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CSS Implementation Methods

TONY STARK•September 3, 2023

Write about different methods for implementing cascading style sheets?

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Cascading Style Sheets (CSS) can be implemented using various methods, depending on the specific needs of a web project. Here are different approaches to implementing CSS:

Inline CSS: This method involves placing CSS directly within the HTML document using the style attribute. While it’s simple and useful for individual elements, it can become hard to maintain in larger projects.

Html

Copy code

```
<p style=”color: blue; font-size: 16px;”>This is some text.</p>
```

Internal CSS: In this approach, CSS is placed within the <style> tags in the HTML <head> section. It’s beneficial for small to medium-sized projects but can become cumbersome for larger websites.

Html

Copy code

```
<head>
  <style>
    P {
      Color: blue;
      Font-size: 16px;
```

```
   }
  </style>
</head>
<body>
  <p>This is some text.</p>
</body>
```

External CSS: In this widely used method, CSS is placed in a separate .css file and linked to the HTML document using the <link> element. This promotes modularity and easier maintenance, especially in larger projects.

Html

Copy code

```
<head>
  <link rel=”stylesheet” type=”text/css” href=”styles.css”>
</head>
```

In styles.css:

Css

Copy code

```
P {
  Color: blue;
  Font-size: 16px;
}
```

CSS Preprocessors: CSS preprocessors like Sass and Less provide extended features like variables, nesting, and functions. Developers write code in these preprocessors, which is then compiled into standard CSS.

Example using Sass:

Sass

Copy code

```
$text-color: blue;
```

```
$font-size: 16px;


P {
  Color: $text-color;
  Font-size: $font-size;
}
```

CSS Frameworks: Frameworks like Bootstrap and Foundation offer pre-designed CSS components and layout systems. Developers can quickly build responsive websites by utilizing these frameworks and customizing them as needed.

CSS-in-JS: In modern web development, some developers use libraries like Styled Components or Emotion to write CSS directly in JavaScript code. This approach offers component-based styling and can enhance maintainability.

Example using Styled Components in React:

Jsx

Copy code

```
Import styled from 'styled-components';


Const StyledParagraph = styled.p`
  Color: blue;
  Font-size: 16px;
`;


Function MyComponent() {
  Return <StyledParagraph>This is some text.</StyledParagraph>;
}
```

CSS Grid and Flexbox: CSS Grid and Flexbox are layout techniques that allow precise control over the arrangement of elements on a webpage. They are often used in combination with other CSS methods to create complex layouts.

Remember that the choice of implementation method depends on factors like project size, team preferences, and specific design requirements. Combining multiple methods can also be beneficial in complex web development projects.

How you will embed audio and video in webpage.

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To embed audio and video in a webpage, you can use HTML5 multimedia elements: <audio> for audio files and <video> for video files. Here’s how you can do it:

Embedding Audio:

Using the <audio> Element:

To embed an audio file, you can use the <audio> element and specify the source (URL) of the audio file using the src attribute. Additionally, you can provide controls for playback using the controls attribute:

Html

Copy code

```
<audio controls>
  <source src=”audiofile.mp3” type=”audio/mpeg”>
  Your browser does not support the audio element.
</audio>
```

In this example, replace “audiofile.mp3” with the actual URL or relative path to your audio file. The type attribute specifies the MIME type of the audio file.

Embedding Video:

Using the <video> Element:

To embed a video file, you can use the <video> element and specify the source (URL) of the video file using the src attribute. Similar to audio, you can provide playback controls using the controls attribute:

Html

Copy code

```
<video controls>
  <source src=”videofile.mp4” type=”video/mp4”>
  Your browser does not support the video element.
</video>
```

Replace “videofile.mp4” with the actual URL or relative path to your video file. The type attribute specifies the MIME type of the video file. You can also provide multiple <source> elements with different formats to ensure compatibility across browsers.

Adding Video Captions (Subtitles):

You can add captions or subtitles to your video by using the <track> element within the <video> element. Here’s an example:

Html

Copy code

```
<video controls>
  <source src=”videofile.mp4” type=”video/mp4”>
  <track label=”English” kind=”subtitles” srclang=”en” src=”captions.vtt”>
  Your browser does not support the video element.
</video>
```

In this example, “captions.vtt” should be replaced with the URL or relative path to your WebVTT (.vtt) caption file.

Responsive Video:

To make your embedded video responsive, you can use CSS to control its size within a responsive container. Here’s an example:

Html

Copy code

```
<div class=”video-container”>
  <video controls>
    <source src=”videofile.mp4” type=”video/mp4”>
```

```
   Your browser does not support the video element.
  </video>
</div>
```

And the associated CSS:

Css

Copy code

```
.video-container {
  Position: relative;
  Padding-bottom: 56.25%; /* 16:9 aspect ratio for widescreen videos */
  Overflow: hidden;
}

Video {
  Position: absolute;
  Top: 0;
  Left: 0;
  Width: 100%;
  Height: 100%;
}
```

This CSS code ensures that the video scales appropriately within the container, maintaining an aspect ratio.

Make sure to replace “videofile.mp4” and “captions.vtt” with your actual file paths or URLs. Additionally, provide alternative content or a message for browsers that do not support the multimedia element you’re embedding.

What are features of Web Services?

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Web services are a fundamental technology for enabling communication and data exchange between different software applications over the internet or a network. They offer various features and capabilities, including:

Interoperability: Web services allow applications developed in different programming languages and running on different platforms to communicate and exchange data seamlessly. They rely on standardized protocols like HTTP, SOAP, and REST to achieve this interoperability.

Platform Independence: Web services are not tied to any specific operating system or platform. They can run on various platforms, making them highly versatile and adaptable.

Language Neutrality: Web services can be developed using different programming languages, making it easier for organizations to leverage their existing skills and technologies.

Location Transparency: With web services, the physical location of the service or the client consuming the service is irrelevant. They can communicate over a network without concern for where the resources are hosted.

Scalability: Web services can be scaled horizontally (adding more servers) or vertically (increasing server capacity) to handle increased loads and demands, making them suitable for both small and large-scale applications.

Loose Coupling: Web services promote loose coupling between client and server components. This means that changes in one component (e.g., the service) do not necessarily require corresponding changes in the other (e.g., the client), enhancing flexibility and maintainability.

Discoverability: Some web services provide mechanisms for clients to discover available services dynamically. For example, UDDI (Universal Description, Discovery, and Integration) allows clients to find services based on keywords or descriptions.

Security: Web services can implement various security measures, including authentication, authorization, and encryption, to ensure the confidentiality and integrity of data during transmission.

Statelessness: Many web services follow a stateless architecture, where each request from a client to a server must contain all the information needed to understand and fulfill the request. This simplifies server management and enhances reliability.

Support for Different Message Formats: Web services can exchange data in various formats, such as XML, JSON, or binary, based on the requirements of the application.

Standardized Protocols: Web services often use standardized communication protocols like HTTP, HTTPS, SOAP (Simple Object Access Protocol), and REST (Representational State Transfer) to facilitate communication and data exchange.

Versatility: Web services can serve a wide range of purposes, including data retrieval, remote procedure calls (RPC), and integration with third-party services, making them suitable for diverse application scenarios.

Caching: Web services can implement caching mechanisms to improve performance by storing and reusing frequently requested data.

Monitoring and Management: Web services can be monitored and managed to track usage, performance, and availability. Tools and frameworks exist for managing web service lifecycles.

Versioning: To accommodate evolving requirements, web services can support versioning, allowing multiple versions of a service to coexist and enabling clients to choose the version they want to use.

These features collectively make web services a crucial technology for building distributed and interconnected systems, enabling businesses and applications to communicate and share data efficiently and securely over the internet and networks.

Create a HTML page Showing a message “I use media query”. Write media query such that the text color changes to light gray when browser window is 600px wide or less and otherwise it is black.

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Sure, here’s an example of an HTML page with a message that changes text color using a media query:

Html

Copy code

```
<!DOCTYPE html>
<html lang=”en”>
<head>
  <meta charset=”UTF-8”>
  <meta name=”viewport” content=”width=device-width, initial-scale=1.0”>
  <title>Media Query Example</title>
  <style>
    Body {
      Font-family: Arial, sans-serif;
      Text-align: center;
    }

    P {
      Font-size: 24px;
      /* Default text color is black */
      Color: black;
    }

    @media (max-width: 600px) {
      /* When the browser window is 600px wide or less, change text color to light gray */
      P {
        Color: lightgray;
      }
    }
  </style>
</head>
<body>
  <p>I use media query</p>
</body>
</html>
```

In this example, we have a paragraph (<p>) element with the text “I use media query.” By using a media query with @media (max-width: 600px), we specify that when the browser window is 600px wide or less, the text color will change to light gray. Otherwise, it remains black. This provides a responsive design that adapts to different screen sizes.

Explain <audio>, <video>, and <canvas> elements in HTML 5

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HTML5 introduced several new elements to enhance multimedia and graphics capabilities on the web. Three notable elements are <audio>, <video>, and <canvas>:

<audio> Element:

The <audio> element allows you to embed audio content, such as music, podcasts, or sound effects, directly into a web page. Key attributes and features include:

Src: Specifies the source URL of the audio file.

Controls: Adds audio playback controls like play, pause, and volume to the audio player.

<source> element: Allows you to specify multiple sources in different formats for better cross-browser compatibility.

Event listeners: You can use JavaScript to add event listeners to control the audio playback programmatically.

Example usage:

Html

Copy code

```
<audio controls>
  <source src=”audio.mp3” type=”audio/mpeg”>
  Your browser does not support the audio element.
</audio>
```

<video> Element:

The <video> element serves a similar purpose as <audio> but is used for embedding video content on a web page. Key attributes and features include:

Src: Specifies the source URL of the video file.

Controls: Adds video playback controls like play, pause, and volume to the video player.

<source> element: Allows you to specify multiple sources in different formats for broader compatibility.

Event listeners: JavaScript can be used to add event listeners to control video playback, track progress, and respond to user interactions.

Example usage:

Html

Copy code

```
<video controls>
  <source src=”video.mp4” type=”video/mp4”>
  Your browser does not support the video element.
</video>
```

<canvas> Element:

The <canvas> element provides a drawing surface that allows you to create dynamic graphics, animations, and interactive visual content using JavaScript. Key features include:

Drawing API: It offers a comprehensive set of JavaScript methods for drawing shapes, lines, text, and images on the canvas.

Animations: You can create animations by updating the content of the canvas element at specified intervals.

Interactivity: <canvas> can respond to user input, making it suitable for creating games, data visualizations, and interactive applications.

Example usage:

Html

Copy code

```
<canvas id=”myCanvas” width=”400” height=”200”></canvas>
<script>
  Const canvas = document.getElementById(‘myCanvas’);
  Const ctx = canvas.getContext(‘2d’);

  // Example: Draw a red rectangle
  Ctx.fillStyle = ‘red’;
  Ctx.fillRect(50, 50, 100, 100);
</script>
```

In this example, a canvas element is created with JavaScript drawing instructions to draw a red rectangle.

These HTML5 elements have significantly improved multimedia and graphics capabilities, making it easier to integrate audio, video, and interactive graphics into web applications while maintaining cross-browser compatibility.

Write HTML code to design a form with three radio buttons red, green, blue. 10 Write Javascript code that will change the background color of the page when user clicks on the particular button.

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Certainly! You can create an HTML form with three radio buttons (Red, Green, Blue), and then use JavaScript to change the background color of the page when the user clicks on a specific button. Here's the HTML and JavaScript code for this:

Html

Copy code

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Background Color Changer</title>
  <script>
    Function changeBackgroundColor() {
      // Get the selected radio button
      Const colorRadioButtons = document.getElementsByName('color');
      Let selectedColor;

      For (const radioButton of colorRadioButtons) {
        If (radioButton.checked) {
          selectedColor = radioButton.value;
          break;
        }
      }

      // Change the background color based on the selected color
      Document.body.style.backgroundColor = selectedColor;
    }
  </script>
</head>
<body>
  <h1>Background Color Changer</h1>
  <form>
    <input type=”radio” name=”color” value=”red” id=”redRadio”>
    <label for=”redRadio”>Red</label><br>

    <input type=”radio” name=”color” value=”green” id=”greenRadio”>
    <label for=”greenRadio”>Green</label><br>

    <input type=”radio” name=”color” value=”blue” id=”blueRadio”>
    <label for=”blueRadio”>Blue</label><br>

    <input type=”button” value=”Change Background Color” onclick=”changeBackgroundColor()”>
  </form>
</body>
</html>
```

In this code:

We create a form with three radio buttons, each representing a color (Red, Green, Blue).

We use JavaScript to handle the button click event (onclick) and determine which radio button is selected.

The selected color value is used to change the background color of the body element using document.body.style.backgroundColor.

When the user clicks the “Change Background Color” button, the JavaScript function changeBackgroundColor is called, and it updates the background color of the page based on the selected radio button.

Why do we use Bootstrap? What is better CSS or Bootstrap?

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Bootstrap is a popular front-end framework used for web development, and it offers several advantages:

Rapid Development: Bootstrap provides a set of pre-designed and pre-built components, such as navigation bars, buttons, forms, and grids, that can be easily customized and used to create responsive and visually appealing web interfaces quickly. This speeds up the development process.

Responsive Design: Bootstrap is built with responsive design in mind. It ensures that web applications and websites look and function well on various devices and screen sizes, from desktops to mobile devices, without extensive custom CSS coding.

Consistency: Bootstrap enforces a consistent design and layout across your web project. This consistency is especially beneficial for teams of developers and designers working on the same project, ensuring that the UI remains uniform.

Cross-Browser Compatibility: Bootstrap takes care of many cross-browser compatibility issues, reducing the need for developers to write browser-specific CSS rules. This ensures that your web application works consistently across different web browsers.

Customization: While Bootstrap provides a default style and structure, it’s highly customizable. Developers can override Bootstrap’s default styles and components to create a unique look and feel for their project. This means you can use Bootstrap as a starting point and tailor it to your specific design requirements.

Community and Resources: Bootstrap has a large and active community, which means there are abundant resources, documentation, and third-party themes and plugins available. This can help developers troubleshoot issues and find solutions quickly.

Now, when it comes to the choice between CSS and Bootstrap, it’s essential to understand that Bootstrap is built on top of CSS. CSS is a fundamental technology for styling web content, and it’s always present when you use Bootstrap. Here’s a comparison:

CSS:

Full Control: Writing custom CSS provides complete control over the styling of your website or application. You can create entirely unique designs and layouts.

Learning Curve: Learning CSS requires a deeper understanding of styling concepts and can take more time to master, especially for complex designs.

Responsiveness: Creating responsive designs in CSS often involves writing media queries and custom layout adjustments.

Bootstrap:

Rapid Development: Bootstrap accelerates development by offering pre-designed components and responsive grids. It’s especially beneficial for prototyping and simpler projects.

Learning Curve: Learning Bootstrap is relatively straightforward, and it’s accessible to developers with varying levels of CSS expertise.

Responsiveness: Bootstrap has built-in responsiveness, making it easier to create layouts that adapt to different screen sizes.

Which to Choose?

The choice between CSS and Bootstrap depends on your project’s specific needs. If you require complete design freedom, have advanced styling requirements, or need a highly unique interface, then custom CSS may be the better option. However, for faster development, consistency, and responsive design out of the box, Bootstrap can be an excellent choice, especially for prototypes, small to medium-sized projects, or when working with a team of developers and designers. In many cases, a combination of both custom CSS and Bootstrap can be used to achieve the desired results.

Demonstrate CSS3 Animation with an example.

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Certainly! CSS3 allows you to create animations directly within your stylesheets. Here’s an example of a simple CSS3 animation that will make an HTML element move across the screen:

HTML:

Html

Copy code

```
<!DOCTYPE html>

<html lang=”en”>

<head>

   <meta charset=”UTF-8”>

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

   <link rel=”stylesheet” href=”styles.css”>

   <title>CSS3 Animation Example</title>

</head>

<body>

   <div class=”box”></div>

</body>

</html>
```

CSS (styles.css):

Css

Copy code

```
Body {

   Margin: 0;

   Overflow: hidden;

}


.box {

   Width: 50px;

   Height: 50px;
   Background-color: blue;
   Position: absolute;
   Animation: moveBox 4s linear infinite;
}

@keyframes moveBox {
   0% {
      Left: 0;
   }
   100% {
      Left: calc(100% - 50px);
   }
}
```

In this example:

We have an HTML <div> element with the class “box” that we want to animate.

In the CSS, we define a keyframes animation named “moveBox.”

The animation gradually moves the .box element from the left side of the screen to the right side. We use the left property to control the horizontal position.

The @keyframes rule defines the animation’s keyframes. In this case, it starts at 0% (left: 0) and ends at 100% (left: 100% - 50px to account for the element’s width).

We apply the animation to the .box element using the animation property, specifying the animation name (“moveBox”), duration (4 seconds), timing function (“linear”), and iteration count (“infinite” to make it loop).

When you load this HTML file in a web browser, you’ll see the blue box moving smoothly from the left to the right side of the screen in a continuous loop. You can adjust the animation properties to achieve different effects, such as changing the duration, easing function, or animation direction.

What do you mean by JSON? Why use JSON over XML?

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JSON (JavaScript Object Notation) is a lightweight data interchange format used to represent structured data. It’s a text-based format that is easy for both humans to read and write and machines to parse and generate. JSON is primarily used for transmitting data between a server and a web application or between different parts of an application.

Key characteristics of JSON include:

Data Structure: JSON represents data as a collection of key-value pairs. These key-value pairs can be nested, forming complex data structures like objects and arrays.

Data Types: JSON supports common data types such as strings, numbers, booleans, arrays, objects, and null values.

Human-Readable: JSON data is easy for humans to understand and edit, making it an excellent choice for configuration files and data exchange between different programming languages.

Lightweight: JSON’s syntax is concise, and it doesn’t include additional markup or metadata. This makes it lightweight and efficient for data transmission.

Language Agnostic: JSON is not tied to any particular programming language, which means it can be used with a wide range of programming languages and platforms.

Parsing: JSON can be easily parsed and converted into native data structures in most programming languages, making it simple to work with in software applications.

Now, let’s address the question of why one might choose JSON over XML (eXtensible Markup Language):

JSON vs. XML:

Readability: JSON is often considered more readable and less verbose than XML. Its syntax is simpler, making it easier for developers to understand and work with.

Parsing: JSON parsing is generally faster and more efficient than XML parsing, which can be important for web applications where performance matters.

Data Size: JSON typically results in smaller data sizes compared to equivalent XML documents. This can be an advantage in scenarios with limited bandwidth or storage constraints.

Ecosystem: JSON is well-supported in modern web development. Most programming languages provide libraries and built-in support for JSON, making it easy to work with in various environments.

JavaScript Integration: JSON's syntax is a natural fit for JavaScript, making it seamless to exchange data between web clients and servers.

Simplicity: JSON's simplicity is a benefit when dealing with straightforward data structures. However, for more complex hierarchical or metadata-heavy data, XML might be a better choice due to its flexibility and self-descriptive nature.

Legacy Systems: XML has been around longer and is still used extensively in legacy systems, so there are cases where compatibility with existing XML data is a requirement.

In summary, JSON is often preferred over XML in modern web development due to its simplicity, efficiency, and widespread support in programming languages. However, the choice between JSON and XML should be based on your specific project's requirements and compatibility with existing systems if applicable.

Write code to process online Alumni information for your college. Create forms to get name, address, date of bir and email id. Use check boxes for taking hobbies and radio buttons for selecting branch. Write JavaScriptcode to validate the following:

i. User has filled all the fields prior to form submission

ii. Valid email-id (with "@" and ".")

iii. Age validation using DOB (&gt;-22 years)

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To create a web form for processing online alumni information with validation using HTML and JavaScript, you can use the following code as an example:

Html

Copy code

```
<!DOCTYPE html>
<html lang=”en”>
<head>
  <meta charset=”UTF-8”>
  <meta name=”viewport” content=”width=device-width, initial-scale=1.0”>
  <title>Alumni Information</title>
  <script>
    Function validateForm() {
      // Check if name, address, date of birth, and email are filled
      Const name = document.getElementById(“name”).value;
      Const address = document.getElementById(“address”).value;
      Const dob = document.getElementById(“dob”).value;
      Const email = document.getElementById(“email”).value;
      Const hobbies = document.querySelectorAll(‘input[type=”checkbox”]:checked’);
      Const branch = document.querySelector(‘input[name=”branch”]:checked’);

      If (!name || !address || !dob || !email || hobbies.length === 0 || !branch) {
        Alert(“Please fill in all fields.”);
        Return false;
      }

      // Check valid email format
      Const emailRegex = /^[^\s@]+@[^\s@]+\.[^\s@]+$/;
      If (!email.match(emailRegex)) {
        Alert(“Please enter a valid email address.”);
        Return false;
      }

      // Calculate age based on date of birth
      Const dobDate = new Date(dob);
      Const currentDate = new Date();
```

```
          Const ageDiff = currentDate.getFullYear() – dobDate.getFullYear();


          If (ageDiff < 22) {
             Alert(“You must be at least 22 years old to submit.”);
             Return false;
          }


          // If all validations pass, allow form submission
          Return true;
       }
    </script>
</head>
<body>
    <h1>Alumni Information Form</h1>
    <form onsubmit=”return validateForm()”>
       <label for=”name”>Name:</label>
       <input type=”text” id=”name” name=”name” required><br>


       <label for=”address”>Address:</label>
       <input type=”text” id=”address” name=”address” required><br>


       <label for=”dob”>Date of Birth:</label>
       <input type=”date” id=”dob” name=”dob” required><br>


       <label for=”email”>Email ID:</label>
       <input type=”email” id=”email” name=”email” required><br>


       <label>Hobbies:</label><br>
       <input type=”checkbox” name=”hobby” value=”Reading”> Reading
       <input type=”checkbox” name=”hobby” value=”Sports”> Sports
       <input type=”checkbox” name=”hobby” value=”Traveling”> Traveling
```

```
        <br>

        <label>Branch:</label><br>
        <input type=”radio” name=”branch” value=”CSE”> CSE
        <input type=”radio” name=”branch” value=”ECE”> ECE
        <input type=”radio” name=”branch” value=”ME”> ME
        <br>

        <input type=”submit” value=”Submit”>
    </form>
</body>
</html>
```

In this code:

The validateForm JavaScript function is called when the form is submitted.

It checks if all the required fields (name, address, date of birth, email, hobbies, and branch) are filled. If not, it displays an alert and prevents submission.

It also validates the email using a regular expression and checks if the age based on the date of birth is greater than or equal to 22 years.

If all validations pass, the form is allowed to submit; otherwise, an alert is displayed with the relevant error message.

Explain native objects in JavaScript.

ChatGPT

In JavaScript, native objects are built-in objects that provide essential functionality and features for performing various tasks. These objects are available by default in a JavaScript environment, and you can use them without needing to define or import them explicitly. Native objects play a crucial role in JavaScript’s core functionality and provide essential tools for developers. Here are some commonly used native objects in JavaScript:

Object: The most fundamental native object in JavaScript, it represents a generic object and serves as the prototype for all other objects.

Array: Used for creating and manipulating arrays, which are ordered lists of values.

Function: Allows you to define and invoke functions in JavaScript.

String: Provides methods and properties for working with strings, which are sequences of characters.

Number: Used for numeric operations and provides methods for working with numbers.

Boolean: Represents the Boolean data type with values true and false.

Date: Used for working with dates and times, allowing you to manipulate and format date objects.

RegExp: Provides support for regular expressions, enabling pattern matching and text manipulation.

Error: The base object for all error types in JavaScript. It’s used for handling exceptions and errors.

Math: Contains mathematical constants and functions, such as Math.PI and Math.sqrt().

JSON: Provides methods for parsing JSON (JavaScript Object Notation) strings and serializing JavaScript objects into JSON.

Global Objects: These are objects and functions available in the global scope, such as setTimeout, setInterval, and console. They are often used for tasks like scheduling asynchronous operations and logging.

These native objects are an integral part of JavaScript and are always available when you write JavaScript code. They form the foundation for building more complex data structures and applications. Additionally, JavaScript allows you to create your own custom objects and extend the functionality of these native objects by adding methods and properties to them.

Here’s an example of using some of these native objects in JavaScript:

Javascript

Copy code

```
// Using native objects
```

```
Const myArray = [1, 2, 3];
Const myString = "Hello, world!";
Const myDate = new Date();
Const myRegExp = /pattern/;
Const myError = new Error("An error occurred");

Console.log(Array.isArray(myArray)); // true
Console.log(myString.length); // 13
Console.log(myDate.getFullYear()); // Current year
Console.log(myRegExp.test("test pattern")); // true
Console.error(myError.message); // "An error occurred"
```

These native objects simplify common programming tasks in JavaScript and are an essential part of the language's standard library.

Write a code in JavaScript to set a cookie Assume suitable data for it

ChatGPT

Certainly! Here's an example of JavaScript code to set a cookie with a name, value, and optional expiration date:

Javascript

Copy code

```
// Function to set a cookie
Function setCookie(cookieName, cookieValue, daysToExpire) {
  Const cookie = `${cookieName}=${encodeURIComponent(cookieValue)}`;

  If (typeof daysToExpire === 'number') {
    Const expirationDate = new Date();
    expirationDate.setTime(expirationDate.getTime() + (daysToExpire * 24 * 60 * 60 * 1000));
    cookie += `; expires=${expirationDate.toUTCString()}`;
  }

  Document.cookie = cookie;
}


// Example: Setting a cookie named “user” with a value and an expiration date of 7 days
Const userName = “John Doe”;
setCookie(“user”, userName, 7);


// You can retrieve cookies using document.cookie
Console.log(document.cookie);
```

In this code:

The setCookie function accepts three parameters:

cookieName: The name of the cookie.

cookieValue: The value to be stored in the cookie.

daysToExpire (optional): The number of days until the cookie should expire. If not provided, the cookie will be a session cookie, which expires when the browser is closed.

Inside the function, the document.cookie property is used to set the cookie with the specified name, value, and expiration date if provided.

We then use the setCookie function to set a cookie named “user” with the value “John Doe” and an expiration date of 7 days. You can change the values as needed.

To retrieve cookies, you can access document.cookie. It will contain all the cookies currently set for the current domain.

Please note that cookies are subject to certain limitations and considerations, such as browser security policies and user privacy concerns. Always handle user data and cookies responsibly and consider using more secure methods for storing sensitive information.

Explain the in-built objects provided in JavaScript with their properties and methods

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JavaScript provides several built-in objects that offer various functionalities and are available globally in the language. Here’s an overview of some of these commonly used built-in objects, along with their properties and methods:

Object:

Properties: Object.prototype, Object.constructor, Object.keys(), Object.values(), Object.entries()

Methods: Object.assign(), Object.create(), Object.defineProperty(), Object.defineProperties(), Object.freeze(), Object.seal(), Object.is()

Array:

Properties: Array.prototype, Array.constructor, Array.length

Methods: Array.isArray(), Array.from(), Array.of(), Array.prototype.push(), Array.prototype.pop(), Array.prototype.shift(), Array.prototype.unshift(), Array.prototype.concat(), Array.prototype.slice(), Array.prototype.splice(), Array.prototype.join(), Array.prototype.map(), Array.prototype.filter(), Array.prototype.reduce(), Array.prototype.sort()

Function:

Properties: Function.prototype, Function.constructor, Function.length

Methods: Function.call(), Function.apply(), Function.bind()

String:

Properties: String.prototype, String.constructor, String.length

Methods: String.prototype.charAt(), String.prototype.charCodeAt(), String.prototype.concat(), String.prototype.indexOf(), String.prototype.lastIndexOf(), String.prototype.slice(), String.prototype.substring(), String.prototype.trim(), String.prototype.replace(), String.prototype.split(), String.prototype.toUpperCase(), String.prototype.toLowerCase(), String.prototype.includes()

Number:

Properties: Number.MAX_VALUE, Number.MIN_VALUE, Number.NaN, Number.POSITIVE_INFINITY, Number.NEGATIVE_INFINITY, Number.prototype, Number.constructor

Methods: Number.isNaN(), Number.isFinite(), Number.isInteger(), Number.parseFloat(), Number.parseInt(), Number.prototype.toFixed(), Number.prototype.toPrecision(), Number.prototype.toString()

Boolean:

Properties: Boolean.prototype, Boolean.constructor

Date:

Properties: Date.prototype, Date.constructor

Methods: Date.now(), Date.parse(), Date.prototype.getDate(), Date.prototype.getMonth(), Date.prototype.getFullYear(), Date.prototype.getHours(), Date.prototype.getMinutes(), Date.prototype.getSeconds(), Date.prototype.getMilliseconds(), Date.prototype.getTime(), Date.prototype.setTime()

RegExp:

Properties: RegExp.prototype, RegExp.constructor

Methods: RegExp.prototype.test(), RegExp.prototype.exec()

Error:

Properties: Error.prototype, Error.constructor

Methods: Error.prototype.toString()

Math:

Properties: Constants like Math.PI, Math.E

Methods: Math.abs(), Math.ceil(), Math.floor(), Math.round(), Math.max(), Math.min(), Math.random(), Math.pow(), Math.sqrt(), Math.sin(), Math.cos(), Math.tan()

JSON:

Methods: JSON.stringify(), JSON.parse()

These built-in objects provide a wide range of functionalities for working with data, manipulating strings, handling dates, performing mathematical operations, and more. Understanding these objects and their methods is fundamental for effective JavaScript programming.

Write a JavaScript code for the following

i. To display digital clock on the screen

1. To change the advertisement stored in the form of image after 5 minutes atomically

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Here’s JavaScript code to achieve both of your requirements:

1. Display a Digital Clock:

Html

Copy code

```
<!DOCTYPE html>
<html lang=”en”>
<head>
  <meta charset=”UTF-8”>
  <meta name=”viewport” content=”width=device-width, initial-scale=1.0”>
  <title>Digital Clock</title>
  <script>
    Function displayTime() {
      Const now = new Date();
      Const hours = now.getHours().toString().padStart(2, ‘0’);
      Const minutes = now.getMinutes().toString().padStart(2, ‘0’);
      Const seconds = now.getSeconds().toString().padStart(2, ‘0’);
      Const timeString = `${hours}:${minutes}:${seconds}`;
      Document.getElementById(‘clock’).textContent = timeString;
    }

    // Update the clock every second
    setInterval(displayTime, 1000);

    // Initial display
    displayTime();
  </script>
  <style>
    #clock {
      Font-size: 24px;
    }
  </style>
</head>
<body>
  <div id=”clock”></div>
</body>
</html>
```

This code will display a digital clock on the screen, and it will automatically update every second.

2. Change Advertisement Image After 5 Minutes Automatically:

Html

Copy code

```
<!DOCTYPE html>
<html lang=”en”>
<head>
  <meta charset=”UTF-8”>
  <meta name=”viewport” content=”width=device-width, initial-scale=1.0”>
  <title>Advertisement Image Rotation</title>
  <script>
    Const advertisements = [
      “image1.jpg”,
      “image2.jpg”,
      “image3.jpg”
      // Add more image URLs here
    ];

    Let currentIndex = 0;

    Function rotateAdvertisement() {
      Const adImage = document.getElementById(“advertisement”);
```

```
            adImage.src = advertisements[currentIndex];
            currentIndex = (currentIndex + 1) % advertisements.length;
        }

        // Rotate advertisement every 5 minutes (300,000 milliseconds)
        setInterval(rotateAdvertisement, 300000);

        // Initial display
        rotateAdvertisement();
    </script>
</head>
<body>
    <img id=”advertisement” src=”” alt=”Advertisement”>
</body>
</html>
```

In this code, you should replace “image1.jpg”, “image2.jpg”, and “image3.jpg” with the URLs of your advertisement images. The code will automatically rotate through the images every 5 minutes (300,000 milliseconds).

Both pieces of code use the setInterval function to execute the specified functions at regular intervals. The first code updates the digital clock every second, and the second code rotates the advertisement image every 5 minutes.

List out the uses of JSON? Also Mention what are the drawbacks of JSON.

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JSON (JavaScript Object Notation) is a widely used data interchange format that offers several advantages, but it also has some limitations. Here are common uses of JSON and its drawbacks:

Uses of JSON:

Data Interchange: JSON is primarily used for data interchange between a server and a web application or between different parts of an application. It provides a lightweight and easy-to-parse format for transmitting structured data.

Configuration Files: JSON is used for storing configuration settings and parameters in a human-readable format. Many software applications and systems use JSON files for configuration management.

API Responses: Web services and APIs often use JSON to format their responses. This allows clients (web browsers, mobile apps, etc.) to easily consume and process the data.

Storing NoSQL Data: JSON is used in NoSQL databases like MongoDB to store and retrieve data as JSON documents. This schema-less approach is flexible and suitable for various data types.

Serialization: JSON is used for object serialization, converting complex data structures (e.g., JavaScript objects) into a string format that can be stored or transmitted. This is useful in saving application state or sending data between different systems.

Configuration of JavaScript Objects: JSON can be used to configure JavaScript objects and initialize their properties. This is common in web development frameworks and libraries.

Drawbacks of JSON:

No Comments: JSON does not support comments within the data, making it less expressive for human documentation or explanations of data structures.

Limited Data Types: JSON natively supports a limited set of data types: strings, numbers, booleans, arrays, objects, and null. Complex data types like dates, binary data, or custom objects require additional handling.

No Circular References: JSON does not support circular references in objects. If you have objects that reference each other, you must handle them specially to avoid infinite loops during serialization.

Lack of Schema: JSON does not provide a built-in schema definition language, which means you must rely on external documentation to understand the structure of JSON data.

Verbose for Some Use Cases: JSON can be more verbose than binary formats like Protocol Buffers or MessagePack. This can lead to larger data payloads when transmitting data over the network.

No Binary Data Support: JSON is a text-based format and cannot handle binary data efficiently. For binary data, you would need to encode it as text (e.g., Base64), which increases data size.

Security Concerns: JSON is susceptible to security vulnerabilities like JSON injection when handling untrusted data. Proper validation and sanitation are necessary to mitigate these risks.

Despite these drawbacks, JSON remains a popular and versatile choice for many data interchange and configuration scenarios due to its simplicity, readability, and broad support across programming languages and platforms.”

https://chat.openai.com/share/9da51ee0-73f4-42b2-92a5-c2307aa72a23#:~:text=Shared%20Chat,across%20programming%20languages%20and%20platforms.