

GIT Repo URL:

<https://github.com/prateekp1304/FSD/tree/main/FSD%20Assignment%202%2C3>

Web Technologies Laboratory 03

Aim: Client-side Form Validations using JavaScript, DOM real-time update, JQuery to develop Ajax based applications.

Aim: Write a program to perform following form validations using JavaScript:

- a) All fields mandatory,
 - b) Phone number, Email Address, Zip code Validation etc.
- Include JavaScript to access and manipulate Document Object Model (DOM) objects in an HTML web page.
Include JQuery to develop to develop your application as an Ajax based application.

Objectives:

- 1. To understand what is form validation.
- 2. To learn basic functioning of DOM objects.
- 3. To learn how to apply various techniques to implement it.

Theory:

- 1. Different types of form validations.

Form validation is a crucial part of web development to ensure that user input meets specific criteria or constraints. Various types of form validations include:

a. **Client-Side Validation:** This validation is performed on the client-side (in the user's web browser) using JavaScript before the data is sent to the server.
Common techniques include:

- **Required Fields:** Ensuring that required fields are not left empty.
- **Length Validation:** Checking the length of input (e.g., minimum and maximum characters).
- **Numeric Validation:** Verifying that numeric input is valid.
- **Email Validation:** Ensuring that an email address is in the correct format.
- **Password Strength:** Checking the strength of a password.
- **Date Validation:** Validating dates to ensure they are in the correct format.

b. **Server-Side Validation:** This validation is performed on the server after the data is submitted, primarily for security and data integrity purposes. It checks for issues like SQL injection, cross-site scripting (XSS), and business logic errors.

c. **Regular Expressions:** Regular expressions (regex) are powerful tools for pattern matching and can be used for custom form validations. For example, validating phone numbers or ZIP codes with specific patterns.

d. **Custom Validation Functions:** You can create custom JavaScript functions to validate form fields based on your specific requirements.

e. **Third-Party Libraries:** Utilizing JavaScript libraries and frameworks like jQuery, Angular, or React may provide built-in form validation tools or plugins.

2. **HTML Document Object Model.**

The Document Object Model (DOM) is a programming interface for web documents. It represents the structure of an HTML or XML document as a tree of objects, where each object corresponds to a part of the document (e.g., elements, attributes, text). Developers can manipulate the DOM using JavaScript to interact with and modify web pages dynamically. Some common DOM manipulation tasks include:

- Accessing and modifying HTML elements and attributes.
- Adding or removing elements from the document.
- Changing the content of elements.
- Handling user events (e.g., clicks, input) and responding to them.
- Animating elements and creating interactive web applications.

3. **What is JQuery? Write various JQuery Selectors.**

jQuery is a fast, lightweight, and feature-rich JavaScript library that simplifies many common tasks related to DOM manipulation, event handling, and AJAX interactions. It abstracts away browser-specific complexities, providing a more consistent and concise way to work with the DOM and JavaScript.

Here are some common jQuery selectors:

- **Element Selector:** Selects HTML elements based on their element type
- **ID Selector:** Selects an element by its unique ID attribute
- **Class Selector:** Selects elements by their CSS class name
- **Attribute Selector:** Selects elements by their attributes and attribute values
- **Descendant Selector:** Selects elements that are descendants of a specified element
- **Child Selector:** Selects elements that are direct children of a specified element.
- **Pseudo-class Selector:** Selects elements based on their state or position.

FAQ:

1. **Write 3 reasons why Form validations are important.**

- **Data Integrity:** Form validations help ensure the integrity of data submitted by users. They prevent the submission of incorrect or inappropriate data that could lead to errors, security vulnerabilities, or data corruption in a database.
- **User Experience:** Validations provide immediate feedback to users, helping them understand and correct input errors before submitting a form. This improves the overall user experience and reduces frustration.

- **Security:** Proper form validation on both the client and server sides is essential for security. It helps prevent malicious input, such as SQL injection or cross-site scripting (XSS) attacks, by filtering and sanitizing user-submitted data.

2. Give an example of how to modify an attribute value using DOM.

Suppose you have an HTML element with an **id** attribute, and you want to change its **src** attribute (e.g., for an image element). Here's how you can do it using the DOM and JavaScript:

```
<!DOCTYPE html>
<html>
<head>
  <title>Modify Attribute Example</title>
</head>
<body>
  
  <button onclick="changeImage()">Change Image</button>

  <script>
    function changeImage() {
      // Get a reference to the image element by its ID
      var imageElement = document.getElementById("myImage");

      // Modify the src attribute to change the image
      imageElement.src = "new-image.jpg";

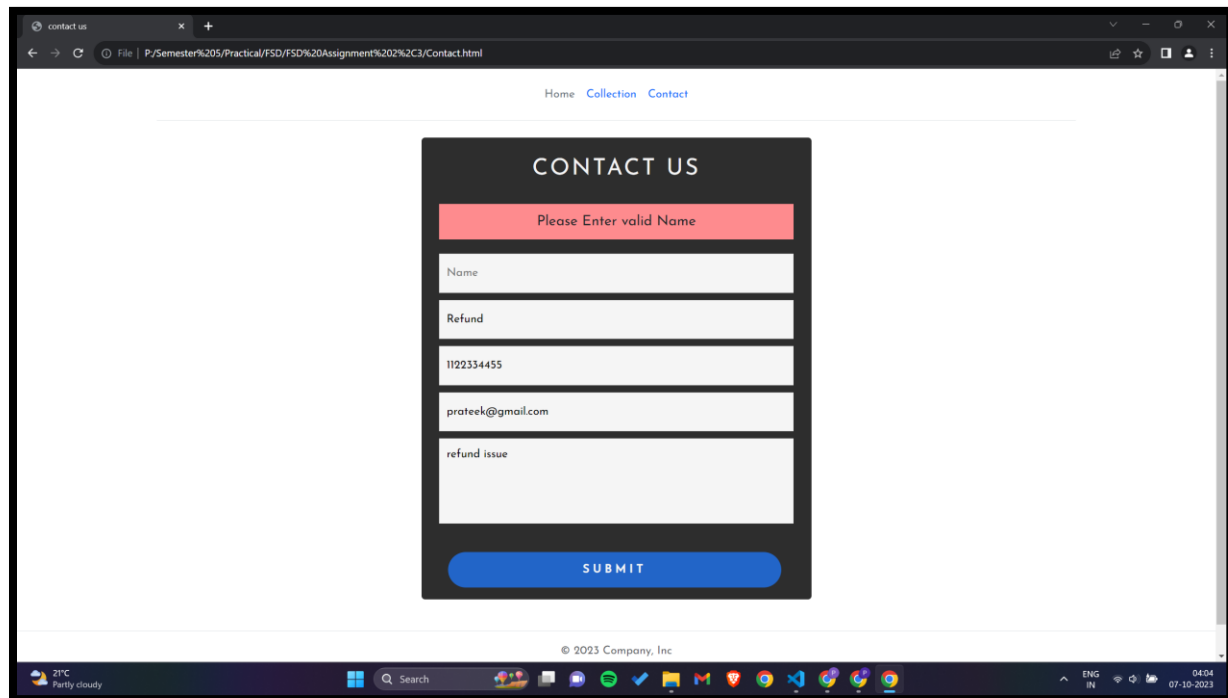
      // You can also modify other attributes similarly
      // For example, change the alt text
      imageElement.alt = "New Image Alt Text";
    }
  </script>
</body>
</html>
```

3. What is jQuery Ajax?

jQuery Ajax is a set of methods and functions provided by the jQuery library for making asynchronous HTTP requests to a server and handling the responses. Ajax stands for "Asynchronous JavaScript and XML," although modern Ajax requests often work with various data formats beyond XML, such as JSON.

Output: Screenshots of the output to be attached.

Output Screenshots:



contact us

Home Collection Contact

CONTACT US

Please Enter valid Name

Name

Refund

1122334455

prateek@gmail.com

refund issue

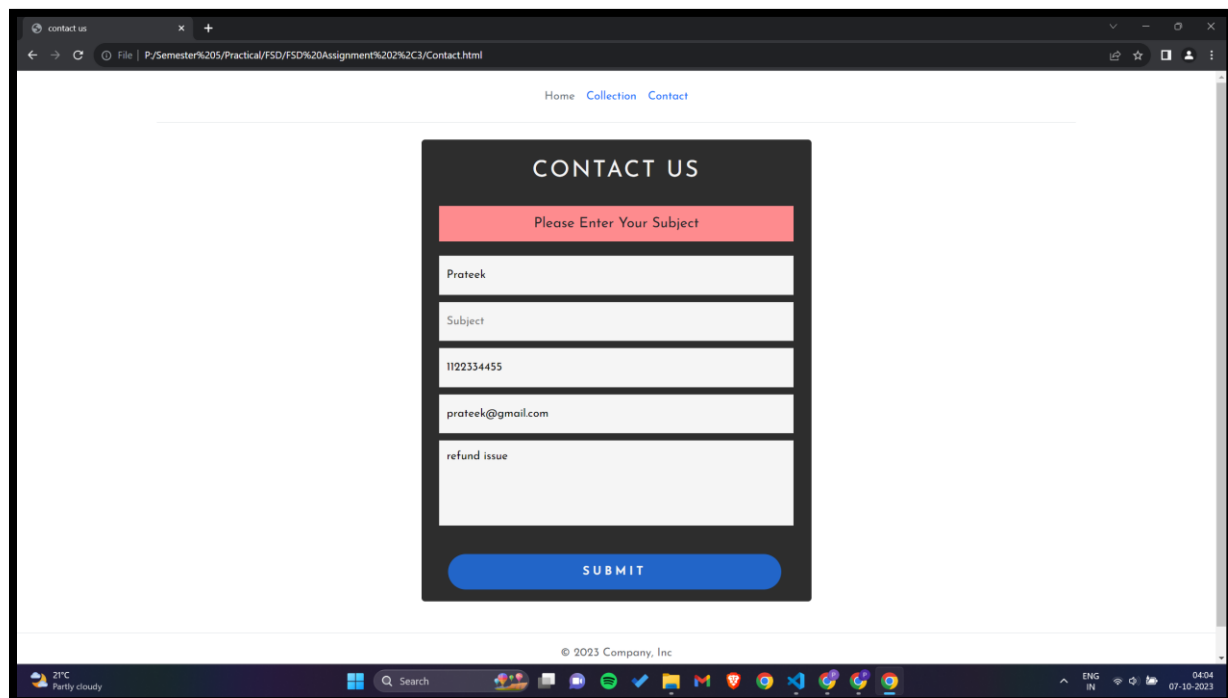
SUBMIT

© 2023 Company, Inc.

21°C Partly cloudy

Search

ENG IN 04:04 07-10-2023



contact us

Home Collection Contact

CONTACT US

Please Enter Your Subject

Prateek

Subject

1122334455

prateek@gmail.com

refund issue

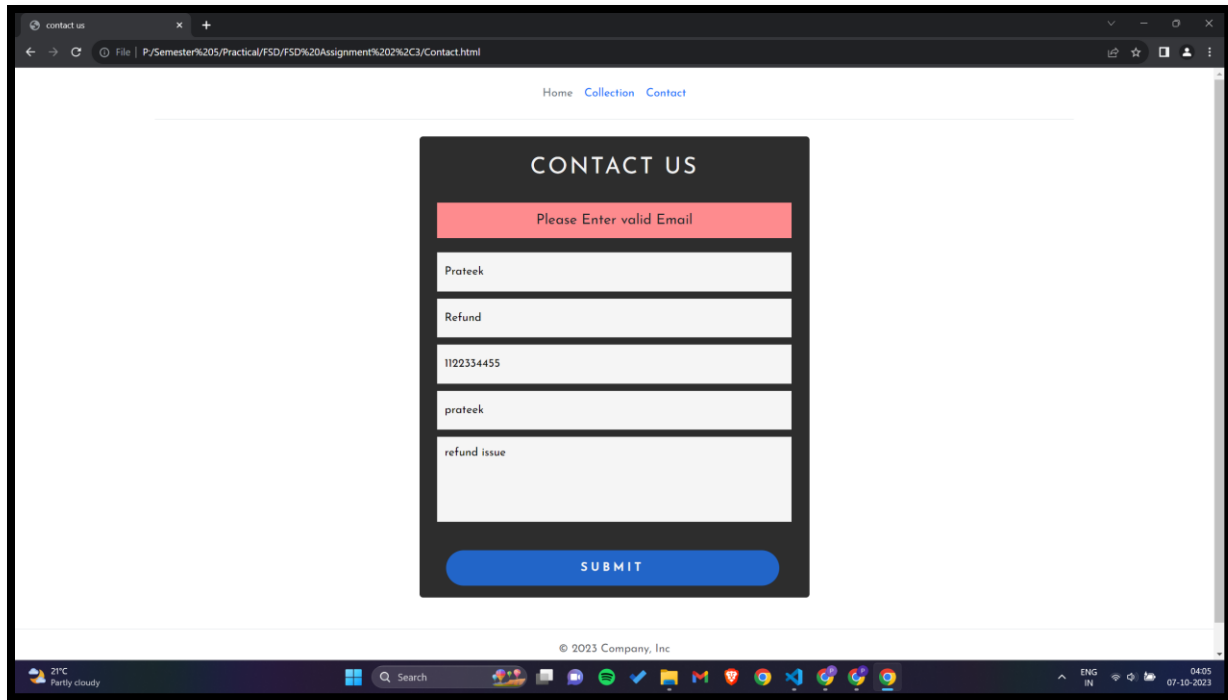
SUBMIT

© 2023 Company, Inc.

21°C Partly cloudy

Search

ENG IN 04:04 07-10-2023



contact us

Home Collection Contact

CONTACT US

Please Enter valid Email

Prateek

Refund

1122334455

prateek

refund issue

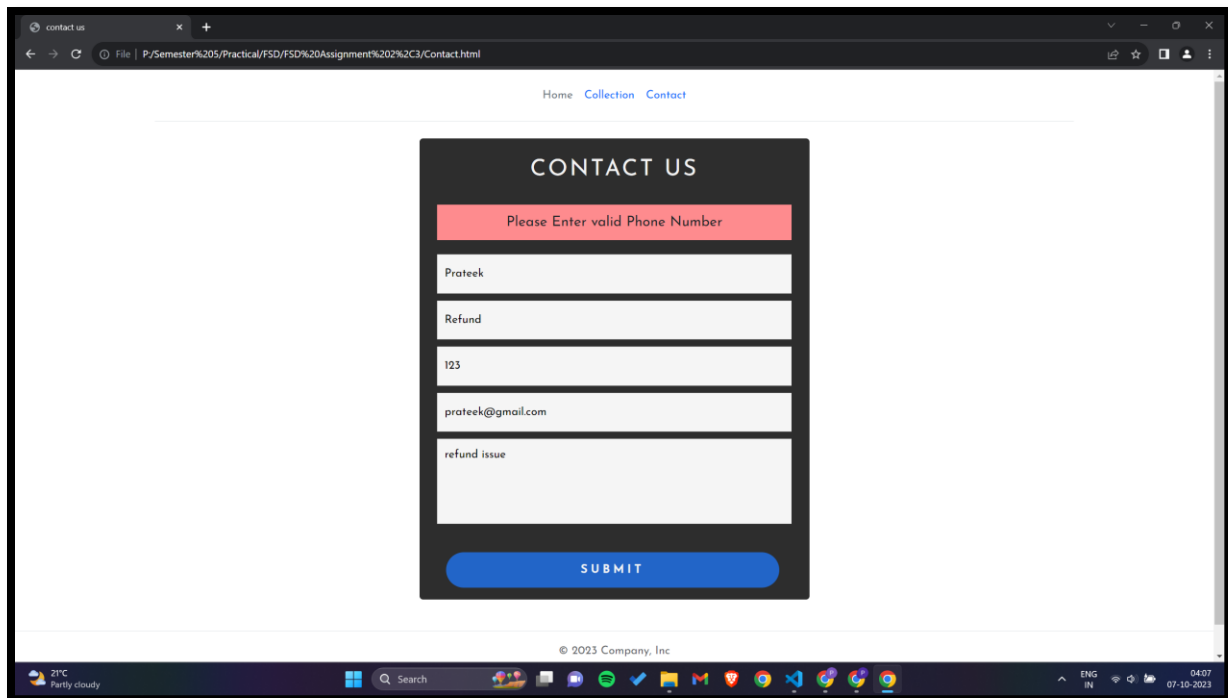
SUBMIT

© 2023 Company, Inc

21°C Partly cloudy

Search

ENG IN 04:05 07-10-2023



contact us

Home Collection Contact

CONTACT US

Please Enter valid Phone Number

Prateek

Refund

123

prateek@gmail.com

refund issue

SUBMIT

© 2023 Company, Inc

21°C Partly cloudy

Search

ENG IN 04:07 07-10-2023

Problem Statement:

Write a program to design Student registration form by using HTML, CSS having following fields: Username, Email, Phone number, Password, Confirm Password and write external javascript code to achieve following validations

- Fields should not be empty. If spaces are entered those should be considered empty
- Phone number must accept only numeric values and it should be 10 digits
- Password length must be at least 7 and it should contain at least one capital letter, one digit and one special character from the set (&,\$,#@)
- Value entered in password field and confirm password fields must match

Email address must contain @ sign and a ., there should be few letters before the @ sign, there should be three letters between @ sign and a . There must be 3 or 2 letters after the . (hint: Use regular expression)

Write a client-side script with JavaScript to access and manipulate Document Object Model (DOM) objects in an HTML web page. Develop a dynamic web page using javascript and DOM. Make use of the following for accessing elements

- getElementById, getElementsByTagName, getElementsByClassName
- Change the text using innerHTML property
- Change the CSS properties like color, position of a particular element on the page
- Change the image source after clicking on a button
- Add a text node and attach it to a parent node
- Delete a node

Include jQuery to perform following operations:

- Change button text using jQuery.
- Set background-image using jQuery CSS property.
- Access HTML form data using jQuery.
- Add attribute using jQuery

Use this reference link for jQuery : <https://www.w3resource.com/jquery-exercises/part1/index.php>