

LOAN DEFAULT PREDICTION

WITH BERKA DATASET



Keerathap Ploysri

61070502404

Sorayut Meeyim



WHY IS THIS PROJECT INTERESTING

To provides mechanisms in determining which consumers should receive loans and to benefit banks in increasing profits.

Binary classification

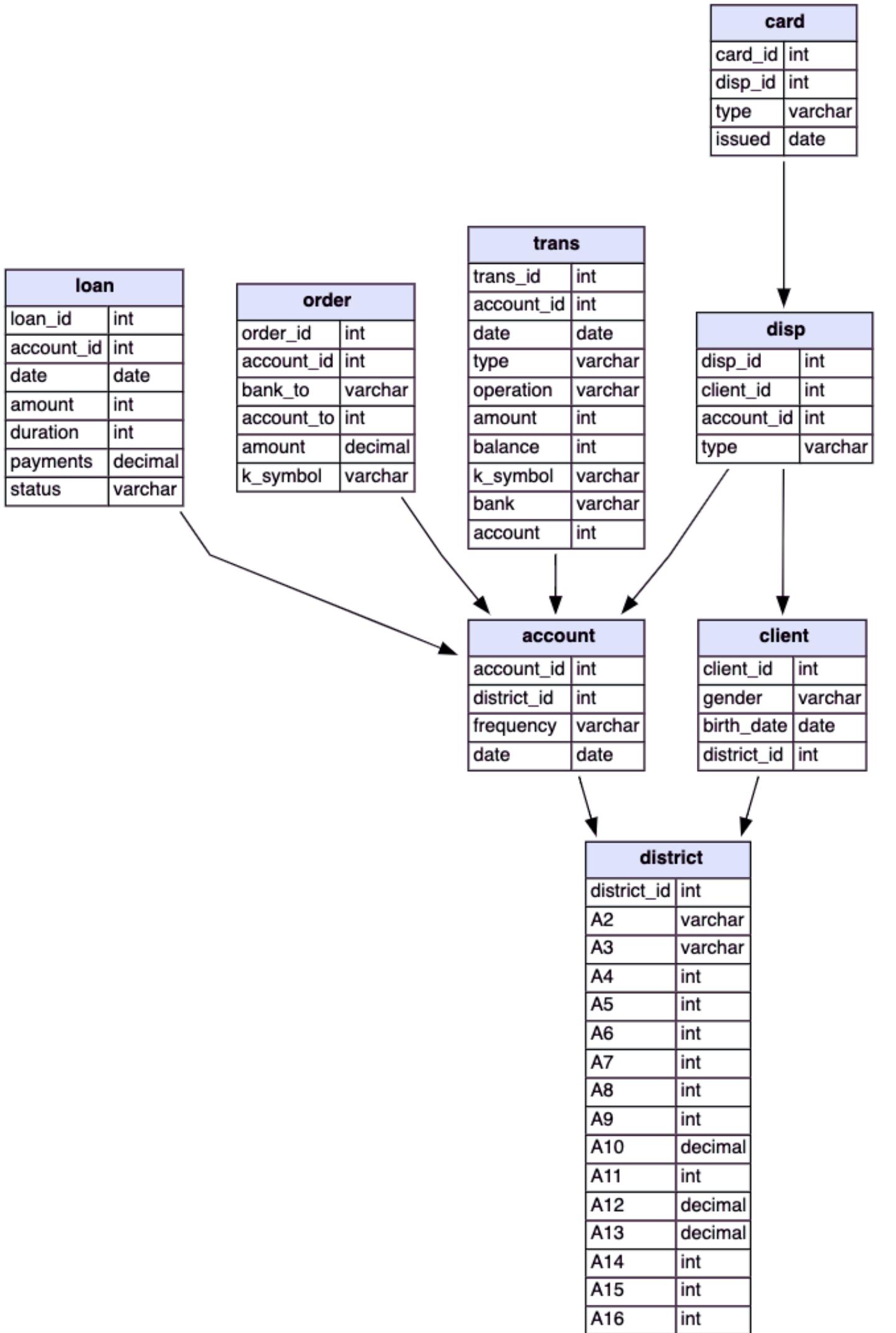
Extract feature

Deal with the unbalanced data



BERKA

DATASET



PREPARE DATA

Load data

Clean data

Extract feature

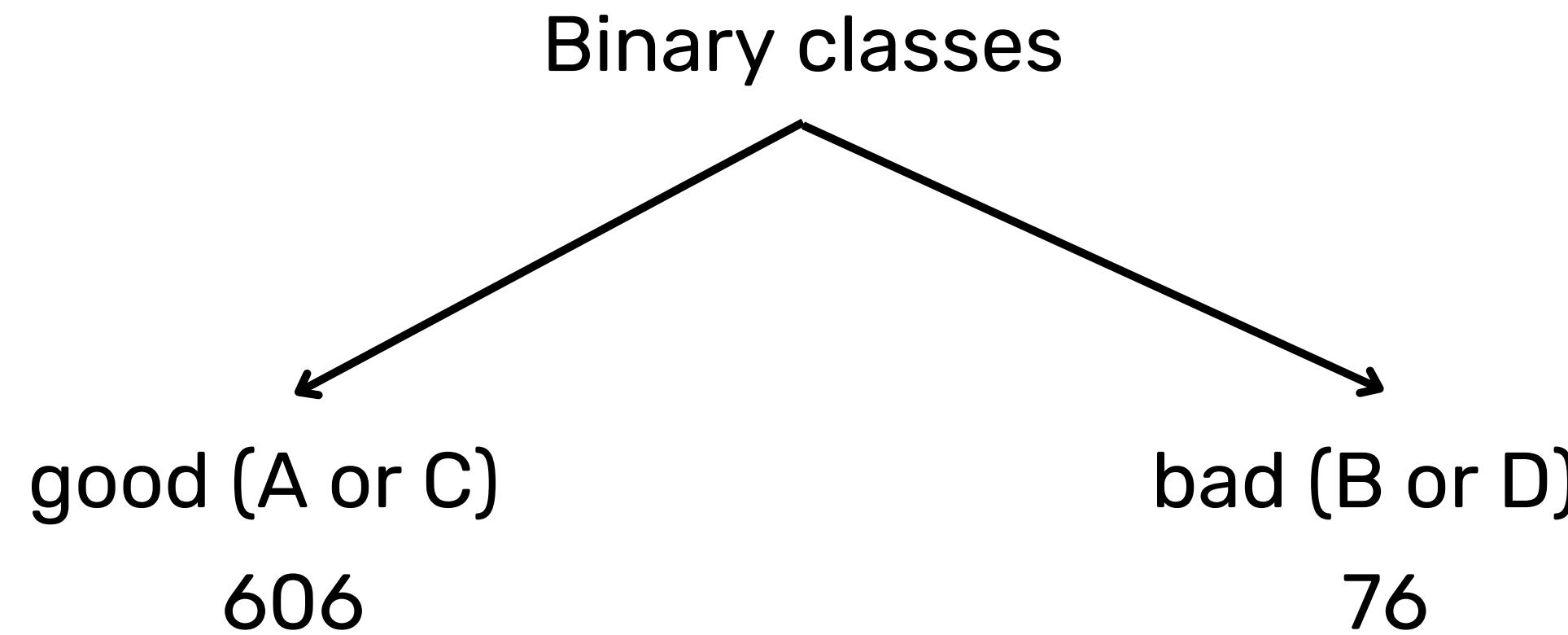
Create new feature

Save data

} Feature engineering

CLASS

- A: Contract finished, no problems.
- B: Contract finished, loan not paid.
- C: Running contract, okay so far.
- D: Running contract, client in debt.



PROCESS

PREPARED DATA



SMOTE



Estimator



Best Feature

Best parameter

Estimator

Evaluation

RandomForestClassifier

LogisticRegression

LGBMClassifier

XGBClassifier

EVALUATION

XGBClassifier

```
{'max_depth': 30,  
 'gamma': 0.0,  
 'min_child_weight': 1,  
 'reg_lambda': 40,  
 'scale_pos_weight': 8}
```

#initial model performance

Acc: 0.9148763853367434

F1: 0.5711705451411334

ROC AUC: 0.7380620608899298

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Num Best features: 45

ยอดเงินคงเหลือเฉลี่ยใน ၇ เดือนล่าสุดก่อนกู้ยืมเงิน ต่อเงินค่ากู้ที่ต้องจ่ายต่อเดือน

จำนวนครั้งที่ถูกปรับ เนื่องจากยอดเงินคงเหลือติดลบ

ยอดเงินคงเหลือต่ำสุด ในรอบ 3 เดือน

ยอดเงินคงเหลือล่าสุด ก่อนกู้ยืมเงิน

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#performance after all process

Acc: 0.9252131287297527

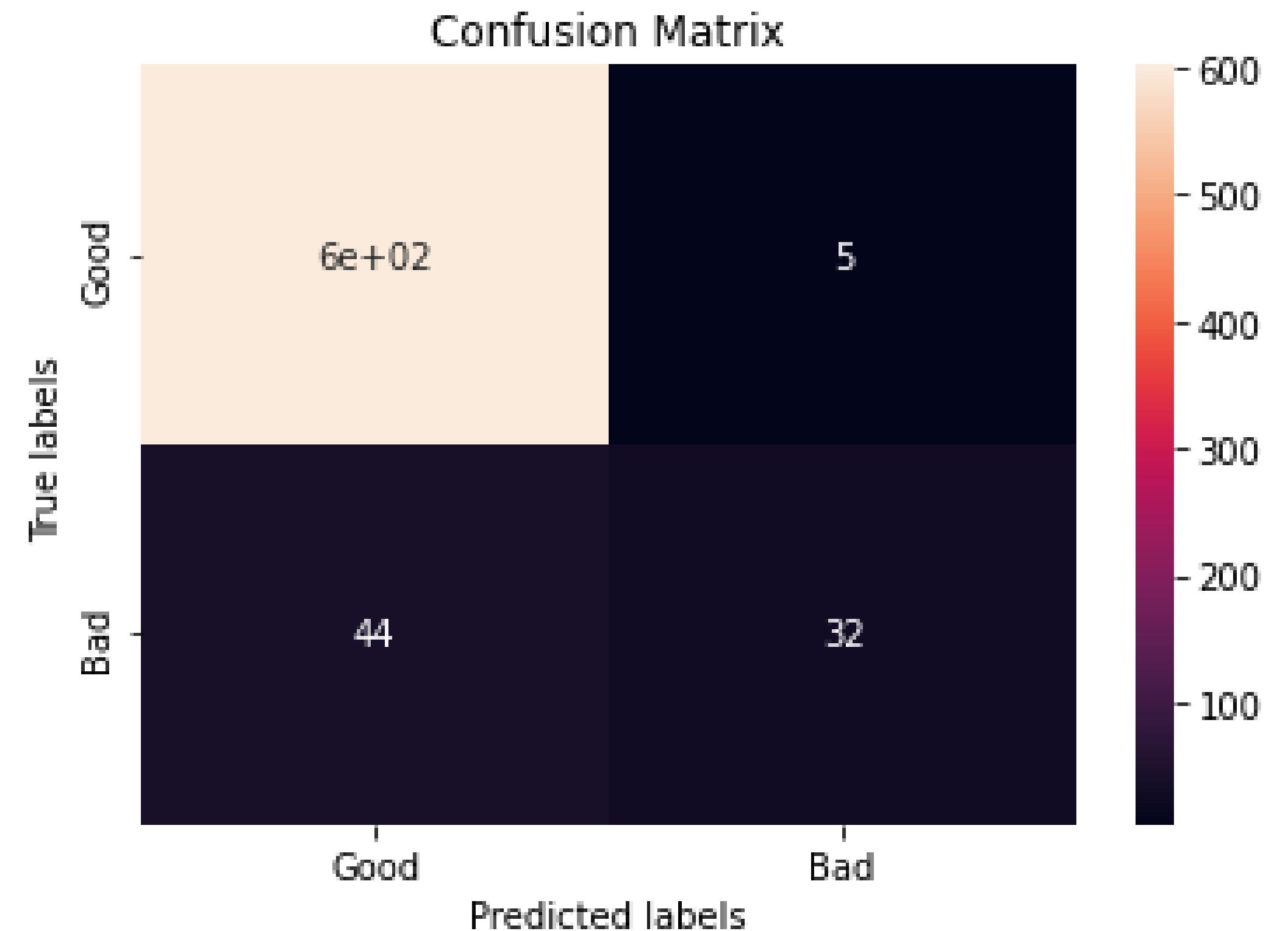
F1: 0.6215826330532213

ROC AUC: 0.7655483996877439

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CONFUSION MATRIX

- | | Actual | Predict |
|------|--------------------------|---------|
| • TN | Good | Good |
| | issued | |
| • FN | Good | Bad |
| | not issued (profit lost) | |
| • TP | Bad | Bad |
| | not issued | |
| • FP | Bad | Good |
| | issued (default) | |



VISUALIZATION

via Power BI



FUTURE WORK

- **Customers tracking system** to notify the bank if a client is about to default the next month.
- **Funding management system** for banks when several consumers apply for loans at the same time.
- **Maximize the interest rate** for each user to obtain the most money.

THANK YOU!



