EXPERIMENT NO. 9: AJAX

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D.O.P.	**06/03/2025**
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Sign and Grade	

AIM : To study AJAX

PROBLEM STATEMENT :

Create a registration page having fields like **Name**, **College**, **Username**, and **Password** (password is to be entered twice). Validate the form by checking:

a. Username is not same as existing entries
b. Password and Confirm Password fields match
c. Auto-suggest college names
d. On successful registration, show the message **"Successfully Registered"** below the Submit button

Let all page updates be **asynchronously loaded.** Implement using **XMLHttpRequest Object**

THEORY :

1. **How do Synchronous and Asynchronous Requests differ?**

Synchronous Requests	**Asynchronous Requests**
Blocks the execution of code	Doesn't block the execution
Waits for the server response	Continues executing while waiting for response
Slower user experience	Faster, smoother user experience
Used less in modern web applications	Preferred in modern web applications

2. **Describe various properties and methods used in XMLHttpRequest Object**

Properties:

- readyState: Describes the state of the request (0 to 4)
- status: HTTP status code (e.g., 200 = OK)
- responseText: Gets the response data as a string
- responseXML: Gets the response data as XML

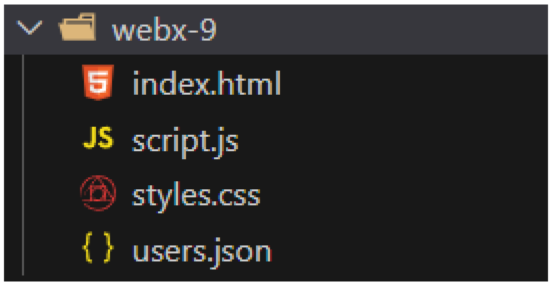
Methods:

- open(method, url, async): Initializes the request
- send(data): Sends the request
- setRequestHeader(header, value): Sets HTTP headers
- onreadystatechange: Event triggered when readyState changes

GITHUB LINK - https://github.com/Ansh476/Webx_Lab/tree/main/webx-9

CODE:

a) **Folder structure**



```
webx-9
    index.html
    script.js
    styles.css
    users.json
```

b) **index.html**

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>AJAX Registration</title>
  <link rel="stylesheet" href="styles.css" />
</head>
<body>
  <div class="container">
    <h1>Register</h1>
    <form id="registerForm">
      <label for="name">Name</label>
      <input type="text" id="name" required />
```

```
            <label for="college">College</label>
            <input type="text" id="college" list="collegeList" required />
            <datalist id="collegeList"></datalist>

            <label for="username">Username</label>
            <input type="text" id="username" required />

            <label for="password">Password</label>
            <input type="password" id="password" required />

            <label for="confirmPassword">Retype Password</label>
            <input type="password" id="confirmPassword" required />

            <button type="submit">Register</button>
          </form>
        <div id="message"></div>
        <button id="addNewBtn" style="display:none;">Add New</button>
      </div>
      <script src="script.js"></script>
    </body>
    </html>
```

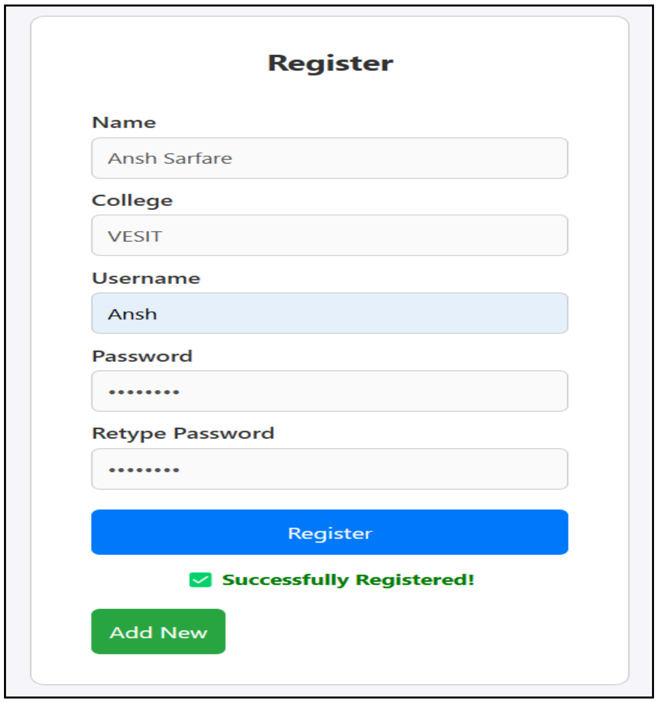
c)script.js

```
function showMessage(text, color = 'red') {
  const messageBox = document.getElementById('message');
  messageBox.innerText = text;
  messageBox.style.color = color;
  messageBox.style.opacity = 1;

  if (messageBox.timeoutId) {
    clearTimeout(messageBox.timeoutId);
  }
  messageBox.timeoutId = setTimeout(() => {
    messageBox.innerText = '';
  }, 15000);
}

document.getElementById('registerForm').addEventListener('submit', function (e) {
  e.preventDefault();

  const name = document.getElementById('name').value.trim();
  const college = document.getElementById('college').value.trim();
  const username = document.getElementById('username').value.trim();
  const password = document.getElementById('password').value;
  const confirmPassword = document.getElementById('confirmPassword').value;
  const addNewBtn = document.getElementById('addNewBtn');
  addNewBtn.style.display = 'none';

  if (!name) {
    showMessage('Name cannot be empty!');
    return;
  }

  if (password !== confirmPassword) {
    showMessage('Passwords do not match!');
    return;
  }

  const xhr = new XMLHttpRequest();
  xhr.open('GET', 'http://localhost:3000/users', true);

  xhr.onload = function () {
    if (xhr.status === 200) {
      const users = JSON.parse(xhr.responseText);
      const userExists = users.some(user => user.username === username);

      if (userExists) {
        showMessage('Username already exists!');
      } else {
        const newUser = {
          name,
          college,
          username,
          password
        };

        const xhrPost = new XMLHttpRequest();
        xhrPost.open('POST', 'http://localhost:3000/users', true);
        xhrPost.setRequestHeader('Content-Type', 'application/json');

        xhrPost.onload = function () {
          if (xhrPost.status === 201) {
                              document.querySelectorAll('#registerForm input, #registerForm
button[type="submit"]').forEach(el => {
              el.disabled = true;
            });

            setTimeout(() => {
              showMessage('✅ Successfully Registered!', 'green');
              addNewBtn.style.display = 'inline-block';
            }, 100);
          } else {
            showMessage('Something went wrong!');
          }
        };

        xhrPost.send(JSON.stringify(newUser));
      }
    } else {
      showMessage('Failed to fetch users!');
    }
  };

  xhr.onerror = function () {
    showMessage('Network error occurred!');
  };

  xhr.send();
});
document.getElementById('addNewBtn').addEventListener('click', function () {
  document.getElementById('registerForm').reset();
  document.getElementById('message').innerText = '';
  this.style.display = 'none';

            document.querySelectorAll('#registerForm      input,      #registerForm
button[type="submit"]').forEach(el => {
    el.disabled = false;
  });
});
const collegeNames = ["VESIT", "DJ Sanghvi", "Sardar Patel", "KJ Somaiya", "VJTI"];
const datalist = document.getElementById('collegeList');

collegeNames.forEach(college => {
  const option = document.createElement('option');
  option.value = college;
  datalist.appendChild(option);
});
```

c) users.json

```
{
    users:[]
}
```

a)Successful Registration Message


Register

Name
Ansh Sarfare

College
VESIT

Username
Ansh

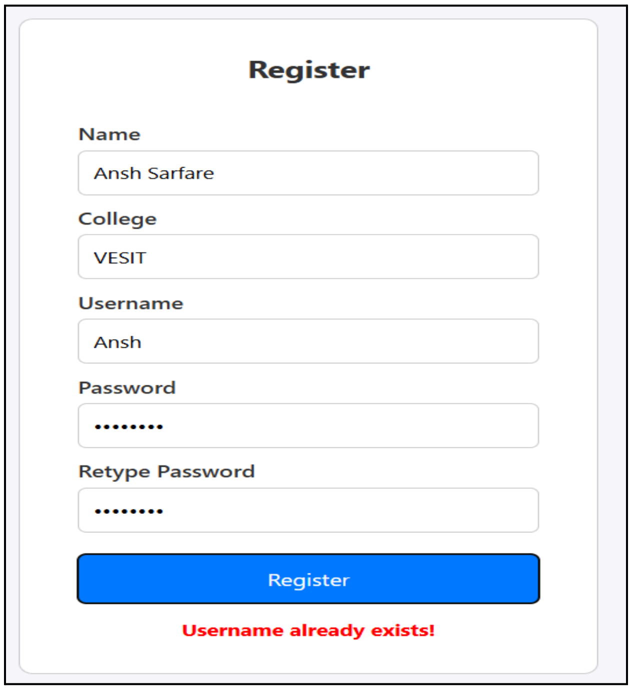
Password
••••••••

Retype Password
••••••••

✓ Successfully Registered!

This screenshot shows the "Successfully Registered!" message, which appears after a successful registration.

b)Duplicate Username Validation


Register

Name
Ansh Sarfare

College
VESIT

Username
Ansh

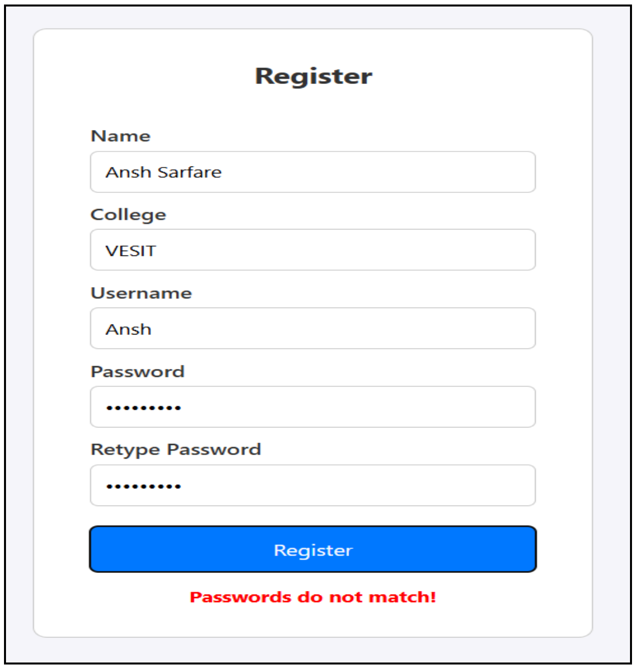
Password
••••••••

Retype Password
••••••••

Username already exists!

This screenshot validates that the Username is not already in use, preventing duplicate entries.

c)Password Match Confirmation



Register

Name: Ansh Sarfare

College: VESIT

Username: Ansh

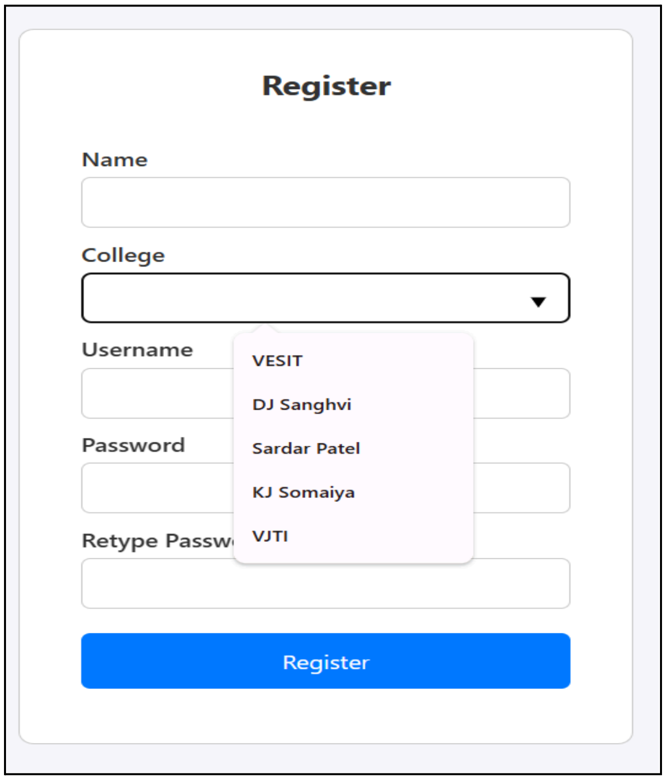
Password: •••••••••

Retype Password: •••••••••

Passwords do not match!

This screenshot confirms that the Password and Re-typed Password match, ensuring data integrity.

d) College Name Auto-suggestion



Register

Name

College

Username

Password

Retype Passw

VESIT

DJ Sanghvi

Sardar Patel

KJ Somaiya

VJTI

This screenshot demonstrates the auto-suggestion feature for the College field, where users can choose from suggested college names.

Conclusion:

The experiment successfully demonstrated the use of the XMLHttpRequest object to implement AJAX-based asynchronous form submission and validation. Key features such as form field validation, duplicate username detection, password match checking, and college name auto-suggestions were efficiently implemented without reloading the page. This experiment highlighted the effectiveness of AJAX in enhancing user experience by allowing dynamic content updates and real-time feedback during user interaction.