

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:

- Name field is not empty
- Username is not same as existing entries
- Password and Confirm Password fields match
- Auto-suggest college names
- 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

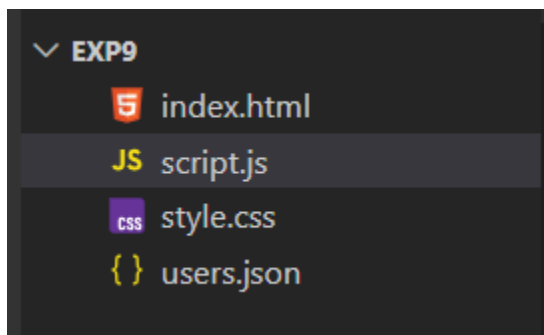
Methods:

- `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/prathmzz/WebX-Lab>

CODE:

a) Folder Structure



b) index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>AJAX Registration</title>
  <link rel="stylesheet" href="style.css" />
```

```

</head>
<body>
  <div class="container">
    <h1>Register</h1>
    <form id="registerForm">
      <input type="text" id="name" placeholder="Name"
required />
      <input type="text" id="college" placeholder="College"
list="collegeList" required />
      <datalist id="collegeList"></datalist>
      <input type="text" id="username"
placeholder="Username" required />
      <input type="password" id="password"
placeholder="Password" required />
      <input type="password" id="confirmPassword"
placeholder="Confirm Password" 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

```

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 messageBox = document.getElementById('message');
    const addNewBtn = document.getElementById('addNewBtn');

messageBox.innerText = '';
messageBox.style.color = 'red';
addNewBtn.style.display = 'none';

if (!name) {
    messageBox.innerText = 'Name cannot be empty!';
    return;
}

if (password !== confirmPassword) {
    messageBox.innerText = '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) {
            messageBox.innerText = 'Username already exists!';
        } else {
            const newUser = {
```

```

        name,
        college,
        username,
        password
    };

    const xhrPost = new
    XMLHttpRequest();
    xhrPost.open('POST',
    'http://localhost:3000/users',

    xhrPost.setRequestHeader('Content-
    Type',

    'application/json');
    xhrPost.onload = function () {
        if (xhrPost.status === 201) {
            messageBox.innerText = '✅ Successfully
Registered!';
            messageBox.style.color = 'green';
            addNewBtn.style.display = 'inline-block';

            // Disable form fields
            document.querySelectorAll('#registerForm input,
            #registerForm button[type="submit"]').forEach(el => {
                el.disabled = true;
            });
        } else {
            messageBox.innerText = 'Something went wrong!';
        }
    };
    xhrPost.send(JSON.stringify(newUser));
    }
    };
    xhr.send();
});

// Add new button reset

```

```

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

    // Enable form again
    document.querySelectorAll('#registerForm input,
    #registerForm button[type="submit"]').forEach(el => {
        el.disabled = false;
    });
});

// Auto-suggest colleges
const collegeNames = ["VESIT", "DJ Sanghvi", "Sardar
Patel", "KJ Somaiya", "VJTI"];
const datalist = document.getElementById("collegeList");
collegeNames.forEach(name => {
    const option = document.createElement("option");
    option.value = name;
    datalist.appendChild(option);
});

```

d) users.json

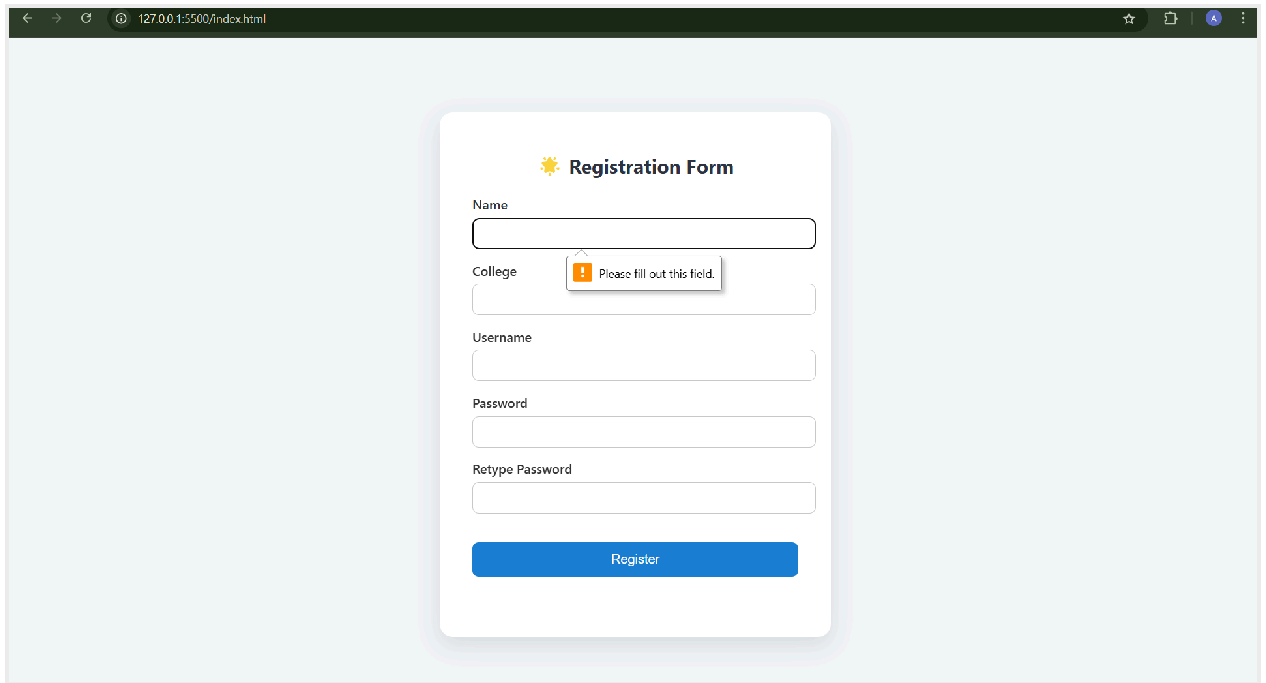
```

{
    "users": []
}

```

OUTPUT:

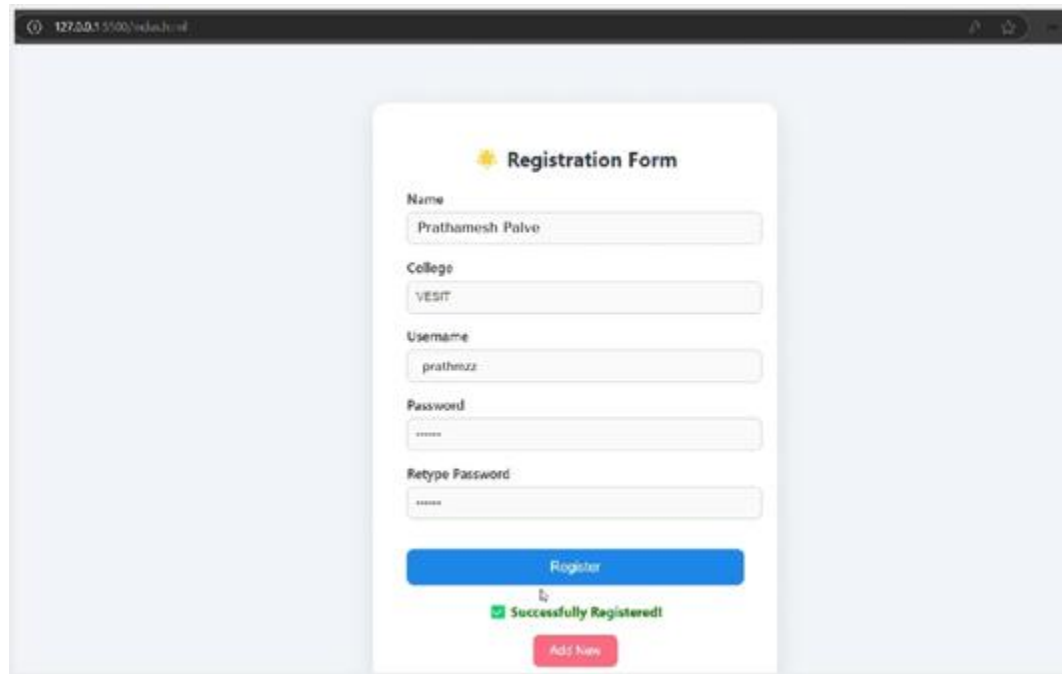
a) Registration Form Display



The screenshot shows a web browser window with the address bar displaying "127.0.0.1:5500/index.html". The main content area features a white registration form titled "Registration Form" with a sun icon. The form contains the following fields: "Name" (empty), "College" (empty with a tooltip "Please fill out this field."), "Username" (empty), "Password" (empty), and "Retype Password" (empty). A blue "Register" button is at the bottom of the form.

This screenshot displays the registration form with input fields for Name, College, Username, Password, and Confirm Password, ensuring that the Name field is not left empty.

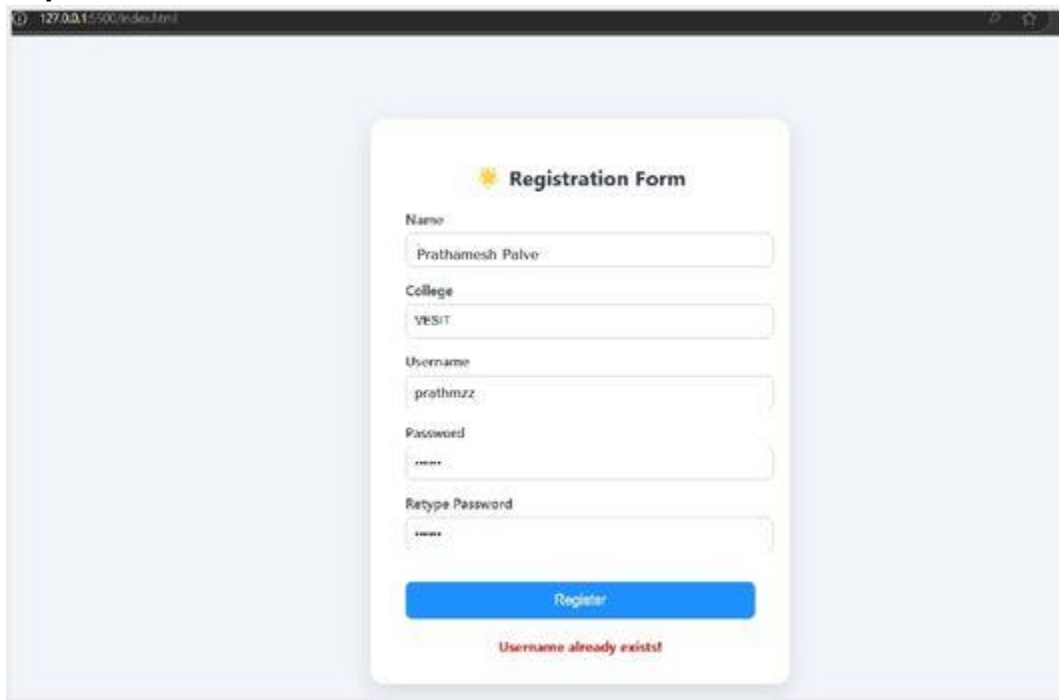
b) Successful Registration Message



The screenshot shows the same web browser window, but the registration form is now filled out. The "Name" field contains "Prathamesh Palve", "College" contains "VESIT", "Username" contains "prathmzz", "Password" contains "*****", and "Retype Password" contains "*****". The blue "Register" button is still present. Below the form, a green message "Successfully Registered!" is displayed, accompanied by a green checkmark icon. A red "Add Item" button is located at the bottom of the form area.

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

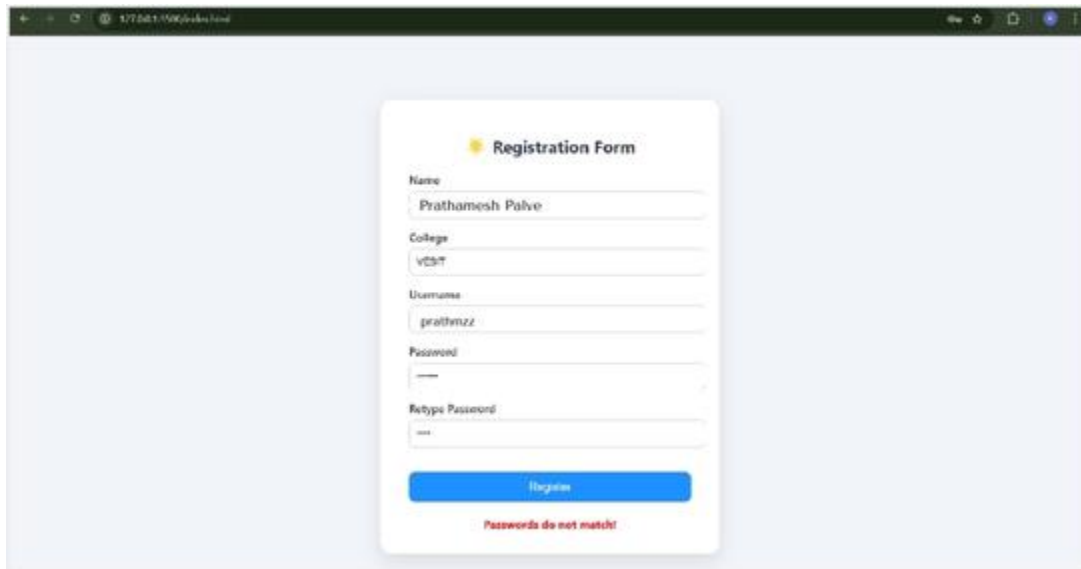
c) Duplicate Username Validation



The screenshot shows a web browser window with the address bar displaying "127.0.0.1:5000/index.html". The page contains a "Registration Form" with a yellow sun icon. The form fields are: Name (Prathamesh Palve), College (VESIT), Username (prathmzz), Password (masked with dots), and Retype Password (masked with dots). A blue "Register" button is at the bottom. Below the button, a red error message states "Username already exists!".

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

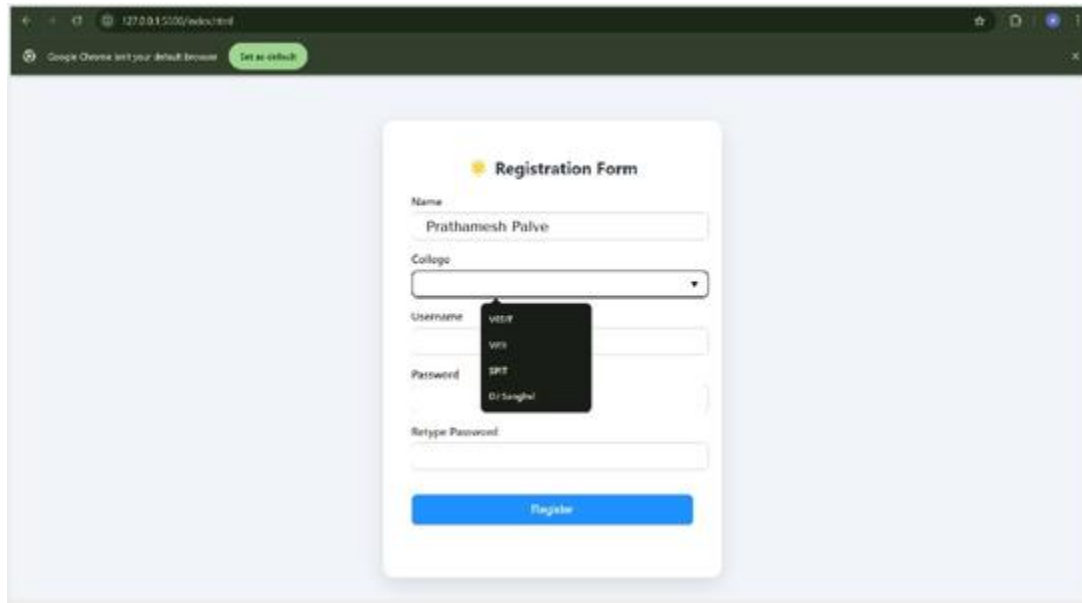
d) Password Match Confirmation



The screenshot shows the same "Registration Form" as in the previous image. The fields are: Name (Prathamesh Palve), College (VESIT), Username (prathmzz), Password (masked with dots), and Retype Password (masked with dots). The blue "Register" button is present. Below the button, a red error message states "Passwords do not match!".

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

e) College Name Auto-suggestion

A screenshot of a web browser window displaying a registration form titled "Registration Form". The form contains several input fields: "Name" (filled with "Prathamesh Palve"), "College" (a dropdown menu with a list of suggestions), "Username" (filled with "vish"), "Password" (filled with "SPIT"), and "Retype Password". A blue "Register" button is at the bottom. The browser's address bar shows "127.0.0.1:5500/index.html".

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.