
MICROLENDING PLATFORM

SKILLENZA

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Problem Statement :

Lending

Digital lending for small businesses based on their creditworthiness. The process of a loan application, KYC and other verifications should be completed online.

- The application should have the ability to allow users to create loan applications with a web app.
- Low-risk credit line renewals should be automatic, period could be set from an admin dashboard i.e the lender.
- The lender should be able to monitor risk - financial performance, industry performance, market and sentiment data, pertinent news and external risk factors.
- Repayment of the loan should be created as a feature.
- Chat option for help

Type of client end web application for businesses, web dashboard for the lender.

Components :

1. **Consumer Application** - Consumer Facing portal for uploading KYC documents and Loan applications
2. **Admin Application** – Financial Institution facing for Approvals and management
3. **Decision Platform**- Azure Machine Learning powered platform For Analysis of KYC Data and documents analysis .

Technology Stack:

Language :Java

Framework : Spring Boot

UI/UX – HTML , Angular/Jquery

Message Broker – Active MQ or Rabbit MQ

Platform : Docker

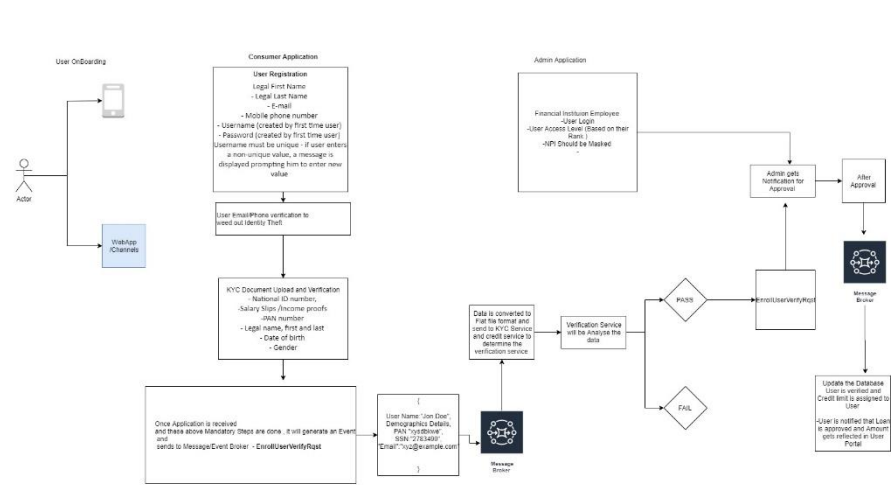
Database : MYSQL

Batch Reporting : JSR 352

Encryption : AES-256

Azure Machine learning Studio – Decision Platform

Consumer application



Note -

KYC Upload User must be able to upload KYC documents in image or PDF format

KYC The platform must store each individual user's KYC docs securely -

Storage AES256 should be preferred encryption. Storage should be secure and follow Compliance laws like NPI, GDPR

#	Title	User Story	Importance Notes
1	User app registration	<p>User must be able to register for app using mobile phone and set username and password. At minimum, the following information needs to be furnished by user for registration:</p> <ul style="list-style-type: none"> - Legal First Name - Legal Last Name - E-mail - Mobile phone number - Username (created by first time user) - Password (created by first time user) <p>Username must be unique - if user enters a non-unique value, a message is displayed prompting him to enter new value</p>	Must
2	Registration verification	<p>User will be sent a verification link to his e-mail address and must click on the link in order to verify and activate registration:</p> <ul style="list-style-type: none"> - If user registers successfully via above flow, a notification is displayed indicating so in the app - If user is not able to register successfully via above flow, a notification is displayed in the app indicating the fact and requesting user prompt for sending verification e-mail again 	Must
3	User verification via National ID	<p>User verification should be via National ID, by inputting details of the ID in the app. This screen/prompt is displayed after successful user registration. At minimum user should input the following</p> <ul style="list-style-type: none"> - National ID number, - Legal name, first and last - Date of birth - Gender 	Must
4	Manual application & verification	<p>If both National ID verification fails user could manually enter information in order to register. At minimum user must input the following:</p> <ul style="list-style-type: none"> - Legal First Name - Legal Last Name - Date of Birth - E-mail - National ID Number - Mobile phone number - Gender - Current physical address 	Must
		An admin at the financial institution must verify and approve the ID manually for verification to be complete	
5	KYC Upload	User must be able to upload KYC documents in image or PDF format	Must
6	KYC Storage	The platform must store each individual users KYC docs securely	Must
7	App permissions request	<p>Upon successful registration and ID verification, the app will display a request to access users cell-phone call records, SMS records, lat-long and SMS content.</p> <ul style="list-style-type: none"> - If user consents and clicks on prompt for consent, the app will start collecting data from that point onwards - If user does not consent and clicks on prompt for NON-consent, the app will not collect data from users phone - System/back-end must keep a record of the users choice 	Should
8	App permission edit	User must be able to toggle between consent and non-consent for app permissions to collect above data.	Should

The system/back-end must keep a record of the users choice each time a change is made including:

- Status change: e.g. non-consent to consent
- Date and time of status change
- User ID

- | | | |
|-------------------------------------|--|------|
| 9 Link Bank account | User must be able to link an external bank account - either with the same institution or a different one - to the app . User must input the following information: <ul style="list-style-type: none">- Routing number- Account number- Name under which account is issued | Must |
| 10 Link Mobile wallet account | User must be able to link an external mobile wallet account - either with the same institution or a different one - to the app | Must |
| 11 Display loan offers | APp must display loan offers that cusotmer qualifies for and an option to apply for offer | Must |
| 12 Loan dashboard | For ongoing loans, simple dashboard to display principal, interest, balance etc | Must |
| 13 Repay loan from within app | After linking an external bank or digital-wallet account, user must be able to repay loans from within the app <ul style="list-style-type: none">- User must be able to input amount he wishes to pay- User must be able to select which loan he wishes to pay (if he has multiple)- User must be able to select which linked payment he wants to send money from (if he has multiple) | |
| 14 Support Contact Request | User must be able to put in a customer-support request via the app <ul style="list-style-type: none">- User is given a unique ID for each request he creates- App displays a text input field | Must |
| 15 Create user support ticket | A corresponding ticket must be created on the platform <ul style="list-style-type: none">- Ticket will contain a unique ID same as that given to user- Ticket will contain text of customer request | Must |
| 16 Support ticket resolution notice | User will receive updates to his ticket(s) <ul style="list-style-type: none">- everytime a change or progress is made- via in app notification | |
| 17 App downloads & funnel | Admin will be able to view app-install path and funnel including: <ul style="list-style-type: none">- App downloads: successful and abandoned- Registrations: successful and abandoned- ID verifications: successful and abandoned | Must |
| 18 Accounts status | Admin will be able to view out-of-box reports/dashboard on status of customer loan accounts including. <ul style="list-style-type: none">- Total applications,- Accepted vs rejected,- Delinquencies,- Payments,- Balance- Other financial metrics- Individual user profile info for above also | Must |

19 In app notification	User will receive in-app notifications for the following events (timingShould and frequency TBD) - loan application approval - loan repayment due dates - overdue payments	
20 SMS notification	User will receives SMS notifications for the following events (timing Must and frequency TBD) - loan application approval - loan repayment due dates - overdue payments	
21 Storage of customer data from mobile	Customer data that is gathered from user mobile phone will be stored in Fineract CN (details TBD)	Should
22 Data access layer and security	Design an access layer for the data that is different from self-service API accessing prod data	Should
23 Log-in screen	User will be presented with a log-in screen upon opening the app	Must
24 Password recovery	User must be able to recover (reset) password via recovery mechanism - User must be given option to recover password via SMS or e-mail - If user chooses e-mail, a link must be sent to users e-mail to reset password - User must click on link to be taken to a password reset screen - If user chooses SMS, a code must be sent to users phone via text - User must enter the code on a prompt screen and then set a new password	Must
25 User-name recovery	User must be able to recover (reset) user-name via recovery mechanism - User must be given option to recover user-name via SMS or e-mail - If user chooses e-mail, an e-mail is sent to user with his username - If user chooses SMS, username is sent to user via mobile phone	Must
26 User profile	User must be able to access and edit his profile details via a 'Profile' section in the app. The following information must be displayed and non-editable: - User legal first name last name The following information must be displayed and editable: - E-mail: if user edits e-mail, another verification e-mail is sent to him and he must click on it to change email - App permission settings: user must be able to toggle between allow app to access his mobile phone data and not allowing it	Must
27 Abandoned registration	User should receive notification to complete abandoned registration	Should
28 Abandoned ID verification	User should receive notification to complete abandoned ID verification	Should

Admin Application (Line of Credit)

# Title	User Story	Importance	Notes
1 Set product credit limits	As an org user, I must be able to set the max credit limit for an open-ended LOC product	Must Have	
2 Set product repayment frequency and rules for payment amounts	<p>As an org user, I must be able to set the permitted frequencies for the repayment on the LOC product along with the minimum payment amount defined as one of the following</p> <ul style="list-style-type: none"> • Flat amount (subject to being lesser than than current principal) • % of the outstanding amount • % of the outstanding principal 	Must Have	
3 Associate LOC account to customer level overdraft facility	As a loan officer, I must be able to optionally associate a LOC account to an existing customer level overdraft facility. Once I have done the same, the credit limit of this account is determined by the limit associated with the overdraft facility and the balance of other accounts linked to this facility.	Nice to Have	Some institutions allow creating multiple customer level overdraft facilities. The customer can then have multiple accounts linked to each such facility.
4 Full flexibility to update interest rates on active loc accounts	<p>As a loan officer, in addition to associate indexed interest rates to LOC accounts, I must be able to edit the applicable interest rate on an active LOC account. While doing so, I should not have any constraints other than</p> <ul style="list-style-type: none"> • Abiding by the min / max interest rates associated with the product • The criteria that the effective date for new interest shall fall after the last interest posting on the LOC 	Must Have	As open-ended accounts are long running, this is a common requirement.
5 System generates repayment schedule entry on payment due date	<p>As a system user, I should be able to view details of the scheduled repayment on a LOC account on the repayment due date.</p> <p>This schedule entry should be created as a part of the daily system batch jobs which updates the payment amount based on the rules for payment associated with this account.</p>	Must Have	A fixed grace period is then associated with this new generated repayment schedule entry giving the customer sufficient time to make a payment

Decision Platform

Credit Decision platform is built using Azure Machine learning studio. This component is responsible for machine learning analysis for credit line score using the data sets and machine learning algorithms. The Batch process for reporting and fraud detection will be added feature of this component.

References:

<https://docs.microsoft.com/en-us/azure/machine-learning/studio/tutorial-part1-credit-risk>

<https://docs.microsoft.com/en-us/azure/machine-learning/studio/tutorial-part2-credit-risk-train>

<https://docs.microsoft.com/en-us/azure/machine-learning/studio/tutorial-part3-credit-risk-deploy>

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