Addis Ababa University

Collage of Natural and Computational Science

Department of Computer Science

SQA Test Plan and Report for Online Shopping System

Software Quality and Testing

Submitted To: Dr. Ayalew B.

Submitted By:

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1. Test Plan

1.1. Introduction

This test plan outlines the scope, approach, resources, and schedule of testing activities for the Egila Online Shopping System. The Egila Online Shopping System is a web-based e-commerce platform that allows customers to browse, select, and purchase various products.

The need for this test plan stems from the requirement to ensure the Egila Online Shopping System meets all functional and non-functional requirements before its release to customers. This plan references the project authorization, project plan, quality assurance plan, and configuration management plan for the Egila Online Shopping System development.

The test plan provides the framework for all lower-level test plans and test documentation that will be created for the various components and modules of the Egila Online Shopping System.

1.2. Test Items

The test items for the Egila Online Shopping System include:

- Egila Online Shopping System web application (version 1.0)
- Product catalog management system (version 1.0)
- Customer account management system (version 1.0)
- Shopping cart and checkout process (version 1.0)
- Order management and fulfillment system (version 1.0)
- The test items will be delivered via a secure web server for testing purposes.
- References to the requirements specification, design specification, user guide, operations guide, and installation guide for the Egila Online Shopping System are provided in the respective documentation.
- There are no known bug reports related to the test items at this time.

1.3. Features to be Tested

All core features of the Egila Online Shopping System will be tested, including:

- User registration and authentication
- Product browsing and search

- Shopping cart management

- Checkout

- Order tracking and fulfillment

- Reporting and analytics

1.4. Features Not to be Tested

- The mobile application version of the Egila Online Shopping System will not be tested as part of this plan, as it is planned for a future release.

- Integration with third-party payment gateways and shipping providers will not be tested as part of this plan, as those integrations are not planned for the initial release.

1.5. Approach

The overall approach to testing the Egila Online Shopping System will be a combination of black-box and white-box testing techniques, including unit tests, integration tests, and system tests. For the core features of the application, a minimum of 85% code coverage will be achieved through unit and integration tests. System tests will be performed to validate end-to-end functionality, usability, performance, and security requirements.

User acceptance tests will be conducted with a representative sample of end-users to ensure the software meets their expectations. Test cases will be designed to trace back to the requirements specification to ensure comprehensive test coverage.

Testing will be constrained by the availability of test environments, test data, and the project timeline.

1.6. Item Pass/Fail Criteria

A test item will be considered to have passed testing if it meets all the acceptance criteria defined in the test case specifications. Acceptance criteria will be based on the functional and non-functional requirements for the Egila Online Shopping System.

Defects identified during testing will be categorized by severity, and any defects classified as "blocker" or "critical" must be resolved before the test item can be considered to have passed.

1.7. Suspension Criteria and Resumption Requirements

Testing will be suspended if the number of open, unresolved "blocker" or "critical" defects

exceeds three, or if the test environment becomes unavailable for an extended period. When testing is resumed, any testing activities that were interrupted or invalidated by the suspension will need to be repeated.

1.8. Test Deliverables

The following test deliverables will be produced as part of this test plan:

- Test design specifications
- Test case specifications
- Test procedure specifications
- Test summary reports

1.9. Testing Tasks

Key testing tasks include:

- Test planning and design
- Test environment setup and configuration
- Test data preparation
- Test execution and defect tracking
- Test reporting and analysis

1.10. Environmental Needs

The test environment for the Egila Online Shopping System will consist of:

- Web application server running the latest stable version of the software
- Database server with test data
- Client machines with supported web browsers
- Necessary software tools for test automation, performance testing, and security testing

1.11. Responsibilities

- The Quality Assurance team will be responsible for managing, designing, preparing, executing, and reporting on the testing activities.
- The Development team will be responsible for providing the test items and ensuring the test environment is set up and maintained.

- The Project Management team will be responsible for coordinating the testing activities and ensuring the necessary resources are available.

1.12. Staffing and Training Needs

The testing team will consist of:

- 1 senior QA engineers
- 3 junior QA engineers
- 1 test automation engineer
- 1 security testing specialist

Training will be provided to the QA team on the Egila Online Shopping System, test automation tools, security testing techniques, and any other necessary skills

1.13. Schedule

Test Milestones	Date
Test Plan Approval	10-05-2024
Test Design Completion	23-05-2024
Test Execution Start:	24-05-2024
Test Execution Complete	29-05-2024
Test Summary Report	04-06-2024

1.14. Risks and Contingencies

- High-risk assumptions:
  - Availability of the test environment and necessary resources
  - Timely resolution of critical defects by the development team
  - Potential security vulnerabilities in the web application
- Contingency plans:
  - Identify alternative test environments and resources
  - Establish escalation processes for critical defects
  - Allocate additional time in the schedule for testing and defect resolution
  - Conduct regular security assessments and implement mitigation measures

1.15. Approvals

This test plan has been reviewed and approved by:

- Akebert Tesfahunegn, Quality Assurance Manager
- Bethelem Melese, Project Manager
- Tsedeniya Alebel, Development Manager
- Getahun Zeberga, Information Security Manager

2. Test Description

The test description or the test case, plays a crucial role in the overall software testing process for an online shopping system. In the testing description, it has to be included Test case Id, Test Case Name, Test Objective, Test Steps, Test data, Test environment, Test procedure, Expected results.

Here are the test descriptions:

1. **Test Case ID:** TC-001

   Test Case Name: Registration

   Test Objective: To verify that a user can successfully register to the system

   Test Steps:

   - Open the Online Shopping system
   - Navigate to the login page
   - Click on the "Don't have an account? Sign Up" button
   - Verify all the necessary input filed are required or not
   - Verify the use is successfully registered to the system

   Test data:

   - First Name: Bethelem
   - Middle Name: Melese
   - Last Name: Bekele

- Email: melesebety2673@gmail.com

- Phone: 0934343434

- Address: Addis Ababa

- Sub City: Ayer Tena, Addis Ababa

- Town (optional): Empty

- Username: Admin@123

- Password: Admin@123

Test environment:

- Operating System: Windows 10

- Browser: Google Chrome (latest version)

- Internet Connection: Stable broadband connection

Test procedure:

- Launch the web browser and navigate to the online shopping system.

- Navigate to the login page.

- Click on the "Don't have an account? Sign Up" button.

- Ensure that all the necessary inputs filed are required and inputs values are valid.

- Verify that the user is registered successfully to the system.

- Navigate to Login page and ensure that the user can login based on inserted username and password.

Expected results:

- The user has to be successfully registered or add to the system.

- The use has to be login by the inserted username and password.

- If the email, phone or username already exist, the system has to be display error message.

2. **Test Case ID**: TC-002

   Test Case Name: Login

   Test Objective: To Verify if the user can login to the system by using existing username and password.

   Test Steps:

   - Open the Online shopping system
   - Navigate to login page
   - Insert the username and password
   - Click on the "Sign In" button
   - Verify if the user can login successfully or not by existed username and password

   Test Date:

   - Username: Admin@123
   - Password: Admin@123

   Test environment:

   - Operating System: Windows 10
   - Browser: Google Chrome (latest version)
   - Internet Connection: Stable broadband connection

   Test procedure:

   - Launch the web browser and navigate to the online shopping system.
   - Navigate to the login page.
   - Insert the username and password data.

- Click on the "Sign Up" button.

- Display the successful message.

- Display the dashboard page based on the user role.

Expected Result:

- The user has to be login if the username and password exist and display the successful message.

- If the username and password is not correct or not exist on the system, the system has to display the error message.

3. **Test Case ID**: TC-003

   Test Case Name: Add Item

   Test Objective: To verify that an item can add to the online shopping system.

   Test Steps:

   - Open the online shopping system

   - Navigate to the login page

   - Insert the username and password

   - Click on "Sign Up" button

   - Display the Dashboard page

   - Navigate to the item menu or page

   - Click on the "Add Item" button

   - Display the Dialog of the Add Item Form

   - Insert the required values and image of item

   - Click "Send" button

   - Verify all the necessary inputs are inserted or required

- Verify the item is add to the online shopping system.

Test Date:

- Item Name: Wireless Headphones

- Item Description (optional): Empty

- Price: 1000

- Brand: Apple AirPods

- Quantity: 5

- Item Image: brad-headphone.jpg

Test environment:

- Operating System: Windows 10

- Browser: Google Chrome (latest version)

- Internet Connection: Stable broadband connection

Test Procedure:

- Launch the web browser and navigate to the online shopping system.

- Navigate to the login page.

- Insert the username and password.

- Click on "Sign Up" button.

- Display the successful message.

- Display the Dashboard page.

- Navigate to the item menu or page.

- Display the item table.

- Click on the "Add Item" button.

- Display the Dialog of the Add Item Form

- Insert the item name, item description, brand, quantity and image of item

- Click "Send" button

- Verify all the necessary inputs are inserted or required

- Verify the item is add to the online shopping system.

- Display the successful message.

Expected Result:

- The system has to be displayed the successful message, if all the necessary input values are inserted correctly.

- The system has to be displayed the existence error message, if the item name already existed on the online shopping system

4. **Test Case** ID: TC-004

Test Case Name: Add Item to Cart

Test Objective: Verify that a user can successfully add an item to their shopping cart.

Test Steps:

- Open the online shopping system.

- Navigate to Category page

- Verify that the item details are displayed correctly.

- Click the "Add to Cart" button.

- Verify that the item has been added to the shopping cart.

- Verify that the cart total and item count have been updated correctly.

Test Data:

- Item Name: "Wireless Headphones"

Test Environment:

- Operating System: Windows 10

- Browser: Google Chrome (latest version)

- Internet Connection: Stable broadband connection

Test Procedure:

- Launch the web browser and navigate to the online shopping system.

- Navigate to Category page that display all items, category and search box

- In the search box, enter the keyword "Wireless Headphones" and press the search button.

- Verify that the search results display the "Wireless Headphones" item in the category page.

- Click the "Add to Cart" button.

- Verify that the shopping cart icon in the header displays the updated item count.

- Navigate to the shopping cart page and ensure that the "Wireless Headphones" item is listed with the correct price and quantity.

- Verify that the cart total reflects the added item.

Expected Results:

- The product should be successfully added to the shopping cart.

- The cart total and item count should be updated correctly.

- The product details should be displayed accurately on the product details page.

5. **Test Case ID**: TC-005

Test Case Name: Checkout Process

Test Objective: Verify that a user can successfully complete the checkout process for an online purchase.

Test Steps:

- Open the online shopping system.

- Search for and add multiple items to the shopping cart.

- Proceed to the checkout page.

- Verify that the cart summary is displayed correctly.

- Enter valid personal and billing information.

- Select a payment method and provide the necessary payment details.

- Review the order summary and confirm the purchase.

- Verify that the order confirmation page is displayed.

- Verify that the order details are correctly reflected in the user's order history.

Test Data:

- Items: Wireless Headphones (1000), Samsung Phone (20000)

- Shipping Address: Ayer Tena, Addis Ababa

- Billing Address: Same as shipping address

- Payment Method: CBE birr

Test Environment:

- Operating System: Windows 10

- Browser: Google Chrome (latest version)

- Internet Connection: Stable broadband connection

Test Procedure:

- Launch the web browser and navigate to the online shopping website.

- In the search box, enter keywords for the desired items and add them to the shopping cart.

- Click the "Proceed to Checkout" button.

- Verify that the cart summary displays the correct items, quantities, and total amount.

- Enter the shipping and billing address information.

- Select the payment method and provide the valid payment details.

- Review the order summary and click the "Place Order" button.

- Verify that the order confirmation page is displayed with the order details.

- Log in to the user account and navigate to the order page or menu section to ensure the order is listed correctly.

Expected Results:

- The checkout process should be completed successfully without any errors.

- The cart summary, order summary, and order history should correctly reflect the purchased items and the total amount.

- The payment should be processed successfully, and the order confirmation page should be displayed.

6. **Test Case ID**: TC-003

Test Case Name: Order Placement

Test Objective: Verify that a user can successfully place an order for multiple products in the online shopping system.

Test Steps:

- Open the online shopping system.

- Search for and add multiple products to the shopping cart.

- Proceed to the checkout page.

- Enter valid shipping and billing information.

- Select a payment method and provide the necessary payment details.

- Review the order summary and confirm the purchase.

- Verify that the order confirmation page is displayed.

- Verify that the order details are correctly reflected in the user's order history.

- Verify that the order is correctly processed in the backend system.

Test Data:

- Products:

  - Apple iPad Pro 12.9" (100000)

  - Bose Noise Cancelling Wireless Headphones (12000)

- Shipping Address: Ayer Tena, Addis Ababa

- Billing Address: Same as shipping address

- Payment Method: CBE birr

Test Environment:

- Operating System: Windows 10

- Browser: Google Chrome (latest version)

- Internet Connection: Stable broadband connection

Test Procedure:

- Launch the web browser and navigate to the online shopping website.

- In the search bar, enter keywords for the desired products and add them to the shopping cart.

- Click the "Proceed to Checkout" button.

- Enter the shipping and billing address information.

- Select the "Visa" payment method and provide the valid payment details.

- Review the order summary and click the "Place Order" button.

- Verify that the order confirmation page is displayed with the order details.

- Log in to the user account and navigate to the order history section to ensure the order is listed correctly.

- Verify the order details in the backend order management system.

Expected Results:

- The order should be placed successfully without any errors.

- The cart summary, order summary, and order history should accurately reflect the purchased items and the total amount.

- The payment should be processed successfully, and the order confirmation page should be displayed.

- The user should receive a confirmation message for the placed order.

- The order details should be correctly reflected in the backend system.

3. Test Design

The test design process involves specific considerations to ensure thorough testing and validation of an online shopping system. Here's how each aspect of test design applies to an online shopping system:

3.1. Identifying Test Scenarios:

➢ **Based on System Requirements**: Test scenarios should be derived from the functional and non-functional requirements of the online shopping system. For example,

scenarios could include user registration, product search, adding items to the cart, payment processing, and order tracking.

> ➤ **User Stories or Use Cases**: Test scenarios can also be based on user stories or use cases that outline the interactions and workflows within the online shopping platform.

- **User Registration and Authentication:**

  1. New user registration.

  2. User login with valid credentials.

  3. User login with invalid credentials.

  4. Password reset functionality.

  5. User logout.

- **Product Search and Filtering:**

  1. Searching for a product by name.

  2. Filtering products by price range.

  3. Filtering products by ratings.

  4. Sorting products by different criteria.

- **Product Details:**

  1. Viewing product details page.

  2. Checking product availability.

  3. Viewing product reviews and ratings.

- **Shopping Cart:**

  1. Adding a product to the cart.

  2. Removing a product from the cart.

3. Updating product quantities in the cart.

4. Viewing the shopping cart summary.

- **Checkout Process:**

1. Entering shipping information.

2. Entering billing information.

3. Selecting a payment method.

4. Applying discount codes.

5. Completing the purchase.

- **Order Management:**

1. Viewing order history.

2. Tracking order status.

3. Cancelling an order.

4. Requesting a return or refund.

- **User Profile Management:**

1. Updating user information.

2. Managing saved addresses.

3. Changing the password.

3.2. Determining Testing Techniques:

➢ **Black-box Testing**: This technique can be used to validate the external behavior of the online shopping system without knowledge of its internal structure. Testers can focus on functionalities such as user interface interactions, search functionality, checkout process, and payment gateways.

- **White-box Testing**: White-box testing can be applied to assess the internal logic and code structure of critical components like the payment processing module or inventory management system.

- **Scenario-based Testing**: Creating test scenarios that mimic real-world user interactions, such as placing an order with multiple items, applying discounts, or handling returns, can help validate the system's functionality under various conditions.

3.3. Designing Test Cases:

- **Functional Testing**: Test cases should cover essential functions like user registration, login, and item browsing, adding items to the cart, process of checkout, and completing a purchase.

- **Non-functional Testing**: Test cases should also address non-functional aspects such as performance (load testing for handling multiple users), security

4. Test Report

4.1. Executive Summary

The testing for the Online Shopping System (OSS) was conducted from May10st to Jun 5th, 2024, following the defined test plan. The testing covered various aspects of the system, including functional, usability, performance, and security testing, as well as integration and regression testing.

with the majority of the test cases passing and the critical issues being resolved. The key findings and highlights of the testing are as follows:

- **Functional Testing:** 90% of the functional test cases passed, with minor defects related to the product search and filtering functionality.

- **Performance Testing:** The system was able to handle the expected user load and traffic, with page load times and server response times within the acceptable thresholds.

- **Security Testing:** The security testing identified a few high-risk vulnerabilities, which have been addressed, and the system needs to meet the security compliance requirements.

- **Integration Testing:** The integration with the payment gateway, shipping providers, and inventory management system needs to be improved.

- **Regression Testing:** The automated regression test suite executed successfully, with no regressions detected after the latest code changes.

Based on the test results, the OSS is recommended for production deployment, with a few minor issues to be addressed in the upcoming maintenance releases.

4.2. Test Summary

The key objectives of the testing for the OSS were to validate the core functionalities, assess the usability and user experience, ensure the system can handle the expected user load and traffic, verify the security of the system, validate the integration with third-party services, and confirm the existing functionalities continue to work as expected after code changes or new feature additions.

The testing was conducted using an Agile methodology and used both black-box and white box testing, with the QA team actively participating in sprint planning, code reviews, and daily stand-ups. A significant portion of the test cases were automated to ensure consistent and reliable test execution, especially for regression testing.

4.3. Defect Summary

The testing identified the following defects:

- **Functional Defects:**

    - 2 defects related to the product search and filtering functionality

    - 1 blocked test cases due to dependencies on other system components

- **Performance Defects:** No performance-related defects were found, as the system met the defined thresholds.

- **Security Defects:** 3 low-risk security vulnerabilities were identified and addressed.

4.4. Test Coverage

The testing covered the following areas:

- **Functional Testing:** 6 test cases, with 90% passing.

- **Performance Testing:** Page load times, server response times, and system handling of expected user load.

- **Security Testing:** Identification and resolution of security vulnerabilities.

- **Integration Testing:** integration with payment gateway, shipping providers, and inventory management system need addressed.

- **Regression Testing:** Automated regression test suite executed successfully.

- The testing approach and coverage were aligned with the defined test objectives.

4.5. Recommendations

Based on the test results, the QA team recommends the following:

- Deploy the Online Shopping System (OSS) to the production environment after improving.

- Continue monitoring the system's performance and user feedback in the production environment.

- Incorporate the user feedback and identified improvements into the upcoming maintenance releases.

- Maintain the test automation suite and regularly execute regression testing to ensure the system's stability.

4.6. Conclusion

The testing conducted for the Online Shopping System (OSS) has demonstrated that the majority of the test cases passed, and the identified issues has to be resolved after that the system can be ready for deployment. The system meets the specified functional, usability, performance, and need to be address the security requirements, and the integration with third-party services.

The testing results indicate that the OSS is a reliable and qualified e-commerce platform after the improvement that will be provide a seamless shopping experience for the customers.