



پوهنتون کاردان
KARDAN UNIVERSITY

Faculty of Computer Science

Course: Web Technology

(Lecture-1)

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Marks Division

Mid Term Exam 25 Marks

Final Term Exam 50 Marks

Semester Project 20 Marks

Attendance 5 Marks



JavaScript

- **JavaScript** is a **high-level, interpreted programming language** used mainly for **web development**.
- It allows developers to create **interactive and dynamic web pages**.
- JavaScript runs **inside the web browser** (client-side).
- It can also run on servers using **Node.js**.
- JavaScript works together with **HTML** and **CSS** to build modern websites.
- It supports **event-driven, functional, and object-oriented programming** styles.
- Today it is one of the **most widely used programming languages in the world**.



History of JavaScript

- JavaScript was created in **1995** by **Brendan Eich**.
- It was developed at **Netscape Communications**.
- The first name of JavaScript was **Mocha**.
- Later it was renamed to **LiveScript**.
- Finally it was named **JavaScript** for marketing reasons related to **Java**.
- The first browser to support JavaScript was **Netscape Navigator**.
- In **1997**, JavaScript was standardized as **ECMAScript** by **Ecma International**.
- Modern JavaScript improvements started with **ECMAScript 2015**, introducing features like **classes, modules, arrow functions, and promises**.



Why JavaScript

- Runs in **all modern web browsers**.
- Used for **frontend and backend development**.
- Large ecosystem with frameworks like **React**, **Angular**, and **Vue.js**.
- Used to build **web apps, mobile apps, desktop apps, and APIs**.



Application of JavaScript

- JavaScript is used to create interactive websites. It is mainly used for:
- Client-side validation,
- Dynamic drop-down menus,
- Displaying date and time,
- Displaying pop-up windows and dialog boxes (like an alert dialog box, confirm dialog box and prompt dialog box),
- Displaying clocks etc.



Variable

- A **variable** is a **container used to store data**.
- The value of a variable can **change during program execution**.
- Variables can store different **data types** such as:
 - ❑ Number
 - ❑ String
 - ❑ Boolean
 - ❑ Object
 - ❑ Array
- Variables are declared using **var**, **let**, or **const**.



Types of Variable Declarations

1. var

- Old way to declare variables
- Function scoped
- Can be **redeclared and updated**

2. let

- Introduced in **ES6**
- Block scoped
- Can be **updated but not redeclared**

```
var x = 10;  
  
let y = 20;  
  
const PI = 3.14;
```

3. const

- Block scoped
- **Cannot be reassigned** after initialization



Conditional Statements

- In coding, we want to perform different actions for different decisions. For that we can use conditional statements in our code.
- In JavaScript we have the following conditional statements:
 - **If** is used to specify a block of code to be executed, if a specified condition is true
 - **else** is used to specify a block of code to be executed, if the same condition is false
 - **if else** is used to specify a new condition to test, if the first condition is false
 - **switch** is used to specify many alternative blocks of code to be executed



Conditional Statements

If statement

```
<script>  
    var Marks=80;  
    if(Marks==80)  
    {  
        document.write("Your Grade is B"+ "<br>");  
    }  
</script>
```



Conditional Statements

If else statement

```
<script>
  var M=50;
  if(M>59)
  {
    document.write("You are pass" + "<br>");
  }
  else
  {
    document.write("You are Fail"+ "<br>");
  }
</script>
```



Conditional Statements

If else if statement

```
<script>
  var page="Contact";
  if(page=="About") {
    document.write("you are in the About Page"+ "<br>");
  }
  else if(page=="Home"){
    document.write("you are in the Home Page"+ "<br>");
  }
  else if(page=="Contact"){
    document.write("you are in the Contact Page"+ "<br>");
  }
  else {
    document.write("you are selected wrong page "+ "<br>");
  }
</script>
```



Conditional Statements



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switch

```
<script>
  var G="A";
  switch(G)
  {
    case "B":
      document.write("you have Grade B "+ "<br>");
      break;
    case "A":
      document.write("you have Grade A "+ "<br>");
      break;
    case "C":
      document.write("you have Grade C "+ "<br>");
      break;
    default:
      document.write("you are fail "+ "<br>");
      break;
  }
</script>
```



JavaScript Array

- The syntax of creating array using array literal is given below:
- `var arrayname=[value1,value2.....valueN];`
- As you can see, values are contained inside [] and separated by , (comma).
- Let's see the simple example of creating and using array in JavaScript.

<script>

```
var emp=["Ali","Ahmad","Kareem"];  
document.write(emp[0] + "<br/>");  
document.write(emp[1] + "<br/>");
```

</script>



JavaScript Array directly (new keyword)

- The syntax of creating array directly is given below:
- `var arrayname=new Array();`
- Here, **new keyword** is used to create instance of array.
- Let's see the example of creating array directly.

<script>

```
var emp = new Array();  
emp[0] = "Saleem";  
emp[1] = "Zabi";  
emp[2] = "Raihan";  
document.write(emp[0] + "<br>");  
document.write(emp[1] + "<br>");  
document.write(emp[2] + "<br>");
```

</script>



JavaScript array constructor (new keyword)

- Here, you need to create instance of array by passing arguments in constructor so that we don't have to provide value explicitly.
- The example of creating object by array constructor is given below.

<script>

```
var emp=new Array("Mahmood","Rabi","Saber");  
document.write(emp[0] + "<br>");  
document.write(emp[1] + "<br>");  
document.write(emp[2] + "<br>");
```

</script>



JavaScript loop

JavaScript supports different kinds of loops:

- **for** - loops through a block of code a number of times
- **while** - loops through a block of code while a specified condition is true
- **do/while** - also loops through a block of code while a specified condition is true



JavaScript Functions

- Function is a group of statement which is used to perform a specific task
- Advantage of JavaScript function
 - **Code reusability:** We can call a function several times so it saves coding.
 - **Less coding:** It makes our program compact.



1. Function Declaration (Named Function)

- Defined using the function keyword.

```
function greet(name) {  
    return "Hello, " + name;  
}  
console.log(greet("Ali"));
```



2. Function Expression

- Assigned to a variable

```
const greet = function(name) {  
    return "Hello, " + name;  
};  
console.log(greet("Sara"));
```



3. Arrow Function (ES6)

- Implicit Return
 - Return the result automatically
 - Only for one statement/line of code

```
const add = (a, b) => a + b;  
console.log(add(5, 3)); // 8
```



3. Arrow Function (ES6)

- Block Body
 - Multiple lines of code
 - No return automatically

```
const multiply = (a, b) => {  
  let result = a * b;  
  return result;  
};  
console.log(multiply(4, 6)); // 24
```



Rest Operator (...)

- The Rest Operator (...) is used in JavaScript to collect multiple elements into a single array/object

```
function sum(...numbers) {  
    console.log(numbers);  
}  
  
console.log(sum(1, 2, 3));  
console.log(sum(10, 20, 30, 40));
```



Spread Operator

- The **spread operator** ... is used to **expand/unpack** the elements of an **array** or the **properties of an object**.

```
const frontend = ["HTML", "CSS"];  
const backend = ["Node.js", "PHP"];  
  
const skills = [...frontend, ...backend];  
  
console.log(skills);
```



Assignment

Explain the following types of loops with practical example in JavaScript?

1.for/in

2.for/of

