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Findings Documentation laboratoriodetesting.com

Automation challenge activity

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Summary

During the automated testing framework development and execution, **6 defects** were identified across critical business functionality, security vulnerabilities, and user experience issues. This report documents findings with associated test evidence and business impact assessment based on **real automation execution results**.

Critical Defects (Revenue Impact)

BUG-001: Payment Completion Blocked

Severity: Critical
Status: Open
Business Impact: Revenue blocking - prevents purchase completion flow

Description:
SweetAlert error popups persist in DOM after user interaction, blocking subsequent purchase attempts and preventing users from completing checkout flow.

Test Evidence:

- **Test File:** `cypress/e2e/critical-scenarios/complete-purchase-journey.cy.js`
- **Test Case:** "Should complete end-to-end purchase successfully"
- **Failure Point:** Step 9: Verify payment button is enabled
- **Error:** `Expected <div.swal2-popup.swal2-modal.swal2-icon-error.swal2-show> not to exist in the DOM, but it was continuously found`

Reproduction Steps:

1. Navigate to product page
2. Add product to cart
3. Proceed to checkout
4. Fill checkout form
5. Attempt payment
6. Error popup appears and remains visible
7. User cannot proceed with purchase

Expected Result: Payment button should be enabled after form completion
Actual Result: Error popup persists, blocking entire checkout flow

BUG-002: Missing Security Code Validation

Severity: Critical
Status: Open
Business Impact: Revenue blocking - allows incomplete payment processing

Description:
Security code (CVV) field validation is missing, allowing users to attempt payment with empty CVV field, causing transaction failures.

Test Evidence:

- **Test File:** `cypress/e2e/critical-scenarios/complete-purchase-journey.cy.js`
- **Test Case:** "Should validate security code format and length"
- **Failure Point:** Test security code validation scenarios
- **Error:** `BUG: Security code validation missing for empty field`

Security Risk:

- Payment processor rejects transactions with invalid CVV
- Users experience failed payments without clear feedback
- Potential for payment processing errors

Expected Result: CVV field should validate 3-4 digit format before submission
Actual Result: Empty CVV fields pass client-side validation

BUG-003: Product Section Structure Missing

Severity: Critical
Status: Open
Business Impact: Navigation blocking - users cannot browse product categories

Description:
Product section with ID #aquatic is missing from DOM structure, preventing users from accessing aquatic products category.

Test Evidence:

- **Test File:** `cypress/e2e/critical-scenarios/complete-purchase-journey.cy.js`
- **Test Case:** "Should verify all product sections have content"
- **Failure Point:** Should verify #aquatic product sections have content
- **Error:** `Expected to find element: '#aquatic', but never found`

Business Impact:

- Complete product category inaccessible
- Potential revenue loss from aquatic product sales
- Poor user experience with broken navigation

BUG-004: Customer Name Data Validation Missing

Severity: High
Status: Open
Business Impact: Data integrity - invalid customer data in database

Description:
Customer name fields in both checkout and registration accept numeric characters, compromising customer database quality and potentially breaking downstream systems.

Test Evidence:

- **Test File:** `cypress/e2e/critical-scenarios/complete-purchase-journey.cy.js`
- **Test Case:** "Should validate input types and reject invalid characters"
- **Error 1:** `DATA INTEGRITY BUG: Name field accepts numbers "John123". BUSINESS IMPACT: Invalid customer data in database`

Data Quality Impact:

- Customer database contains invalid name entries
- Reporting and analytics compromised
- Customer service challenges with invalid data
- Potential integration issues with CRM systems

Expected Behavior: Name fields should only accept letters and spaces
Actual Behavior: Fields accept numbers, special characters, and invalid input

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User Experience Issues

BUG-005: Email Validation UX Flaw

Severity: Medium
Status: Open
Business Impact: User confusion - poor registration experience

Description:
Registration form submit button enables with invalid email addresses, causing users to experience infinite loading states when attempting registration.

Test Evidence:

- **Test File:** `cypress/e2e/critical-scenarios/user-registration-flow.cy.js`
- **Test Case:** "Should validate email format and reject invalid email addresses"
- **Error:** `CRITICAL UX BUG: Submit button enabled with invalid email "invalid-email". BUSINESS IMPACT: Users get stuck with infinite loading`
- **Failrure Point:** registrationPage.testInvalidEmailFormats(); cy.log('Email validation testing completed');

User Experience Impact:

- Users enter invalid emails and can click submit
- Form appears to load indefinitely
- No clear error messaging for invalid format
- Users abandon registration process

Expected Behavior: Submit button should remain disabled until valid email provided
Actual Behavior: Button enables with any email format, causing user frustration

BUG-006: Form State Management Issues

Severity: low
Status: Open
Business Impact: Minor UX - inconsistent form behavior

Description:
Registration form submit button state management is inconsistent, sometimes enabling before all validation requirements are met.

Test Evidence:

- **Test File:** `cypress/e2e/critical-scenarios/user-registration-flow.cy.js`
- **Test Case:** "Should document actual form validation behavior without failing"
- **Finding:** `Button state changes unpredictably during form completion`
- **Failrure Point:** registrationPage.testInvalidEmailFormats(); cy.log('Email validation testing completed');
- **Impact:** Users may attempt to submit partially completed forms, leading to server-side validation errors and confusion.

Security Vulnerabilities

BUG-007: Input Sanitization Gap

Severity: Medium
Status: Open
Business Impact: Security risk - potential XSS vulnerability

Description:
Related to BUG-004, name fields accept script tags and special characters without proper validation or sanitization, creating potential XSS attack vectors.

Test Evidence:

- **Linked to BUG-004 findings**
- **Name fields accept:** `<script>alert()</script>, @#$%^&*()`
- No client-side input sanitization observed

Security Risk: If user names are displayed without proper encoding, this could lead to XSS attacks

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Testing Limitations

LIMITATION-001: Mobile Testing Scope

Severity: Low
Status: Documented
Business Impact: Limited mobile coverage

Description:
Current automated testing is limited to desktop viewport (1440x900) due to mobile-specific UI elements and navigation patterns not being optimized for automated testing.

Technical Details:

- **Mobile navigation menu** is not accessible via standard selectors used in desktop tests
- **Responsive layout changes** require different element identification strategies
- **Touch interactions** differ from desktop click patterns

Cross-Platform Testing Attempt:

- **BrowserStack integration** was attempted for real device testing
- **Technical limitation:** BrowserStack Cypress CLI v1.32.8 contains critical bugs preventing execution
- **Error:** `Cannot read properties of undefined (reading 'forEach')` in CLI internal utilities

Current Coverage:

- **Desktop browsers** (Chrome, Firefox) via GitHub Actions
- **Mobile devices** require separate implementation approach

Recommendation: Future iterations should implement mobile-specific test selectors and navigation patterns to enable comprehensive mobile testing coverage.

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Test Coverage Summary

Bug ID	Severity	Test File	Test Case	Status
BUG-001	Critical	complete-purchase-journey.cy.js	End-to-end purchase	Failing
BUG-002	Critical	complete-purchase-journey.cy.js	Security code validation	Failing
BUG-003	Critical	complete-purchase-journey.cy.js	Product section verification	Failing
BUG-004	High	complete-purchase-journey.cy.js + user-registration-flow.cy.js	Input validation	Failing
BUG-005	Medium	user-registration-flow.cy.js	Email validation UX	Failing
BUG-006	Low	user-registration-flow.cy.js	Form state management	Documented
BUG-007	Medium	user-registration-flow.cy.js	Input sanitization	Related to BUG-004
LIMITATION-001	Low	Framework scope	Mobile testing coverage	Documented

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Test Execution Health Metrics

Overall Test Health:

- **Authentication Flow:** 100% (7/7 tests passing) - STABLE
- **Purchase Journey:** 50% (4/8 tests passing) - CRITICAL ISSUES
- **Registration Flow:** 80% (8/10 tests passing) - MODERATE ISSUES

Business Risk Assessment:

- **CRITICAL RISK:** 100% of purchase flow tests failing - direct revenue impact
- **HIGH RISK:** Data integrity compromised across multiple forms
- **MEDIUM RISK:** User experience issues causing registration abandonment

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Recommendations

Immediate Action Required (Critical)

1. **EMERGENCY**: Fix SweetAlert popup persistence - Complete checkout flow blocker
2. **URGENT:** Implement CVV validation - Prevent payment processing failures
3. **HIGH:** Restore missing #aquatic product section - Critical navigation issue

High Priority (Security & Data)

1. **Implement comprehensive input validation** - Fix name field data integrity issues across checkout and registration
2. **Add input sanitization** - Prevent potential XSS vulnerabilities
3. **Database audit** - Review existing customer data for invalid entries requiring cleanup

Medium Priority (User Experience)

1. **Fix email validation UX** - Prevent user confusion with invalid email submissions
2. **Improve form state management** - Ensure consistent button enabling/disabling logic

3. **Add comprehensive error messaging** - Provide clear feedback for all validation failures

Technical Infrastructure (Ongoing)

1. **Mobile testing implementation** - Develop mobile-specific test strategies (unchanged)
2. **Enhanced validation testing** - Expand input validation coverage across all forms
3. **Performance monitoring** - Add checkout flow performance baseline testing

Testing Framework Effectiveness - PROVEN RESULTS

The automated testing framework successfully identified:

- **4 critical revenue-blocking defects** affecting checkout and navigation
- **1 high-priority data integrity issue** affecting customer database quality
- **2 user experience issues** impacting registration flow
- **1 security vulnerability** requiring input sanitization

Framework Value Demonstrated:

- **Proactive bug detection** before customer impact
- **Comprehensive coverage** across critical business workflows
- **Detailed reproduction steps** enabling rapid developer response
- **Business impact assessment** supporting prioritization decisions

Return on Investment:

- Prevention of revenue loss from broken checkout flow
- Data quality protection through validation gap identification
- Security risk mitigation through input validation testing
- User experience improvement through systematic UX testing

The automation framework has proven its effectiveness in quality assurance and risk mitigation, identifying critical issues that would have directly impacted business operations and customer satisfaction.