**Week 2: JSS2, JAVASCRIPT AND BOOTSTRAP**

**Topics:**

**JavaScript**: *Where to, Output, Statement, Syntax, Comment,**Variable, Let, Constants, Operators, Arithmetic, Assignment*

**BOOTSTRAP**: *Containers, Grid basics, Topography, Colors*

JavaScript is the world's most popular programming language.

JavaScript is the programming language of the Web.

**Where To**

Where to start would be to link your JavaScript file to your html file

Insert it in the head or body part of your html code.

A JavaScript function is a block of JavaScript code that can be executed when "called" for.

For example, a function can be called when an **event** occurs, like when the user clicks a button.

**Example**:

# Output

* Writing into an HTML element, using innerHTML.
* Writing into the HTML output using document.write().
* Writing into an alert box, using window.alert().
* Writing into the browser console, using console.log().

## Print

JavaScript does not have any print object or print methods.

You cannot access output devices from JavaScript.

The only exception is that you can call the window.print() method in the browser to print the content of the current window.

Example:

**Statement**

JavaScript statements are composed of:

Values, Operators, Expressions, Keywords, and Comments.

Example:

|  |  |
| --- | --- |
| **Keyword** | **Description** |
| var | Declares a variable |
| let | Declares a block variable |
| const | Declares a block constant |
| if | Marks a block of statements to be executed on a condition |
| switch | Marks a block of statements to be executed in different cases |
| for | Marks a block of statements to be executed in a loop |
| function | Declares a function |
| return | Exits a function |
| try | Implements error handling to a block of statements |

**Syntax**

The JavaScript syntax defines two types of values:

* Fixed values
* Variable values

Fixed values are called **Literals**.

Variable values are called **Variables**.

The two most important syntax rules for fixed values are:

1. **Numbers** are written with or without decimals:
2. Strings are written In single or double quote

JavaScript uses the keywords var, let and const to **declare** variables.

An **equal sign** is used to **assign values** to variables.

Example:

**Expressions**

An expression is a combination of values, variables, and operators, which computes to a value.

The computation is called an evaluation.

For example, 3 \* 66 evaluates to 198:

Example:

**Comments**

Not all JavaScript statements are "executed".

Code after double slashes // or between /\* and \*/ is treated as a **comment**.

Comments are ignored, and will not be executed:

**Variables**

All JavaScript **variables** must be **identified** with **unique names**.

These unique names are called **identifiers**.

Identifiers can be short names (like x and y) or more descriptive names (age, sum, totalVolume).

The general rules for constructing names for variables (unique identifiers) are:

* Names can contain letters, digits, underscores, and dollar signs.
* Names must begin with a letter.
* Names can also begin with $ and \_ (but we will not use it in this tutorial).
* Names are case sensitive (y and Y are different variables).
* Reserved words (like JavaScript keywords) cannot be used as names.

**When to Use JavaScript const?**

If you want a general rule: always declare variables with const.

If you think the value of the variable can change, use let.

In this example, price1, price2, and total, are variables:

**Operators**

**Note: in your hand written note, I am not expecting you to write down all the rows in the tables below, but minimum of first 4 rows is required where others may be negligible.**

**Arithmetic Operators**

|  |  |
| --- | --- |
| **Operator** | **Description** |
| + | Addition |
| - | Subtraction |
| \* | Multiplication |
| \*\* | Exponentiation ([ES2016](https://www.w3schools.com/js/js_2016.asp)) |
| / | Division |
| % | Modulus (Division Remainder) |
| ++ | Increment |
| -- | Decrement |

**Comparison Operators**

|  |  |
| --- | --- |
| **Operator** | **Description** |
| == | equal to |
| === | equal value and equal type |
| != | not equal |
| !== | not equal value or not equal type |
| > | greater than |
| < | less than |
| >= | greater than or equal to |
| <= | less than or equal to |
| ? | ternary operator |

**Logical Operators**

|  |  |
| --- | --- |
| **Operator** | **Description** |
| && | logical and |
| || | logical or |
| ! | logical not |

**Assignment Operators**

Assignment operators assign values to JavaScript variables.

|  |  |  |
| --- | --- | --- |
| **Operator** | **Example** | **Same As** |
| = | x = y | x = y |
| += | x += y | x = x + y |
| -= | x -= y | x = x - y |
| \*= | x \*= y | x = x \* y |
| /= | x /= y | x = x / y |
| %= | x %= y | x = x % y |
| <<= | x <<= y | x = x << y |
| >>= | x >>= y | x = x >> y |
| >>>= | x >>>= y | x = x >>> y |
| &= | x &= y | x = x & y |
| ^= | x ^= y | x = x ^ y |
| |= | x |= y | x = x | y |
| \*\*= | x \*\*= y | x = x \*\* y |

**Class Work**

Create a web page, with two input fields, a select case and a button

When the button is clicked, show the arithmetic result based on the selected mathematical operator

Display your result with the window.alert() function

**Assignment**

Create a web page, with a button

When the button is clicked, display your name in the page

Display your result with the window.alert() function

**Resources:**

https://www.youtube.com/watch?v=W6NZfCO5SIk

**Bootstrap 5**

**What is Bootstrap?**

* Bootstrap is a free front-end framework for faster and easier web development
* Bootstrap includes HTML and CSS based design templates for typography, forms, buttons, tables, navigation, modals, image carousels and many other, as well as optional JavaScript plugins
* Bootstrap also gives you the ability to easily create responsive designs

**What is Responsive Web Design?**  
  
Responsive web design is about creating web sites which automatically adjust themselves to look good on all devices, from small phones to large desktops.

**Why Use Bootstrap?**

Advantages of Bootstrap:

* **Easy to use:** Anybody with just basic knowledge of HTML and CSS can start using Bootstrap
* **Responsive features:** Bootstrap's responsive CSS adjusts to phones, tablets, and desktops
* **Mobile-first approach:** In Bootstrap, mobile-first styles are part of the core framework
* **Browser compatibility:** Bootstrap 5 is compatible with all modern browsers (Chrome, Firefox, Edge, Safari, and Opera). **Note** that if you need support for IE11 and down, you must use either BS4 or BS3.

**Container and container-fluid class**

<!DOCTYPE html>  
<html lang="en">  
  <head>  
    <title>Bootstrap 5 Example</title>  
    <meta charset="utf-8">

<meta name="viewport" content="width=device-width, initial-scale=1">

<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.2.1/dist/css/bootstrap.min.css" rel="stylesheet">  
  <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.2.1/dist/js/bootstrap.bundle.min.js"></script>  
  </head>

<body>

<div class="container">  
  <h1>My First Bootstrap Page</h1>  
  <p>This part is inside a .container class.</p>   
  <p>The .container class provides a responsive fixed width container.</p>   
</div>

</body>  
</html>

**Container Padding**

By default, containers have left and right padding, with no top or bottom padding. Therefore, we often use **spacing utilities**, such as extra padding and margins to make them look even better. For example, .pt-5 means "add a large **top padding**":

Example:

**Grid System**

Bootstrap's grid system is built with flexbox and allows up to 12 columns across the page.

<div class="row">  
  <div class="col-sm-3">.col-sm-3</div>  
  <div class="col-sm-3">.col-sm-3</div>  
  <div class="col-sm-3">.col-sm-3</div>  
  <div class="col-sm-3">.col-sm-3</div>  
</div>

**Default Settings**

Bootstrap 5 uses a default font-size of 1rem (16px by default), and its line-height is 1.5.

In addition, all <p> elements have margin-top: 0 and margin-bottom: 1rem (16px by default).

**<h1> - <h6>**

Bootstrap 5 styles HTML headings (<h1> to <h6>)  with a bolder font-weight and a responsive font-size.

<p class="h1">h1 Bootstrap heading</p>

**Text Colors**

Bootstrap 5 has some contextual classes that can be used to provide "meaning through colors".

The classes for text colors are: .text-muted, .text-primary, .text-success, .text-info, .text-warning, .text-danger, .text-secondary, .text-white, .text-dark, .text-body (default body color/often black) and .text-light:

**Background Colors**

The classes for background colors are: .bg-primary, .bg-success, .bg-info, .bg-warning, .bg-danger, .bg-secondary, .bg-dark and .bg-light.

**Class Work**

Create a simple web page using html and bootstrap

**Assignment**

Create a simple login page using html and bootstrap

**Resources**

https://www.youtube.com/watch?v=eow125xV5-c