



Vidyavardhini's College of Engineering and Technology

Department of Artificial Intelligence & Data Science

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Class/Sem:	TE/V
Experiment No.:	4
Title:	Implement vanilla JavaScript for form validations with DOM elements.
Date of Performance:	6/8/25
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Marks:	
Sign of Faculty:	



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Aim: Perform a bootstrap based form for the validation process.

Objective: Implementation of form validation using elements of bootstrap.

Theory:

Bootstrap, a widely-used front-end framework, has become synonymous with responsive and mobilefirst web design since its introduction by Twitter in 2011. Among its many features, Bootstrap's form components stand out for their versatility, ease of use, and ability to create consistent, visually appealing forms. These attributes have made Bootstrap forms a staple in modern web development, simplifying the process of creating complex and responsive forms that enhance user experience.

The Evolution of Form Design

Forms are an essential component of web applications, enabling user interaction through data submission. Historically, creating forms that were both functional and aesthetically pleasing required significant effort. Developers had to manually style each element and ensure compatibility across different browsers and devices. Bootstrap revolutionized this process by providing a set of pre-styled form components that developers could easily integrate into their projects.

Consistency and Design

One of the primary advantages of using Bootstrap forms is the consistency they bring to web design. Bootstrap's extensive library of CSS classes ensures that form elements such as input fields, buttons, checkboxes, and radio buttons have a uniform appearance across all browsers and devices. This consistency is crucial for maintaining a professional and cohesive look, particularly in large-scale applications where multiple forms are used.

Moreover, Bootstrap's design philosophy emphasizes simplicity and elegance, with a focus on usability. The default styles are minimalistic yet attractive, reducing the need for extensive custom styling. This approach not only saves time but also ensures that forms are user-friendly and accessible, contributing to a better overall user experience.

Responsiveness and Accessibility

In today's digital landscape, where users access websites from a variety of devices, responsiveness is a critical factor. Bootstrap forms are inherently responsive, meaning they automatically adjust to different screen sizes and orientations. This adaptability is achieved through the use of flexible grid systems and media queries, which ensure that form elements are appropriately sized and positioned on any device.

Accessibility is another area where Bootstrap forms excel. The framework follows best practices for web accessibility, providing features such as proper label association with form controls, focus styles, and ARIA attributes. These features make forms more accessible to users with disabilities, aligning with the principles of inclusive design. By using Bootstrap, developers can more easily meet accessibility standards and ensure that their applications are usable by a broader audience.

Customization and Extensibility

While Bootstrap's default form styles are robust and versatile, the framework also offers extensive customization options. Developers can modify the appearance and behavior of form elements through custom CSS and JavaScript, tailoring them to meet the specific needs of their projects. Bootstrap's



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modular structure allows for the selective inclusion of components, enabling developers to create lightweight and efficient forms without unnecessary bloat.

Furthermore, Bootstrap's comprehensive documentation and large community support provide ample resources for developers looking to extend the functionality of their forms. Plugins and third-party libraries built on top of Bootstrap offer additional features, such as advanced validation, dynamic form fields, and integration with popular frameworks like Angular and React.

Efficiency and Productivity

The efficiency gains offered by Bootstrap forms cannot be overstated. By leveraging pre-built components and styles, developers can significantly reduce the time and effort required to create complex forms. This efficiency translates to faster development cycles and quicker time-to-market for web applications. Additionally, the consistency and reliability of Bootstrap forms minimize the likelihood of cross-browser issues, further streamlining the development process.

Bootstrap also promotes a component-based approach to web development, encouraging the reuse of form elements across different parts of an application. This modularity not only improves code maintainability but also enhances collaboration among development teams, as standardized components can be easily shared and integrated.

Code:

```
WC > Exp04 > index.html > html > body > script > addEventListener('submit') callback
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4      <meta charset="UTF-8">
5      <meta name="viewport" content="width=device-width, initial-scale=1.0">
6      <title>Form Validation</title>
7      <link rel="stylesheet"
8          href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
9      <style>
10         .invalid-feedback { display: none;}
11         .was-validated .invalid-feedback { display: block; }
12     </style>
13 </head>
14 <body>
15     <div class="container mt-5 w-50 h-50">
16         <h1 class="text-center">Sign Up</h1>
17         <form id="signupForm">
18             <div class="form-group ">
19                 <label for="username">Username</label>
20                 <input type="text" class="form-control" id="username" required>
21                 <div class="invalid-feedback">Please provide a username.</div>
22             </div>
23             <div class="form-group">
24                 <label for="email">Email</label>
25                 <input type="email" class="form-control" id="email" required>
26                 <div class="invalid-feedback">Please provide a valid email.</div>
27             </div>
28             <div class="form-group">
29                 <label for="password">Password</label>
30                 <input type="password" class="form-control" id="password" required>
31                 <div class="invalid-feedback">Please provide a password.</div></div>
32             <button type="submit" class="btn btn-primary btn-block">Submit</button>
33         </form>
34     </div>
```



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```
35 <script>
36     document.getElementById('signupForm').addEventListener('submit', function (event) {
37         event.preventDefault();
38         let isValid = true;
39         const username = document.getElementById('username');
40         const email = document.getElementById('email');
41         const password = document.getElementById('password');
42         username.classList.remove('is-invalid');
43         email.classList.remove('is-invalid');
44         password.classList.remove('is-invalid');
45         if (username.value.trim() === '') {
46             username.classList.add('is-invalid');
47             isValid = false;
48         }
49         if (email.value.trim() === '' || !email.validity.valid) {
50             email.classList.add('is-invalid');
51             isValid = false;
52         }
53         if (password.value.trim() === '') {
54             password.classList.add('is-invalid');
55             isValid = false;
56         }
57         if (isValid) {
58             alert('Form submitted successfully!');
59         }
60     });
61 </script>
62 </body>
63 </html>
64
```

Output:



Sign Up

Username

Email

Password

Conclusion:



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Bootstrap forms have had a profound impact on modern web development, offering a blend of consistency, responsiveness, accessibility, customization, and efficiency. By providing a robust set of pre-styled form components, Bootstrap simplifies the process of creating user-friendly and visually appealing forms.