Form Validation

What is Form Validation?

Form validation is the process of checking whether the data entered by a user in a web form is **complete, correct, and secure** before sending it to the server. It prevents errors, improves user experience, and protects against invalid or malicious input.

Ex: Making sure an email field contains @ and ., or ensuring a password is at least 8 characters long.

1. Types of Form Validation

- *Client-Side Validation*

  - Happens in the browser using **HTML5 attributes** or **JavaScript**.

  - Provides **instant feedback** to the user.

  - Example: Preventing submission if required fields are empty.

- *Server-Side Validation*

  - Happens on the server after submission.

  - More secure because it cannot be bypassed.

  - Example: Double-checking if an email already exists in the database.

2. HTML5 Built-In Validation

HTML provides simple attributes to handle basic checks without JavaScript:

```html
<form>
  <input type="text" required placeholder="Name"><br>
  <input type="email" required placeholder="Email"><br>
  <input type="password" minlength="8" placeholder="Password"><br>
  <input type="submit">
</form>
```

1. required → Field must not be empty.

2. type="email" → Must match email format.

3. minlength → Sets minimum character length.

3. JavaScript Validation

For more advanced checks, JavaScript is used.

Email validation ex:

```javascript
function validateEmail() {
  let email = document.getElementById("email").value;
  let pattern = /^[^ ]+@[^ ]+\.[a-z]{2,3}$/;

  if (pattern.test(email)) {
    alert("Valid Email!");
    return true;
  } else {
    alert("Invalid Email!");
    return false;
  }
}
```

4. Preventing Form Submission

```
You can block form submission if validation fails.
<form onsubmit="return validateForm()">
  <input type="text" id="username" required>
  <input type="submit">
</form>

<script>
function validateForm() {
  let user = document.getElementById("username").value;
  if (user.length < 3) {
    alert("Username must be at least 3 characters long.");
    return false; // prevents submission
  }
  return true;
}
</script>
```

5. Common Validations

1. **Required fields** (cannot be blank)

2. **Email format** (contains @ and domain)

3. **Password strength** (length, numbers, special characters)

4. **Number ranges** (e.g., age between 18–60)

5. **Matching fields** (confirm password)

6. Why is Form Validation Important?

- Prevents **bad data** from entering the system.

- Provides **instant feedback** to users.

- Improves **security** (avoids injections, malicious scripts).

- Ensures **data integrity** for applications.