

Experiment No. 05

Title: Implement Javascript validation for Website Forms.

Aim: To Implement Javascript validation for Website Forms.

Resources needed: Notepad++, Web Browser

Theory:

JavaScript is a scripting language produced by Netscape for use within HTML Web pages. JavaScript is loosely based on Java and it is built into all the major modern browsers. JavaScript is a lightweight, interpreted programming language, Complementary to and integrated with Java , Complementary to and integrated with HTML , Open and cross platform and is case sensitive.

Data validation is the process of ensuring that user input is clean, correct, and useful.

Typical validation tasks are:

- Has the user filled in all required fields?
- Has the user entered a valid date?
- Has the user entered text in a numeric field?
- Most often, the purpose of data validation is to ensure correct user input. Validation

can be defined by many different methods, and deployed in many different ways.

- Server side validation is performed by a web server, after input has been sent to the server.
- Client side validation is performed by a web browser, before input is sent to a web server.

For example HTML form validation can be done by JavaScript. If a form field (fname) is empty, this function alerts a message, and returns false, to prevent the form from being submitted:

```
function validateForm() {  
    var x = document.forms["myForm"]["fname"].value;  
    if (x == "") {  
        alert("Name must be filled out");  
        return false;  
    }  
}
```

Activity:

Add validations for the Website Forms Such as

- 1) Name should string
- 2) Roll number should a number
- 3) Email id should have @ and . in it
- 4) Telephone number should be a ten digit number.

Students need to add various validations to their form input as per the requirement of the user interface.

Results: (Program printout with output)

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Login and Registration</title>
  <style>
    .error {
      color: red;
      font-size: 12px;
      margin-top: 5px;
    }
  </style>
</head>

<body style="font-family: Arial, sans-serif; margin: 0; padding: 0; display: flex; height: 100vh;">
  <header style="text-align: center;">
    <h1 style="color: #00036f; font-size: 24px;"><br><br> Welcome to Cyber Awareness Portal <br><br> </h1>
    
  </header>
  <div class="container" style="display: flex; width: 100%;">

    <div class="left"
      style="flex: 1; padding: 20px; background-color: #E6E6FA; display: flex; flex-direction: column;
      justify-content: center;">
      <h2 style="text-align: center; margin-bottom: 15px; font-size: 10px;">Register (New User)</h2>
      <form action="Updated.html" method="get" style="max-width: 400px; margin: 0 auto;">
        <label for="name" style="display: block; margin-bottom: 6px; font-size: 8px;">Full Name:</label>
        <input type="text" id="name" name="name" placeholder="Enter your full name" required
          style="width: 90%; padding: 9px; margin-bottom: 12px; border-radius: 5px; border: 1px solid #ccc;
font-size: 8px;">
        <div id="name-error" class="error"></div>

        <label for="email" style="display: block; margin-bottom: 6px; font-size: 8px;">Email:</label>
        <input type="email" id="email" name="email" placeholder="Enter your email" required
          style="width: 90%; padding: 9px; margin-bottom: 12px; border-radius: 5px; border: 1px solid #ccc;
font-size: 8px;">
        <div id="email-error" class="error"></div>

        <label for="phone" style="display: block; margin-bottom: 6px; font-size: 8px;">Phone Number:</label>
        <input type="tel" id="phone" name="phone" placeholder="Enter your phone number" required
          style="width: 90%; padding: 9px; margin-bottom: 12px; border-radius: 5px; border: 1px solid #ccc;
font-size: 8px;">
        <div id="phone-error" class="error"></div>

        <label for="username" style="display: block; margin-bottom: 6px; font-size: 8px;">Username:</label>
        <input type="text" id="username" name="username" placeholder="Choose a username" required
          style="width: 90%; padding: 9px; margin-bottom: 12px; border-radius: 5px; border: 1px solid #ccc;
font-size: 8px;">
        <div id="username-error" class="error"></div>

        <label for="password" style="display: block; margin-bottom: 6px; font-size: 8px;">Password:</label>
        <input type="password" id="password" name="password" placeholder="Create a password" required
          style="width: 90%; padding: 9px; margin-bottom: 12px; border-radius: 5px; border: 1px solid #ccc;
font-size: 8px;">
        <div id="password-error" class="error"></div>

        <label for="confirm-password" style="display: block; margin-bottom: 6px; font-size: 8px;">Confirm
          Password:</label>
        <input type="password" id="confirm-password" name="confirm-password" placeholder="Confirm your password"
```

```

        required
        style="width: 90%; padding: 9px; margin-bottom: 12px; border-radius: 5px; border: 1px solid #ccc;
font-size: 8px;">
<div id="confirm-password-error" class="error"></div>

<label for="gender" style="display: block; margin-bottom: 6px; font-size: 8px;">Gender:</label>
<input type="radio" id="male" name="gender" value="male" required style="width: auto;">
<label for="male" style="display: inline;">Male</label>
<input type="radio" id="female" name="gender" value="female" style="width: auto;">
<label for="female" style="display: inline;">Female</label>
<div id="gender-error" class="error"></div>

<label for="dob" style="display: block; margin-bottom: 6px; font-size: 8px;">Date of Birth:</label>
<input type="date" id="dob" name="dob" required
        style="width: 90%; padding: 9px; margin-bottom: 12px; border-radius: 5px; border: 1px solid #ccc;
font-size: 8px;">
<div id="dob-error" class="error"></div>

<label for="country" style="display: block; margin-bottom: 6px; font-size: 8px;">Country:</label>
<select id="country" name="country" required
        style="width: 90%; padding: 9px; margin-bottom: 12px; border-radius: 5px; border: 1px solid #ccc;
font-size: 8px;">
    <option value="">Select your country</option>
    <option value="India">India</option>
    <option value="USA">USA</option>
    <option value="UK">UK</option>
    <option value="Canada">Canada</option>
</select>
<div id="country-error" class="error"></div>

<label for="agree" style="display: block; margin-bottom: 6px; font-size: 8px;">Terms and Conditions:</label>
<input type="checkbox" id="agree" name="agree" required style="width: auto;">
<label for="agree" style="display: inline;">I agree to the terms and conditions</label>
<div id="agree-error" class="error"></div>

<button type="submit"
        style="width: 90%; padding: 9px; margin-bottom: 12px; border-radius: 5px; border: none; background-color:
#8E24AA; color: white; cursor: pointer;">Register</button>
</form>
</div>

<div class="right"
        style="flex: 1; padding: 20px; background-color: #00036f; color: white; display: flex; flex-direction: column;
justify-content: center;">
<h2 style="text-align: center; margin-bottom: 15px; font-size: 15px;">Login (Existing User)</h2>
<form action="Updated.html" method="get" style="max-width: 400px; margin: 0 auto;">
    <label for="userId" style="display: block; margin-bottom: 6px; font-size: 8px;">Username/Email:</label>
    <input type="text" id="userId" name="userId" placeholder="Enter your username or email" required
        style="width: 90%; padding: 9px; margin-bottom: 12px; border-radius: 5px; border: 1px solid #ccc;
font-size: 8px;">
    <div id="userId-error" class="error"></div>

    <label for="password" style="display: block; margin-bottom: 6px; font-size: 8px;">Password:</label>
    <input type="password" id="password" name="password" placeholder="Enter your password" required
        style="width: 90%; padding: 9px; margin-bottom: 12px; border-radius: 5px; border: 1px solid #ccc;
font-size: 8px;">
    <div id="password-error-login" class="error"></div>

    <button type="submit"
        style="width: 90%; padding: 9px; margin-bottom: 12px; border-radius: 5px; border: none; background-color:
#8E24AA; color: white; cursor: pointer;">Login</button>
    </form>
    <footer style="text-align: center; margin-top: 20px;">
        <p>Forgot your password? <a href="#" style="color: #E6E6FA;">Reset Password</a></p>
    </footer>
</div>
</div>

<script>
function validateRegistrationForm(event) {
    event.preventDefault();
    let isValid = true;
    clearErrors();

    const name = document.getElementById('name').value.trim();
    if (!name) {
        showError('name-error', 'Name is required');
        isValid = false;
    } else if (!/^[A-Za-z\s]{2,50}$/.test(name)) {
        showError('name-error', 'Name should be 2-50 characters long and contain only letters and spaces');
        isValid = false;
    }

    const email = document.getElementById('email').value.trim();
    if (!email) {
        showError('email-error', 'Email is required');
        isValid = false;
    } else if (!/^[^\s@]+@[^\s@]+\.[^\s@]+$/.test(email)) {
        showError('email-error', 'Please enter a valid email address');
        isValid = false;
    }
}

```

```

const phone = document.getElementById('phone').value.trim();
if (!phone) {
  showError('phone-error', 'Phone number is required');
  isValid = false;
} else if (!/^d{10}$/.test(phone)) {
  showError('phone-error', 'Phone number must be exactly 10 digits');
  isValid = false;
}

const username = document.getElementById('username').value.trim();
if (!username) {
  showError('username-error', 'Username is required');
  isValid = false;
} else if (!/[a-zA-Z0-9._]{3,20}$/.test(username)) {
  showError('username-error', 'Username must be 3-20 characters and can only contain letters, numbers, dots,
and underscores');
  isValid = false;
}

const password = document.getElementById('password').value;
if (!password) {
  showError('password-error', 'Password is required');
  isValid = false;
} else if (!/^(?=.*[a-z])(?=.*[A-Z])(?=.*\d)(?=.*[@#%&*!])[A-Za-z\d@#%&*!]{8,}$/.test(password)) {
  showError('password-error', 'Password must be at least 8 characters long and contain at least one uppercase
letter, one lowercase letter, one number, and one special character');
  isValid = false;
}

const confirmPassword = document.getElementById('confirm-password').value;
if (password !== confirmPassword) {
  showError('confirm-password-error', 'Passwords do not match');
  isValid = false;
}

const gender = document.querySelector('input[name="gender"]:checked');
if (!gender) {
  showError('gender-error', 'Please select a gender');
  isValid = false;
}

const dob = new Date(document.getElementById('dob').value);
const today = new Date();
const age = today.getFullYear() - dob.getFullYear();
if (!dob) {
  showError('dob-error', 'Date of Birth is required');
  isValid = false;
} else if (dob > today) {
  showError('dob-error', 'Date of Birth cannot be in the future');
  isValid = false;
} else if (age < 13) {
  showError('dob-error', 'You must be at least 13 years old to register');
  isValid = false;
}

const country = document.getElementById('country').value;
if (!country) {
  showError('country-error', 'Please select a country');
  isValid = false;
}

const agree = document.getElementById('agree').checked;
if (!agree) {
  showError('agree-error', 'You must agree to the terms and conditions');
  isValid = false;
}

if (isValid) {
  event.target.submit();
}
}

function validateLoginForm(event) {
  event.preventDefault();
  let isValid = true;
  clearErrors();

  const userId = document.getElementById('userId').value.trim();
  if (!userId) {
    showError('userId-error', 'Username/Email is required');
    isValid = false;
  } else {
    const isEmail = /^[^s@]+@[^s@]+\.[^s@]+$/.test(userId);
    const isValidUsername = /^[a-zA-Z0-9._]{3,20}$/.test(userId);
    if (!isEmail && !isValidUsername) {
      showError('userId-error', 'Please enter a valid email address or username');
      isValid = false;
    }
  }

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

```

```

    if (!password) {
        showError('password-error-login', 'Password is required');
        isValid = false;
    }

    if (isValid) {
        event.target.submit();
    }
}

function showError(id, message) {
    const errorElement = document.getElementById(id);
    errorElement.textContent = message;
}

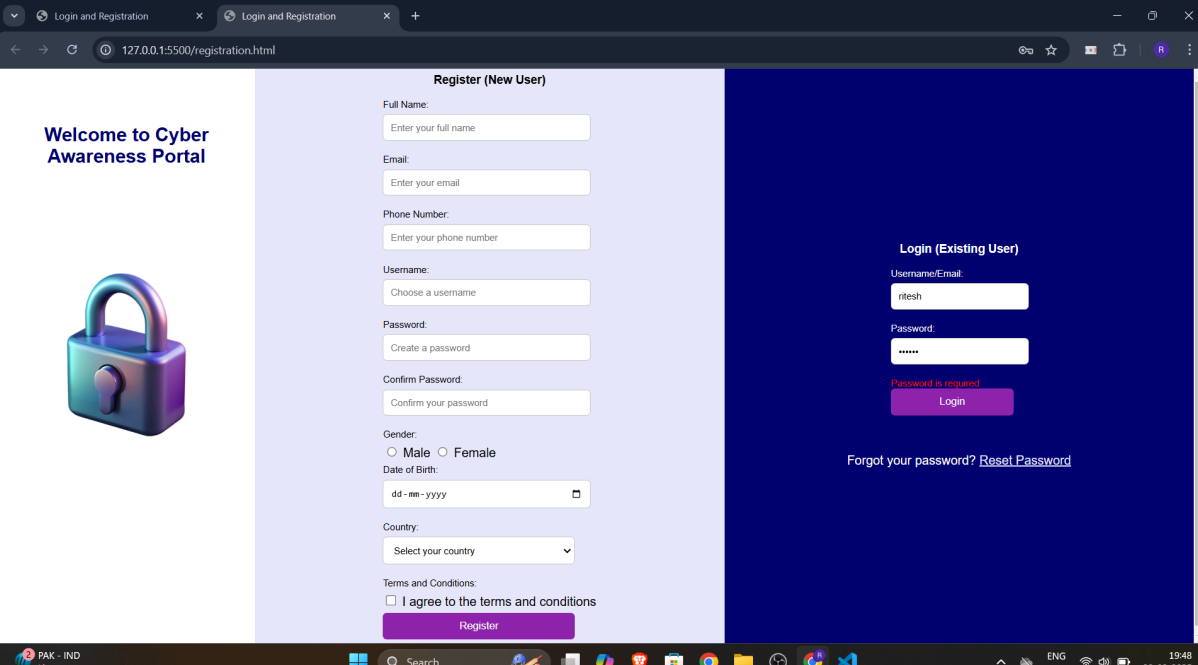
function clearErrors() {
    const errorElements = document.querySelectorAll('.error');
    errorElements.forEach(element => {
        element.textContent = '';
    });
}

document.addEventListener('DOMContentLoaded', function () {
    const registrationForm = document.querySelector('.left form');
    const loginForm = document.querySelector('.right form');

    if (registrationForm) {
        registrationForm.addEventListener('submit', validateRegistrationForm);
    }

    if (loginForm) {
        loginForm.addEventListener('submit', validateLoginForm);
    }
});
</script>
</body>
</html>

```



The screenshot shows a web browser window with two tabs labeled 'Login and Registration'. The address bar shows '127.0.0.1:5500/registration.html'. The page layout is split into three main sections:

- Header:** A dark blue bar with the text 'Welcome to Cyber Awareness Portal' on the left and a 3D padlock icon on the right.
- Registration Form (Left):** Titled 'Register (New User)', it contains input fields for Full Name, Email, Phone Number, Username, Password, Confirm Password, Gender (Male/Female), Date of Birth, and Country. It also includes a checkbox for 'I agree to the terms and conditions' and a 'Register' button.
- Login Form (Right):** Titled 'Login (Existing User)', it contains input fields for Username/Email and Password. A red error message 'Password is required' is visible below the password field. There is a 'Login' button and a link for 'Forgot your password? Reset Password'.

The Windows taskbar at the bottom shows the system clock as 19:48 on 23-02-2025.

127.0.0.1:5500/registration.html

Welcome to Cyber Awareness Portal

Register (New User)

Full Name:

Email:

Phone Number:

Phone number must be exactly 10 digits

Username:

Password:

Password must be at least 8 characters long and contain at least one uppercase letter, one lowercase letter, one number, and one special character

Confirm Password:

Gender: ☒ Male ☐ Female

Date of Birth:

You must be at least 13 years old to register

Country:

Terms and Conditions: ☒ I agree to the terms and conditions

Register

Login (Existing User)

Username/Email:

Password:

Login

Forgot your password? [Reset Password](#)

Questions:

Q1) Why to carry out Validation at client side using scripting language?

Client-side validation helps catch errors before sending data to the server, making the process faster and reducing server load. It improves user experience by providing instant feedback, such as highlighting incorrect inputs. Scripting languages like JavaScript are commonly used for this because they run directly in the browser without needing a server request. This saves time and bandwidth while ensuring users enter correct data before submission.

Q2) What is the difference between client side validation and server side validation?

Client-side validation happens in the user's browser before sending data to the server. It provides quick feedback but can be bypassed if a user disables JavaScript.

Server-side validation happens on the server after receiving data. It ensures security by verifying all inputs, even if client-side validation was skipped. While it takes more time due to server processing, it is essential to prevent security risks like SQL injection or malicious data submission.

Outcomes: CO3: Apply JavaScript and JSON for web application development

Conclusion: (Conclusion to be based on the outcomes achieved)

From this experiment, I learned the importance of JavaScript validation in ensuring the accuracy and security of user input on web forms. Implementing client-side validation helped me understand how to enforce constraints such as requiring names to contain only letters, email addresses to follow proper formatting, and phone numbers to be exactly 10 digits. Additionally, I gained practical experience in handling validation errors, displaying appropriate messages, and preventing form submission when inputs are incorrect. This experiment reinforced the significance of input validation in enhancing user experience and protecting web applications from invalid or malicious data.

Grade: AA / AB / BB / BC / CC / CD /DD

Signature of faculty in-charge with date

References:**Books/ Journals/ Websites:**

- “Web technologies: Black Book”, Dreamtech Publications
- <http://www.w3schools.com>