**HTML5** is the fifth and latest version of the HTML (Hypertext Markup Language), which is used for **structuring and presenting content on the web**. HTML5 introduces several new features and elements aimed at improving the multimedia experience, providing better functionality, and offering improved support for modern web applications.

**Key Features of HTML5:**

1. **Doctype Declaration:**
   * HTML5 uses a simplified doctype declaration: <!DOCTYPE html>. This makes it easier to define the document type and eliminates browser inconsistencies.
2. **New Semantic Elements:**
   * HTML5 introduced new semantic elements that provide meaning to the document structure. These elements make the code more readable and accessible.

<header>: Represents the header of a document or section.

<header>

<h1>Welcome to My Website</h1>

</header>

<nav>: Defines navigation links.

<nav>

<ul>

<li><a href="#home">Home</a></li>

<li><a href="#about">About</a></li>

</ul>

</nav>

<article>: Defines a self-contained piece of content.

<article>

<h2>Blog Post Title</h2>

<p>This is a blog post.</p>

</article>

<section>: Represents a section of a document.

<section>

<h2>Our Services</h2>

<p>We offer web development services.</p>

</section>

<footer>: Represents the footer of a document or section.

<footer>

<p>&copy; 2024 My Website</p>

</footer>

1. **Multimedia Support:** HTML5 includes native support for audio and video without the need for third-party plugins like Flash.

<audio>: Embeds audio content.

<audio controls>

<source src="audio.mp3" type="audio/mp3">

Your browser does not support the audio element.

</audio>

<video>: Embeds video content.

<video width="320" height="240" controls>

<source src="video.mp4" type="video/mp4">

Your browser does not support the video element.

</video>

1. **Canvas Element:** HTML5 introduced the <canvas> element, which is used to draw graphics via JavaScript.

<canvas id="myCanvas" width="200" height="200"></canvas>

<script>

var c = document.getElementById("myCanvas");

var ctx = c.getContext("2d");

ctx.fillStyle = "#FF0000";

ctx.fillRect(50, 50, 150, 150);

</script>

1. **Local Storage:** HTML5 provides the ability to store data locally within the user's browser.

<script>

// Storing data

localStorage.setItem("username", "JohnDoe");

// Retrieving data

var username = localStorage.getItem("username");

alert(username); // Outputs: JohnDoe

</script>

1. **Form Elements Enhancements:** HTML5 introduces new input types for forms, which help in improving user experience.

<input type="email">: Validates the input for email format.

<form>

<label for="email">Email:</label>

<input type="email" id="email" name="email" required>

</form>

<input type="date">: Provides a date picker.

<form>

<label for="birthday">Birthday:</label>

<input type="date" id="birthday" name="birthday">

</form>

1. **Geolocation API:** HTML5 allows the use of geolocation to get the geographical position of a user.

<script>

if (navigator.geolocation) {

navigator.geolocation.getCurrentPosition(function(position) {

alert("Latitude: " + position.coords.latitude +

" Longitude: " + position.coords.longitude);

});

} else {

alert("Geolocation is not supported by this browser.");

}

</script>

1. **Offline Web Applications (Application Cache):** HTML5 allows web applications to be cached for offline use using the applicationCache API.

<html manifest="offline.manifest">

<head>

<title>Offline Web App</title>

</head>

<body>

<h1>Welcome, You are offline now!</h1>

</body>

</html>

1. **Web Workers:** HTML5 allows you to run JavaScript in the background without blocking the main thread using Web Workers.

// Worker.js

self.onmessage = function(e) {

postMessage("Hello " + e.data);

};

// Main script

var worker = new Worker("worker.js");

worker.onmessage = function(e) {

console.log(e.data); // Outputs: Hello World!

};

worker.postMessage("World");

Example: Simple HTML5 Document

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

<title>HTML5 Example</title>

</head>

<body>

<header>

<h1>HTML5 Features</h1>

</header>

<section>

<h2>Audio Example</h2>

<audio controls>

<source src="audio.mp3" type="audio/mp3">

Your browser does not support the audio element.

</audio>

</section>

<section>

<h2>Canvas Example</h2>

<canvas id="myCanvas" width="200" height="200"></canvas>

<script>

var c = document.getElementById("myCanvas");

var ctx = c.getContext("2d");

ctx.fillStyle = "#FF0000";

ctx.fillRect(50, 50, 150, 150);

</script>

</section>

<footer>

<p>&copy; 2024 HTML5 Demo</p>

</footer>

</body>

</html>

This example demonstrates several HTML5 features, including the audio element, canvas, and semantic structure.