Software Requirements Specification for Non-Deposit-Taking Microfinance Lending Platform in Ghana

1. Introduction
This Software Requirements Specification (SRS) outlines the functional and non-functional requirements for a modern lending platform designed for non-deposit-taking microfinance institutions (Tier 3 MFIs) in Ghana. The platform automates lending processes, ensures compliance with regulations from the Bank of Ghana (BoG) and other authorities, and provides data-driven insights. Key regulations include the Banks and Specialised Deposit-Taking Institutions Act, 2016 (Act 930), Borrowers and Lenders Act, 2020 (Act 1052), Anti-Money Laundering Act, 2020 (Act 1044), and Ghana Investment Promotion Centre Act, 2013 (Act 865).

1.1 Purpose
The purpose of this SRS is to define the requirements for a web-based lending platform that:
- Automates loan origination, management, and repayment tracking.
- Ensures compliance with Ghanaian microfinance regulations for Tier 3 MFIs.
- Protects borrower data and promotes fair lending practices.
- Provides analytics for operational and regulatory insights.

1.2 Scope
The platform will:
- Support loan application, approval, and disbursement processes.
- Automate compliance reporting for BoG and GIPC (if applicable).
- Implement anti-money laundering (AML) and customer protection measures.
- Provide a user-friendly interface for borrowers and administrators.
- Exclude deposit-taking functionalities, as it targets Tier 3 MFIs.

2. Functional Requirements

2.1 User Management
- **FR1.1**: The system shall allow administrators to register the MFI as a private limited liability company, storing details such as Certificate of Incorporation, Tax Clearance Certificate, and registered place of business for BoG licensing compliance (Act 930).
- **FR1.2**: The system shall support registration of foreign shareholders (if applicable), capturing details for GIPC compliance, including proof of USD 500,000 minimum investment (Act 865).
- **FR1.3**: The system shall provide role-based access control (RBAC) with at least two roles: Administrator (for MFI staff managing loans and compliance) and Borrower (for loan applications and repayments).
- **FR1.4**: The system shall require administrators to verify their identity using Ghanaian ID (e.g., Ghana Card) or passport details to ensure authorized access.

2.2 Loan Management
- **FR2.1**: The system shall provide a loan application module with BoG-approved forms, capturing borrower details (e.g., name, ID, contact, income), loan amount, purpose, and repayment terms (Act 1052).
- **FR2.2**: The system shall display transparent loan terms to borrowers, including interest rates, repayment schedules, and total financial costs, before loan acceptance (Act 1052, non-prudential guidelines).
- **FR2.3**: The system shall allow administrators to register security interests (e.g., collateral details) and integrate with an external registry API (if available) for Act 1052 compliance.
- **FR2.4**: The system shall support automated credit assessment using alternative data (e.g., mobile money transaction history, if permitted), ensuring non-discriminatory algorithms.
- **FR2.5**: The system shall track loan disbursements and repayments, generating schedules and sending reminders via email or SMS (if integrated with compliant APIs).
- **FR2.6**: The system shall flag loans at risk of default based on repayment history and BoG provisioning guidelines.

2.3 Compliance and Reporting

- **FR3.1**: The system shall track and display the MFI's paid-up capital, ensuring it meets the GHS 2,000,000 minimum requirement, with alerts for non-compliance (Act 930).
- **FR3.2**: The system shall generate compliance reports for BoG, including loan portfolio summaries, capital adequacy ratios, and suspicious transaction reports, in BoG-prescribed formats.
- **FR3.3**: The system shall implement AML checks, flagging transactions based on predefined risk criteria (e.g., large cash loans, unusual repayment patterns) for reporting to the Financial Intelligence Centre (Act 1044).
- **FR3.4**: The system shall log all compliance-related actions (e.g., report submissions, capital updates) for BoG audits.
- **FR3.5**: The system shall support GIPC reporting for foreign-owned MFIs, capturing shareholder and investment details (Act 865).

2.4 Borrower Education and Support
- **FR4.1**: The system shall provide a borrower portal with educational content on loan terms, financial literacy, and responsible borrowing, accessible in English and local languages (e.g., Twi, Ewe).
- **FR4.2**: The system shall allow borrowers to view their loan status, repayment history, and outstanding balance in real-time.
- **FR4.3**: The system shall include a feedback mechanism for borrowers to report issues or request loan term clarifications, ensuring compliance with non-prudential guidelines.

2.5 Debt Collection
- **FR5.1**: The system shall implement ethical debt collection workflows, allowing administrators to send polite repayment reminders and escalate overdue loans without aggressive tactics.
- **FR5.2**: The system shall log all debt collection actions for transparency and compliance with non-prudential guidelines.

2.6 Data Analytics
- **FR6.1**: The system shall provide a dashboard for administrators to view key metrics, such as loan approval rates, default rates, and portfolio performance, to support data-driven insights.
- **FR6.2**: The system shall generate reports on borrower demographics and repayment trends, ensuring non-discriminatory data use.
- **FR6.3**: The system shall anonymize data for analytics to protect borrower privacy.

3. Non-Functional Requirements

3.1 Security
- **NFR1.1**: The system shall encrypt all borrower data (e.g., personal details, loan agreements) at rest and in transit using AES-256 and TLS 1.3 to comply with data privacy regulations.
- **NFR1.2**: The system shall implement multi-factor authentication (MFA) for administrator access to prevent unauthorized changes.
- **NFR1.3**: The system shall comply with AML requirements by integrating secure transaction monitoring and logging suspicious activities (Act 1044).
- **NFR1.4**: The system shall restrict data access to authorized personnel only, with audit trails for all data interactions.

3.2 Usability
- **NFR2.1**: The system shall provide a responsive, user-friendly interface using Tailwind CSS, accessible on desktop and mobile browsers.
- **NFR2.2**: The borrower portal shall support accessibility standards (e.g., WCAG 2.1) to accommodate users with disabilities.
- **NFR2.3**: The system shall display loan terms in clear, non-technical language, with translations for local languages.

3.3 Performance
- **NFR3.1**: The system shall handle up to 10,000 concurrent users with a response time of

under 2 seconds for loan application submissions.
- **NFR3.2**: The system shall generate compliance reports within 5 seconds for datasets up to 100,000 loans.

3.4 Scalability
- **NFR4.1**: The system shall scale to support increasing loan volumes and users without performance degradation, using a cloud-based architecture (e.g., AWS or Azure, if compliant).
- **NFR4.2**: The system shall support integration with external APIs (e.g., mobile money, credit bureaus) for future scalability, ensuring compliance with BoG regulations.

3.5 Reliability
- **NFR5.1**: The system shall achieve 99.9% uptime to ensure continuous access for borrowers and administrators.
- **NFR5.2**: The system shall back up data daily, with recovery mechanisms to restore operations within 4 hours of a failure.

3.6 Compliance
- **NFR6.1**: The system shall ensure all features align with BoG regulations, including Act 930, Act 1052, Act 1044, and non-prudential guidelines.
- **NFR6.2**: The system shall prevent over-indebtness by implementing credit limits based on borrower income and repayment capacity.
- **NFR6.3**: The system shall log all regulatory compliance actions for BoG audits, retaining records for at least 5 years.

4. Assumptions and Constraints
- **Assumption 1**: The platform is a single-page web application built using React, JSX, and Tailwind CSS, hosted via a CDN (e.g., cdn.jsdelivr.net for React dependencies).
- **Assumption 2**: External integrations (e.g., mobile money APIs) are permitted and compliant with BoG regulations.
- **Constraint 1**: The system shall not support deposit-taking functionalities, as it targets Tier 3 MFIs.
- **Constraint 2**: The system shall avoid local file I/O or unauthorized network calls to comply with browser-based security restrictions.
- **Constraint 3**: The system shall not use `<form>` onSubmit due to sandbox restrictions, using event handlers instead.

5. External Interfaces
- **User Interface**: A React-based single-page application with Tailwind CSS for styling, providing borrower and administrator portals.
- **API Integrations**: Potential integrations with mobile money platforms, credit bureaus, or GIPC/BoG reporting systems, subject to regulatory approval.
- **Data Storage**: A secure database (e.g., PostgreSQL) with encrypted fields for borrower data and compliance logs.

6. Additional Notes
- The development team should consult the BoG's Other Financial Institutions Supervision Department to validate licensing and reporting formats.
- Engage with legal experts to ensure compliance with evolving regulations.
- Join the Ghana Microfinance Institutions Network (GHAMFIN) for industry guidance.
- Regularly update the platform to reflect changes in BoG or GIPC regulations, accessible via www.bog.gov.gh.