

Entity Relationship Diagram (ERD)

Project Name: Bank Churn & Loan Repayment Prediction

Document Type: Entity Relationship Diagram (ERD)

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1. Objective

This document outlines the **data model structure** and relationships between entities involved in the *Bank Churn & Loan Repayment Prediction* project. It helps visualize how the customer and loan data interact and supports the data preparation and analysis processes.

2. Entity Descriptions

◆ Entity: Customer

Column Name	Description
<i>customer_id</i>	Unique identifier for each bank customer
<i>credit_score</i>	Customer's credit score
<i>country</i>	Country of residence
<i>gender</i>	Gender
<i>age</i>	Age of the customer
<i>tenure</i>	Years the customer has been with the bank
<i>balance</i>	Bank account balance
<i>products_number</i>	Number of active products with the bank
<i>credit_card</i>	Whether customer holds a credit card
<i>active_member</i>	Customer's activity status
<i>estimated_salary</i>	Estimated salary of the customer
<i>churn</i>	Target: Whether the customer churned (1/0)

◆ Entity: **Loan_Application**

Column Name	Description
<i>loan_id</i>	Unique loan application ID
<i>customer_id</i>	Foreign key linking to Customer entity
<i>gender</i>	Gender of loan applicant
<i>married</i>	Marital status
<i>dependents</i>	Number of dependents
<i>education</i>	Education level (Graduate/Not Graduate)
<i>self_employed</i>	Employment status
<i>applicantincome</i>	Income of the applicant
<i>coapplicantincome</i>	Income of the co-applicant
<i>loanamount</i>	Loan amount requested
<i>loan_amount_term</i>	Loan term in months
<i>credit_history</i>	Credit history (1 = good, 0 = bad)
<i>property_area</i>	Area type of the property (Urban, Rural etc.)
<i>loan_status</i>	Target: Whether loan was approved (Y/N)

🔗 **3. Relationship Summary**

- The *customer_id* column in the **Loan_Application** entity is a **foreign key** referencing the *customer_id* in the **Customer** entity.
- A **one-to-many** relationship exists:
👉 *One customer can apply for one or more loans.*

✓ **4. Notes**

- The ERD is designed based on a merged dataset combining customer churn and loan application records.
- The visual diagram (provided separately) represents this logical data structure and relationship.

5. Visual ERD Diagram

The following diagram illustrates the relationship between the Customer and Loan_Application entities:

