

# CS355 Web Technologies

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Lecture 6

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# Introduction to JavaScript

- JavaScript is a scripting language over internet.
- JavaScript is **a sequence of statements** to be executed by the browser.
- JavaScript is hooked on HTML language
- JavaScript code is written into an HTML page.
- When a user requests an HTML page with JavaScript code, the **script is sent to the browser** to do something with it.

# JavaScript Basics

- Can't work outside a web page
- Doesn't need a compiler (interpreted language).
- Object-based oriented language (no inheritance).
- Mainly used to create dynamic HTML pages and validating the data (client-side validations).

# JavaScript Basics

- Designed to **add interactivity to HTML pages**
- Can **read and write HTML elements**.
- Containing **executable code**.
- Used to **validate form data** before it is submitted to a server.
- Used to **create cookies** (store and retrieve information on the client's computer).

# Insert Script Code into HTML Page

- The HTML `<script>` tag is used to insert a Script code into an HTML page.
- Scripts can be included in both **body and head** sections.
- The script is **containing 2 attributes**:
  1. **Language attribute**: represents name of scripting language such as JavaScript, VbScript, ...etc.  
`<script language="JavaScript">`

# Insert Language Attribute into HTML Head Section

Example:

```
<html>
```

```
<head>
```

```
  <script language="JavaScript">
```

```
    document.write("Web Technologies")
```

```
  </script>
```

```
</head>
```

```
<body>
```

```
</body>
```

```
</html>
```

# Insert Language Attribute into HTML Body Section

## Example:

```
<html>
```

```
<head>
```

```
<body>
```

```
  <script language="JavaScript">
```

```
    document.write("Web Technologies Details ...")
```

```
  </script>
```

```
</body>
```

```
</head>
```

```
</html>
```

# Insert Type Attribute into HTML Page

## 2. Type attribute:

specifies **MIME** type (media type) of scripting code (MIME: Multi purpose Internet Mail Extension).

- MIME or media type is **a string** sent along with a file indicating the **type of the file** (describing the content format).

It sets to an **alpha-numeric MIME type** of code.

```
<script type="text / JavaScript">
```



# Insert Type Attribute Code into HTML Script

## Example:

```
<html>
```

```
<body>
```

```
<script type="text/javascript">
```

```
    document.write("Hello Students!");
```

```
</script>
```

```
</body>
```

```
</html>
```

# Insert JavaScript Code into HTML Page

- The **document.write** is a standard JavaScript command for **writing output to a page**.
- JavaScripts in the **head section** are executed when called.
- JavaScripts in the **body section** are executed during the page loads.
- Document can include an **unlimited number of scripts**

# JavaScripts in Both head and body

**<html>**

**<head>**

**<script type="text/javascript">**

....

**</script>**

**</head>**

**<body>**

**<script type="text/javascript">**

....

**</script>**

**</body>**

# JavaScripts Code

- JavaScript is **case sensitive**.
- Semicolon (;) is **optional** in general JavaScript.
- Each statement is executed by the browser in the **sequence they are written**.
- Single line JavaScript comments start with **//**.
- Multi line comments start with **/\*** and end with **\*/**.

# JavaScripts Code - Example

```
<script type="text/javascript">
```

//The following code will write one heading and two paragraphs

```
document.write("<h1>Web Technology</h1>");
```

```
document.write("<p>Introduction to Web Tech.</p>");
```

```
document.write("<p>Advance Web Tech.</p>");
```

```
</script>
```

# Creating external JavaScripts

- **External script** is used to **run the same script on several pages** without having to write the script on each page.
  - Write external script file and save it with **.js** extension.
  - Specify **.js** file in **src** attribute of `<script>` tag.
- **Note:** external script can't contain script tag.

# Creating External JavaScripts - Example

- Write the following statements and save it in a file named **external.js**

```
{  
document.write("This is external script code 1 "+"<br>");  
document.write("This is external script code 2 "+"<br>");  
document.write("This is external script code 3 ");  
}
```

# Using External JavaScripts - Example

<HTML>

<BODY>

<script language="JavaScript">

document.write("This is internal script code "+"<br>");

</script>

<script src="external.js">

</script>

</BODY>

</HTML>

This is internal script code

This is external script code 1

This is external script code 2

This is external script code 3

The web page output:



# JavaScript Variable Declaration

- JavaScript declare variables with **var** or **const**.
- When variables are changed, use **let**.

Example:

```
var id;
```

```
const grade1 = 35;
```

```
const grade2 = 62;
```

```
let total = grade1 + grade2;
```

# JavaScript Variable Declaration

- A **declaration** can span multiple lines.
- Example:

```
let course = "CS355",  
    courseName = "Web Technologies",  
    CreditHours = 3;
```

# JavaScript Functions

- JavaScript functions are created with the keyword **function**.

- JavaScript function **Syntax:**

```
function functionname( )
```

```
{
```

```
    statement 1;
```

```
    statement 2;
```

```
    ....
```

```
}
```

# JavaScript Functions

- There are 2 ways to call a function in JavaScript

- **Direct function call:**

the data passed to the function as arguments

- **Using event handlers:**

JavaScript provide a list of events that call function dynamically.

# JavaScript Direct Function Call - Example

```
<HTML>
<HEAD>
<TITLE> direct Function call</TITLE>
  <script language="JavaScript">
    function sum(a,b)
    {
      c = a + b
      return c
    }
  </script>
</HEAD>
<BODY>
  <script>
    var x = sum(10,20)  // direct function call
    document.write("The sum is :"+ x);
  </script>
</BODY>
</HTML>
```

# Event Handlers Function Call - Example

```
<HTML>
<HEAD>
<TITLE> Dynamic Function Call</TITLE>
  <script language="JavaScript">
    function sum(a,b)
    {
      a = 10
      b = 20
      c = a + b
      document.write("The sum is :"+ c);
    }
  </script>
</HEAD>
<BODY>
  // call the sum function
  <input type = "button" value = "click here" onclick = "sum( )">
</BODY>
</HTML>
```

# Examples

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## JS – Example #1 – 1/2

### Document. WriteLn.

```
1  <!DOCTYPE html>
2
3  <!-- Fig. 6.1: welcome.html -->
4  <!-- Displaying a line of text. -->
5  <html>
6    <head>
7      <meta charset = "utf-8">
8      <title>A First Program in JavaScript</title>
9      <script type = "text/javascript">
10
11        document.writeLn(
12          "<h1>Welcome to JavaScript Programming!</h1>" );
13
14      </script>
15    </head><body></body>
16  </html>
```

**Fig. 6.1** | Displaying a line of text. (Part 1 of 2.)



## JS – Example #1 – 2/2

### Document. WriteIn - Output



**Fig. 6.1** | Displaying a line of text. (Part 2 of 2.)