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Enrollment No: BT21GCS161

Software Engineering (CS -301)

Assignment – 13

Activity: Escaped Defect Chart Metrics

Metric	Version 1	Version 2	Version 3
Functional Issues	Moderate	Moderate	Moderate
Usability Issues	Low	Low	Moderate
Performance Issues	Low	Low	Low
Security Issues	Moderate	Moderate	Moderate
Code Maintainability	Moderate	Moderate	Moderate
Documentation Quality	Low	Low	Low
User Experience	Low	Low	Moderate
Overall Quality	Moderate	Moderate	Moderate

Functional Issues - Client-side email validation is present, but server-side validation is necessary for enhanced security, the success message functionality relies on a parameter ("success"). Ensure correct server-side parameter setting

Usability Issues – Usability is generally okay, but improvements can be made in accessibility features and the placement of the success message. Consider adding password visibility toggle. Include a confirmation password field

Performance Issues – Performance is acceptable. Script placement can be optimized by moving it just before the closing

Security Issues – Password criteria enforcement should be duplicated on the server side.

Code Maintainability – Organize code by separating JavaScript into an external file Add comments for complex sections and Thymeleaf syntax.

Documentation Quality – More detailed comments would enhance documentation quality

User Experience – Version 3 provides the best user experience with improved validation messages, resulting in a Moderate rating.

Overall Quality – Overall quality is moderate. Addressing the mentioned issues would contribute to a more robust and user-friendly application.

Source Code Version 1

```html
<!-- You have to set ChatGPT to help you code this -->
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Registration</title>
  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css" integrity="sha384-BVYiiSIFeK1dGmJRAkycuHAHRg32OmUcww7on3RYdg4Va+PmST
  <style>
    body {
      padding-top: 70px; /* Adjusted padding for fixed navbar */
    }
    h1 {
      text-align: center;
    }
    .form-container {
      margin-top: 30px;
    }
    .success-message {
      margin-top: 20px;
    }
  </style>
</head>
<body>

  <!-- Navigation Bar (Header) -->
  <nav class="navbar navbar-inverse navbar-fixed-top">
    <div class="container">
      <div class="navbar-header">
        <button type="button" class="navbar-toggle collapsed" data-toggle="collapse" data-target="#navbar" aria-expanded="false" aria-controls="navbar">
          <span class="sr-only">Toggle navigation</span>
          <span class="icon-bar"></span>
          <span class="icon-bar"></span>
          <span class="icon-bar"></span>
        </button>
        <a class="navbar-brand" href="#" th:href="@{/}">Registration and Login Module</a>
      </div>
    </div>
  </nav>

  <!-- Main Content -->
  <div class="container form-container">
    <div class="row">
      <div class="col-md-6 col-md-offset-3">

        <!-- Success Message -->
        <div th:if="${param.success}" class="alert alert-success success-message">
          You've successfully registered to our awesome app!
        </div>

        <h1>Registration</h1>

        <!-- Registration Form -->
        <form th:action="@{/registration}" method="post" th:object="${user}">
          <div class="form-group">
            <label for="firstName">First Name</label>
            <input id="firstName" class="form-control" th:field="*{firstName}" required autofocus="autofocus">
          </div>

          <div class="form-group">
            <label for="lastName">Last Name</label>
            <input id="lastName" class="form-control" th:field="*{lastName}" required autofocus="autofocus">
          </div>
```

```html
      <div class="form-group">
        <label for="email">Email</label>
        <input id="email" class="form-control" th:field="*{email}" required autofocus="autofocus">
      </div>

      <div class="form-group">
        <label for="password">Password</label>
        <input id="password" class="form-control" type="password" th:field="*{password}" required autofocus="autofocus">
      </div>

      <div class="form-group">
        <button type="submit" class="btn btn-success">Register</button>
        <span>Already registered? <a href="/" th:href="@{/login}">Login here</a></span>
      </div>
    </form>
  </div>
 </div>
</div>

<!-- Bootstrap JS -->
<script src="https://code.jquery.com/jquery-3.3.1.slim.min.js" integrity="sha384-q8i/X+965DzO0rT7abK41JStQIAqVgRVzpbzo5smXKp4YfRvH+8abtTE1Pi6jizo">
<script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.14.7/umd/popper.min.js" integrity="sha384-UO2eT0CpHqdSJQ6hJty5KVphtPhzWj9WO1clHTMGa3JDZwrnQq4sF86dIHNDz0W">
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js" integrity="sha384-Tc5IQib027qvyjSMfHjOMaLkfuWVxZxUPnCJA">
</body>
</html>
```

Output –

You've successfully registered to our awesome app!

Registration

First Name

Aryan

Last Name

Sharma

Email

aryan.sharma21@st.niituniversity.in

Password

••••

Register   Already registered? Login here

Source Code Version 2

```html
↑ Click here to ask Blackbox to help you code faster
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Registration</title>
  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css" integrity="sha384-BVYiiSIFeK1dGmJRAkycuHAHRg32OmUcww7on3RYdg4Va+PmS
  <style>
    body {
      padding-top: 70px; /* Adjusted padding for fixed navbar */
    }
    h1 {
      text-align: center;
    }
    .form-container {
      margin-top: 30px;
    }
    .success-message {
      margin-top: 20px;
    }
  </style>
</head>
<body>

  <!-- Navigation Bar (Header) -->
  <nav class="navbar navbar-inverse navbar-fixed-top">
    <div class="container">
      <div class="navbar-header">
        <button type="button" class="navbar-toggle collapsed" data-toggle="collapse" data-target="#navbar" aria-expanded="false" aria-controls="navbar">
          <span class="sr-only">Toggle navigation</span>
          <span class="icon-bar"></span>
          <span class="icon-bar"></span>
          <span class="icon-bar"></span>
        </button>
        <a class="navbar-brand" href="#" th:href="@{/}">Registration and Login Module</a>
      </div>
    </div>
  </nav>

  <!-- Main Content -->
  <div class="container form-container">
    <div class="row">
      <div class="col-md-6 col-md-offset-3">

        <!-- Success Message -->
        <div th:if="${param.success}" class="alert alert-success success-message">
          You've successfully registered to our awesome app!
        </div>

        <h1>Registration</h1>

        <!-- Registration Form -->
        <form th:action="@{/registration}" method="post" th:object="${user}" onsubmit="return validateEmail()">
          <div class="form-group">
            <label for="firstName">First Name</label>
            <input id="firstName" class="form-control" th:field="*{firstName}" required autofocus="autofocus">
          </div>

          <div class="form-group">
            <label for="lastName">Last Name</label>
            <input id="lastName" class="form-control" th:field="*{lastName}" required autofocus="autofocus">
          </div>

          <div class="form-group">
            <label for="email">Email</label>
            <input id="email" class="form-control" th:field="*{email}" required autofocus="autofocus">
            <small id="emailHelp" class="form-text text-muted">Email address must end with "@gmail.com".</small>
          </div>

          <div class="form-group">
            <label for="password">Password</label>
            <input id="password" class="form-control" type="password" th:field="*{password}" required autofocus="autofocus">
          </div>

          <div class="form-group">
            <button type="submit" class="btn btn-success">Register</button>
            <span>Already registered? <a href="/" th:href="@{/login}">Login here</a></span>
          </div>
        </form>
      </div>
```

```
<!-- Bootstrap JS -->
<script src="https://code.jquery.com/jquery-3.3.1.slim.min.js" integrity="sha384-q8i/X+965DzO0rT7abK41JStQIAqVgRVzpbzo5smXKp4YfRvH+8abtTE1Pi6jizo" crossorigin="anonymous"></script>
<script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.14.7/umd/popper.min.js" integrity="sha384-UO2eT0CpHqdSJQ6hJty5KVphtPhzWj9WO1clHTMGa3JDZwrnQq4sF86dIHNDz0W1" crossorigin="anonym
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js" integrity="sha384-Tc5IQib027qvyjSMfHjOMaLkfuWVxZxUPnCJA7l2mCWNIpG9mGCD8wGNIcPD7Txa" crossorigin="anonymous">

<script>
  function validateEmail() {
    var emailInput = document.getElementById("email");
    var emailValue = emailInput.value;

    // Check if the email ends with "@gmail.com"
    if (!emailValue.toLowerCase().endsWith("@gmail.com")) {
      alert("Please enter a valid Gmail address.");
      return false;
    }

    return true;
  }
</script>
</body>
</html>
```

Output –

Registration

First Name

Aryan

Last Name

kumar

Email

kumar@gmail.com

Email address must end with "@gmail.com".

Password

••••

Register   Already registered? Login here

Source Code Version 3

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Registration</title>
  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css" integrity="sha384-BVYiiSIFeK1dGmJRAkycuHAHRg32OmUcww7on3RYdg4Va+Pm
  <style>
    body {
      padding-top: 70px; /* Adjusted padding for fixed navbar */
    }
    h1 {
      text-align: center;
    }
    .form-container {
      margin-top: 30px;
    }
    .success-message {
      margin-top: 20px;
    }
  </style>
</head>
<body>
```

```html
<!-- Navigation Bar (Header) -->
<nav class="navbar navbar-inverse navbar-fixed-top">
  <div class="container">
    <div class="navbar-header">
      <button type="button" class="navbar-toggle collapsed" data-toggle="collapse" data-target="#navbar" aria-expanded="false" aria-controls="navbar">
        <span class="sr-only">Toggle navigation</span>
        <span class="icon-bar"></span>
        <span class="icon-bar"></span>
        <span class="icon-bar"></span>
      </button>
      <a class="navbar-brand" href="#" th:href="@{/}">Registration and Login Module</a>
    </div>
  </div>
</nav>

<!-- Main Content -->
<div class="container form-container">
  <div class="row">
    <div class="col-md-6 col-md-offset-3">

      <!-- Success Message -->
      <div th:if="${param.success}" class="alert alert-success success-message">
        You've successfully registered to our awesome app!
      </div>

      <h1>Registration</h1>
```

```html
<!-- Registration Form -->
<form th:action="@{/registration}" method="post" th:object="${user}" onsubmit="return validateForm()">
  <div class="form-group">
    <label for="firstName">First Name</label>
    <input id="firstName" class="form-control" th:field="*{firstName}" required autofocus="autofocus">
  </div>

  <div class="form-group">
    <label for="lastName">Last Name</label>
    <input id="lastName" class="form-control" th:field="*{lastName}" required autofocus="autofocus">
  </div>

  <div class="form-group">
    <label for="email">Email</label>
    <input id="email" class="form-control" th:field="*{email}" required autofocus="autofocus">
    <small id="emailHelp" class="form-text text-muted">Email address must end with "@gmail.com".</small>
  </div>

  <div class="form-group">
    <label for="password">Password</label>
    <input id="password" class="form-control" type="password" th:field="*{password}" required autofocus="autofocus">
    <small id="passwordHelp" class="form-text text-muted">Password must be at least 6 characters long and contain at least 1 number, 1 lowercase alphabet, 1 uppe
  </div>

  <div class="form-group">
    <button type="submit" class="btn btn-success">Register</button>
    <span>Already registered? <a href="/" th:href="@{/login}">Login here</a></span>
  </div>
</form>
```

```html
<!-- Bootstrap JS -->
<script src="https://code.jquery.com/jquery-3.3.1.slim.min.js" integrity="sha384-q8i/X+965DzO0rT7abK41JStQIAqVgRVzpbzo5smXKp4YfRvH+8abtTE1Pi6
<script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.14.7/umd/popper.min.js" integrity="sha384-UO2eT0CpHqdSJQ6hJty5KVphtPhzWj9WO1c
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js" integrity="sha384-Tc5IQib027qvyjSMfHjOMaLkfuWVxZxUPnCJA7l2m

<script>
  function validateForm() {
    if (!validateEmail() || !validatePassword()) {
      return false;
    }
    return true;
  }

  function validateEmail() {
    var emailInput = document.getElementById("email");
    var emailValue = emailInput.value;

    // Check if the email ends with "@gmail.com"
    if (!emailValue.toLowerCase().endsWith("@gmail.com")) {
      alert("Please enter a valid Gmail address.");
      return false;
    }

    return true;
  }
```

```
    function validatePassword() {
      var passwordInput = document.getElementById("password");
      var passwordValue = passwordInput.value;

      // Check if the password meets the criteria
      var passwordRegex = /^(?=.*\d)(?=.*[a-z])(?=.*[A-Z])(?=.*[@#$%&]).{6,}$/;
      if (!passwordRegex.test(passwordValue)) {
        alert("Please enter a valid password. It must be at least 6 characters long and contain at least 1 number, 1 lowercase alphabet, 1 uppercase alphabet, and 1 special character (@, #
        return false;
      }

      return true;
    }
  </script>
</body>
</html>
```

Output –

Registration

First Name

sdf

Last Name

sdf

Email

dtry

Email address must end with "@gmail.com". Please enter a valid Gmail address.

Password

•••••

Password must be at least 6 characters long and contain at least 1 number, 1 lowercase alphabet, 1 uppercase alphabet, and 1 special character (@, #, $, %, &). Please enter a valid password. It must be at least 6 characters long and contain at least 1 number, 1 lowercase alphabet, 1 uppercase alphabet, and 1 special character (@, #, $, %, &).

Register   Already registered? Login here