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Powercoders Workshop

Introduction into Programming

Content

- Text editor
- General Web Development
- HTML/CSS/JS
- Basics of Programming

Text Editor

A text editor is a program that has additional features that allow for nicer programminging experience. This includes syntax highlighting, syntax check, text completion and so on. There are a lot of text editors. We recommend VSCode. It is one of the best editors at the moment. You can find it here: Click (Or google vscode).

Web Development

Web Devolpment has two parts:

- **Frontend**: How the Website looks and behaves.
- **Backend**: How to save, process and deliver data.

We will not do any Backend today.

Frontend

In Frontend Development there are three parts you need to master.

- HTML: Defines the content
- CSS: Styles the content
- Javascript: Interactivity of the content

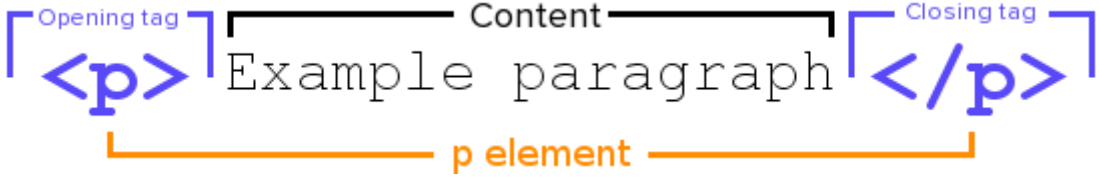
You can think of it like a body, HTML is the skeleton, CSS the skin and hair, JS are the muscles.

HTML

HTML is not a programming language but a **Markup** Language. In a Markup Language you can define different **elements** with tags. This way our browser can differentiate between the elements and then render them accordingly.

HTML Tags

Here an example tag:



Here we define a p element. The p stands for paragraph, so it is text. Other elements include headings, lists, images, input fields etc.

HTML

```
<h2>HTML</h2>
```

As you have seen you need an opening tag then you define the content and then the closing tag.

```
<a href="www.duck.com">DuckDuckGo</a>
```

We can define additional information in the opening tag. In this case we defined where a hyperlink should point to.

CSS

CSS is short for Cascading Style Sheet. With CSS you can style every element as you wish. Most essential you can change size, color and position of elements.

CSS

Here you see a css example:

```
p {
  font-size: 1.9 rem;
  color: red;
}
```

There are two parts to this. Before the brackets we declare which elements should be themed. In this case all p elements are themed. Inside the brackets we then specify the theming these elements should get.

Bigger projects

We prepared a website for you to experiment with. You find it here: bit.ly/GithubPoCo
On there you also find this presentation.

Structure

As you can see we have our html file and then we have additional folders. It is recommended to seperate the three parts of your code to keep the overview. With these lines in the HTML file we link them all toghether.

```
<link rel="stylesheet" href="css/powercoders.css">
...
<script src="js/scripts.js"></script>
```

HTML STRUCTURE

The HTML file also has a structure. First you find the header. In the header you find information about the website, you also find stylesheets. After the header there is the body. There we define the elements that are actually shown.

Javascript

Javascript is a high-level programming language. Nowadays you can do anything with Javascript. Javascript is built to interact with HTML elements. Most importantly you can change style and content of elements. This makes it possible to add interactivity to a website.

Programming

- Programming is the art of breaking a problem down into smaller problems.
- Finding the solutions to these smaller problems.
- Putting these pieces back together.

Building blocks of Programming:

- Variables
- Conditions
- Loops
- Functions

Variables

Variables are the way we store and access data in programming. We can store simple things like numbers, strings (text) but also more complex like objects and arrays.

```
let Programming = 'nice';
let numberOfHouses = 542;
let numberOfPersonsLivingInHouses = 2.5 * numberOfHouses;
```

Conditions

Conditions are the way we steer the programm.
A condition is for example if the weather is nice then go outside else stay inside.

```
if(weather == 'nice'){
  goOutside();
} else {
  stayInside();
}
```

Loops

With loops our programms get really powerful, It is a way to run lines of code as often as you want. An example would be: As long as the music is playing draw circles. There are a few loop options available. We will have a look at the most simple one.

While-Loop

The while-loop is the most basic loop in Programming, but it is still powerful. At the start of the loop we check if a condition is true, if it is true we go into the loop (again). If it is not true we skip over the loop and continue.

```
while(numberOfCircles < 100){
  drawCircle();
  numberOfCircles = numberOfCircles + 1;
}
doOtherStuff();
```

Functions

Functions are a block of code to perform a particular task. Once you defined a function you can call them to perfrom this task. They can accept values and can return one value.

```
function sumTwoNumbers(a, b){
  return a+b;
}
```

Examples

These were only the beginning. Here are some examples that use the web to deliver a beautiful experience.

- Histography is a website which shows major events in earth history.
- Legworkstudio An agency showing of.
- The boat A visual novel in your browser.

Tips and how to continue

We all agree that the best way to learn programming is to do it. Here are some links that guide you with tutorials.

- w3schools

  Extensive website with a lot of tutorials and examples.

- freecodecamp

  A website which has a really nice introduction to Web Development.

- Khan academy Another free course with a focus in visual representations.
- edabit Another course, there are tons of them in the internet.

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Powercoders mission is to integrate refugees with work permits into the IT job market. At the moment we are open for applications for the next round in 2020. We are always searching for new talent, volunteers and companies willing to partner with us. So please share a word over us.