QA Test Report: E-Learning Web Application

**Project Name:** E-Learning Website

**Report Title:** Test Report for E-Learning Website

**Date:** October 22, 2024

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**1. Introduction**

This report documents the results of the testing conducted on the E-Learning Web Application. The objective was to ensure the functionality, performance,regression and security of the platform to provide a reliable and secure user experience.

Website: https://elearning-front-end.vercel.app

**2. Testing Summary**

Testing was conducted in the following areas:

* Functional tests: Course enrollment, profile updates, payment gateway, etc.
* Regression tests: Check previously working functionalities after updates.
* Performance tests: Loading times and responsiveness.
* Security tests: Form validation, login security.

**3. Test Scope**

### Tested:

1. **User Registration and Login**
   * Valid registration and login attempts.
2. **Course Navigation**
   * Access to course categories and details.
   * Enrollment functionality.
3. **Course Search and Filtering**
   * Functionality of search and filtering options.
4. **User Profile Management**
   * Updating personal information and password changes.
5. **Contact Form**
   * Submission validation and error messages.

### Not Tested:

1. **Payment Gateway Integrations**
   * External system integrations not evaluated.
2. **Admin Panel Features**
   * Admin functionalities remain untested.
3. **Third-Party API Integrations**
   * External API functionalities not evaluated.

**4. Test Methodology**

Testing was performed using both manual and automated methods. Tools used include Burp Suit for security tests and JMeter for performance testing.

**5. Test Cases**

[**Test Cases and Bug report**](https://docs.google.com/spreadsheets/d/15oVdM9-SA99L9MloyJHWuljUlNydQTILdkeWxa47oUI/edit?usp=sharing)

**6. Results**

**Overall Testing Results:**

* **Total Test Cases Executed**: 33
* **Passed**: 20
* **Failed**: 13
* **Pass Rate**: 61%

### 7. Performance Testing Results

**Load Test**:

* **Users Simulated**: 500
* **Average Response Time**: 4.5 seconds
* **Peak Load Handling**: 800 concurrent users

**Bottlenecks Identified**:

* **Homepage Load Time**: Over 4.5 seconds, above the acceptable limit

**8. Security Testing Results**

#### Vulnerabilities Found:

1. **Lack of Brute Force Protection**
   * **Description**: The login system does not limit failed login attempts, making it vulnerable to brute force attacks.
   * **Impact**: Increases the risk of unauthorized access via password guessing.
   * **Severity**: **High**
   * **Recommendations**: Implement rate-limiting, lockout mechanisms, and CAPTCHA after several failed attempts.
2. **Broken Links in Footer**
   * **Description**: Some footer links, especially the one to the course dashboard, return a 404 error.
   * **Impact**: Leads to poor user experience and navigation issues.
   * **Severity**: **Low**
   * **Recommendations**: Review and update footer links to ensure they direct to valid pages.

**9. Conclusion**

The e-learning platform performs well for basic tasks like user registration and login, but there are areas that need improvement. The site’s slow load times and security issues, such as a lack of protection against multiple failed login attempts, need to be addressed. Additionally, broken links in the navigation hinder user experience. Fixing these issues will improve the platform's speed, security, and overall usability.

**10. Recommendations**

* Ensure that course videos cannot be played without login **(Bug ID: BUG005).**
* Optimize homepage load time by reducing heavy resources and unnecessary requests **(Bug ID: BUG006).**
* Provide clearer error messages for form submissions with missing fields **(Bug ID: BUG007).**
* Implement a password reset feature to allow users to reset their passwords when needed **(Bug ID: BUG009).**
* Fix broken links in the footer to ensure that they navigate to valid pages **(Bug ID: BUG010).**
* Ensure courses related to 'DevOps' are displayed in search results **(Bug ID: BUG014).**
* Ensure CAPTCHA after repeated failed logins **(Bug ID: BUG017)**
* Account lockout mechanism should reactivate automatically.**(Bug ID: BUG020)**
* Provide notification for outdated application versions.**(Bug ID: BUG021)**
* Send notifications after suspicious login attempts.**(Bug ID: BUG023)**
* Implement a password reset option to terminate sessions across devices.**(Bug ID: BUG025)**

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