**Test Strategy for VWO.com Login Page**

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| **1. Overview** |
| This document defines the **high-level testing approach** for the **VWO.com login page**, ensuring it meets functional, security, usability, and performance requirements. |
| **1.1 Goals** |
| Validate **end-to-end login functionality** (email/password, SSO). |
| Ensure **security compliance** (OWASP Top 10). |
| Optimize **performance** (fast load times, low latency). |
| Guarantee **cross-browser & mobile compatibility**. |
| Verify **accessibility** (WCAG 2.1 AA). |
| **1.2 Scope** |
| **In-Scope:** |
| ✅ Email/password login |
| ✅ "Forgot Password" flow |
| ✅ "Remember Me" functionality |
| ✅ SSO (Google, etc.) |
| ✅ Error handling & validation |
| ✅ CAPTCHA |
| ✅ Free Trial Account |
| **Out-of-Scope:** |
| ❌ Post-login dashboard features |
| ❌ Third-party integrations (unless login-related) |

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| **2. Testing Types & Approach** |
| **2.1 Functional Testing** |
| **Objective:** Verify login workflows & error handling. |
| **Techniques:** |
| **Positive Testing:** Valid credentials → Successful login. |
| **Negative Testing:** Invalid credentials → Proper error messages. |
| **Boundary Testing:** Long emails/passwords, special characters. |
| **State-Based Testing:** "Remember Me" session persistence. |
| **Tools:** |
| Manual testing (exploratory + test cases) |
| **Automation:** Selenium/Cypress (for regression) |

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| **2.2 Security Testing** |  |  |  |  |
| **Objective:** Prevent breaches & data leaks. |  |  |  |  |
| **Tests:** |  |  |  |  |
| ✔ **SQL Injection:** ' OR '1'='1 → Blocked |  |  |  |  |
| ✔ **XSS:** <script>alert(1)</script> → Sanitized |  |  |  |  |
| ✔ **Brute-Force Protection:** Account lockout after 5 attempts |  |  |  |  |
| ✔ **HTTPS Enforcement:** No mixed content |  |  |  |  |
| ✔ **Password Hashing:** Verify bcrypt/scrypt |  |  |  |  |
| **Tools:** |  |  |  |  |
| OWASP ZAP / Burp Suite |  |  |  |  |
| Manual penetration testing |  |  |  |  |
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| **2.3 UI/UX Testing** |  |  |  |  |
| **Objective:** Ensure intuitive, responsive design. |  |  |  |  |
| **Checks:** |  |  |  |  |
| **Consistency:** Fonts, colors, spacing (Figma vs. live). |  |  |  |  |
| **Responsiveness:** Mobile (iOS/Android), tablet, desktop. |  |  |  |  |
| **Error States:** Clear, non-technical error messages. |  |  |  |  |
| **Labels & Placeholders:** "Enter email" vs. "Email Address". |  |  |  |  |
| **Tools:** |  |  |  |  |
| BrowserStack / LambdaTest |  |  |  |  |
| Chrome DevTools (mobile emulation) |  |  |  |  |
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| **2.4 Performance Testing** |  |  |  |  |
| **Objective:** Optimize speed & scalability. |  |  |  |  |
| **Metrics:** |  |  |  |  |
| **Page Load:** <2 seconds (Lighthouse) |  |  |  |  |
| **API Response:** /login <500ms |  |  |  |  |
| **Concurrent Users:** 1000+ logins/minute (peak load) |  |  |  |  |
| **Tools:** |  |  |  |  |
| JMeter / k6 |  |  |  |  |
| Google Lighthouse |  |  |  |  |
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| **2.5 Cross-Browser & Cross-Device Testing** |  |  |  |  |
| **Objective:** Consistent experience across platforms. |  |  |  |  |
| **Coverage:** |  |  |  |  |
| **Browser** | **OS** | **Device** |  |  |
| Chrome 120+ | Windows 11 | Desktop |  |  |
| Safari 16+ | macOS Ventura | MacBook |  |  |
| Firefox 115+ | Android 13 | Samsung S23 |  |  |
| Edge 110+ | iOS 16 | iPhone 14 |  |  |
| **Tools:** |  |  |  |  |
| BrowserStack / Sauce Labs |  |  |  |  |
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| **2.6 Accessibility Testing** |  |  |  |  |
| **Objective:** WCAG 2.1 AA compliance. |  |  |  |  |
| **Checks:** |  |  |  |  |
| ✔ **Screen Readers:** NVDA, VoiceOver |  |  |  |  |
| ✔ **Keyboard Navigation:** Tab/Enter/Esc |  |  |  |  |
| ✔ **Color Contrast:** ≥ 4.5:1 (e.g., error messages) |  |  |  |  |
| ✔ **Alt Text:** For logos/icons |  |  |  |  |
| **Tools:** |  |  |  |  |
| Axe DevTools |  |  |  |  |
| WAVE Evaluation Tool |  |  |  |  |
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| **3. Test Automation Strategy** |  |  |  |  |
| **Scope:** |  |  |  |  |
| **Regression Suite:** Login + error flows (50+ test cases). |  |  |  |  |
| **CI/CD Integration:** Run on every staging deploy. |  |  |  |  |
| **Framework:** |  |  |  |  |
| **Web:** Cypress (JavaScript) |  |  |  |  |
| **API:** Postman + Newman |  |  |  |  |
| **Performance:** k6 (scripted scenarios) |  |  |  |  |
| **Maintenance:** |  |  |  |  |
| Weekly script reviews |  |  |  |  |
| Dynamic selectors (not XPath-dependent) |  |  |  |  |
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| **4. Entry & Exit Criteria** |  |  |  |  |
| **4.1 Entry Criteria** |  |  |  |  |
| ✅ Staging environment ready. |  |  |  |  |
| ✅ Test cases peer-reviewed. |  |  |  |  |
| ✅ Test data (credentials, SSO config) prepared. |  |  |  |  |
| **4.2 Exit Criteria** |  |  |  |  |
| ✔️ 100% P0/P1 test cases executed. |  |  |  |  |
| ✔️ Zero critical defects open. |  |  |  |  |
| ✔️ Performance SLA met (<2s load time). |  |  |  |  |
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| **5. Risk Management** |  |  |  |  |
| |  |  |  |  | | --- | --- | --- | --- | | **Risk** | **Likelihood** | **Impact** | **Mitigation** | | Browser-specific CSS bugs | Medium | High | Test early on BrowserStack | | SSO provider downtime | Low | Critical | Mock SSO in test env | | API latency under load | High | Medium | Optimize DB queries | |  |  |  |  |
| **6. Deliverables** |  |  |  |  |
| Test Cases (Excel/TestRail) |  |  |  |  |
| Defect Reports (JIRA) |  |  |  |  |
| Performance Benchmarks (Lighthouse/JMeter) |  |  |  |  |
| Accessibility Audit (Axe/WAVE) |  |  |  |  |
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| **7. Roles & Responsibilities** |  |  |  |  |
| **Role** | **Responsibility** |  |  |  |
| QA Lead | Test planning, sign-off |  |  |  |
| QA Engineers | Execution, defect logging |  |  |  |
| Dev Team | Fixing critical bugs |  |  |  |
| DevOps | CI/CD pipeline setup |  |  |  |