BANKING SYSTEM PROJECT - DAY 1: REQUIREMENTS GATHERING

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PROJECT OVERVIEW

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The Indian Banking System is a comprehensive transaction management system designed to handle core banking operations with full audit capabilities. This system provides both CLI and Web interfaces for managing customer accounts, processing transactions, and maintaining detailed audit logs.

FUNCTIONAL REQUIREMENTS

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1. MONEY TRANSFER FUNCTIONALITY

- Transfer funds between customer accounts

- Support for multiple account types (Savings, Current, Fixed Deposit, Recurring Deposit)

- Real-time balance validation

- Transaction confirmation and receipt generation

- Support for INR currency with proper formatting

- Minimum transfer amount: Rs. 0.01

- Maximum transfer amount: Rs. 10,00,000 per transaction

- Daily transfer limit: Rs. 5,00,000 per account

2. AUDIT LOGS SYSTEM

- Comprehensive logging of all system activities

- User action tracking with timestamps

- Transaction history maintenance

- Dual storage system (MongoDB and DynamoDB)

- Audit trail for compliance and security

- Real-time log generation for all operations

- Searchable and filterable audit records

3. CUSTOMER MANAGEMENT

- Customer registration with Indian-specific fields

- Multiple accounts per customer support

- Customer profile management

- Address and contact information management

- KYC (Know Your Customer) compliance

4. ACCOUNT MANAGEMENT

- Account creation and management

- Balance tracking and updates

- Account status management (Active, Inactive, Suspended, Closed)

- Account type management

- Interest calculation for applicable account types

- Account statement generation

5. TRANSACTION PROCESSING

- Deposit operations with validation

- Withdrawal operations with balance checks

- Transfer operations between accounts

- Transaction reversal capabilities (Undo/Redo)

- Transaction status tracking

- Failed transaction handling and logging

NON-FUNCTIONAL REQUIREMENTS

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1. PERFORMANCE REQUIREMENTS

- Response time: Less than 2 seconds for standard operations

- Concurrent user support: Up to 1000 simultaneous users

- Database query optimization

- Efficient memory usage

- Scalable architecture design

2. SECURITY REQUIREMENTS

- Input validation for all user inputs

- SQL injection prevention

- XSS (Cross-Site Scripting) protection

- Secure authentication mechanisms

- Data encryption for sensitive information

- Audit trail for security compliance

3. RELIABILITY REQUIREMENTS

- System availability: 99.9% uptime

- Data consistency across all operations

- Transaction rollback capabilities

- Error handling and recovery mechanisms

- Backup and disaster recovery procedures

4. USABILITY REQUIREMENTS

- Intuitive user interface design

- Multi-language support (English and Hindi)

- Responsive design for various devices

- Accessibility compliance

- User-friendly error messages

- Comprehensive help documentation

TECHNICAL REQUIREMENTS

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1. BACKEND TECHNOLOGY STACK

- Java 17 or higher

- Spring Boot 3.2.0 framework

- Maven for dependency management

- MongoDB for primary data storage

- DynamoDB for audit log storage

- RESTful API architecture

2. FRONTEND TECHNOLOGY STACK

- HTML5 for structure

- CSS3 for styling and responsive design

- JavaScript for interactive functionality

- Modern web standards compliance

- Cross-browser compatibility

3. DATABASE REQUIREMENTS

- MongoDB for customer, account, and transaction data

- DynamoDB for audit logs and event tracking

- Data consistency and ACID compliance

- Backup and recovery procedures

- Performance optimization

4. TESTING REQUIREMENTS

- Unit testing with JUnit 5

- Integration testing with Spring Boot Test

- BDD (Behavior Driven Development) with Cucumber

- Mock testing for external dependencies

- Performance testing capabilities

BUSINESS RULES

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1. TRANSACTION RULES

- All transactions must be logged with complete audit trail

- Minimum balance requirements for different account types

- Daily transaction limits per account

- Transfer restrictions between certain account types

- Business hours restrictions for certain operations

2. COMPLIANCE RULES

- RBI (Reserve Bank of India) compliance requirements

- KYC (Know Your Customer) regulations

- Anti-money laundering (AML) procedures

- Data privacy and protection regulations

- Audit and reporting requirements

3. OPERATIONAL RULES

- Multi-level approval for high-value transactions

- Automated settlement processing

- Batch processing for bulk operations

- Real-time monitoring and alerting

- Escalation procedures for failed transactions

USER STORIES

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1. AS A CUSTOMER

- I want to transfer money to other accounts so that I can pay bills and send money to family

- I want to view my transaction history so that I can track my spending

- I want to check my account balance so that I know how much money I have

- I want to receive transaction confirmations so that I have proof of my transactions

2. AS A BANK EMPLOYEE

- I want to create new customer accounts so that I can onboard new customers

- I want to view audit logs so that I can investigate any issues

- I want to process batch settlements so that I can complete daily operations

- I want to generate reports so that I can provide management insights

3. AS A SYSTEM ADMINISTRATOR

- I want to monitor system performance so that I can ensure optimal operation

- I want to manage user access so that I can maintain security

- I want to backup data so that I can recover from failures

- I want to configure system parameters so that I can optimize performance

ACCEPTANCE CRITERIA

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1. MONEY TRANSFER ACCEPTANCE CRITERIA

- Transfer must complete within 2 seconds

- Both source and destination accounts must be updated correctly

- Transaction must be recorded in audit logs

- User must receive confirmation of successful transfer

- Failed transfers must be properly logged and reported

2. AUDIT LOG ACCEPTANCE CRITERIA

- All user actions must be logged with timestamp

- Audit logs must be searchable and filterable

- Logs must be stored in both MongoDB and DynamoDB

- Audit trail must be tamper-proof

- Logs must be accessible through both CLI and Web interfaces

3. SYSTEM PERFORMANCE ACCEPTANCE CRITERIA

- System must handle 1000 concurrent users

- Response time must be under 2 seconds for standard operations

- System must maintain 99.9% uptime

- Database queries must be optimized for performance

- Memory usage must be within acceptable limits

RISK ASSESSMENT

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1. TECHNICAL RISKS

- Database connectivity issues

- Performance bottlenecks under high load

- Security vulnerabilities

- Data corruption or loss

- Integration challenges with external systems

2. BUSINESS RISKS

- Regulatory compliance issues

- Customer data privacy concerns

- Financial transaction accuracy

- System downtime impact on operations

- Scalability limitations

3. MITIGATION STRATEGIES

- Comprehensive testing and quality assurance

- Regular security audits and updates

- Backup and disaster recovery procedures

- Performance monitoring and optimization

- Regular compliance reviews and updates

SUCCESS METRICS

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1. FUNCTIONAL METRICS

- 100% of transactions processed successfully

- All audit logs generated and stored correctly

- Zero data loss or corruption incidents

- Complete user requirement satisfaction

2. PERFORMANCE METRICS

- Average response time under 2 seconds

- System uptime above 99.9%

- Concurrent user capacity of 1000 users

- Database query performance within acceptable limits

3. QUALITY METRICS

- Zero critical security vulnerabilities

- 95% test coverage for all components

- Zero production bugs in first month

- User satisfaction score above 4.5/5

This requirements document serves as the foundation for the Indian Banking System project and will guide all subsequent development phases.