**Project: Credit Scoring Model for Loan Applications**

**Tools:** Power BI, SQL, Python, R (Random Forest), Excel  
**Duration:** [Insert timeline, e.g., July 2025 – August 2025]

**Description:**  
Developed a full-cycle credit risk analytics solution to evaluate loan applications and predict default risk using statistical modeling and interactive dashboards.

**Key Contributions:**

* 📊 **Power BI Interactive Dashboard:**
  + Built multi-page visuals showing default distribution by income bracket, grade, and employment type
  + Included advanced visual components: KPI cards, decomposition tree, company comparison matrix
  + Added What-If parameter sliders to simulate risk based on applicant profiles
* 🐍 **Python for Data Preprocessing:**
  + Cleaned and transformed the raw dataset (Main Dataset.xlsx)
  + Handled missing values, created dummy variables, encoded categorical fields
  + Exported cleaned dataset for model training in R and dashboard use in Power BI
* 🧠 **Machine Learning Integration (R):**
  + Trained a **Random Forest classifier** to predict loan default (loan\_status)
  + Saved model as .rds and integrated predictions with Power BI visuals
  + Enabled live simulation using Power BI parameters and DAX formulas
* 🧮 **Excel Scorecard Modeling:**
  + Designed a credit scorecard using IFS() logic to assign risk scores
  + Created a rules-based scoring system considering income, loan amount, credit score, and term
  + Offered a transparent fallback model to supplement ML scoring
* 🛠️ **SQL for Feature Engineering:**
  + Queried and joined borrower, repayment, and loan records
  + Created custom metrics like default rate by grade, avg repayment time, and high-risk flags
  + Used SQL logic to prepare aggregated tables for dashboard import

**Outcome:**

Delivered a production-ready credit scoring dashboard blending **machine learning**, **rule-based modeling**, and **interactive BI tools**. Enabled risk simulations, transparency in approvals, and data-driven decision-making for financial institutions.