



HOME LOAN SYSTEM

Home Loan System

1 Business Requirements & Rules

- Bank Savings Account Holder will apply for home loan with the bank. Following information will be provided at the time of application. Description / Address of property for which loan is required, loan amount, tenure in years (5-20), Net Monthly Salary. Also upload image of property document.
- Loan Approval - The system will approve loan amount up to maximum of 50 times Net monthly Salary. Mail will be sent to account holder informing about sanction of loan and monthly EMI (calculation given below). Loan Status becomes Approved.
- If requested loan amount is higher than eligible amount then account holder will have option of cancelling loan application OR going with the eligible loan amount (Loan Status = Approved). If account holder cancels loan application no Loan Account record will be created.
- When loan is approved a new Loan Account be created linking to the account holder savings account. It will also populate Loan Repayment Schedule as given below (Status = Pending). Loan interest rate will be taken as 7% PA.
- Its assumed that loan is disbursed immediately and EMI will be applicable from next month.
- $EMI = [P \times R \times (1+R)^N] / [(1+R)^N - 1]$ where P is the approved / eligible loan amount, R rate of interest, N is tenure of the loan. Since we are paying monthly installment Annual Interest Rate is divided by 12, N becomes number of years x 12 months.
- EMI will be deducted from Savings Account balance every month. Its assumed account has sufficient funds to pay the EMI, paid amount will be updated in Loan Repayment Schedule. After deduction the status of loan account repayments schedule for the month will be set to Paid. Loan Account Status becomes OnGoing. After payment is deducted mail will be sent to account holder that EMI has been deducted.
- E.g. So, assuming that you take a home loan of Rs 50 lakh with an interest rate of 12% PA for a tenure of 10 years, the approximate EMI will be:
 - P = Rs 50 lakh, R = 12/100/12 or 0.01 (convert to months), N = 10 years or 120 months
 - $EMI = [5000000 \times 0.01 \times (1+0.01)^{120}] / [(1+0.01)^{120} - 1]$
 - EMI = Rs 71,735.

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- Once the loan is disbursed monthly repayment schedule (for whole tenure in months) will be calculated stating the principal and interest component for each EMI payment. The interest component of the EMI for the month is balance outstanding for the month x Monthly Rate of interest. Interest rounded off to rupees.
 - EMI 71735 (As above)
 - Month 1 - Interest = Balance outstanding (5000000) x 0.12 / 12 = 50000. Principal = 71735 - 50000 = 21735
 - Month 2 - Interest = Balance outstanding 5000000 - 21735 ((cumulative principal paid) = 497265. Interest = 497265 x 0.12 / 12 = 49783. Principal = 71735 - 50000 = 21953
 - For tenure of 10= years = 120 month monthly repayment schedule will be created for each 120 months stating EMI, Principal Paid for the month, Interest for the month, Balance (Principal Outstanding), Paid Amount (initially zero for all), Status (Pending, Paid, Cancelled)
- Loan Foreclosure and Prepayment.
 - Account Holder can close the loan (after minimum 3 EMI have been deducted) by making full payment of the outstanding amount for that month. Monthly payment schedule for the closure month will change to reflect the paid amount = full closure amount. Subsequent months repayment schedule will get status of Cancelled. Loan Account Status becomes Closed, Principal , Interest will be set to zero.
 - Account Holder can make partial prepayment of loan of minimum 3 times the monthly EMI. In this case paid amount for the prepayment month will be adjusted against outstanding balance. Then subsequent Prepayment schedule & New EMI, Principal, Interest, outstanding from prepayment month onwards recalculated on the new outstanding amount with other parameters remaining same.
- Future payments should be simulated by screen input

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2 System Roles (Actors)

- Account Holder
- System

3 Suggested Classes

- Saving Accounts - Sequence ID, Account Number, Name, Email Address, Current Balance (Populate via backend SQL)
- Users (Login ID, Password) (Populate via backend SQL)
- Loan Account (Loan Account ID, Savings Account, Total Loan Amount, Interest Rate, Tenure , Status (Approved / Ongoing / Closed).
- Loan Repayment Schedule - Year-Month, EMI, Principal Amount, Interest Amount, Outstanding (Closing after EMI deduction), Status (Pending / Paid / Cancelled)

4 Use cases (Screens)

- Login
- Role Account Holder
 - Apply for home loan - cancel / approve loan application
 - View Repayment Schedule
 - Loan Foreclosure
 - Loan Prepayment
 - Export Repayment Schedule in CSV
- Mail Provision