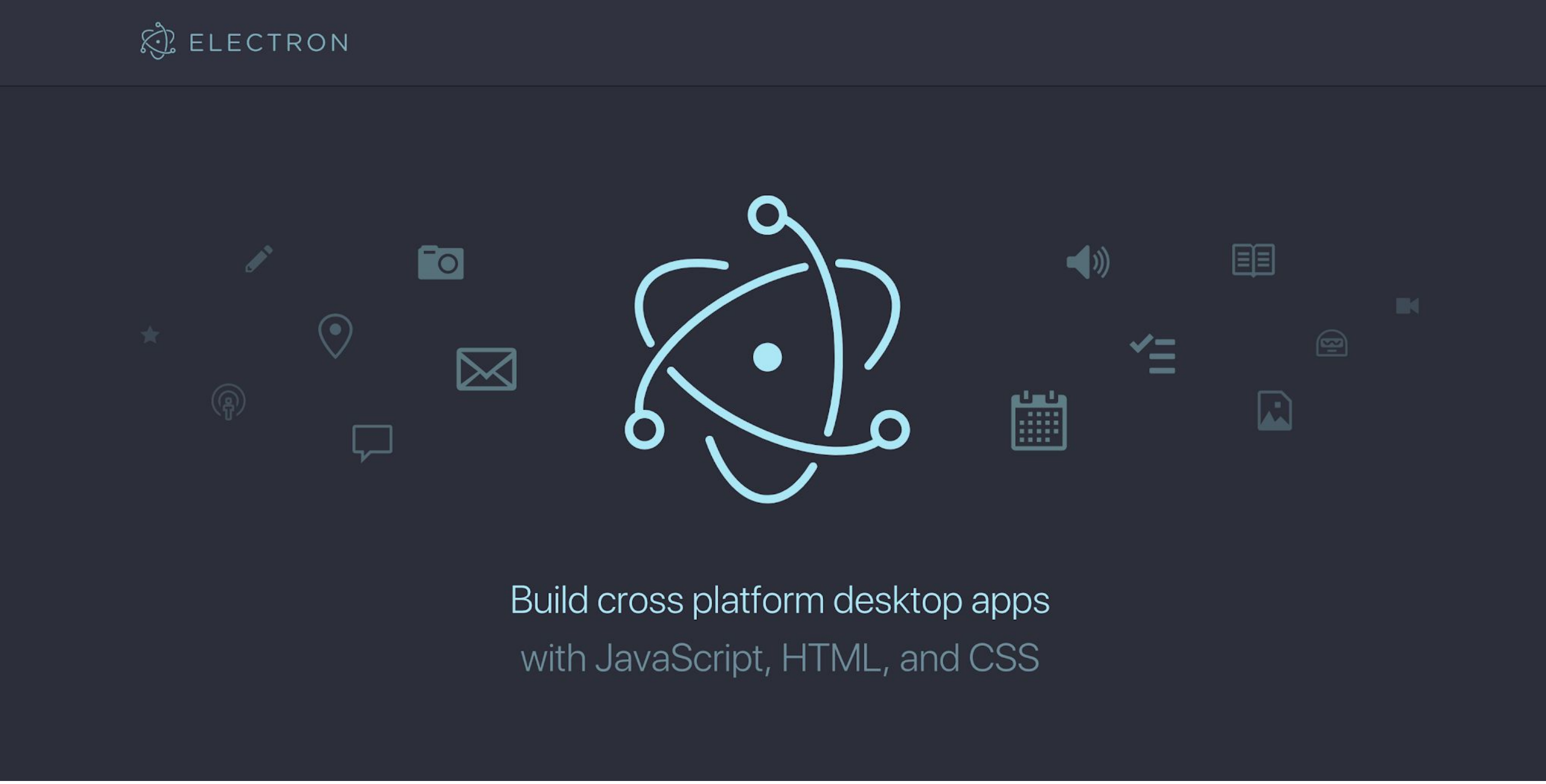
Free and **open source**

+4 more...

Reusable code across platforms

Support for offline scenarios

Access native device APIs


ELECTRON
Build cross platform desktop apps
with JavaScript, HTML, and CSS

NPM https://www.npmjs.com

"Node.js' package ecosystem, npm, is the largest ecosystem of open source libraries in the world" https://nodejs.org

NPM ≈ Maven ≈ Composer ≈ Bundler ≈ …

Java PHP Ruby

NPM

https://docs.npmjs.com/files/package.json

```
{
  "name": "project-name",
  "description": "project-desc",
  "version": "1.0.0",
  "license": "MIT",
  "dependencies": {
    "express": "^4.14.0"
  },
  "peerDependencies": {
    "jquery": "1.9.1 - 3"
  },
  "devDependencies": {
    "mocha": "^3.2.0"
  }
}
```

package.json

package.json is used to give information to npm that allows it to identify the project as well as handle the project's dependencies.

devDependencies are dependencies not required for normal operation, but required/recommended if you want to patch or modify the project (unit test, lint, builder, ecc.).

dependencies field is used to list all the dependencies of your project that are available on npm. When someone installs your project through npm, all the dependencies listed will be installed as well.

peerDependencies are used if you want to express the compatibility of your package with a host tool or library, while not necessarily doing a require of this host.

NPM https://docs.npmjs.com

```
{
  "name": "project-name",
  "description": "project-desc",
  "version": "1.0.0",
  "license": "MIT",
  "dependencies": {
    "express": "^4.14.0"
  },
  "peerDependencies": {
    "jquery": "1.9.1 - 3"
  },
  "devDependencies": {
    "mocha": "^3.2.0"
  }
}
```

package.json

npm install - npm update

installs a package, and any packages that it depends on

npm install <package-name>

installs the specified package and adds it to the package.json

npm prune

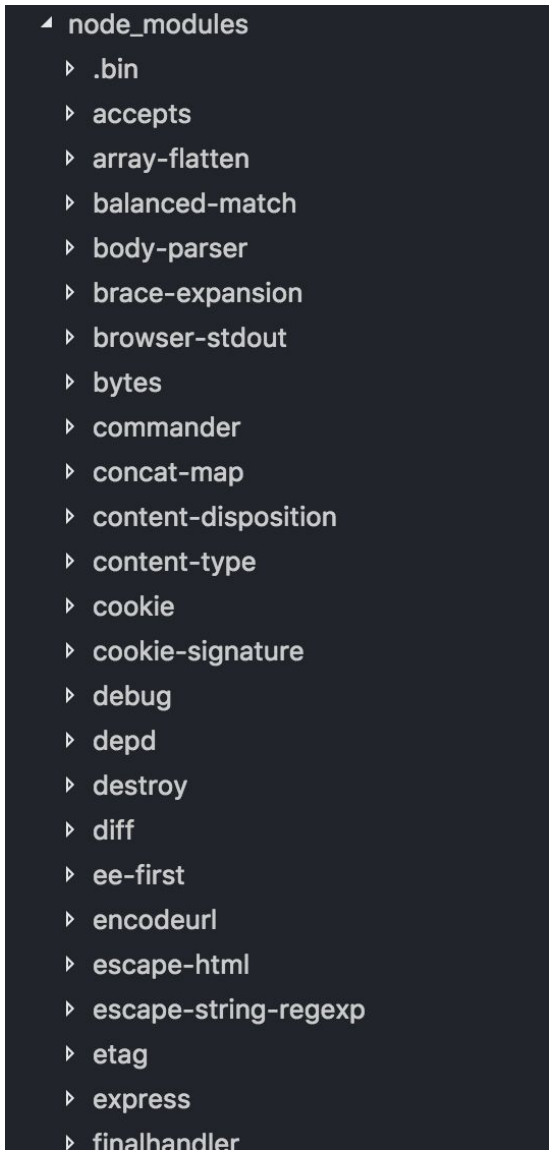
removes packages that are not listed on the parent package's dependencies list

NPM • node_modules

```
{
  "name": "project-name",
  "description": "project-desc",
  "version": "1.0.0",
  "license": "MIT",
  "dependencies": {
    "express": "^4.14.0"
  },
  "peerDependencies": {
    "jquery": "1.9.1 - 3"
  },
  "devDependencies": {
    "mocha": "^3.2.0"
  }
}
```

package.json

npm install



A folder with name node_modules is created. This folder contains all downloaded dependencies.

You don't need to commit and push this folder, so remember to add it to .gitignore file.

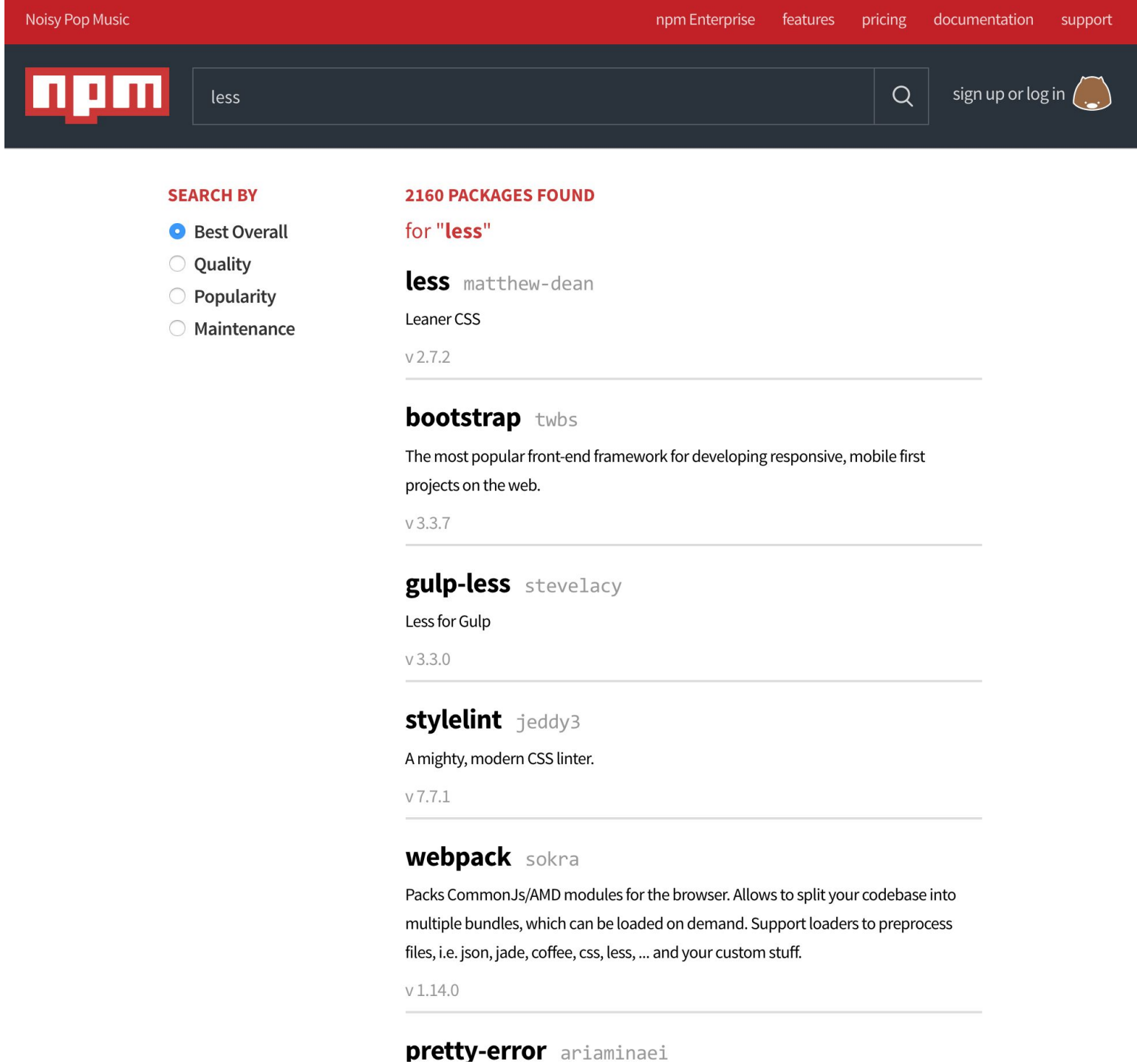
HOW DO I INSTALL NODE.JS?

LTS Recommended For Most Users		Current Latest Features
 Windows Installer node-v8.9.3-x86.msi	 Macintosh Installer node-v8.9.3.pkg	 Source Code node-v8.9.3.tar.gz

Windows Installer (.msi)	32-bit	64-bit	
Windows Binary (.zip)	32-bit	64-bit	
macOS Installer (.pkg)	64-bit		
macOS Binaries (.tar.gz)	64-bit		
Linux Binaries (x86/x64)	32-bit	64-bit	
Linux Binaries (ARM)	ARMv6	ARMv7	ARMv8
Source Code	node-v8.9.3.tar.gz		

WHERE ARE PACKAGES?

https://www.npmjs.com/search?q=less




DEPRECATED
https://git.io/vdzfx
Bower
A package manager
for the web

BOWER

DEPRECATED

https://git.io/vdzfx

BOWER https://bower.io

"Web sites are made of lots of things — frameworks, libraries, assets, and utilities. Bower manages all these things for you." https://bower.io

Bower ≈ NPM ≈ Maven ≈ Composer ≈ Bundler ≈ …

Java PHP Ruby

DEPRECATED

https://git.io/vdzfx

HOW DO I INSTALL BOWER?

```
npm install -g bower
```

-g installs the specified package as a global package. It is useful if you want to use it as a command line tool

DEPRECATED

https://git.io/vdzfx

BOWER https://github.com/bower/spec/blob/master/json.md

```
{
  "name": "project-name",
  "description": "project-desc",
  "version": "1.0.0",
  "license": "MIT",
  "dependencies": {
    "bootstrap": "^3.3.7"
  },
  "devDependencies": {
    ...
  }
}
```

bower.json

bower.json is used to give information to bower that allows it to identify the project as well as handle the project's dependencies.

dependencies field is used to list all the dependencies of your project that are available on bower. When someone installs your project through bower, all the dependencies listed will be installed as well.

devDependencies are dependencies not required for normal operation, but required/recommended if you want to patch or modify the project (unit test, lint, builder, ecc.).

DEPRECATED

https://git.io/vdzfx

BOWER https://bower.io/docs/api

```
{
  "name": "project-name",
  "description": "project-desc",
  "version": "1.0.0",
  "license": "MIT",
  "dependencies": {
    "bootstrap": "^3.3.7"
  },
  "devDependencies": {
    …
  }
}
```

bower.json

bower install - bower update

installs a package, and any packages that it depends on

bower install <package-name> --save

installs the specified package and adds it to the bower.json

bower prune

removes packages that are not listed on the parent package's dependencies list

DEPRECATED

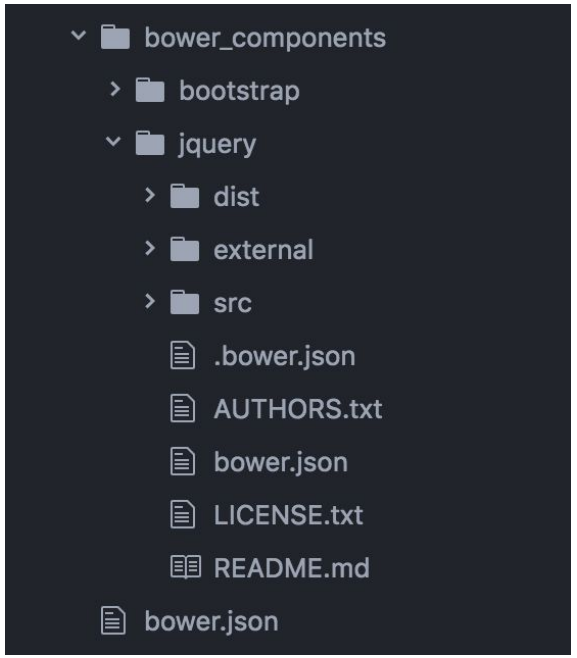
https://git.io/vdzfx

BOWER • bower_components

```
{
  "name": "project-name",
  "description": "project-desc",
  "version": "1.0.0",
  "license": "MIT",
  "dependencies": {
    "bootstrap": "^3.3.7"
  },
  "devDependencies": {
    ...
  }
}
```

bower.json

bower install

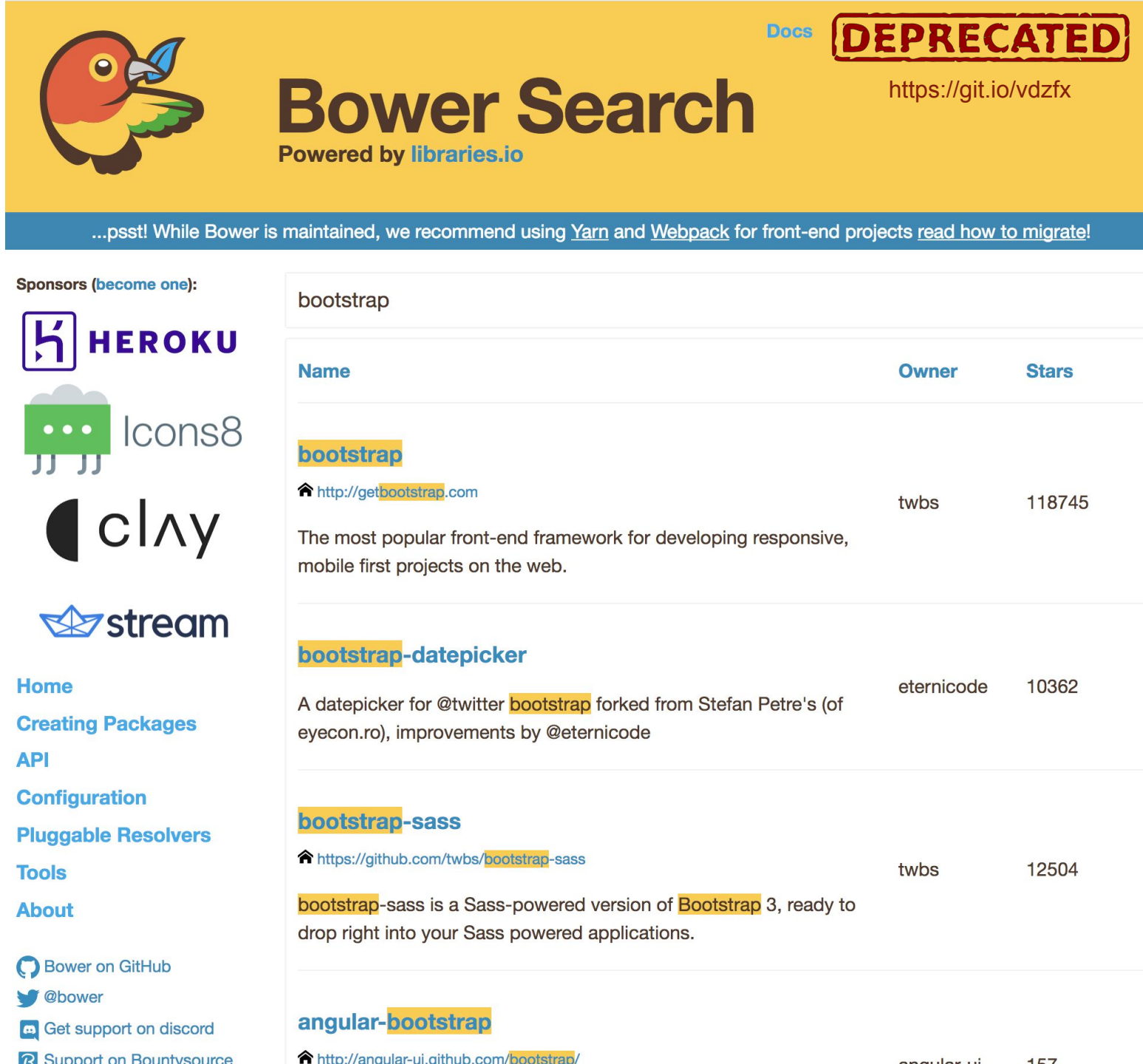


A folder with name bower_components is created. This folder contains all downloaded dependencies.

You don't need to commit and push this folder, so remember to add it to .gitignore file.

WHERE ARE PACKAGES?

https://bower.io/search



GRUNTJS

GRUNTJS

- GruntJS is a task runner for JavaScript
- It improves code quality adding automated tasks for linting and unit testing
- It can do most of that mundane work for you—and your team—with basically zero effort
- Many of the tasks you need are already available as Grunt Plugins

HOW DO I INSTALL GRUNTJS?

```
npm install -g grunt-cli
```

-g installs the specified package as a global package. It is useful if you want to use it as a command line tool

GRUNTJS • PLUGINS

Plugins are installed adding devDependencies to the package.json

```
{
  "name": "package-name",
  "dependencies": {
    …
  },
  "devDependencies": {
    "grunt": "^1.0.1",
    "grunt-contrib-uglify": "^3.3.0",
    "grunt-contrib-watch": "^1.0.0"
  }
}
```

package.json

npm install

GRUNTJS • Gruntfile.js

Gruntfile.js is used to configure or define tasks and load Grunt plugins.

This is a base structure for a Gruntfile.js

```
module.exports = function(grunt)
{
   grunt.initConfig({

   });

};
```

GRUNTJS • Gruntfile.js

uglify task configuration.
A subtask called **development** is defined,
which minify application.js in application.min.js

watch task configuration.
A subtask called **js** is defined,
which listens to all modifications on specified files.
Once a *.js is modified, the task is automatically run.

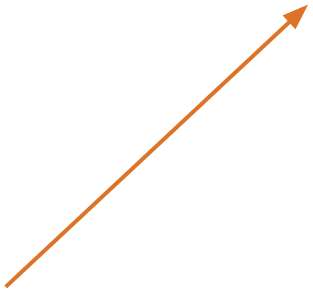
Load tasks from the specified Grunt plugin.
Plugins must be installed locally via npm, and must
be relative to the Gruntfile.

```
module.exports = function(grunt)
{
  grunt.initConfig({
    uglify: {
      development: {
        files: {
          'application.min.js': ['application.js']
        }
      }
    },
    watch: {
      js: {
        files: ['**/*.js'],
        tasks: ['uglify']
      },
    },
  });

  grunt.loadNpmTasks('grunt-contrib-uglify');
  grunt.loadNpmTasks('grunt-contrib-watch');
};
```

GRUNTJS • Gruntfile.js

Gruntfile.js

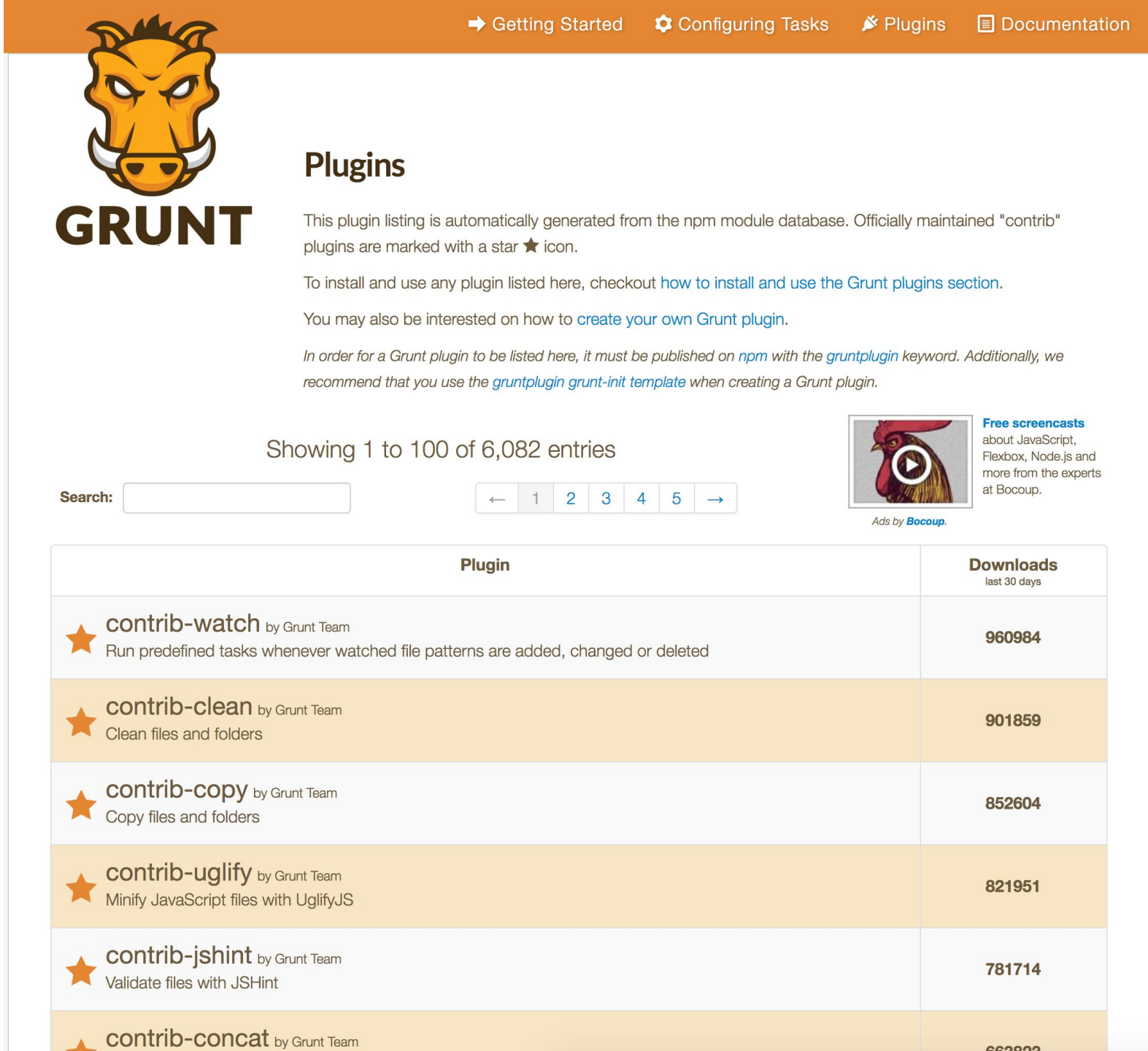
```
module.exports = function(grunt)
{
   grunt.initConfig({
      uglify: {
         development: {
            files: {
               'application.min.js': ['application.js']
            }
         }
      },
      watch: {
         js: {
            files: ['**/*.js'],
            tasks: ['uglify']
         },
      },
   });

   grunt.loadNpmTasks('grunt-contrib-uglify');
   grunt.loadNpmTasks('grunt-contrib-watch');
};
```



```
grunt uglify
grunt uglify:development

grunt watch
grunt watch:js
```

WHERE ARE PLUGINS?

http://gruntjs.com/plugins



PREPROCESSORS

LESS

- It is a CSS pre-processor
- It extends CSS adding variables, mixins, functions and more
- It make CSS more maintainable over time
- It can be converted to CSS using different tools

CSS = LESS

- Same syntax
- Same semantics

LESS = CSS + extensions

- Variables
- Mixins
- Nested Rules
- Math Operations
- Functions
- Import

LESS • VARIABLES

- Common property values can be written only once
- You can change multiple values changing just one code line
- Are written as “@” followed by a name
- A variable can have every property value

```
@size: 100px;
```

```
@my-border: 1px solid #FFFFFF;
```

```
@border-color: #FFFFFF;
```

```
@my-border: 1px solid @border-color;
```

LESS • VARIABLES

CSS

```
.component-header {
    color: #FFFFFF;
    border-bottom: 1px solid #FFFFFF;
}
.component-footer {
    color: #FFFFFF;
    background-color: #FF0000;
}
.another-component {
    color: #FF0000;
}
```

LESS

```
@color-1: #FFFFFF;
@color-2: #FF0000;

.component-header {
    color: @color-1;
    border-bottom: 1px solid @color-1;
}
.component-footer {
    color: @color-1;
    background-color: @color-2;
}
.another-component {
    color: @color-2;
}
```

LESS • MIXINS

- Used to define a group of properties and use them later on
- Parametric mixins are by all means functions

```less
.a, #b {
  color: red;
}
.red-element {
  .a();
}
.another-red {
  #b();
}
```

LESS

```css
.a, #b {
  color: red;
}
.red-element {
  color: red;
}
.another-red {
  color: red;
}
```

CSS

LESS

```less
.red-text() {
  color: red;
}
.red-element {
  .red-text();
}
```

CSS

```css
.red-element {
  color: red;
}
```

```less
.border-radius(@radius: 10px) {
  -moz-border-radius: @radius;
       border-radius: @radius;
}

#header {
  .border-radius(4px);
}
```

LESS

```css
#header {
  -moz-border-radius: 4px;
       border-radius: 4px;
}
```

CSS

LESS • MIXINS

CSS

```
.section-1 {
    color: #FFFFFF;
    background-color: #FF0000;
    height: 200px;
}
.section-2 {
    color: #FFFFFF;
    background-color: #FF0000;
    height: 500px;
}
.section-3 {
    color: #FFFFFF;
    background-color: #FF0000;
    height: 1000px;
}
```

LESS

```
.create-section() {
    color: #FFFFFF;
    background-color: #FF0000;
}

.section-1 {
    .create-section();
    height: 200px;
}
.section-2 {
    .create-section();
    height: 500px;
}
.section-3 {
    .create-section();
    height: 1000px;
}
```

LESS • NESTED RULES

CSS

```
#header {
  color: black;
}
#header > .navigation {
  font-size: 12px;
}
#header a {
  color: blue;
}
#header a:hover {
  text-decoration: none;
}
```

LESS

```
#header {
  color: black;

  > .navigation {
    font-size: 12px;
  }

  a {
    color: blue;

    &:hover {
      text-decoration: none;
    }
  }
}
```

LESS • NESTED RULES • @media

CSS

```
.component {
   width: 100%;
}

.component .blue {
   color: blue;
}

@media (min-width: 1200px) {
   .component {
      width: 50%;
   }
}
```

LESS

```
.component {
   width: 100%;

   .blue {
      color: blue;
   }

   @media (min-width: 1200px) {
      width: 50%;
   }
}
```

LESS • MATH OPERATIONS

- Suppose we have two TAGs with a total width of 1000px
- One must be ¾ of the other

CSS

```
#content {
   width: 750px;
}
#sidebar {
   width: 250px;
}
```

LESS

```
@width: 1000px;
@contentWidth: @width * (3 / 4);
@sidebarWidth: @width - @contentWidth;

#content {
   width: @contentWidth;
}
#sidebar {
   width: @sidebarWidth;
}
```

LESS • MATH FUNCTIONS http://lesscss.org/functions/

- ceil(2.4) → 3
- floor(2.6) → 2
- round(1.67, 1) → 1.7
- percentage(0.5) → 50%
- sqrt(25px) → 5px
- abs(-15px) → 15px
- min(5, 10) → 5
- max(5, 10) → 10

LESS • COLOR FUNCTIONS

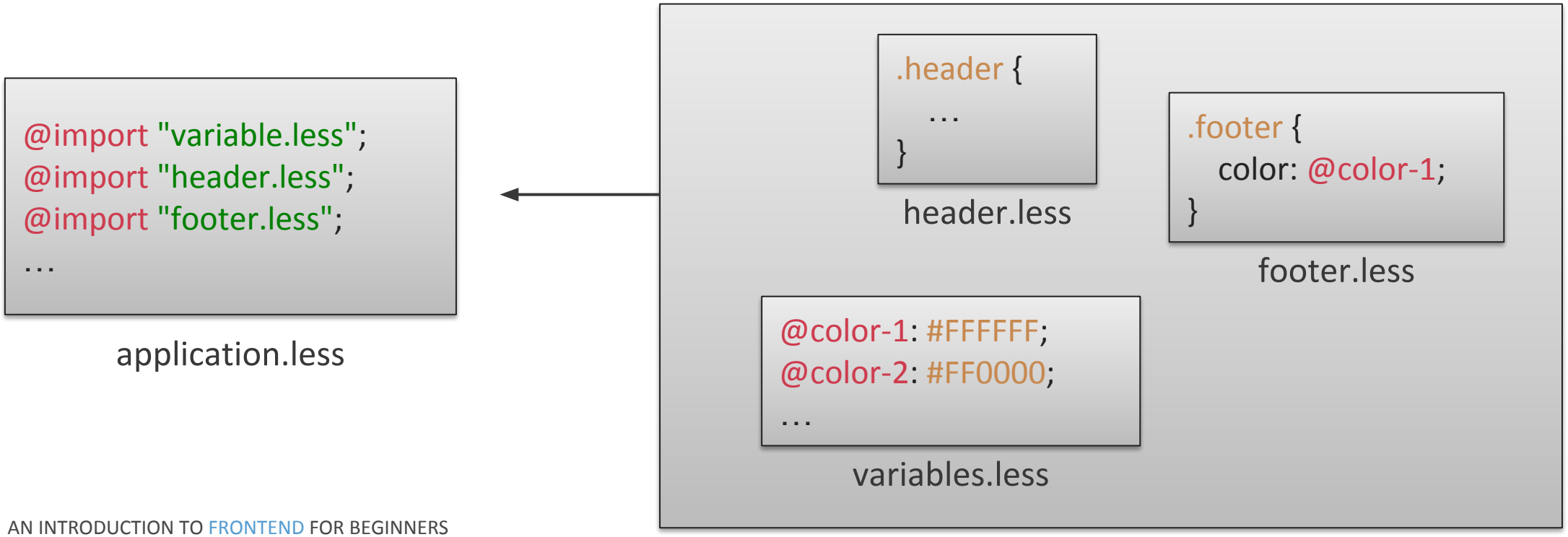
- rgb(90, 129, 32) → #5a8120
- red(#5a8120) → 90
- green(#5a8120) → 129
- blue(#5a8120) → 32
- lighten(#80e619, 20%) → #b3f075

- darken(#80e619, 20%) → #4d8a0f

LESS • IMPORT

You can import .less files inside other .less files

```
@import "this-is-valid.less";
```



LESS • LAZY LOADING and SCOPE

- **LAZY LOADING** – Variables **don't need** to be declared before being used
- **SCOPE** – Variables and mixins are first looked for locally, and if they aren't found, the compiler will look in the parent scope, and so on

```
.lazy-eval {
   width: @var;
}

@var: @a;
@a: 9%;
```

LAZY LOADING

```
@var: red;

#header {
   @var: white;
   color: @var;   // white
}

@var: blue;
```

SCOPE

```
@var: red;

#page {
   #header {
      color: @var;   // white
   }
   @var: white;
}
```

LAZY LOADING + SCOPE

HOW DO I COMPILE IT?

1. npm install -g less

-g installs the specified package as a global package. It is useful if you want to use it as a command line tool

2. lessc input.less output.css

REFERENCES

- Less – http://lesscss.org
- Sass/Scss – http://sass-lang.com

PREPROCESSORS
in action

https://lesstester.com/

USEFUL LINKS

- Can I Use? – http://caniuse.com
- CSS-Trick – https://css-tricks.com
- Codrops – http://tympanus.net/codrops
- Smashing Magazine – https://www.smashingmagazine.com

Thank You!

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

GITHUB

https://github.com/marcomontalbano/an-introduction-to-frontend-for-beginners