**Wipro Java Selenium-Batch 10, Team-06**

**Test Strategy**

Demo Web Shop

**Revision History**

| Date | Version | Author | Description |
| --- | --- | --- | --- |
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# Scope

### 1.1.1 In Scope

The following features will be covered in testing:

* Full customer journey:  
   **Registration → Login → Search → Product Details → Add to Cart → Checkout → Order Confirmation**
* Search functionality, including edge cases (e.g., invalid terms, special characters)
* Shopping cart operations: **Add**, **update quantity**, **remove items**
* Payment & shipping options (e.g., credit card, purchase order)
* UI validation: Input fields, error messages, visibility of UI elements
* Cross-browser and basic mobile UI compatibility check.

**1.1.2 Out of Scope**

The following areas will **not** be covered during this test cycle:

* Third-party integrations, like marketing emails or external payment gateway performance testing
* Performance/load testing at scale
* Accessibility testing

# Test Approach

This is the comprehensive test approach for the Demo Web Shop application (https://demowebshop.tricentis.com). It covers different testing types, methods, and activities to ensure complete validation of the website's functionality, performance, security, and usability.

· **Functional Testing**

The focus will be on verifying user-centric features such as user registration, login/logout, browsing product listings, filter and search functionality, add-to-cart, checkout workflows, order placement, newsletter subscription, and product review mechanisms. Each flow will include positive, negative, boundary, and error-path scenarios.

· **Automation Strategy**

We will prioritize automation of high-risk, frequently used user journeys—login, search, add-to-cart, checkout, and order flow—within a scalable framework such as Page Object Model. Automation will be integrated into CI pipelines.

· **Regression Testing**

A comprehensive regression suite will be executed toward the end of each sprint. Key workflows are retested to ensure no features are broken due to new changes.

· **Performance Testing**

Load, stress, spike, and endurance testing will be conducted. Responsiveness of key pages will be validated, aiming for optimal performance under various traffic conditions.

· **Security Testing**

Testing will cover vulnerabilities like SQL injection, XSS, CSRF, broken authentication, and session hijacking. SSL configurations and secure cookie practices will also be validated.

· **Usability & Exploratory Testing**

Exploratory testing will be conducted to uncover usability issues. This includes layout consistency, checkout flow efficiency, and mobile responsiveness.

· **Compatibility & Accessibility**

Testing will verify site behavior across major browsers and devices. Accessibility testing will ensure keyboard navigation, screen reader support, and WCAG compliance.

· **Integration & Third-Party Services**

Testing will cover communication with email services, CAPTCHA, and newsletter systems. Mock services will be used where real integrations are unavailable.

· **Agile-specific Adaptations**

In Agile, QA is involved from story grooming to sprint closure. Test cases are created from acceptance criteria, and automated/manual tests are executed during each sprint cycle with continuous feedback.

**Summary Table of Test Approach**

| Area | Objective |
| --- | --- |
| Functional Testing | Validate all user journeys and functional paths |
| Automation & Regression | Automate core flows; ensure regressions are caught in CI |
| Performance Testing | Simulate peak, spikes, endurance under load for key pages |
| Security Testing | Identify and resolve vulnerabilities (XSS, injection, session risks) |
| Usability & Exploratory Testing | Identify UI and UX issues not captured in scripts |
| Compatibility & Accessibility | Ensure consistent UX across browsers, devices, and accessibility support |
| Integration Testing | Confirm backend flows and dependencies (email, captcha, newsletter services) |

# Test Environment

A **test environment** is a setup of software, hardware, and tools used to run tests and simulate real-world conditions.

**Operating Systems:**Testing will be conducted on multiple OS platforms, including Windows 10/11 and macOS, to ensure cross-platform compatibility.

**Browsers:**The application will be tested on the latest versions of Chrome, Firefox, Edge, and Safari to validate performance across various browser engines.

**Devices:**Tests will be run on desktop and laptop systems only. Since the web app is built for fixed screen sizes, responsive testing is not required.

**Test Tools:**Automation testing will be carried out using Selenium WebDriver. Postman will be used for API testing if applicable. Test execution and reporting will utilize TestNG or JUnit frameworks. Jira will be used for bug tracking and test management.

**Test Data:**Dummy user accounts, product listings, and cart/transaction data will be used during testing. All test data will be securely stored and backed up daily.

**Backup & Restore Strategy:**Daily database snapshots will be created. In the event of data loss or corruption, the system will be restored using pre-test cycle backups.

**Staging Environment:**Testing will be performed in a dedicated staging server that mirrors the production setup to avoid disrupting live systems.

#### Internet Speed

#### Testing will be conducted on connections ranging from 2 Mbps to 100 Mbps to simulate different user network conditions.

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# Testing Tools

Automation and Test management tools needed for test execution are identified based on the application architecture, testing scope, and team size. Both **open-source** and **commercial** tools are considered to achieve high coverage and efficiency. The number of supported users for each tool is evaluated to plan licenses and team access accordingly.

## 4.1 Test Management Tools

| **Tool** | **Type** | **Purpose** | **User Support** |
| --- | --- | --- | --- |
| Jira + Xray/TestRail | Commercial | Test case design, execution, defect tracking, and traceability | Up to 10 QA and dev team members via project access |

## 4.2 Automation Tools

| **Tool** | **Type** | **Purpose** | **User support** |
| --- | --- | --- | --- |
| Selenium WebDriver + TestNG | Open-source | UI automation for functional and regression testing | Used by 3–5 automation engineers |
| Cypress | Open-source | Frontend e2e automation testing for dynamic web elements | Used by 2 QA testers for rapid UI feedback |
| REST Assured | Open-source | API-level automated validation | Integrated with Selenium; used by 2–3 testers |
| Jenkins | Open-source | CI/CD pipeline for automation execution | Integrated for automated nightly runs by all QA |

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## 4.3 Performance Testing Tools

| **Tool** | **Type** | **Purpose** | **User support** |
| --- | --- | --- | --- |
| Apache JMeter | Open-source | Load and performance testing on endpoints like Checkout and Cart | Used by 2 performance engineers |
| Gatling (Optional) | Open-source | Scripting-based performance testing | Optional use based on test complexity |

## 4.4 Cross-Browser & Responsive Testing Tools

| **Tool** | **Type** | **Purpose** | **User support** |
| --- | --- | --- | --- |
| BrowserStack | Commercial | Real device and browser testing | License for 2 concurrent users planned |
| Chrome DevTools – Responsive Mode | Open-source | Ad-hoc responsive testing | Used by all frontend testers (no license required) |

## 4.5 API Testing Tools

| **Tool** | **Type** | **Purpose** | **User support** |
| --- | --- | --- | --- |
| Postman | Freemium/Open-source | Manual API testing and collection sharing | Used by 3 testers |
| Swagger UI (if exposed) | Open-source | Visualize and test REST APIs | Public access or team access if available |

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## 4.6 Security & Vulnerability Testing

| **Tool** | **Type** | **Purpose** | **User support** |
| --- | --- | --- | --- |
| OWASP ZAP | Open-source | Vulnerability scanning (XSS, SQLi, CSRF) | Used by 1 security tester for baseline scans |
| Burp Suite Community | Open-source | Manual security testing | Used by 1 tester as needed |

## 4.7 Test Data Management

| **Tool** | **Type** | **Purpose** | **User support** |
| --- | --- | --- | --- |
| Mockaroo | Open-source | Fake test data generation (names, emails, addresses) | Used by 2 testers |
| Excel/CSV + Selenium DataProvider | Open-source | Data-driven testing for login, checkout | Used by all automation testers |

## Tool Utilization Plan

* Open-source tools will be used wherever possible to reduce cost while maintaining testing coverage.
* Commercial tools like Jira (with Xray/TestRail) and BrowserStack will be licensed for key users (QA leads, automation testers).
* Total user capacity is balanced across tools to support ~6–8 QA engineers and 2–3 dev leads.
* Tools will be integrated with Jenkins for continuous automation runs and report generation

# Release Control

**5.1 Release & Version Structure**

Maintain structured versioning using test-management tool:

* **Releases**: Represent major delivery milestones with defined start/end dates, scope and release notes.
* **Builds**: Subsets or incremental development checkpoints within a Release.

**5.1.1 Timeline**

Release v1.0 (Core Webshop – July 1 to July 28)

├ Build 1.0.1 (Login & Registration)

├ Build 1.0.2 (Product Browse & Cart)

├ Build 1.0.3 (Wishlist)

Release v1.1 (Payment & Checkout –  July 29 to August 6 )

├ Build 1.1.0 (Payment Integration)

├ Build 1.1.1 (Order confirmation)

**5.2. Feature Requirements**

* **Capture Requirements**: Map each requirement, bug fix, or enhancement to a specific Release and Build within Test.
* **Version History**: For each version or build, maintain a changelog:
* New features
* Fixed bugs/issues
* Test impact (modified, added, skipped, deprecated)

**5.3. Test Planning & Execution Hierarchy**

Test Execution module, structure tests as follows:

1. **Release Container**
2. **Test Cycles**: e.g. “Cycle – Build 1.1.1 Regression”
3. **Test Suites**: Group by functionality or feature (e.g. “Checkout Flow Suite”)
4. **Test Runs**: Individual test cases executed by testers or automation

This allows tracking execution status per version/build and linking test runs to defects or requirements.

**5.4 Release Version & History**

| **Release** | **Build** | **Date** | **Description of Changes** | **Testing Focus** | **Status** |
| --- | --- | --- | --- | --- | --- |
| v1.0. | 1.0.1 | 2025-07-01 | Initial baseline deployment | Full regression test | Complete |
| v1.0 | 1.0.2 | 2025-07-20 | New feature: wishlist functionality | Functional + regression | In progress |
| v1.0 | 1.0.3 | 2025-08-28 | Small bug fix: login error | Targeted smoke testing | Pending |
| v1.1 | 1.1.0 | 2025-08-01 | Feature enhancements: search filters | Regression + UI testing | Planned |
| v1.1 | 1.1.1 | 2025-08-06 | Patch: checkout flow fix | End-to-end scenario test | Planned |

# Risk Analysis

* List all risks that you can estimate
* Environment Instability
  + Testing environment may not always mirror production or could experience downtime, resulting in failed or invalid tests.
* Regression Failures After Updates
  + Updates or new feature deployments may unintentionally break existing functionalities (e.g., cart, checkout).
* Integration Issues
  + Failures or issues when integrating with third-party services (e.g., payment gateways, email notifications).
* Limited Test Data
  + Lack of or outdated test data may impede proper validation, especially for rare or edge cases.
* Time Constraints in Sprints/Releases
  + Compressed timelines could lead to reduced coverage, rushed executions, or missed defects.
* Resource Availability
  + Key QA or development team members may be unavailable, impacting planning and execution.
* Browser and Device Compatibility
  + The site may behave inconsistently across different browsers or devices if not adequately tested.
* Give a clear plan to mitigate the risks also a contingency plan
* Continuous Requirement Review: Regular backlog grooming and close collaboration with the Product Owner or business user to clarify requirements and changes.
* Stable & Mirrored Environments: Automate environment setup and refresh to closely match production, and monitor uptime.
* Automated Regression Suite: Maintain and regularly run automated tests for key workflows (e.g., login, add-to-cart, checkout) to quickly detect breakages.
* Rich Test Data Management: Use tools/scripts to create and refresh real-world-like test data.
* Prioritized Coverage: Focus first on critical user journeys and high-risk features; expand coverage as time allows.
* Resource Planning: Ensure backup testers and cross-training; stagger vacations and plan ahead for key project phases.
* Compatibility Testing: Maintain a browser/device matrix and use tools like BrowserStack for cross-platform checks.
* Security and Performance: Include dedicated security checks (manual and automated) and run performance tests before major releases.

# Review and Approvals

**Review and Approval:**

All activities related to this release such as requirement analysis, test case creation, test execution, and defect resolution have been reviewed and approved by the respective stakeholders including the Business Team, Project Management, Development Team, and QA Team.

**Review Log:**

| **Review Date** | **Name** | **Role** | **Comments** | **Approved** |
| --- | --- | --- | --- | --- |
| [YY/MM/DD] | [Business Lead Name] | Business Team Lead | Validated product filters and UI alignment | Yes |
| [YY/MM/DD] | [Project Lead Name] | Project Manager Lead | Confirmed build scope and checkout enhancements. | Yes |
| [YY/MM/DD] | [Dev Lead Name] | Development Lead | Reviewed UI adjustments and backend fixes. | Yes |
| [YY/MM/DD] | [QA Lead Name] | QA Lead | Approved test case updates and regression scope. | Yes |

**Approval:**

Final Sign‑Off:

| Stakeholder Team | Name | Role | Signature / Initials | Approval Date |
| --- | --- | --- | --- | --- |
| Business Team | [Business Lead Name] | Business Analyst | —------------------ | YY/MM/DD |
| Project Management | [Project Lead Name] | Project Manager | —----------------- | YY/MM/DD |
| Development Team | [Dev Lead Name] | QA Lead | —------------------ | YY/MM/DD |
| QA Team | [QA Lead Name] | Dev Lead | —------------------- | YY/MM/DD |