Experiment-07

Develop JavaScript program (with HTML/CSS) for:

a) Converting JSON text to JavaScript Object

b) Convert JSON results into a date

c) Converting From JSON To CSV and CSV to JSON

d) 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:

a) Convert JSON to JavaScript Object

b) Convert JSON to Date

c) Convert JSON to CSV and CSV to JSON

d) 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:

a) 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.

b) 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.

c) 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.

d) 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.