DAY 4 - HTML5 Multimedia and APIs: Working with Audio, Video, and HTML5 APIs

HTML5 offers powerful features for working with multimedia elements such as audio and video, as well as utilizing HTML5 APIs to enhance functionality on webpages. This topic explores how to incorporate multimedia elements and leverage APIs in HTML5.

1. Working with Audio and Video:

- **Embedding Audio:** Learn how to add audio files to your webpage using the `<audio>` element. Understand the different audio formats supported and how to control playback.

- **Embedding Video:** Explore the `<video>` element and discover how to embed video files on your webpage. Understand various video formats, controls, and customization options.

- **Responsive Media:** Learn techniques to ensure audio and video elements are responsive and adapt to different screen sizes.

2. HTML5 APIs:

- **Geolocation API:** Discover how to utilize the Geolocation API to retrieve the user's geographic location. Understand how to request location information and handle user permissions.

- **Web Storage API:** Learn about the Web Storage API, which provides a way to store data locally in the user's browser. Explore both localStorage and sessionStorage and their differences.

- **Drag and Drop API:** Understand how to implement drag and drop functionality using the Drag and Drop API. Learn about the different events and methods involved in creating interactive drag and drop interfaces.

Hands-on Project: Adding multimedia elements and using APIs in a webpage

In this hands-on project, you will create a webpage that incorporates multimedia elements (audio and video) and utilizes HTML5 APIs. The project will involve the following steps:

1. Setting up the HTML structure: Create the basic HTML structure for the webpage, including the necessary `<audio>` and `<video>` elements.

2. Adding multimedia elements: Embed audio and video files within the respective elements. Customize the controls and appearance as needed.

3. Implementing HTML5 APIs: Choose one or more HTML5 APIs (e.g., Geolocation API, Web Storage API, Drag and Drop API) to enhance your webpage's functionality. Implement the chosen API(s) using appropriate JavaScript code.

4. Testing and refinement: Test your webpage to ensure the multimedia elements play correctly and the HTML5 APIs function as intended. Make any necessary refinements or adjustments to improve the user experience.

NOTE:
Please note that the example code provided above includes CSS and JavaScript for the purpose of styling and interactivity. However, in order to understand the functionality of HTML and how to embed a YouTube video, you can focus solely on the HTML markup.

The key concept to grasp is that when embedding YouTube videos, it is recommended to use the YouTube iframe embed code. This involves using an `<iframe>` element with the `src` attribute set to the YouTube video's embed URL. The video will be displayed within the iframe, and you can adjust the width and height to your preference.

Feel free to ignore the CSS and JavaScript portions of the example, as they are not essential for understanding the HTML functionality in this case. The main takeaway is the use of the YouTube iframe embed code to embed a video into your HTML page.

EXAMPLE 1 → Multimedia

```
<!DOCTYPE html>
<html>
```

```
<head>
  <title>HTML5 Multimedia and APIs</title>
</head>
<body>
  <h1>My Multimedia Webpage</h1>

  <h2>Audio Example</h2>
  <audio controls>
    <source src="./sample-15s.mp3" type="audio/mpeg">
    Your browser does not support the audio element.
  </audio>

  <h2>Video Example</h2>
  <video controls width="480" height="270">
    <source src="./LinkedIn Bot Demo.mp4" type="video/mp4">
    Your browser does not support the video element.
  </video>

  <iframe width="480" height="270"
src="https://www.youtube.com/embed/LXb3EKWsInQ" frameborder="5"
allowfullscreen></iframe>
  <script>
    // Example JavaScript code for using HTML5 APIs
    // Implement your chosen API(s) here
  </script>
</body>
</html>
```

EXAMPLE 2 → Drag and Drop(DND)

```
<!DOCTYPE html>
<html>
<head>
  <title>HTML5 Drag and Drop API Example</title>
  <style>
    .drag-container {
      display: flex;
    }
    .drag-box {
      width: 150px;
      height: 150px;
      border: 2px solid gray;
```

```
      text-align: center;
      padding: 10px;
      margin-right: 10px;
      cursor: move;
    }
  </style>
  <script>
    function allowDrop(event) {
      event.preventDefault();
    }

    function drag(event) {
      event.dataTransfer.setData("text", event.target.id);
    }

    function drop(event) {
      event.preventDefault();
      var data = event.dataTransfer.getData("text");
      event.target.appendChild(document.getElementById(data));
    }
  </script>
</head>
<body>
  <h1>HTML5 Drag and Drop API Example</h1>

  <div class="drag-container">
    <div id="drag-box1" class="drag-box" draggable="true"
ondragstart="drag(event)">
      Drag Box 1
    </div>
    <div id="drag-box2" class="drag-box" draggable="true"
ondragstart="drag(event)">
      Drag Box 2
    </div>
  </div>

  <div id="drop-box" class="drag-box" ondrop="drop(event)"
ondragover="allowDrop(event)">
    Drop Box
  </div>
```

```
</body>
</html>
```

EXAMPLE 3 → HTML5 API

```
<!DOCTYPE html>
<html>
<head>
  <title>HTML5 Web APIs Example</title>
  <script>
    // Geolocation API
    function getLocation() {
      if (navigator.geolocation) {
        navigator.geolocation.getCurrentPosition(showPosition);
      } else {
        alert("Geolocation is not supported by this browser.");
      }
    }

    function showPosition(position) {
      var latitude = position.coords.latitude;
      var longitude = position.coords.longitude;
      document.getElementById("location").innerHTML = "Latitude: " +
latitude + "<br>Longitude: " + longitude;
    }

    // Web Storage API
    function saveData() {
      var inputText = document.getElementById("data").value;
      localStorage.setItem("userInput", inputText);
      alert("Data saved!");
    }

    function retrieveData() {
      var savedData = localStorage.getItem("userInput");
      document.getElementById("saved-data").innerHTML = "Saved Data: " +
savedData;
    }
  </script>
```

```
</head>
<body>
  <h1>HTML5 Web APIs Example</h1>

  <h2>Geolocation API</h2>
  <button onclick="getLocation()">Get Location</button>
  <p id="location"></p>

  <h2>Web Storage API</h2>
  <label for="data">Enter data to save:</label>
  <input type="text" id="data">
  <button onclick="saveData()">Save</button>
  <button onclick="retrieveData()">Retrieve</button>
  <p id="saved-data"></p>
</body>
</html>
```