How to Build a Web Page

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Are you sure you want to delete Internet?

Yes   No

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Day 1

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Web Page to Web Browser

Web Browser

The Internet

The Web Server
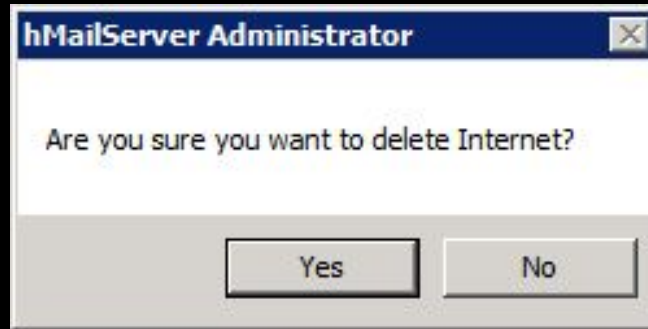
Web Page

HTML Basics

```
<!doctype html>
<html>
    <head>
        <meta charset="utf-8" />
        <title>Title Bar Text</title>
     </head>
    <body>
        <h1>Chapter Title</h1>
        <p>The first paragraph is the most <em>important</em>.</p>
    </body>
</html>
```
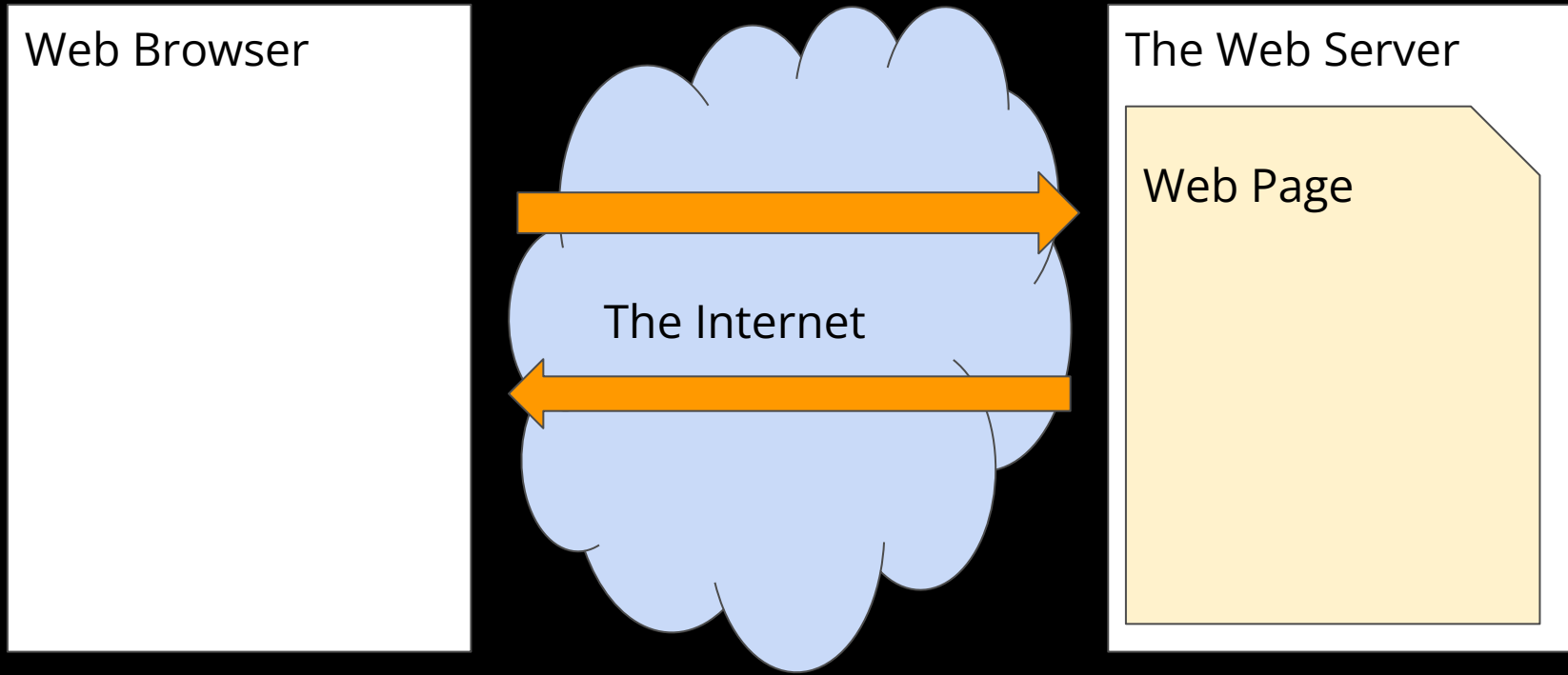
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Assignment - Environment

1. Install and start Visual Studio Code from
   https://code.visualstudio.com

2. Install the Extensions
   "Live Preview", "HTML CSS Support"

Full Presentation on https://goo.gl/xl3MQE

Assignment - HTML

1. Create a Folder and open it with Visual Code

2. Create the file `first.html` in your folder

3. Right-Click in the text Area of the File in Visual Code and Select "Show Preview"

4. You can also get an initial html file by just typing 'html' and then selecting 'html:5'.

```html
<!doctype html>
<html>
  <head>
    <meta charset="utf-8" />
    <title>Hello World</title>
  </head>
  <body>
    <h1>Introduction</h1>
    <p>I am <em>Tobi</em></p>
  </body>
</html>
```

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HTML Tag Structure

```
<img src="smile.png" alt="Happy"/>


<a href="https://www.google.com">Link</a>


<!-- a comment inside your document -->
```

Assignment - HTML Tags

1. Write a structured text with paragraphs <p> and headings <h1>, <h2>, …

2. Embed the Image `<img>`
   `https://picsum.photos/640/480`

3. Write a shopping a list `<ul>` with items `<li>`.

4. Create a <table> with 3 columns and 4 rows.

HTML References: http://htmlreference.io/

`https://goo.gl/xl3MQE`

CSS Basics

```html
<html><head>
<style>
h1 { background-color: blue; }      /* all 'h1' tags */
.person { color: red; }             /* class person */
#copyright {font-size: 5px; }       /* id copyright */
</style>
</head><body>
<h1 class="person xyz">Tobi Oetiker</h1>
<div class="person">Mark</div>
<div id="copyright">Copyright 2015</div>
</body></html>
```

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Assignment - CSS

1. What color do you get when using #ff0000? How does it work? What code would you use for yellow?

2. Create a <h2> with a blue border.

3. Create three <div> entries with 5px vertical space between them using a class attribute.

CSS Reference https://cssreference.io/ or

Developer Tools

- All modern browsers have developer tools.
- Normally started by pressing F12 or from the menu.
- They show what really happens on the page.
- Live editing saves tons of time.

Assignment - Developer Tools

1. Start developer tools

2. Analyze your html page from the previous assignment.

3. Modify the html on the fly.

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CSS Inheritance

```
<html><head><style>
.redColor .yellowColor { color: orange;}
.yellowColor { color: yellow; }
.redColor { color: red; }
.boldFont {   font-weight: bold; }
</style></head><body>
<div class="redColor secondClass">
  <div class="yellowColor">Hello</div>
  <div class="boldFont">World</div>
</div>
<div class="yellowColor">WWF</div>
</body></html>
```

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Assignment - CSS Inheritance

1. Try the example from the previous slide.

2. Setup a css rule to make all 'h1' tags red as long as they appear inside a div with the 'important' class assigned to.

Flexbox and Grid

```
<style>
    .container {
     display: flex;
     gap: 10px;
    }
    .item {
     flex-grow: 1;
     height: 100px;
     border: dashed 1px;
    }
</style>
```

```
<body>
    <div class="container">
        <div class="item"></div>
        <div class="item"></div>
        <div class="item"></div>
    </div>
</body>
```

Guide on A Complete Guide to Flexbox

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Assignment - Flexbox

1. Try the example from the previous slide.
2. Align the items vertically
3. Change the order of the items from last to first.

Data Organization

- one file per content-type

- browsers cache data

- reuse in other documents

Assignment - Organization

1. Move your css style into a file called style.css

2. Load this file using

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

   in the <head> section of your html.

Fonts and the Web

- first nobody cared
- the font attribute and platform fonts
  `<h1 font="comic sans">Hello</h1>`
- web fonts but no standard and no fonts
- css support and google fonts

Assignment - CSS Fonts

HTML:

```html
<head>
<link href="https://fonts.googleapis.com/css?family=Open+Sans" rel="stylesheet">
<style>
.sans { font-family: 'Open Sans',sans-serif;}
</style></head>
<body>
<div class="sans">Hello World</div>
</body>
```

Find and use your own fonts on fonts.google.com

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Positioning - static

by default one thing after the other (static)

```
position: static; /* default */
```

```
position: static;
```

```
position: static;
```

```
position: static;
```

Positioning - absolute

Absolute position will remove the element from the flow. Positioning it anywhere.

```
position: absolute;
```

```
position: static;
```

```
position: static;
```

```
position: static;
```

Positioning - relative

Relative position is like static, except that absolute elements will position themselves relative to the 'relative' element.

```
position: relative;        position: absolute;
```

Note: absolute and fixed elements also build a new frame of reference.

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```
css position: fixed;
```

Positioning

Fixed elements are fixed relative to the browser window.

Use them for status bars, menus.

Assignment - Fixed Positioning

HTML:

`<div id="fix-top">Menu Line</div>`

CSS:

`#fix-top { position: fixed; top: 0px; left: 0px }`

1. Create a page with sample text from lipsum.com to demonstrate fixed positioning.

2. Make the `div` cover the full width of the screen, with the text on the right side of the div.

3. Set the background color to yellow.

Useful properties: `padding, width, text-align`

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Assignment - Absolute Positioning

HTML:

<div id="absolute">Side Note</div>

CSS:

#absolute { position: absolute; left: 0px }

1. Work with sample text from lipsum.com.

2. Indent the body of the document on the left by 100px

3. Place a div in the new margin.

Useful properties: `padding-left, width`

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z-index: auto

z-index: auto; /* default */

z-index: auto; /* default */

z-index: auto; /* default */

Z-Index: explicit

z-index: 10;

z-index: 1;

z-index: 11;

float

Some simple text but no real content.

```
float: right;
```

The float will stay within the last element with position other than static.

float with overflow hidden

`overflow: hidden;`

`float: right;`

Some suggest to use an empty div with 'clear: both' but this is rarely necessary.

Assignment - Floats

HTML:

```
<div class="pic"><img src="..."/>
    <div class="cap">Caption</div>
</div>

<div> lots of text … </div>
```

Create CSS so that the pic class floats to the left of the text, together with the caption below it. Add some extra margin to the right of the pic class.

CSS transition and transform

```css
.logo {
    position: absolute;
    top: 200px; left: 300px; width: 4ex;
    font-size: 200px;
    background-color: white;
    transform: rotate(0deg);
    transform-origin: 2ex 1ex;
    transition: transform 1s;
}


.logo:hover {
    transform: rotate(360deg);
    transition: transform 5s;
}
```

```html
<div class="logo">
    ETH
</div>
```

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Assignment - CSS animation

The css transform and css transition properties allow pretty nifty effects without using any javascript. (on modern browsers)

1. Implement the `zoom` effect in css only. Using the scale `transform` and `transition` properties in connection with the `:hover` selector.

Day 2

GitHub Pages
Hands-On

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Media Queries

Selectively enable css based on the properties of the device displaying the webpage.

```css
@media (max-width: 600px) {
  .wide-stuff {
    display: none;
  }
}
```

Assignment - Media Queries

1. Create a @media query that hides part of the page in devices which are less than 1000px wide.

2. Create a media rule that is only active for screens between 1200px and 1800px wide.

JavaScript Hello World Console

```
<html><head>
<script>
console.log("Hello World");
</script>
</head>
<body></body></html>
```

JavaScript Hello World Alert

```
<html><head>

<script>

window.alert("Hello World");

</script>

</head>

<body></body></html>
```

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JavaScript Hello World Document

```html
<!DOCTYPE html>
<html lang="en">
<head>
<script>
    document.body.append("Hello World");
</script>
</head>
<body>
</body>
</html>
```

This does not work!

JavaScript Hello World Document

```
<!DOCTYPE html>
<html lang="en">
<head>
<script>
document.addEventListener('DOMContentLoaded', e => {
    document.body.append("Hello World");
});
</script>
</head>
<body></body>
</html>
```

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Assignment - JavaScript Basics

JavaScript:

```javascript
document.addEventListener('DOMContentLoaded', e => {
    let el = document.querySelector("#world");
    el.style.color="green";
});
```

HTML:

```html
<div id="world">Hello World</div>
```

1. Try this out.

2. Use a random color instead of just red:
   ```javascript
   '#'+Math.floor(Math.random()*16777215).toString(16);
   ```

JavaScript with jQuery

jQuery:

```
jQuery(document).ready(function(){
    jQuery("#world").css('color','red');
});
```

Assignment - jQuery

```
jQuery(document).ready(function(){
    jQuery("div.red").css('color','red');
});
```

1. Load jQuery in your html document using:

    <script src="https://code.jquery.com/jquery-2.1.4.js">
    </script>

2. Create a sample document to see how all <div class="red"> tags get turned red when the above script runs.

3. Try using $ instead of the string `jQuery` in the example above.

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CSS Frameworks

Don't write your own CSS use Framework:

- follow their structure for laying out your html.

- assign the appropriate class names.

- use a template to get started

Get started with Github Pages

1. Setup a Github Account

2. Fork
    https://github.com/oetiker/github-pages-demo

3. Wait for action to run

4. See result on https://<your-login>.github.io/github-page-demo

5. (optional) clone repo locally and use it from Visual Code:
    Google is your friend!

Assignment - CSS Frameworks

1. Create a new project.

2. Enable Github Pages in the Settings

3. Examine the example index-*.html pages in the github pages starter kit.

4. In your repo press "." to see the inline editor

5. Add an index.html file to your project

Assignment UIkit

- Create a modal window

- Add a navbar to your page

- Use sticky to make it stick to the top of the browser window

Assignment - Jekyll

1. Add a new css rule to assets/css/custom.scss and use it in the example page

2. Add a google font into the respective _include/head-*.html

3. Add a _data/mydata.yaml file and access the data from your page with {{site.data.mydata....}}

Further Reading on HTML/CSS

Creating Websites

- **Hugo Static Site Generator
  https://gohugo.io/**

- **SilverStripe Content Management System
  www.silverstripe.org**

Writing CSS

- **SASS = CSS with Super Powers https://sass-lang.com/**
- **TailwindCSS https://tailwindcss.com/**

Further Reading on JavaScript

Basics

- **Pure JavaScript https://javascript.info**

- **jQuery https://learn.jquery.com**

- **Mozilla Developer Network https://developer.mozilla.org/en-US/**

Frameworks

- **React (Facebook) https://reactjs.org**

- **SvelteKit https://kit.svelte.dev/**

- **Qooxdoo https://qooxdoo.org**

- **Blogs https://ghost.org/**

- **Flutter (Dart) https://flutter.dev**

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"Nice" Companies

Domain Names – www.gandi.net

Webhosting – www.metanet.ch

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Course Files

https://drive.google.com/drive/folders/1MInFUMMgZVJ9PX24XdVrEoh4NNCZtqCv?usp=sharing