EXPERIMENT NO. 9: AJAX

Name of Student	**Aryan Patankar**
Class Roll No	**D15A_33**
D.O.P.	**06/03/2025**
D.O.S.	**13/03/2025**
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. Name field is not empty
b. Username is not same as existing entries
c. Password and Confirm Password fields match
d. Auto-suggest college names
e. 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

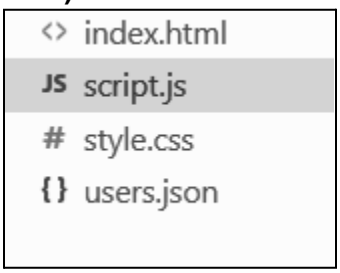
2. **Describe various properties and methods used in XMLHttpRequest Object**
   Properties:
   - `readyState`: Describes the state of the request (0 to 4)
   - `status`: HTTP status code (e.g., 200 = OK)
   - `responseText`: Gets the response data as a string
   - `responseXML`: Gets the response data 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

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">
    <h2> Registration Form</h2>
    <form id="registerForm" class="form-box">
```

```
      <label>Name <input type="text" id="name" required /></label>
      <label>College <input type="text" id="college"
list="collegeList" required /></label>
      <datalist id="collegeList">
        <option value="IIT Bombay" />
        <option value="IISC" />
        <option value="VESIT" />
        <option value="VJTI" />
      </datalist>
      <label>Username <input type="text" id="username" required
/></label>
      <label>Password <input type="password" id="password" required
/></label>
      <label>Retype Password <input type="password"
id="confirmPassword" required /></label>
      <button type="submit">Register</button>
    </form>

    <div id="message" class="message-box"></div>
    <button id="addNewBtn" class="add-new-btn" 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');

    // Clear any previous message
```

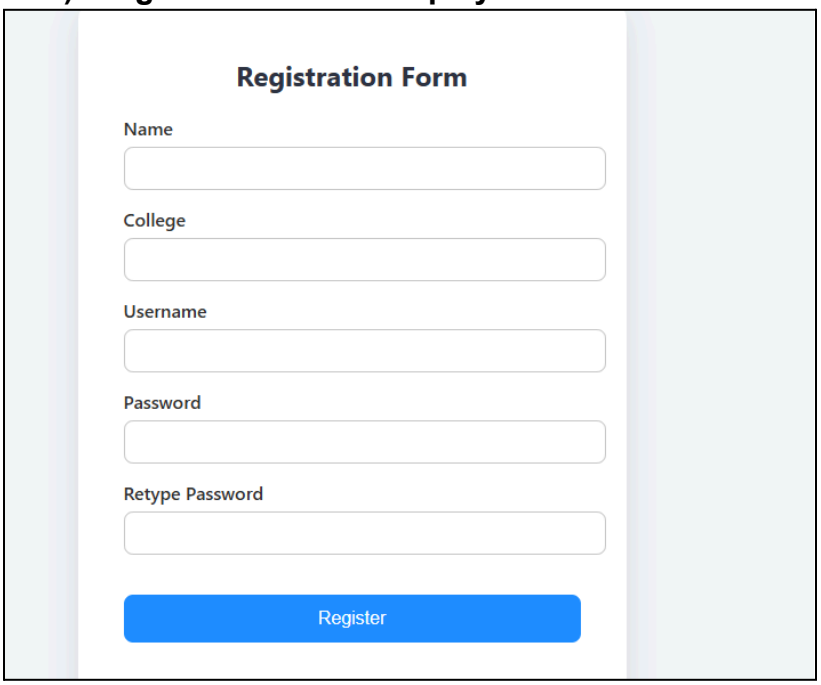
```
    messageBox.innerText = '';
    messageBox.style.color = 'red';
    messageBox.style.display = 'block';
    addNewBtn.style.display = 'none';

    // Validation checks
    if (!name || !college || !username || !password ||
!confirmPassword) {
      messageBox.innerText = 'All fields are required!';
      return;
    }

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

    // Add a 2-second delay before sending the request
    setTimeout(() => {
      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!';
            messageBox.style.color = 'red';
          } 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) {
                // ✅ Finally keep this message on screen
```

```
permanently
                messageBox.innerText = '✅ Successfully
Registered!';
                messageBox.style.color = 'green';
                messageBox.style.display = 'block';
                addNewBtn.style.display = 'inline-block';

                // Freeze form inputs so user can't mess it up
                document.querySelectorAll('#registerForm input,
#registerForm button[type="submit"]').forEach(el => {
                  el.disabled = true;
                });

                // ❌ DO NOT clear the message, do not hide it
                // Let user screenshot it at their pace
              } else {
                messageBox.innerText = 'Something went wrong!';
                messageBox.style.color = 'red';
              }
            };
            xhrPost.send(JSON.stringify(newUser));
          }
        }
      };
      xhr.send();
    }, 2000);
  });

  // Reset handler
  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;
    });
  });
```

d) users.json

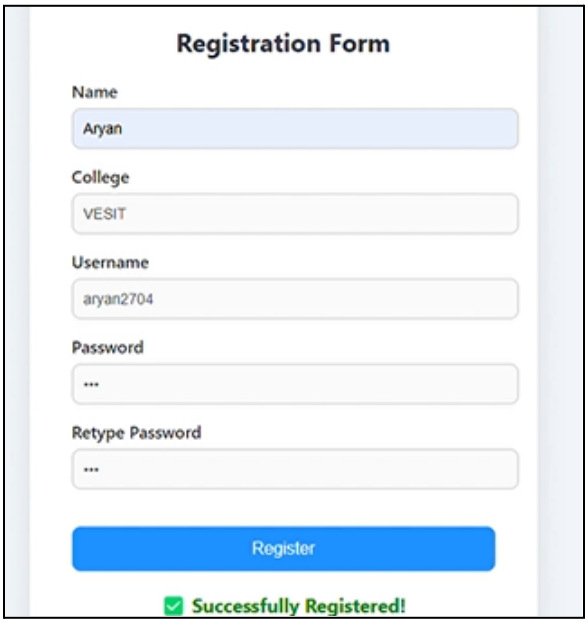
```
{
  "users": []
}
```

a) **Registration Form Display**



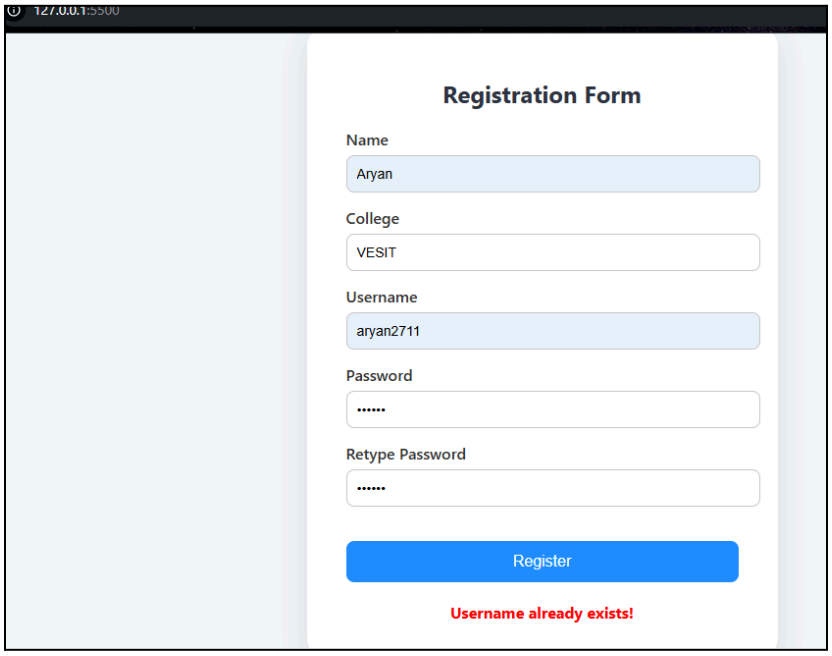
This screenshot displays the registration form with input fields for Name, College, Username, Password, and Confirm Password, ensuring that the Name field is not left empty.

b) **Successful Registration Message**



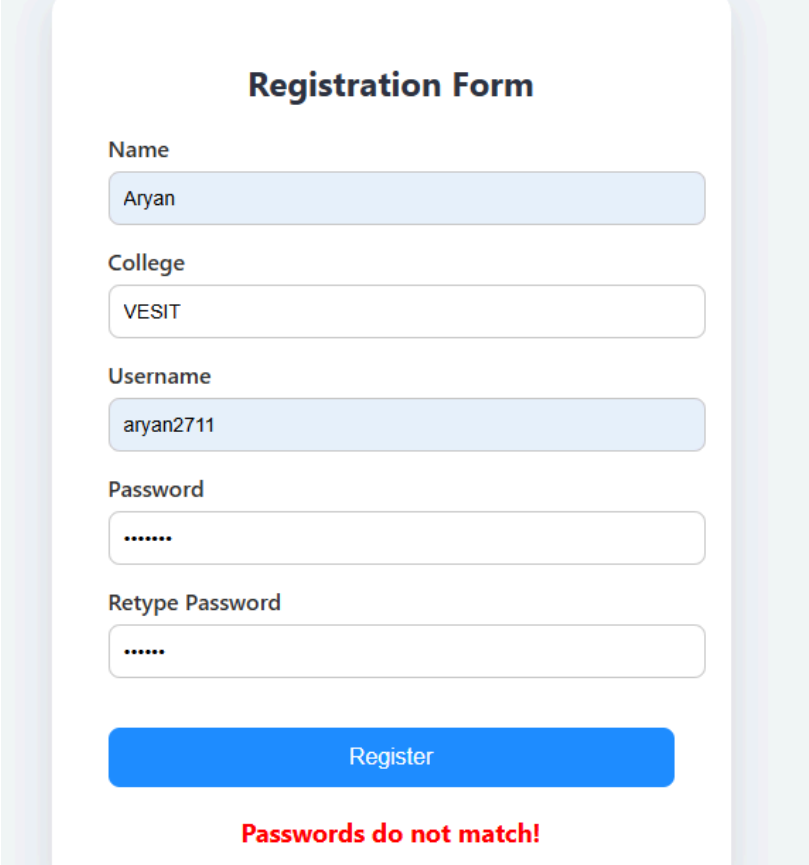
This screenshot shows the **"Successfully Registered!"** message, which appears after a successful registration.

c) **Duplicate Username Validation**



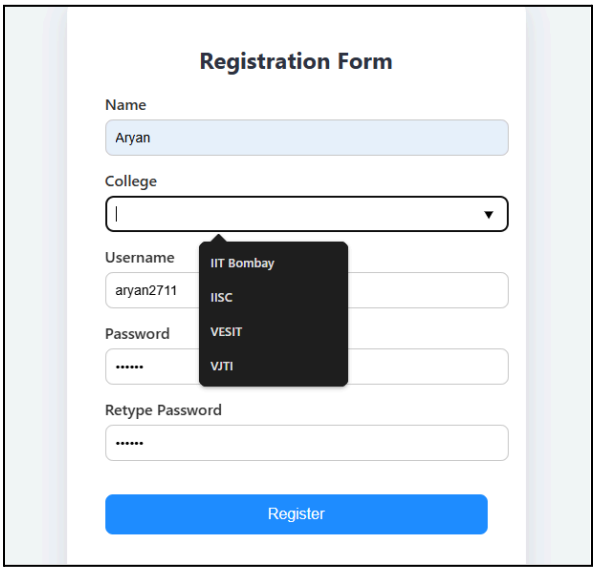
This screenshot validates that the **Username is not already in use**, preventing duplicate entries.

d) **Password Match Confirmation**



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

e) **College Name Auto-suggestion**



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.