Experiment-07

Develop JavaScript program (with HTML/CSS) for:

1. Converting JSON text to JavaScript Object
2. Convert JSON results into a date
3. Converting From JSON To CSV and CSV to JSON
4. Create hash from string using crypto.createHash() method.

Program:

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

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

<title>JSON/CSV Converter and Hash Generator</title>

<script src="https://cdnjs.cloudflare.com/ajax/libs/crypto-js/4.1.1/crypto- js.min.js"></script>

<style>

body {

font-family: Arial, sans-serif;

line-height: 1.6;

margin: 0; padding: 20px;

background-color: #f4f4f4;

}

.container {

max-width: 800px; margin: auto; background: white; padding: 20px; border-radius: 5px;

box-shadow: 0 0 10px rgba(0,0,0,0.1);

}

h1 {

color: #333;

}

textarea { width: 100%; height: 100px;

margin-bottom: 10px;

}

button {

background-color: #4CAF50; color: white;

padding: 10px 15px; border: none; border-radius: 4px; cursor: pointer; margin-right: 10px;

}

button:hover {

background-color: #45a049;

}

#result {

margin-top: 20px; padding: 10px;

background-color: #e7e7e7; border-radius: 4px;

}

</style>

</head>

<body>

<div class="container">

<h1>JSON/CSV Converter and Hash Generator</h1>

<h2>a) Convert JSON to JavaScript Object</h2>

<textarea id="jsonInput" placeholder="Enter JSON here"></textarea>

<button onclick="convertJsonToObject()">Convert to Object</button>

<h2>b) Convert JSON to Date</h2>

<textarea id="jsonDateInput" placeholder='Enter JSON date string (e.g., {"date": "2023-05-15T12:00:00Z"})'></textarea>

<button onclick="convertJsonToDate()">Convert to Date</button>

<h2>c) Convert JSON to CSV and CSV to JSON</h2>

<textarea id="dataInput" placeholder="Enter JSON or CSV here"></textarea>

<button onclick="convertJsonToCsv()">JSON to CSV</button>

<button onclick="convertCsvToJson()">CSV to JSON</button>

<h2>d) Create Hash from String</h2>

<textarea id="hashInput" placeholder="Enter string to hash"></textarea>

<button onclick="createHash()">Generate Hash</button>

<div id="result"></div>

</div>

<script>

function convertJsonToObject() { try {

const jsonInput = document.getElementById('jsonInput').value;

const jsObject = JSON.parse(jsonInput); document.getElementById('result').innerText = 'Converted Object: '

+ JSON.stringify(jsObject, null, 2);

} catch (error) { document.getElementById('result').innerText = 'Error: ' +

error.message;

}

}

function convertJsonToDate() { try {

const jsonInput = document.getElementById('jsonDateInput').value; const jsObject = JSON.parse(jsonInput);

const date = new Date(jsObject.date);

document.getElementById('result').innerText = 'Converted Date: ' + date.toString();

} catch (error) {

document.getElementById('result').innerText = 'Error: ' + error.message;

}

}

function convertJsonToCsv() { try {

const jsonInput = document.getElementById('dataInput').value;

const jsObject = JSON.parse(jsonInput);

const headers = Object.keys(jsObject[0]); const csvRows = [

headers.join(','),

...jsObject.map(row => headers.map(fieldName => JSON.stringify(row[fieldName])).join(','))

];

const csvString = csvRows.join('\n'); document.getElementById('result').innerText = 'Converted CSV:\n'

+ csvString;

} catch (error) { document.getElementById('result').innerText = 'Error: ' +

error.message;

}

}

function convertCsvToJson() { try {

const csvInput = document.getElementById('dataInput').value; const lines = csvInput.split('\n');

const headers = lines[0].split(',');

const jsonArray = lines.slice(1).map(line => { const values = line.split(',');

return headers.reduce((obj, header, index) => { obj[header] = values[index];

return obj;

}, {});

});

document.getElementById('result').innerText = 'Converted JSON:\n' + JSON.stringify(jsonArray, null, 2);

} catch (error) {

document.getElementById('result').innerText = 'Error: ' + error.message;

}

}

function createHash() { try {

const input = document.getElementById('hashInput').value; const hash = CryptoJS.SHA256(input);

document.getElementById('result').innerText = 'Generated Hash (SHA-256): ' + hash;

} catch (error) {

document.getElementById('result').innerText = 'Error: ' + error.message;

}

}

</script>

</body>

</html>

Explanation

This is a tool that helps convert data between different formats (JSON and CSV) and create hash values from text. It's designed to be user-friendly and educational.

Main features:

1. Convert JSON to JavaScript Object
2. Convert JSON to Date
3. Convert JSON to CSV and CSV to JSON
4. Create a Hash from a String Structure of the page:

The page is divided into sections, each with a text area for input and a button to perform the conversion or operation.

How it works:

Users can paste their data into the text areas and click the corresponding buttons to see the results. The converted data or hash appears in a result section at the bottom of the page.

Technologies used:

HTML: For structuring the webpage

CSS: For styling and making the page look nice

JavaScript: For performing the conversions and interactions CryptoJS library: For creating hash values

Now, let's explain each main feature in simple terms:

1. Convert JSON to JavaScript Object:

This takes JSON (a way to represent data as text) and turns it into a JavaScript object that can be used in code.

1. Convert JSON to Date:

This takes a date written in JSON format and converts it into a regular date that's easier to read and use.

1. Convert JSON to CSV and CSV to JSON:

JSON to CSV: This takes data in JSON format and turns it into CSV (Comma- Separated Values), which is like a simple spreadsheet.

CSV to JSON: This does the opposite, taking CSV data and turning it into JSON.

1. Create Hash from String:

This takes any text you enter and creates a unique "fingerprint" (hash) for that text using a method called SHA-256.