Document Object Model

Multi-platform and Language-Independent API

SoftUni Team

Technical Trainers

Software University

http://softuni.bg

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Learn to Search in Internet

The course assignments require to search in Internet

- This is an important part of the learning process
- Some exercises intentionally have no hints

Learn to find solutions!

- Software development includes everyday searching and learning
- No excuses, just learn to study!
- Developers learn new technologies, tools, languages every day!

sli.do

#JS-CORE

Document Object Model (DOM)
Document with a logical tree

What is DOM?

What is **Document Object Model** (**DOM**)?

- **DOM** is a programming **API** for **HTML** and **XML** documents

- It defines the **logical structure** of the documents and the way a document is accessed and manipulated

- It represents **the page** so that programs **can change** the document (structure, style and content)

What is DOM?

With **JavaScript** you can:

- **Change** all **HTML elements**, **attributes** and **styles** in the page

- **Add** and **remove** **HTML elements** and **attributes**

- **Create** a **HTML events** and **react** to all of them in the page

DOM HTML

The **DOM** represents the document as **nodes** and **objects**.
That way, the programming languages **can connect** to the page.

DOM is a **standard** of how to:

- **Get** HTML element

- **Change** HTML element

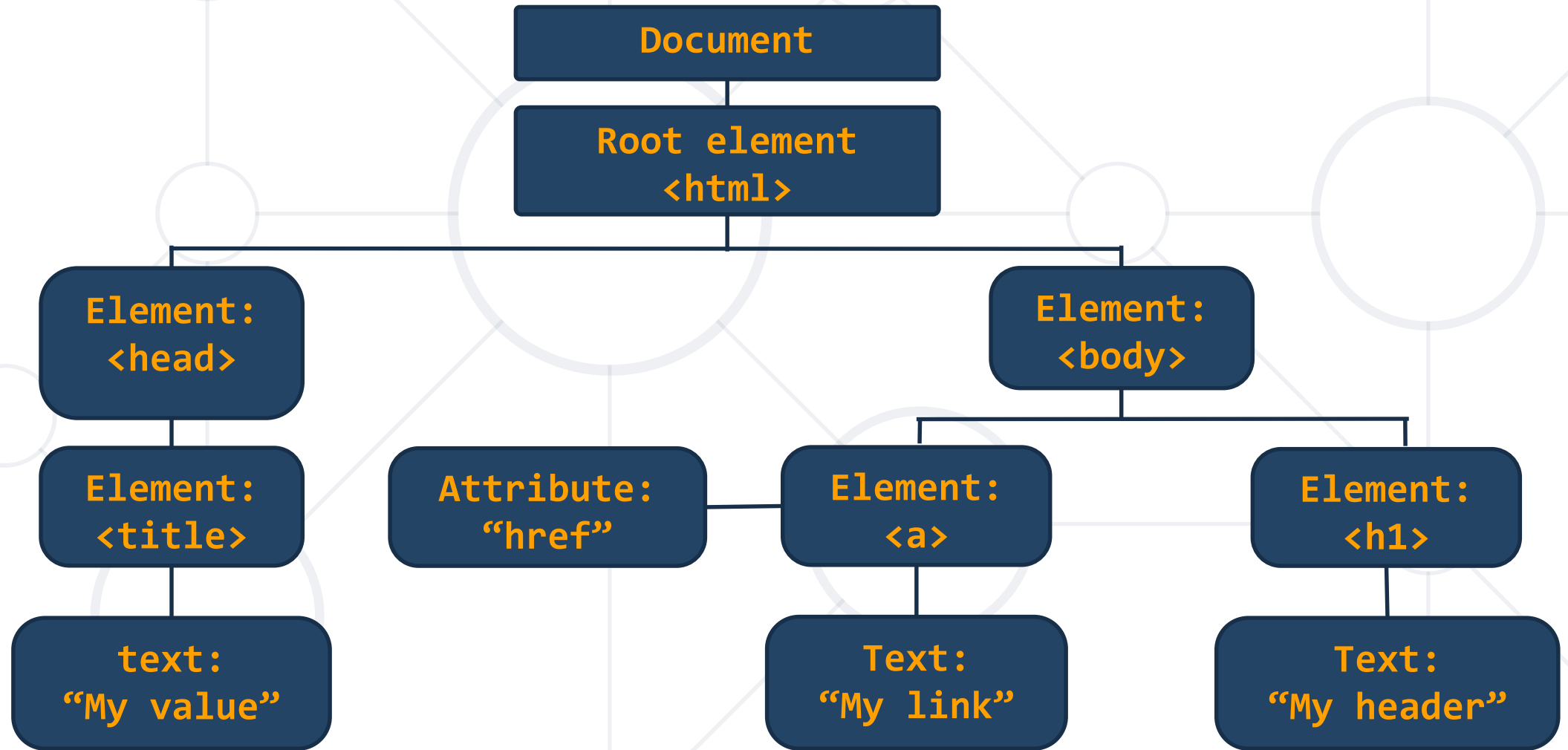- **Add** HTML element

- **Delete** HTML element

DOM HTML (2)

The **HTML DOM** is an **Object Model** for **HTML**. It defines:

- HTML elements as **objects**

- **Properties** for all HTML elements

- **Methods** for all HTML elements

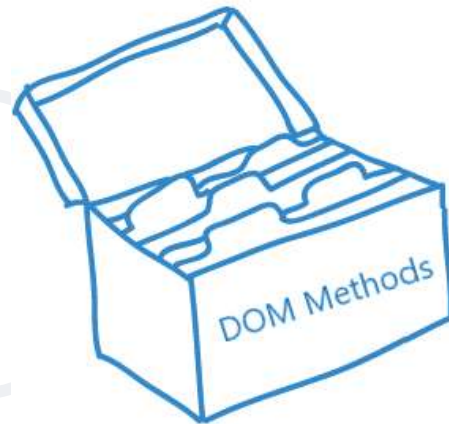- **Events** for all HTML elements

What is the HTML DOM?

```
Document
   |
Root element
  <html>
```

Element: <head>

Element: <body>

Element: <title>

Attribute: "href"

Element: <a>

Element: <h1>

text: "My value"

Text: "My link"

Text: "My header"

DOM Methods
Changing the HTML

DOM Methods

DOM Methods - **actions** you can perform on **HTML elements**

DOM Properties - **values** of **HTML elements** that you can **set** or **change**

DOM Methods

DOM Properties

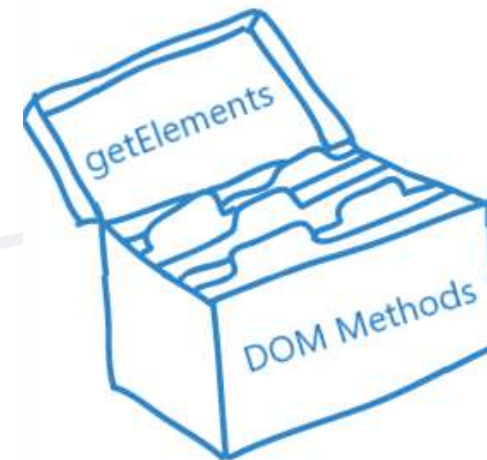# DOM Methods - Example

With **HTML DOM** **methods** we can get every element from the DOM we want

```
<html> == $0
  <head>
    <title>Intro to DOM</title>
  </head>
  <body>
    <h1>Introduction to DOM</h1>
    <ul>
      <li>DOM Methods Example</li>
      <li>DOM Properties Example</li>
    </ul>
  </body>
</html>
```

```
>
let h1Element = document.getElementsByTagName('h1')[0];

console.log(h1Element);

<h1>Introduction to DOM</h1>
```

getElements

DOM Methods

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HTML DOM **properties** allow us to change the value on every html element we want

```
...<html> == $0
  ▼<head>
     <title>Intro to DOM</title>
  </head>
  ▼<body>
     <h1>Introduction to DOM</h1>
  ▼<ul>
     <li>DOM Methods Example</li>
     <li>DOM Properties Example</li>
  </ul>
  </body>
</html>
```

```javascript
let secondLi = document.getElementsByTagName('li')[1];

secondLi.innerHTML += " - DONE"
```

Introduction to DOM

- DOM Methods Example
- DOM Properties Example - DONE

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Problem: Articles List

Create articles and **append** them into the articles list

Solution: Articles List

```javascript
function createArticle(){
    let title = document.getElementById('createTitle').value
    let text = document.getElementById('createContent').value
    let articlesList = document.getElementById('articles')
    if(title !== '' && text !== '') {
        let article = document.createElement('article')
        let h3 = document.createElement('h3')
        h3.textContent = title
        let p = document.createElement('p')
        p.textContent = text
        article.appendChild(h3)
        article.appendChild(p)
        articlesList.appendChild(article)
    }
    document.getElementById('createTitle').value = ""
    document.getElementById('createContent').value = ""
}
```

Check your solution here: https://judge.softuni.bg/Contests/Practice/Index/1425#0

DOM Manipulations
Modify the DOM Tree

DOM Manipulations

There are a few ways to **find** a certain **HTML element** in the **DOM**:

- **by id - getElementById**

- **by tag name - getElementsByTagName**

- **by class name – getElementsByClassName**

- **by css selector – querySelector(condition)**

DOM Manipulations

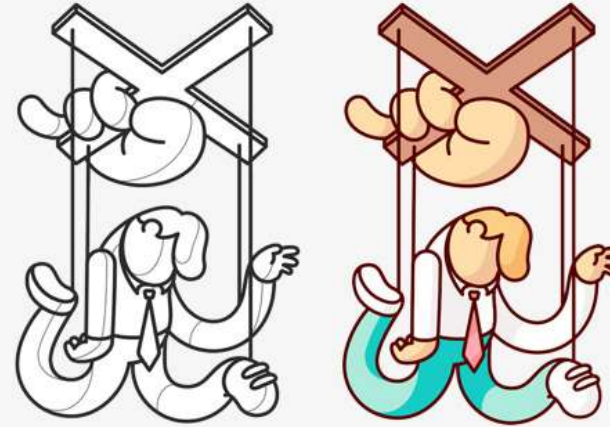The **HTML DOM** allows **JavaScript** to change the content of **HTML elements**.

- **innerHTML**

- **Attribute**

- **setAttribute**

- **style.property**

DOM Manipulations

We can **create, append** and **remove HTML element dynamically.**

- **removeChild**
- **appendChild**
- **replaceChild**
- **write**

Practice: Document Object Model
Live Exercises in Class (Lab)

DOM Events
Handling DOM Events

DOM Events

- **Events** are **actions** or occurrences that happen in the system you are programming, which the system tells you about so you can respond to them in some way if desired

- **DOM Events** are sent to notify code of interesting things that have taken place

DOM Events

- Each **event** is represented by an **object** which is based on the **Event interface**, and may have additional custom fields and/or functions used to get additional information about what happened

- **Events** can represent everything from basic user interactions to automated notifications of things happening in the rendering model

DOM Events

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- **Mouse** events

  click
  mouseover
  mouseout
  mousedown
  mouseup

- **Touch** events

  touchstart
  touchend
  touchmove
  touchcancel

- **DOM / UI** events

  load
  unload
  resize
  dragstart / drop

- **Keyboard** events
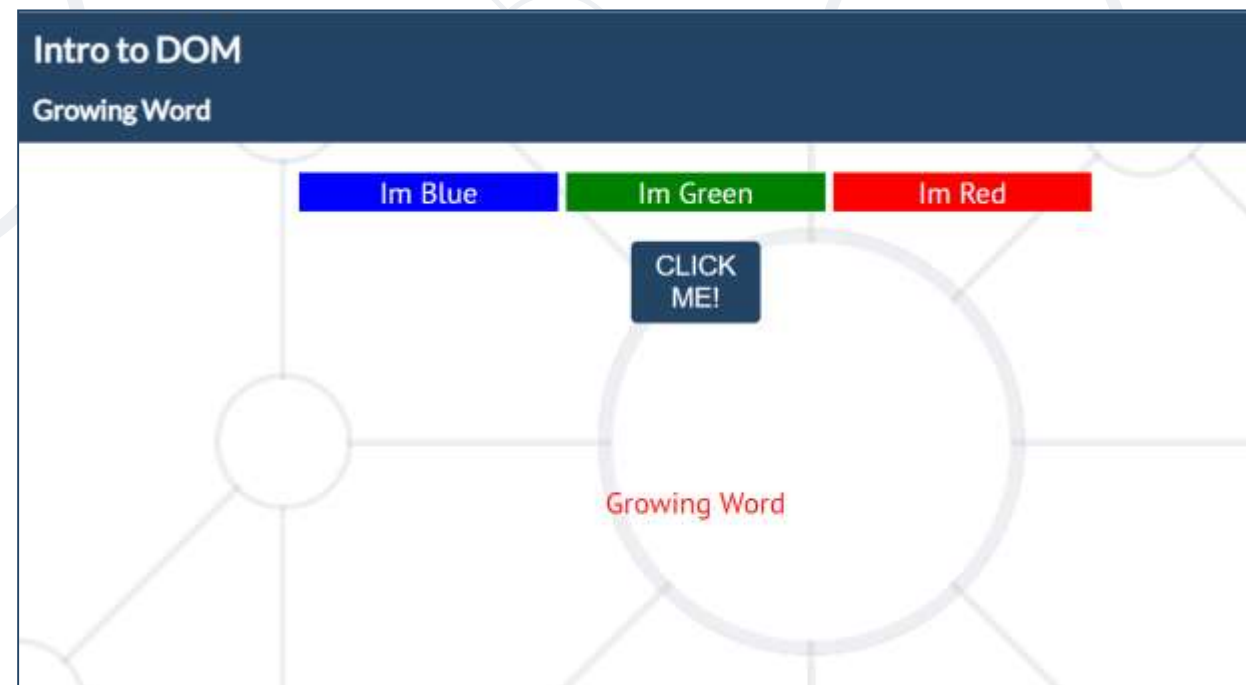
  keydown
  keypress
  keyup

- **Focus** events

  focus
  blur

- **Form** events

  input
  change
  submit
  reset

Problem: Growing Word

Change the size and the color of a paragraph on every click

Solution: Growing Word

```
function solve(){
  let clicks = 0;
  document.querySelector('button').addEventListener('click',
  () => {
    let p = document.querySelector('#exercise p');
    if(clicks % 3 === 0){
    p.style.color = "blue";
    } else if (clicks % 3 === 1){
      p.style.color = "green";
    } else if(clicks % 3 === 2){
      p.style.color = "red";
    }
    clicks++;
    p.style.fontSize = `${clicks * 2}px`; });
}
```

Check your solution here: https://judge.softuni.bg/Contests/Practice/Index/1425#2

Problem: Register Notification

Create a JS functionality that shows **notification** after successful registration

Practice: Document Object Model
Live Exercises in Class (Lab)

Summary

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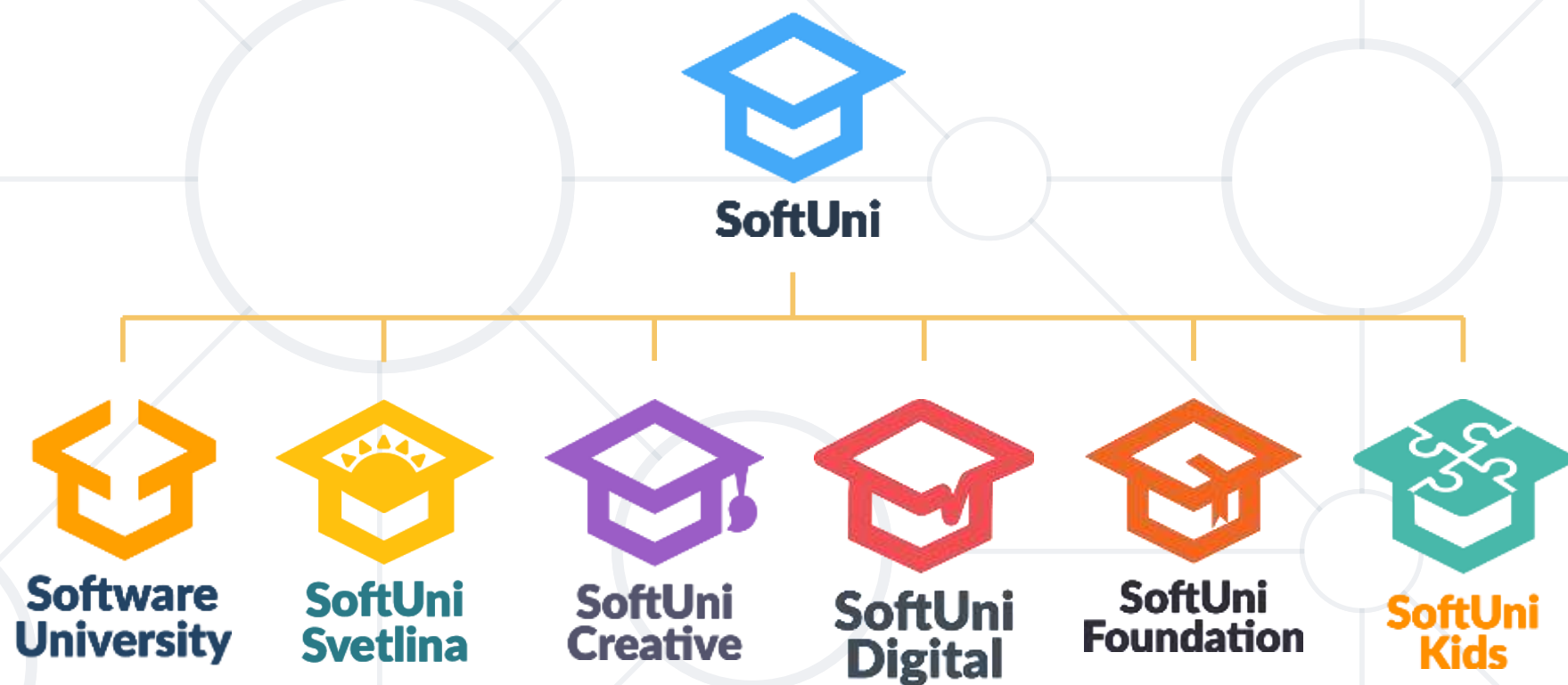
What is **DOM**?

- Definition and **DOM HTML**

DOM Methods

- **Methods** and **Properties**

DOM Manipulations

- Find, Change, Add and Remove **HTML** elements

Questions?

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https://softuni.bg/courses/javascript-fundamentals

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