JavaScript Development Introduction

First Steps in JavaScript

JavaScript

Au Mau Duong
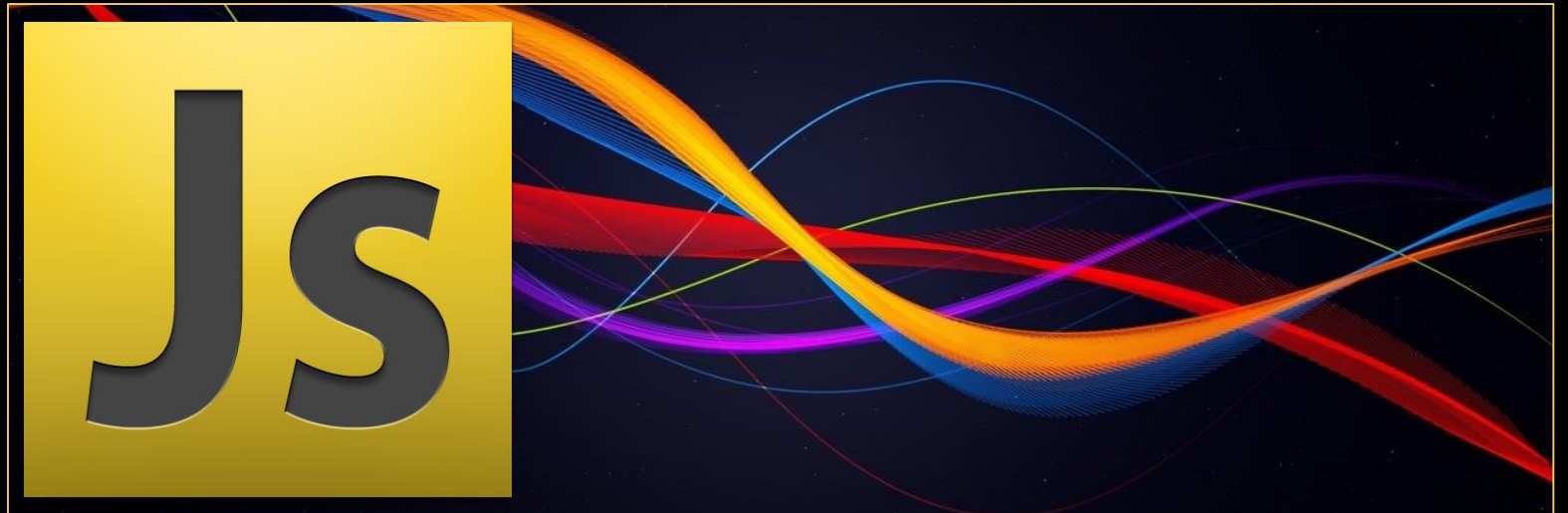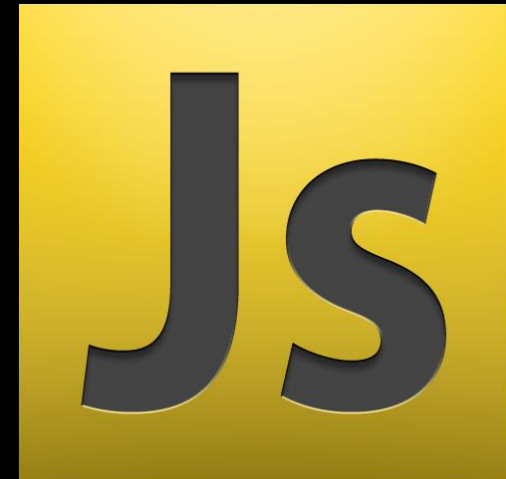**Technical Trainers**

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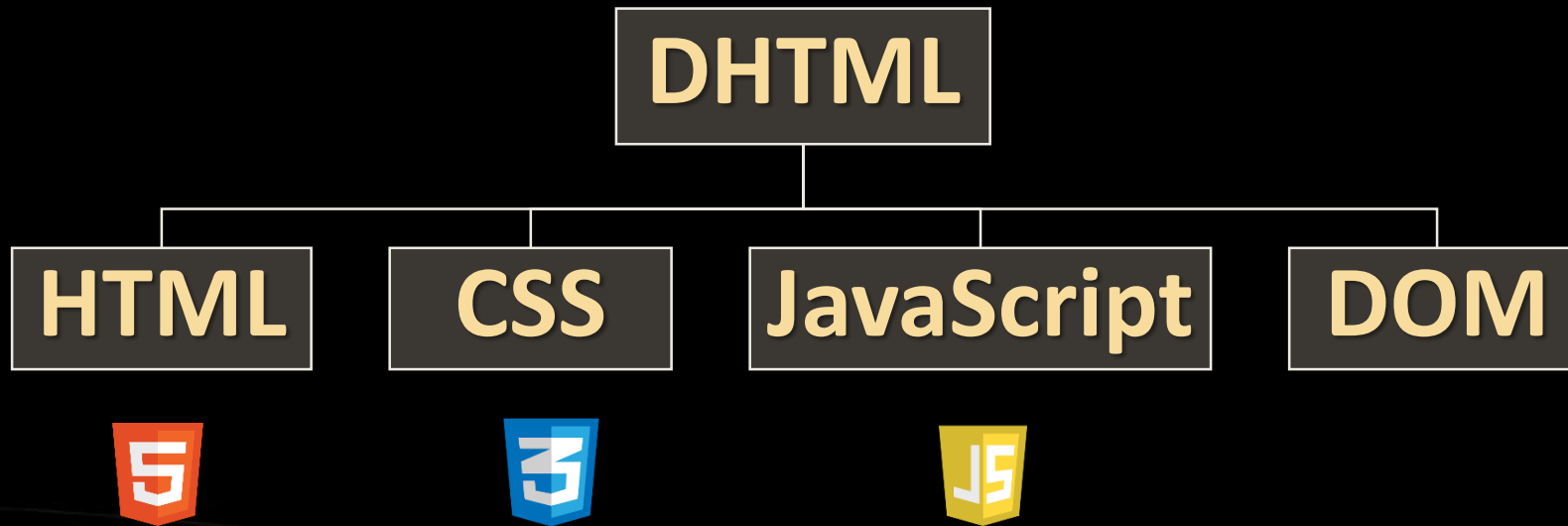   - Integrating JavaScript in HTML
3. First Steps in JavaScript

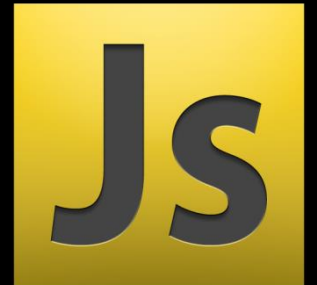# **Dynamic HTML**

Dynamic Behavior at the Client Side

What is DHTML?

- DHTML: collection of technologies used together to create interactive web sites

  - Web pages to react and change in response to the user's actions

- DHTML is combination of **HTML + CSS + JavaScript + DOM**

```
                    ┌──────────┐
                    │  DHTML   │
                    └─────┬────┘
       ┌──────────┬───────┼────────────┬──────────┐
   ┌───────┐ ┌───────┐ ┌─────────────┐ ┌───────┐
   │ HTML  │ │  CSS  │ │ JavaScript  │ │  DOM  │
   └───────┘ └───────┘ └─────────────┘ └───────┘
```

DHTML = HTML + CSS + JavaScript

- HTML defines web sites content through semantic tags (headings, sections, articles, paragraphs, lists, …)

- CSS describes the look and formatting of a document

  - Layout and Position of elements on the page

  - Presentation styles (background, borders, colors…)

  - Text and font styles (size, color, family)

- JavaScript defines dynamic behavior

  - Programming logic for interaction with the user

  - Handle user events

JavaScript

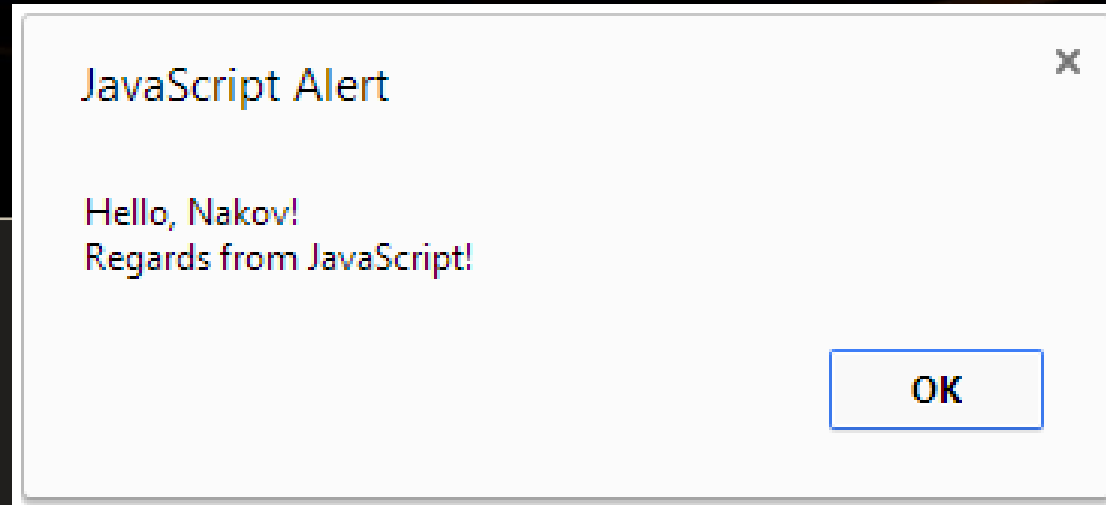Dynamic Behavior in a Web Page

First Look at JavaScript Code

```
<html>

<body>
  <script>
    var name = "Nakov";
    alert("Hello, " + name + "!\nRegards from JavaScript!");
  </script>
</body>

</html>
```

JavaScript Alert

Hello, Nakov!
Regards from JavaScript!

OK

Using JavaScript Code

- The JavaScript code can be placed in:

  - **`<script>`** tag in the head

  - **`<script>`** tag in the body

  - External files (recommended), linked via **`<script src="…">`**

    - Files usually have **`.js`** extension

    - The **`.js`** files are cached by the browser

```
<script src="scripts.js" type="text/javascript">
  <!– code placed here will not be executed! -->
</script>
```
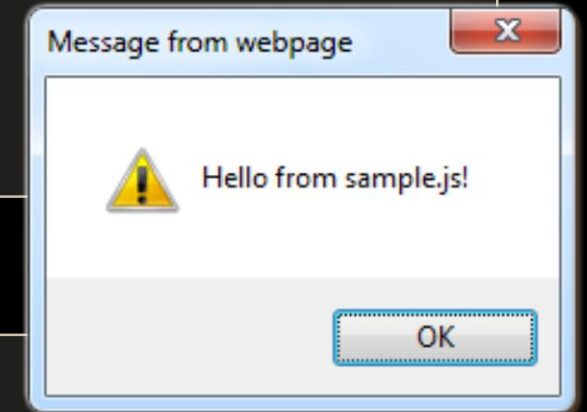
Using External Script Files

- Using external JS files:

```html
<html>
<head>
  <script src="sample.js" type="text/javascript">
  </script>
</head>
<body>
  <button onclick="alertMessage()"
    value="Call JavaScript function from sample.js" />
</body>
</html>
```

external-JavaScript.html

> The **\<script\>** tag is always empty. Cannot be **\<script … />**.

Message from webpage

⚠ Hello from sample.js!

OK

- External JavaScript file (**sample.js**):

```javascript
function alertMessage() {
  alert('Hello from sample.js!')
}
```
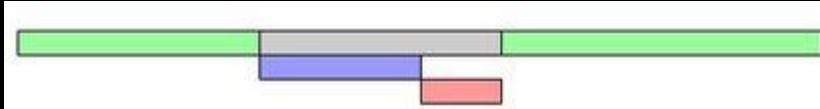
sample.js

Modern Approach to Load JS Files (1)

- Attributes (**async** and **defer**) load a script in background

  - Without pausing the HTML parser

- **async** `<script src="scripts.js" async></script>`

  - Executed asynchronously as soon as the script is downloaded

  - Without blocking the browser in the meantime

- **defer** `<script src="scripts.js" defer></script>`

  - Executed in after the entire document has been loaded
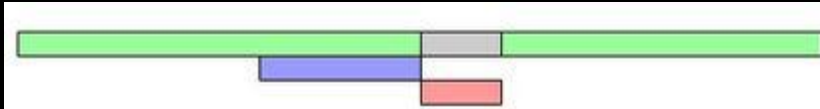
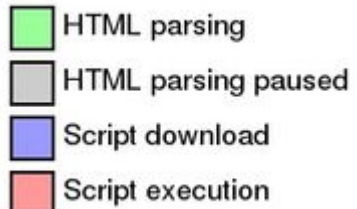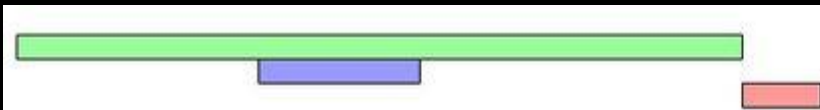# Modern Approach to Load JS Files (2)

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

Normal

`<script src="scripts.js" async></script>`

async

`<script src="scripts.js" defer></script>`

defer

Legend:
- HTML parsing (green)
- HTML parsing paused (gray)
- Script download (blue)
- Script execution (red)

JavaScript – When is Executed?

- JavaScript code is executed during the page loading or when the browser fires an event

  - All statements are executed at page loading

  - Some statements just define functions that can be called later

  - No compile-time checks (JavaScript is dynamic language)

- Function calls or code can be attached as "event handlers"

  - Executed when the event is fired by the browser

```
<img src="softuni.gif" onclick="alert('Clicked!')" />
```

Summary

1. DHTML = HTML + CSS + JavaScript + DOM
2. JavaScript – dynamical scripting language

   - Executed in the Web browsers / server-side

   - Enables dynamic behavior

JavaScript Development Introduction

Questions?