# **DAY – 5 TESTING, ERROR HANDLING AND BACKEND INTEGRATION REFINEMENT.**

# Objective.

Day 5 ka focus Comforty website ko deployment ke liye prepare karna tha, jisme functionalities ko thoroughly test karna, performance ko optimize karna, aur results ko document karna tha. Goal tha website ko user-friendly, responsive, aur secure bananay ka.

### Key Areas of Focus:

1. **Functional Testing:**

- Ensure karna tha ky core functionalities expected tareeqe se kaam karein.

1. **Error Handling:**

Robust error handling implement karna taake seamless user experience mile.

1. **Performance Optimization:**

Website ki speed aur performance ko enhance karna.

1. **Cross-Browser aur Device Compatibility:**

Ensure karna ke website different browsers aur devices par kaam karein.

1. **Documentation:**

Testing aur optimization results ka professional report prepare karna.

# Key Learning Outcomes:

1. Key features ki functionality ko testing se validate karna.
2. Tools jaise Lighthouse ka use karke website performance improve karna.
3. Disabilities wale users ke liye high accessibility ensure karna.
4. SEO ko enhance karna taake search engines mein better visibility mile.
5. Detailed documentation aur CSV-based testing report prepare karna.

# **Implementation Steps:**

## **Step 1: Functional Testing.**

Description: Key components ki functionality ko validate karna.

* **Features Tested:**
  + Navigation links: Sab links sahi tareeqe se navigate karein.
  + Product listings: Product listings accurately aur dynamically display ho.
  + Search aur filter: Search aur filter functionalities ki accuracy test karna.
  + User registration aur login: Registration aur login processes ko test karna.
  + Contact form: Form submission functionality ko confirm karna.
* **Tools Used:**
  + Postman for API response testing.
  + React Testing Library for component testing.
  + Cypress for end-to-end testing.

# Step 2: Error Handling:

Description:Errors ko gracefully handle karne aur user-friendly feedback dene ka mechanism implement karna.

* **Approach:**
  + API error handling ke liye try-catch blocks ka use.
  + Data unavailable hone par fallback UI elements dikhana (e.g., "No products found").
  + Errors ko debug karne ke liye log karna aur user ko clear communication dena.

# **Step 3: Performance Optimization**

Description: Performance bottlenecks ko identify karna aur resolve karna.

* **Key Improvements:**
  + Performance Score: 85 (target 90 se upar).
  + Initial Server Response Time ko reduce karna.
  + Image Optimization: Image size ko reduce karna aur lazy loading implement karna.
  + JavaScript aur CSS ko minimize karna: Unused code ko compress aur eliminate karna.
  + Browser Caching: Faster repeat visits ke liye caching enable karna.

# **Step 4: Cross-Browser aur Device Testing.**

Description: Website ko various browsers aur devices par test karna taake functionality aur appearance mein consistency ho.

* **Browsers Tested:**

Chrome, Firefox, Safari, Edge.

* **Devices Tested:**

Desktop, tablet, aur mobile using BrowserStack.

* **Focus Areas:**
  + Responsiveness: Layout ko different screen sizes par adjust hona ensure karna.
  + Navigation: Different browsers aur devices par smooth navigation ensure karna.
  + Accessibility: Keyboard navigation aur screen reader compatibility verify karna.

# **Step 5: Security Testing.**

Description: Website ko vulnerabilities se secure karna.

* **Key Actions:**
  + User inputs ko sanitize karna taake injection attacks (SQL, XSS) roka ja sake.
  + Secure API communication ko ensure karna via HTTPS.
  + Sensitive data (e.g., API keys) ko environment variables mein securely store karna.
* **Tools Used:**
  + OWASP ZAP for vulnerability scanning.
  + Burp Suite for penetration testing.

# **Step 6: User Acceptance Testing (UAT).**

Description: Real-world user interactions ko simulate karna taake usability issues identify ho sakein.

* **Scenarios Tested:**
  + Products browse karna aur search karna.
  + Cart mein items add aur remove karna.
  + Checkout process complete karna.
* **Feedback Collected:**
  + Minor UI issues solve kiye.
  + Checkout ke dauran better user flow ke liye visual hierarchy adjust ki gayi.

# **Step 7: Documentation Updates.**

Description: Findings aur resolutions ko professional report mein compile karna.

* **Includes:**
  + Test case descriptions aur results.
  + Performance optimization steps.
  + Security measures implemented.
  + Issues aur fixes ke screenshots.
  + Future improvement areas ke liye additional insights.

# CSV Report

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Test Case ID* | *Description* | *Expected Result* | *Actual Result* | *Status* | *Severity* | *Remarks* |
| TC001 | Test navigation links | Links navigate correctly | All links navigate correctly | Pass | Low | None |
| TC002 | Verify product listing | Products display correctly | Products display correctly | Pass | Medium | None |
| TC003 | Test search functionality | Search results match query | Correct results returned | Pass | High | None |
| TC004 | Test user registration | Form submits successfully | Registration works fine | Pass | Medium | None |
| TC005 | Test shopping cart | Add/remove items successfully | Cart functions as expected | Pass | High | None |
| TC006 | Analyze performance metrics | Performance score ≥ 90 | Performance score: 85 | Fail | High | Optimization needed |
| TC007 | Test SEO metrics | SEO score ≥ 90 | SEO score: 82 | Fail | Medium | Implement SEO improvements |
| TC008 | Check mobile responsiveness | Layout adjusts for mobile | Layout is responsive on mobile | Pass | Low | None |

# ***Conclusion:***

Day 5 ke end tak, Comforty One website:

1. Fully tested aur functional hogi, jisme core features validated honge.
2. Performance ko optimize kiya gaya hoga, jisme faster page load times honge.
3. Secure hogi, appropriate error handling aur clear feedback ke saath.
4. Responsively designed hogi, jo different browsers aur devices par consistent experience degi.
5. Well-documented hogi, comprehensive testing report aur detailed documentation ke saath.