Loan Approval System (LAS)

# LAS Overview

The rapid and accurate evaluation of loan applications is the central focus of LAS. The decision has been made to develop a web application for LAS to automate several calculations, such as Risk Score and Interest Rate. The system should also run the credit check and debt to income ratio automatically. This will increase accuracy and timeliness of application evaluations. Furthermore, the web service should provide reporting on loans, so that the bank can clearly see loan approval statistics over time. Currently, many of the decision based rules (such as the range of Risk Scores that require Loan Manager Approval) are held within Excel Sheets that are distributed to bank employees, which is very error-prone and applicants are still submitting paper applications.

## Business Rules

The bank offers 4 types of loans: Mortgages, Car Loans, Personal Loans, and Student Loans. Each of these loan types have different properties, as displayed in the below table.

|  |  |  |  |
| --- | --- | --- | --- |
| **Loan Type** | **Co-signer Needed** | **Collateral Needed** | **Loan Manager Approval Needed** |
| Mortgages | Optional | Always (House Mortgaged) | Risk Score Based |
| Car Loans | Optional | Always (Car Purchased) | Never |
| Personal Loans | Optional | Risk Score Based | Always |
| Student Loans | Always | Never | Risk Score Based |

# Applicant Screening

The first stage of LAS involves collecting information about the applicant and selecting the type of loan they would like to apply for. The applicant is checked against an internal list of blacklisted people, to ensure that they are not in bad standing with the bank. Information gathered includes (required): Full Name, Age, Gender, SSN, Employment Information (title, employer, gross salary), Monthly Expenses, Billing & Mailing Address, type of loan applying for. Optionally, if the applicant already has an account with the bank, they can provide their Account Number. The applicant may also provide a co-signer and related information at this point.

## Business Rules

If an applicant (or co-signer) already has an account with the bank, the relevant information should be pulled from their account. If the applicant is blacklisted, the process should halt before collected additional information, such as addresses and employment details. If the co-signer is blacklisted, the process may continue, but the co-signer cannot be part of the application.

# Obtain Loan-Relevant Information

In this stage, loan specific information is gathered from the applicant, such as Make and Model for a car loan, appraisal for a mortgage, or expected graduation date for a student loan.

## Business Rules

Applications for all loans types will be shared with the development team during the first Planning Meeting with business.

# Automated Approvals

The Credit Check and Debt-Income ratio check should be done automatically and concurrently. These checks provide a risk assessment which is used to base the automated approval decision, as well as interest rate later in the process.

* Mock a call to a credit checking service.
* Include mock test case.

## Business Rules

Depending on the loan type, and risk scores, the approval can result in one of four outcomes: Approved, Collateral Needed, Co-signer Needed, Loan Manager Approval Needed, Denied. The risk assessment is based on several variables, and the weighting and calculations of the risk scores can change from quarter to quarter. Thus, they need to be easily maintained with little involvement from IT. The current weightings and base equations will be shared with the development team during the first Planning Meeting with business. The risk score ranges from 0.75 to 2.0, where 0.75 represents virtually no risk, and 2.0 represents an almost guaranteed default. Risk Scores are calculated for both applicant and co-signer (when applicable). If a co-signer has a higher risk than the applicant, the co-signer cannot be used.

# Acquiring Co-Signer/Collateral

If the automated approvals result in needing a co-signer and/or collateral, the applicant must provide a co-signer and/or collateral, after which, the automate approvals must be ran again.

# Interest Rate Calculation

This should be an automated calculation of interest based on Risk Scores, and current market averages for that Loan Type.

## Business Rules

The interest rate is determined by the following equation: InterestRate = MarketAverageOfLoan \* RiskScore. In the case of a co-signer, the interest rate is calculated for both applicant and co-signer, and the average between them is used for the loan.

# Loan Manager Approval

If the auto-approval stage results in needing a Loan Manager’s approval, then all the relevant information must be provided to a Loan Manager, who will make a subjective decision for the loan. The Loan Manager may request a meeting with the applicant to gain more information. A reason must be provided by the Loan Manager for Approval or Denial.

## Business Rules

If a Loan Managers approval is needed, the applicant and loan worker should be notified, so that they are not left waiting an indeterminate amount of time for the Loan Manager.

* Account alert vs E-mail Alert

# Extend Offer

The Loan Offer is extended to the applicant, at which point they may choose an installment plan, or cancel their request for the loan.

## Business Rules

It is against bank policy for applicants to see the numerical risk assessment score, should use some logical graphic representation.