

Credit Loan

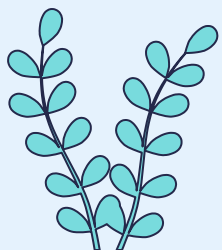
Home Credit Indonesia

By : Samuel Akwila

Intro

The loan is one of the most important products of the finance's business. All the loan companies are trying to figure out effective business strategies to persuade customers/lenders to apply their loans. However, there are some borrowers behave negatively after their application are approved.

In today's world there are many risks involved in loan companies, so as to reduce their capital loss; companies should perform the risk and assessment analysis of the individual before sanctioning loan. In the absence of this process there are many chances that this loan may turn into bad loan in near future. Loan companies hold huge volumes of lender behavior related data from which they are unable to arrive at a decision point i.e. if an applicant can eligible or not.



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You can visit our notebook:
https://github.com/samuelakwila/Home-Credit-Indonesia-Virtual-Internship/blob/main/HCI_Credit_Loan_Prediction.ipynb

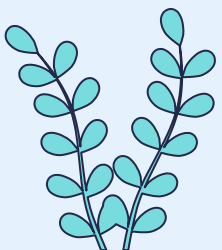


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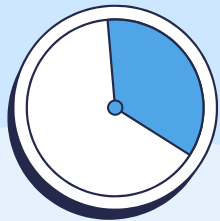
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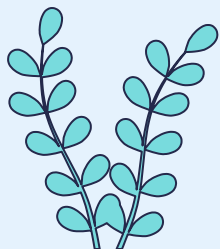
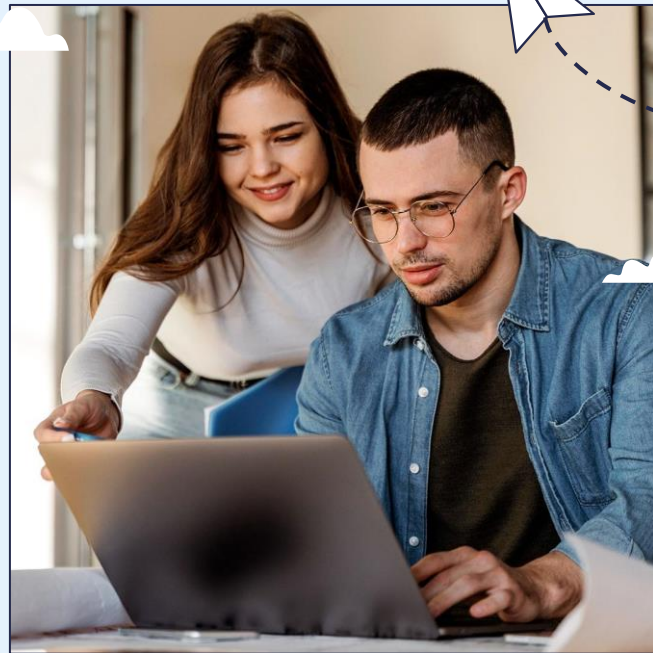
Recommendations



Mission statement

All the keywords you have to know :

- Credit Loan problems
- Binary Classification (Good / Bad Borrower)
- Log Regression, ROC-AUC , Accuracy



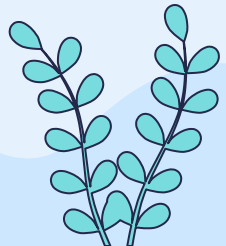
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Samuel Akwila

I am passionate about Data Science and looking for an opportunity to exploit my current skills and become a prominent Data Scientist.





Loan System Overview

Money Loan Company





Problem Statement

Company need to understand customer behavior and predict whether potential customers are eligible for loans and keeping low credit risk as to increase company revenue.



Problem vs solution



Problem

Borrower's bad behaviour after their application are approved



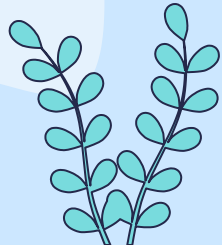
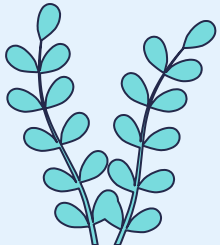
Solution

Predict the secure loan before application is approved



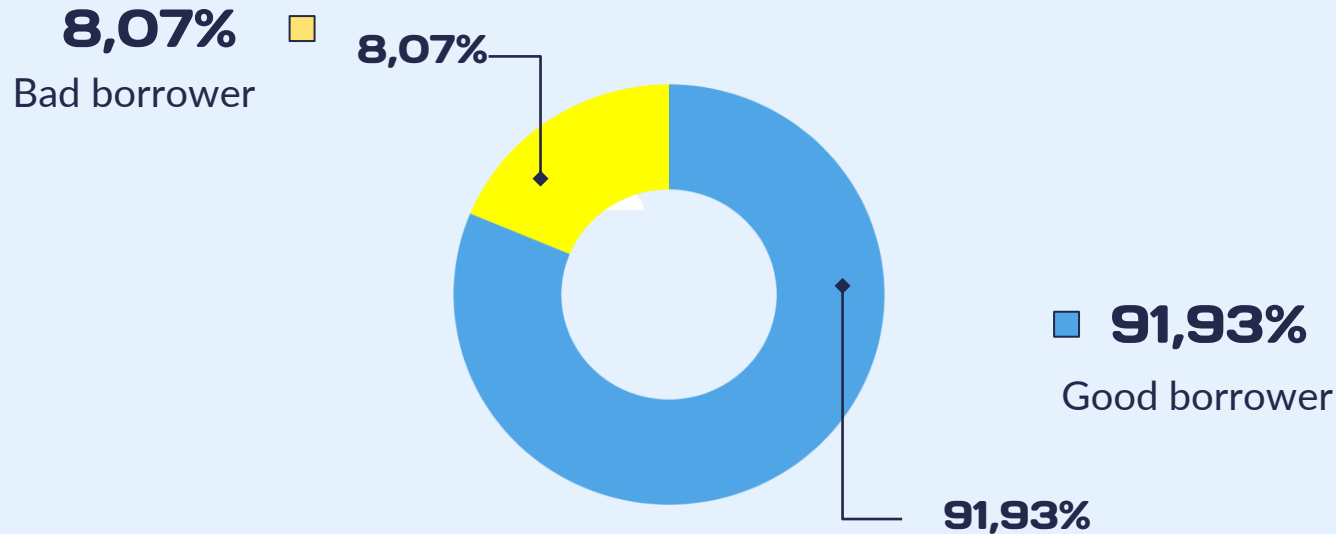
Data Analysis

Exploratory Data Analysis

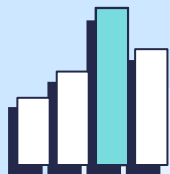




The loan's problem

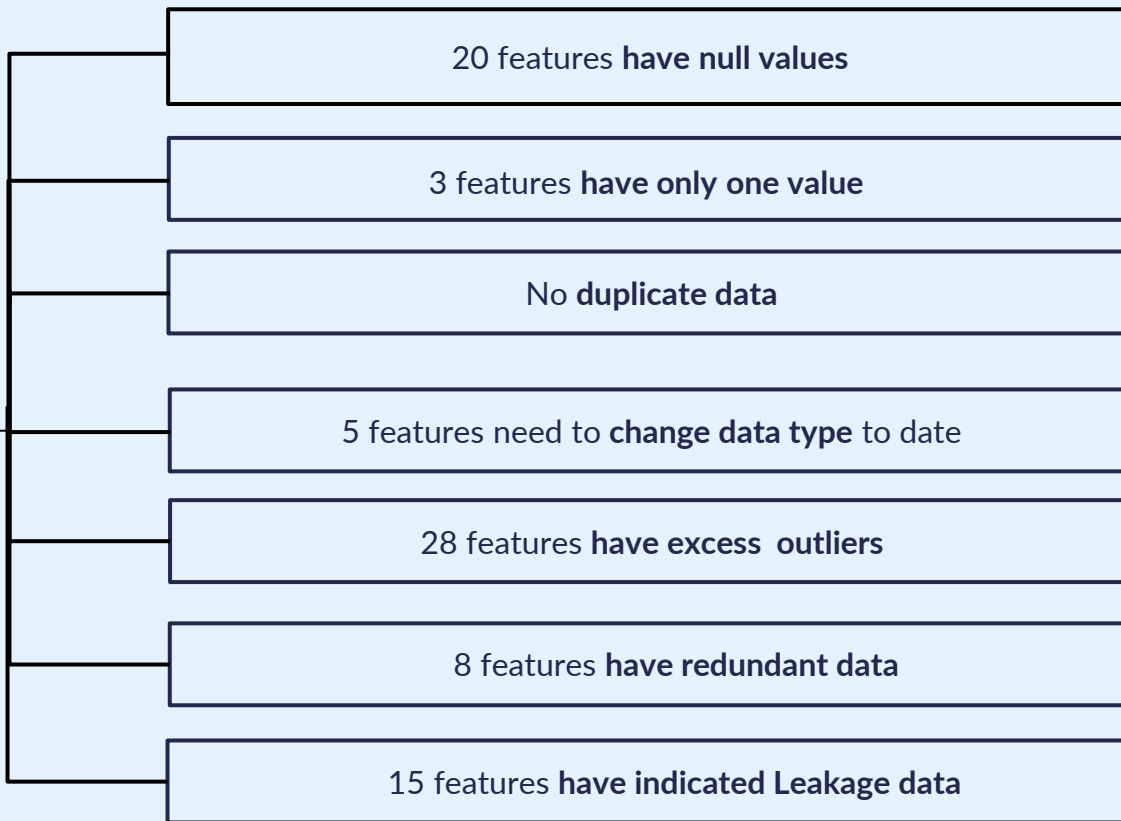


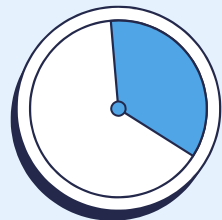
We get the imbalance data which have 91,93% good borrower (282.682) and 8,07% (24.825) bad borrower



Features observation

75
Features

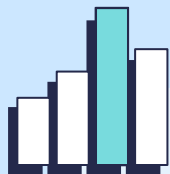




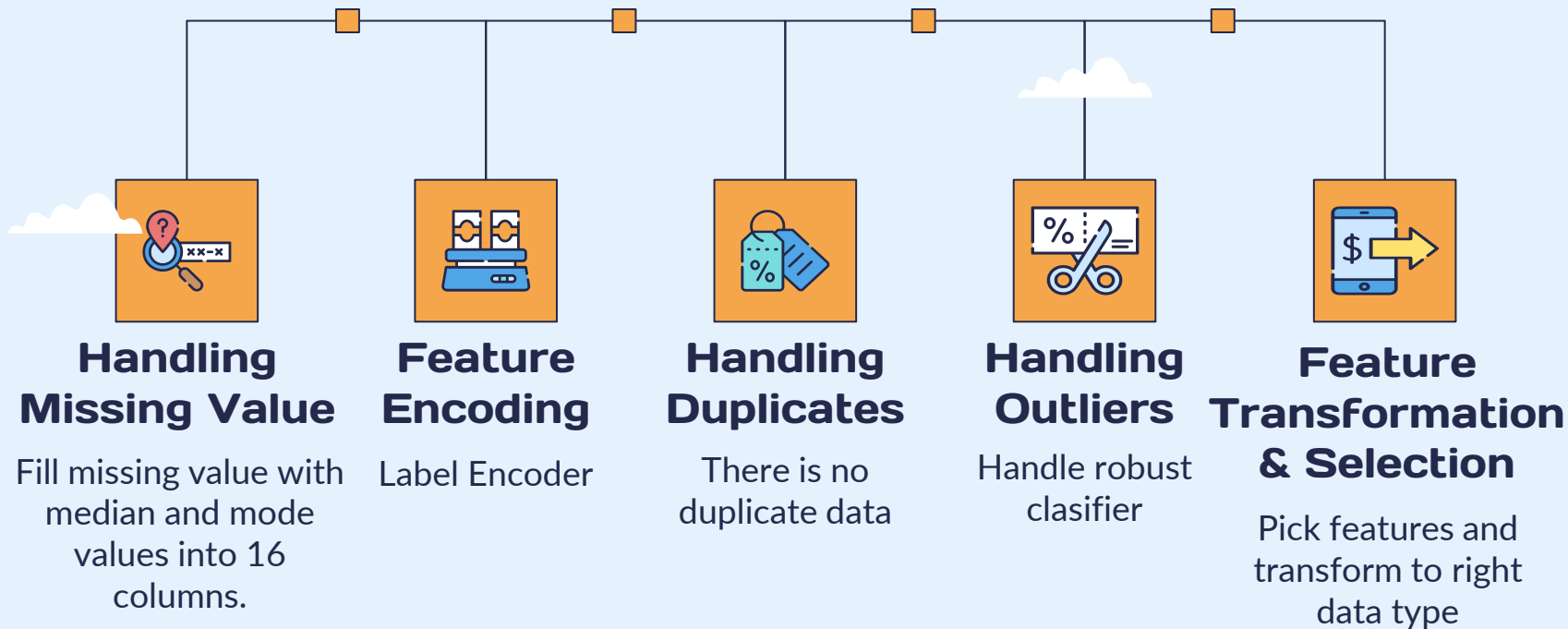
Data Preparation

How we handle this data

3



Prepare Data



Next Step - Prepare Data

Handling Class Imbalance

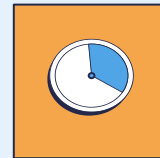
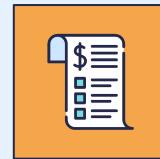
SVM SMOTE

Split Data Train & Test

Train : Test = 80 : 20

Machine Learning Model

Decision Tree,
KNN, Gradient Boosting,
Logistic Regression,
Random Forest, XGBoost





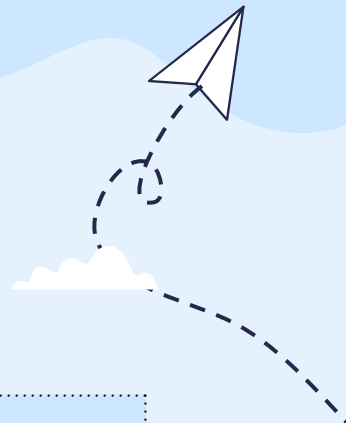
Model Prediction

Handling imbalance data

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Evaluation Models

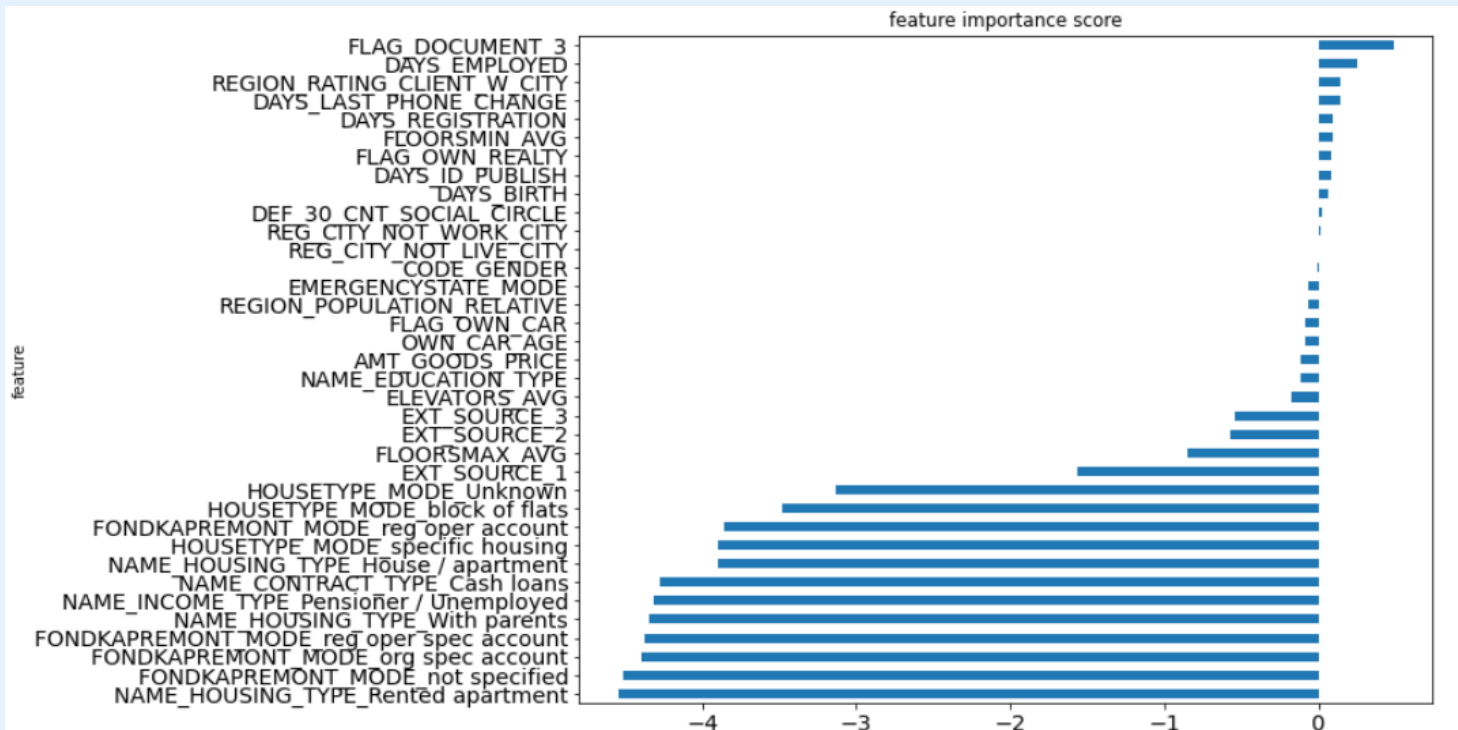


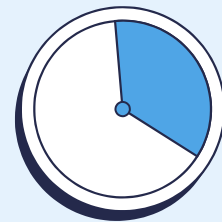
Model	Akurasi	AUC
KNN	60,71%	58,02%
Decision Tree	79,60%	54,19%
XGBoost	88,16%	55,32%
Gradient Boosting	88,03%	55,16%
Random Forest	90,78%	52,07%
Logistic Regression	90,40%	53,87%
Logistic Regression Tuned	90,10%	95,50%

Predict	Actual	
	Bad	Good
Bad	55000	1537
Good	4437	528



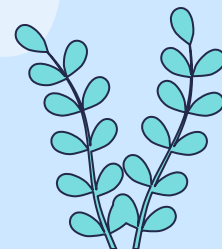
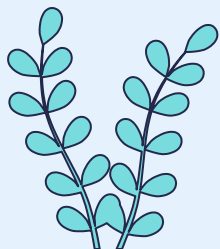
Feature Importance



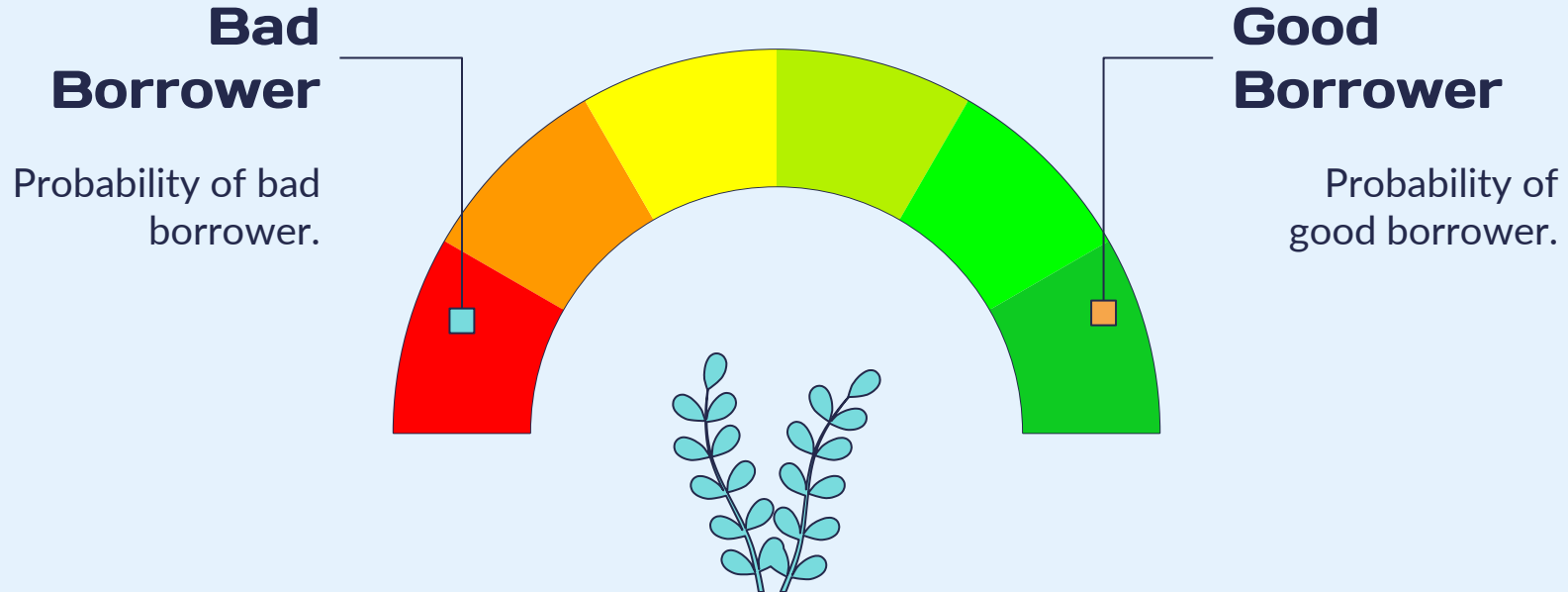


Solution

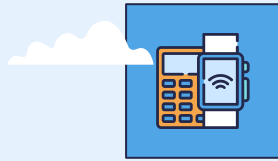
Final product of this project



Predict the Borrower With Credit Score



Before - After : Bad Loan



8,1 %

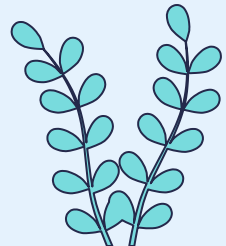
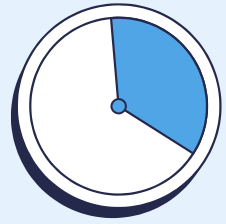


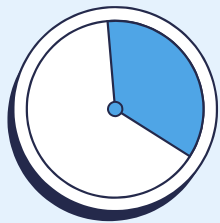
0,8 %



Saving money from the Bad Borrower

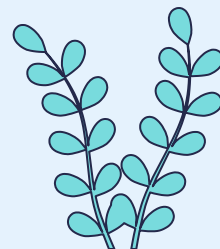
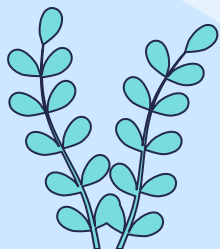
Bad borrower rate potentially decrease by -
91.0% from the previous 8.1% to 0.8% after
action based on predictive modeling as 2458
borrower (before model there were **24825**
bad borrower from total 307511 loan)

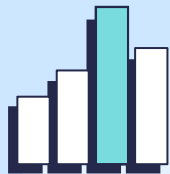




Action Item

Recommendations





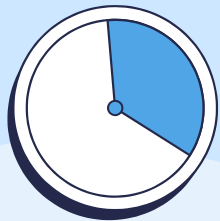
Action Items

Hope this project could help this company to improve :



Feature Importance	Characteristics (value)	Action Item
House Type	Rented Apartment, with parents	Prioritized borrower that has Rented Apartment and with parents.
FondKapremont	Spec Account	Prioritized borrower which has spec account FondKapremont.
Name Contract	Cash loans	Prioritized borrower who contract on cash loans.
Flag Document	3	Prioritized borrower who has 3 documents.





Thanks!

