# MSc DS - Web Technologies

## Module No: 4

## Revision from Last Lecture

1. Module 3 covers fundamental concepts of JavaScript, including variables and data types.

2. It explores logic control with conditionals and loops, and working with arrays and objects.

3. The module concludes with a section on ES-6 features, highlighting contemporary improvements in JavaScript.

## Expected Learning Outcomes

1. To comprehend how a website interacts, you must comprehend the basic ideas and DOM structure.

2. Understand how to use JavaScript to enhance and change web page components for the display of dynamic information.

3. Acquire knowledge about responsive JavaScript features that may be used to create websites user-friendly and adaptive.

4. To improve website speed and data management, delve deeply into cutting-edge data storage techniques and libraries.

## Introduction to the Document Object Model

• The Document Object Model (DOM) is a programming interface for web content.

• It represents web pages as hierarchical structures composed of elements.

• The DOM allows developers to retrieve, change, and interact with web page information, structure, and styles.

## Manipulating Web Page Elements with JavaScript

• JavaScript plays a crucial role in animating online pages and governing the dynamic functionality of web page components.

• JavaScript interacts with the DOM to modify content, structure, and styles in response to user actions or events.

• JavaScript provides methods for selecting specific elements on a web page, allowing developers to modify their properties, invoke methods, or delete/substitute them.

## Making Websites Responsive through JavaScript

• Responsiveness in web design involves dynamic adjustment and uninterrupted user experiences across devices and screen dimensions.

• CSS provides aesthetic fluidity, while JavaScript enables functional responsiveness.

• JavaScript is used for detecting user interactions, optimising functionality, and utilising device-specific functionalities to enhance user experiences.

## Advanced Data Storage Techniques and Libraries

• Efficient storage and retrieval of data are crucial in online applications.

• Web Storage API, including localStorage and sessionStorage, offers higher storage capacities and eliminates the need for transmission with every request.

• IndexedDB provides a sophisticated solution for storing substantial quantities of organised data, while libraries like localForage streamline these activities for developers.

## Important Terminologies

• Document Object Model (DOM): The DOM is a hierarchical depiction of the content of a web page, enabling dynamic interaction via JavaScript.

• JavaScript: A highly adaptable programming language for web development, facilitating creation and manipulation of interactive content.

• Responsive Design: A methodology aiming to ensure optimal visual and functional performance across devices and screen sizes.

## Important Terminologies (continued)

• localStorage: A Web Storage API component allowing browsers to store data persistently without expiry.

• IndexedDB: A low-level API for storing structured data in the browser, supporting large data volumes.

• Libraries: Compilations of reusable code designed to streamline complex tasks and reduce redundancy.

## Summary

• Module 4 focuses on web development and the connection between JavaScript and the Document Object Model (DOM).

• It covers modifying web page components using JavaScript and emphasises website responsiveness.

• The module also explores sophisticated data storage techniques beyond cookies, including the Web Storage API and IndexedDB.