

Test Plan for Multi-Currency Payment System

Project Name: Multi-Currency Payment System Testing

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1. Introduction

This test plan is designed to evaluate the functionality, accuracy, and performance of a multi-currency payment system. The goal is to ensure that users can conduct transactions using various currencies—Naira (NGN), US Dollar (USD), British Pound (GBP), and Euro (EUR)—with accurate conversion rates, smooth processing, and clear display.

2. Objective

The main objectives of this test plan are:

- To verify the system's ability to handle multiple currencies.
- To ensure that currency conversion rates are applied accurately.
- To validate transaction consistency, formatting, and appropriate error handling.
- To check compatibility and successful integration with payment gateways for all supported currencies.

3. Scope of Testing

This testing will cover:

- Currency selection and conversion accuracy.
- Transaction processing for each supported currency.
- Display and formatting of currency values.
- Logging, reporting, and reconciliation of transactions in multi-currency formats.

4. Supported Currencies

The system will support the following currencies:

- **Naira (NGN)**
- **US Dollar (USD)**
- **British Pound (GBP)**
- **Euro (EUR)**

5. Testing Types

1. Functional Testing

- Verifying individual features related to currency handling, selection, conversion, and transaction processing.

2. Integration Testing

- Testing the integration of the multi-currency system with external payment gateways and currency exchange services.

3. Usability Testing

- Ensuring that currency options and values are displayed in an understandable format for the end-user.

4. Performance Testing

- Testing the system's response and stability under normal and high-load scenarios.

5. Security Testing

- Verifying data encryption, secure transaction processing, and handling of sensitive information, especially related to currency handling and payment.

6. Testing Tools

- **API Testing:** K6, JMeter
- **Performance Testing:** Blazemeter, JMeter
- **Manual and Automation Testing:** Cypress, Postman for API validation
- **Database Testing:** SQL for validating transaction logs and database entries

7. Testing Scenarios and Test Cases

7.1. Currency Selection and Conversion

- **Test Case 1:** Verify that users can select Naira, USD, GBP, or EUR as their preferred payment currency.
 - **Expected Result:** Selected currency displays correctly and carries through to the checkout page.
- **Test Case 2:** Ensure that the exchange rate is applied based on the latest rate at the time of transaction.
 - **Expected Result:** Converted amounts should match real-time exchange rates.
- **Test Case 3:** Validate currency symbols and formats for each selected currency.
 - **Expected Result:** Correct symbols and decimal formatting (e.g., USD, GBP, EUR with two decimals; NGN without decimals).

7.2. Payment Processing

- **Test Case 4:** Process a transaction in Naira.
 - **Expected Result:** Transaction completes successfully, and the correct amount is deducted in Naira.

- **Test Case 5:** Process a transaction in USD.
 - **Expected Result:** Transaction completes successfully, with correct USD amount debited and logged.
- **Test Case 6:** Process a transaction in GBP.
 - **Expected Result:** Successful transaction, with correct GBP amount.
- **Test Case 7:** Process a transaction in EUR.
 - **Expected Result:** Transaction completes with the correct EUR amount reflected.
- **Test Case 8:** Verify multi-currency payment gateway integration by conducting transactions with each currency.
 - **Expected Result:** Payment gateway successfully processes each currency without error.

7.3. Currency Conversion Accuracy

- **Test Case 9:** Convert between currencies (e.g., NGN to USD, USD to GBP) based on the exchange rate.
 - **Expected Result:** Converted amounts are accurate based on the rate.

7.4. Error Handling

- **Test Case 10:** Attempt a transaction using an unsupported currency.
 - **Expected Result:** Display an error message that the currency is unsupported.
- **Test Case 11:** Validate behavior if an exchange rate is unavailable.
 - **Expected Result:** System provides an error or alternative rate message.

7.5. Reporting and Transaction Logs

- **Test Case 12:** Ensure transaction logs reflect accurate currency values and conversion rates.
 - **Expected Result:** Transaction logs show correct currency type and amount.
- **Test Case 13:** Validate monthly and annual financial reports to ensure currency conversions and totals are accurate.
 - **Expected Result:** Reports show precise conversions and summaries across currencies.

7.6. User Interface and Usability

- **Test Case 14:** Verify that currency options and totals are clearly displayed to users throughout the checkout process.
 - **Expected Result:** Users see consistent currency displays from selection through confirmation.

8. Test Data

- **Currency Rates:** Set specific test rates to ensure consistency during tests.

- **Transaction Amounts:** Use a variety of amounts for each currency to test small, standard, and high-value transactions.
- **User Accounts:** Test accounts set up with default currency preferences for each supported currency.

9. Entry and Exit Criteria

Entry Criteria:

- Development of the multi-currency payment feature is complete.
- Test environment is set up with access to all necessary payment gateways and currency conversion services.
- Necessary tools and test data are available.

Exit Criteria:

- All test cases have been executed with at least 95% pass rate.
- All critical and major bugs are fixed and retested.
- Test reports are reviewed and accepted by stakeholders.

10. Risks and Mitigation

Risk	Mitigation
Exchange rate fluctuations affecting test consistency	Use static rates in test environment or mock API calls
Payment gateway downtime during testing	Schedule tests during uptime windows and have backup gateways
High dependency on real-time data for currency	Set up caching or mock data for repeatability

11. Deliverables

- Test Cases Document
- Execution Logs
- Defect Report
- Performance and Load Testing Reports
- Final Test Summary Report

12. Schedule

Activity	Timeline
Test Planning	1 week
Test Case Design	1 week
Test Environment Setup	1 week
Test Execution	2 week
Bug Fixing and Retesting	1 week
Test Closure	1 week

13. Approvals

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- **Approved by:** Project Manager -