Test Plan Document for Protocommerce Website

Introduction:

The Protocommerce website aims to provide users with a seamless experience in registering for the ProtoCommerse Forum, browsing and purchasing items from the Shop Page, and making secure payments. This test plan document outlines the testing strategy to ensure the functionality, reliability, and performance of the website, adhering to both functional and non-functional requirements.

Test Scope:

The testing will cover the Protocommerce Home Page, Shop Page, Checkout Page, and Payment Page. It will focus on user interactions, error handling, security, performance, and usability aspects of the website.

Test Environment:

The test environment plays a crucial role in ensuring the effectiveness and reliability of software testing activities. It encompasses a range of devices, operating systems, and tools that are essential for conducting both manual and automated testing processes. This outline will delve into the components of a comprehensive test environment for web automation and manual non-functional testing.

Components of the Test Environment:

1. **Devices:**
   - The primary device for testing will be a laptop to simulate the user experience on a typical computing device.
2. **Operating System:**
   - The test environment will support Windows 10 and Windows 11 operating systems to cover a broad user base.
3. **Manual Testing Tools:**
   - **MS Word:** Used for documenting test evidence and reports.
   - **Browsers:** Chrome, Firefox, and Edge will be utilized for manual testing to validate the compatibility and functionality of the web application.
4. **Automation Tools:**
   - **IDE:** PyCharm will serve as the integrated development environment for writing and executing automated test scripts.
   - **Language:** Python will be the programming language used for automation due to its simplicity and versatility.
   - **Packages:**
     - **Selenium:** The latest version of Selenium will be employed for web automation testing.
     - **PyTest:** A testing framework for easy test implementation and execution.
     - **Reports:** Tools for generating comprehensive test reports.
     - **Data Driven Testing:** Excel in conjunction with PyXL for data-driven testing.
     - **Allure:** A reporting tool for visualizing test execution results.
   - **Design Pattern:**
     - Utilization of Page Object Model and Hybrid Framework for efficient test script organization and maintenance.
   - **Supporting Browsers:**
     - Testing will be conducted on Chrome, Microsoft Edge, and Firefox to ensure cross-browser compatibility.

Additional Test Environment Components:

1. **Devices:**
   - In addition to laptops, testing will be extended to desktops, tablets, and mobile phones to assess the responsiveness of the web application across various form factors.
2. **Operating Systems:**

- The test environment will encompass macOS, iOS, and Android to cover a diverse range of platforms and ensure comprehensive testing coverage.

Test Strategy:

Levels:

Unit Testing:

Unit testing involves testing individual components or units of the software to ensure their correctness and functionality. In the context of Protocommerse, unit testing would focus on:

- **Form Fields:** Validate that form fields such as Name, Email, Password, and Checkout options function correctly. Ensure input validations, error handling, and data submission.
- **Buttons:** Test the functionality of buttons like "Register," "Login," "Add to Cart," and "Checkout" to ensure they perform the intended actions.
- **Navigation:** Verify navigation links and menus to ensure users can move between pages and sections seamlessly.

Integration Testing:

Integration testing is about testing the interaction and integration between different components and pages of the software. For Protocommerse, integration testing would focus on:

- **Interaction between Components:** Ensure that components like user registration, shopping cart, and payment gateway integrate seamlessly without data loss or functionality issues.
- **Page Navigation:** Test the transition between pages, ensuring that users can navigate between the Home Page, Shop Page, Checkout, and Payment pages without errors or interruptions.

System Testing:

System testing validates the end-to-end functionality and user flows of the entire system. In Protocommerse, system testing would involve:

- **End-to-End Functionality:** Test the complete user journey from registration to shopping and checkout, including user authentication, product selection, adding items to cart, and completing the purchase process.
- **User Flows:** Validate different user flows such as a new user registering, an existing user logging in, browsing products, adding items to the cart, and making a payment.

User Acceptance Testing (UAT):

User Acceptance Testing (UAT) involves actual users evaluating the website's usability and overall satisfaction. In Protocommerse, UAT would include:

- **Usability Testing:** Evaluate the website's ease of use, user interface design, and intuitiveness for users.
- **Functional Testing:** Verify that all functionalities work as expected from a user's perspective, including form submissions, shopping experience, and payment processing.
- **Overall Satisfaction:** Gather feedback from users regarding their experience, any issues encountered, and suggestions for improvement.

By conducting these testing levels in coherence with the requirements of Protocommerse, you ensure thorough validation of the application's functionality, usability, and overall user experience.

Phases

Certainly! Let's describe each type of testing based on the requirements provided for the Protocommerse project:

1. Exploratory Testing:

Exploratory testing involves simultaneous learning, test design, and execution. Testers explore the application without predefined test cases, focusing on understanding the system and identifying issues. In the context of Protocommerse, exploratory testing can involve:

- Exploring the Protocommerse Home Page to understand user registration and forum access.
- Investigating the Shop Page functionality, including adding items to the cart and viewing checkout options.
- Navigating through the Checkout and Payment pages to understand the payment process and validations.
- Testing various scenarios such as incomplete form submissions or unexpected inputs to uncover usability issues or edge cases.

2. Smoke Testing:

Smoke testing is a quick and shallow test to ensure that critical functionalities of the application work as expected after a build or deployment. In Protocommerse, smoke testing involves:

- Verifying that the Protocommerse Home Page loads without errors and displays the registration form.
- Checking basic functionalities like user registration, login, and navigation to the Shop Page.
- Ensuring that key components such as adding items to cart and proceeding to checkout are functional.
- Validating that the payment gateway integration is operational and redirects to the payment page.

3. Sanity Testing:

Sanity testing focuses on a specific area or functionality to ensure its stability after changes or fixes. In Protocommerse, sanity testing may include:

- Testing the user registration process with different types of valid inputs (e.g., unique email addresses, valid passwords).
- Verifying the functionality of the Shop Page, including adding multiple items to the cart and updating cart quantities.
- Checking the Checkout and Payment pages for any recent changes or updates, such as new validation rules or user interface changes.

4. End-to-End Testing:

End-to-end testing validates the entire flow of the application from start to finish, simulating real user scenarios. In Protocommerse, end-to-end testing would involve:

- Registering a new user account, logging in, and accessing the forum section.
- Browsing and adding items to the cart, proceeding through the checkout process, and making a payment (simulated in a test environment).
- Verifying that the order confirmation and receipt are generated correctly after successful payment.
- Testing the complete user journey from registration to purchasing a product to ensure a seamless experience.

5. Regression Testing:

Regression testing ensures that recent changes or updates to the application do not adversely affect existing functionalities. In Protocommerse, regression testing includes:

- Re-testing previously verified functionalities (e.g., user registration, shopping cart) after new feature implementations.
- Verifying that fixes for reported defects or issues do not introduce new problems.
- Testing the entire application or critical workflows to ensure overall system stability.
- Conducting regression tests periodically, especially before major releases or updates, to catch any regressions early.

By incorporating these testing types based on the Protocommerse requirements, you can ensure thorough validation and quality assurance across different aspects and stages of the project.

Non-Functional Testing:

Certainly! Let's describe each type of testing in coherence with the requirements of the Protocommerse project:

Security Testing:

Security testing focuses on ensuring the security of the Protocommerse website. This includes:

- **Data Privacy Measures:** Validate that sensitive user information such as personal details and payment data is securely handled and protected from unauthorized access or data breaches.
- **Secure Payment Processing:** Test the payment gateway integration to ensure that payment transactions are secure, encrypted, and comply with industry standards for online payment security.
- **User Authentication and Session Management:** Verify the effectiveness of user authentication mechanisms to prevent unauthorized access. Test session management to ensure sessions are secure and users are logged out after a period of inactivity.

Performance Testing:

Performance testing evaluates the speed, responsiveness, and scalability of the Protocommerse website. This includes:

- **Website Speed and Response Time:** Measure the loading speed of web pages, including Home Page, Shop Page, and Checkout pages. Test response times for user interactions such as adding items to cart and completing payments.
- **Optimization for Smooth User Experience:** Check for optimization techniques such as caching, minification, and content delivery network (CDN) usage to ensure a fast and seamless user experience, especially during peak traffic periods.

Usability Testing:

Usability testing focuses on assessing the user interface and overall user experience of the Protocommerse website. This includes:

- **Intuitive Navigation:** Evaluate the website's navigation menus, links, and buttons to ensure users can easily find information, and products, and navigate between pages.
- **Cross-Device Interaction:** Confirm that the website is responsive and provides a consistent user experience across various devices such as desktops, laptops, tablets, and smartphones.

Reliability Testing:

Reliability testing ensures the reliability, availability, and integrity of the Protocommerse system. This includes:

- **System Availability:** Test the system's uptime and availability to ensure it can handle concurrent user sessions and traffic loads without downtime or disruptions.
- **Data Integrity:** Validate that user data, order information, and payment details are accurately processed, stored securely, and not compromised.
- **Error Handling Mechanisms:** Test error handling functionalities to validate how the system responds to unexpected inputs, invalid data, and system errors. Ensure that error messages are informative and help users resolve issues effectively.

By conducting these types of testing in coherence with the requirements of Protocommerse, you can ensure a secure, high-performing, user-friendly, and reliable website for your users.

Test Schedule:

Certainly! Below are the surface-level schedule for each phase, to describe the activities and phases of each activity, refer to the below document

Phase	Start Date	End Date
Requirement	[Insert]	[Insert]
Planning	[Insert]	[Insert]
Design	[Insert]	[Insert]
Environment Setup	[Insert]	[Insert]
Execution	[Insert]	[Insert]
Closure	[Insert]	[Insert]

High-level Test Schedule: 🟩 Test Schedule.xlsx

Adjust the start date, end date, and specific activities based on your project timeline and requirements. This table provides a structured approach to planning and scheduling testing activities from the Requirement phase to test closure.

Conclusion:

This test plan document outlines a comprehensive strategy to ensure the functionality, reliability, and performance of the Protocommerce website. By conducting rigorous testing, including unit testing, integration testing, system testing, and user acceptance testing, we aim to deliver a high-quality website that meets the specified requirements and provides an excellent user experience.

Note: This test plan document serves as a guideline for the testing process and can be adapted as per specific requirements during the testing phase.