Team 4 Members: Elizabeth, Nick, Jess, and Fizza

Project Overview:

- **Topic:** Loan Prediction
- **Dataset:** Loan Prediction (Kaggle)

Breakdown: In finance, a loan involves the lending of money by one or more individuals, organizations, or entities to other parties, who then incur a debt, typically with interest, until repayment. Banks assess various factors, such as income, property value, credit history, and more, when approving loans (Source)

For our project, we'll utilize Machine Learning techniques to predict loan approval using key features like Marital Status, Education, Applicant Income, and Credit History. Our objective is to develop a model that accurately predicts loan approval.

Factors Impacting Loan Approval:

- **Education:** Higher education levels may correlate with higher chances of approval.
- **Income:** Higher incomes often lead to greater approval likelihood.
- **Loan Amount:** Smaller loan amounts might increase approval chances.

Sakib's Recommendations:

- Incorporate additional columns:
- Loan-to-Income ratio
- Co-applicant existence (True/False)
- Combine applicant and co-applicant incomes
- Determine the number of dependents based on income
- Analyze Income vs. Region

Reference Websites:

- Kaggle - Loan Prediction Dataset
- GeeksforGeeks - Loan Approval Prediction using ML
- GeeksforGeeks - Loan Eligibility Prediction using ML Models in Python

Requirements:

1. Data Model Implementation (25 points)
    - Python script initializes, trains, and evaluates the model.
    - Data is cleaned, normalized, and standardized before modeling.
2. Data Model Optimization (25 points)
    - Model optimization and evaluation process documented, showing iterative changes and resulting performance improvements.
    - Overall model performance displayed at the end of the script.
3. GitHub Documentation (25 points)
    - GitHub repository free of unnecessary files, with appropriate .gitignore.
    - README customized as a polished project presentation.
4. Group Presentation (25 points)
    - All group members actively participate in the presentation.
    - Content flows smoothly within time constraints, maintaining audience interest.
    - Presentation content remains relevant to the project.

Additional Ideas for Loan Approval Prediction:

- Incorporate demographic data such as age, gender, and location.
- Explore feature engineering techniques to create new predictive variables.
- Utilize ensemble methods to improve model accuracy.
- Implement feature importance analysis to understand key factors influencing loan approval.