Lending Club Case Study

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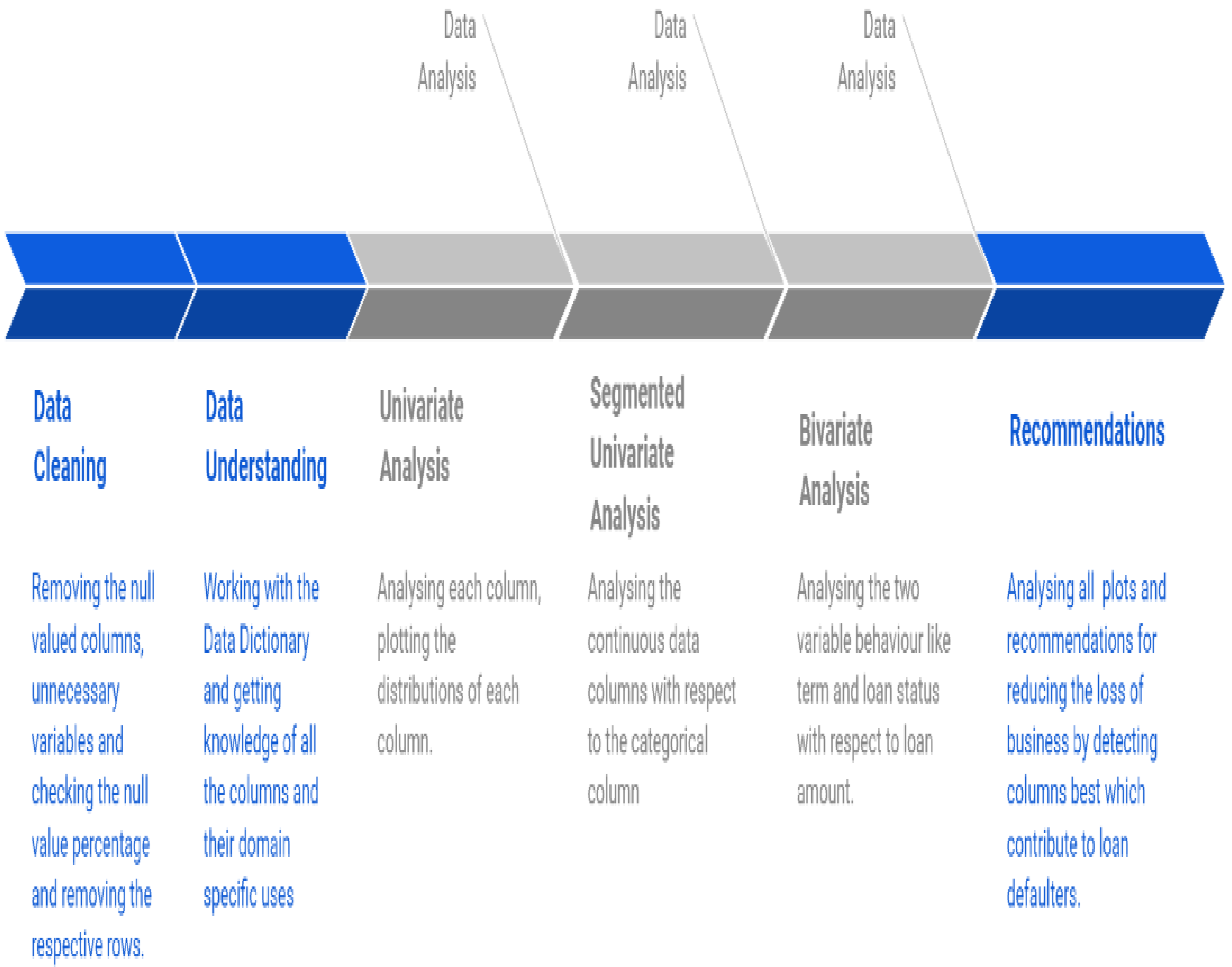
Problem Statement

A consumer finance company specializes in lending various types of loans to urban customers. When the company receives a loan application, it must decide for loan approval based on the applicant's profile. Two types of risks are associated with the bank's decision:

- If the applicant is likely to repay the loan, then not approving the loan results in a loss of business to the company
- If the applicant is not likely to repay the loan, i.e., he/she is likely to default, then approving the loan may lead to a financial loss for the company

The aim is to identify patterns which indicate if a person is likely to default, which may be used for taking actions such as denying the loan, reducing the amount of loan, lending (to risky applicants) at a higher interest rate, etc.

Problem Solving Methodology



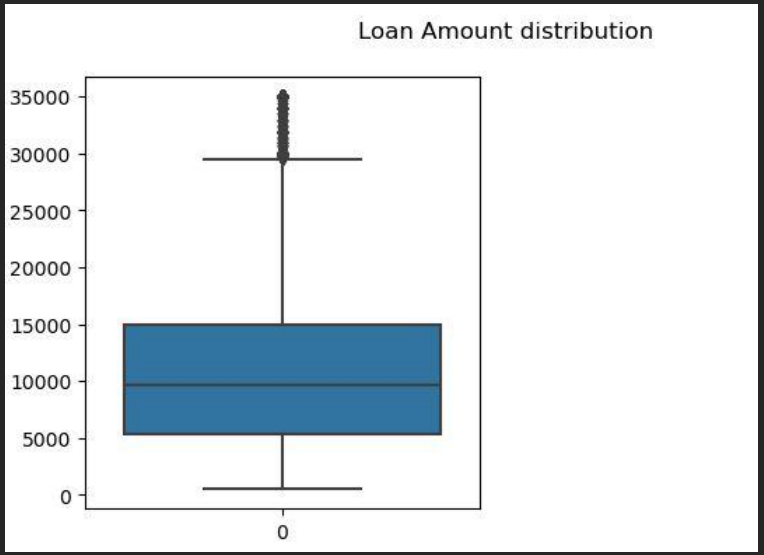
Data Cleaning & Understanding

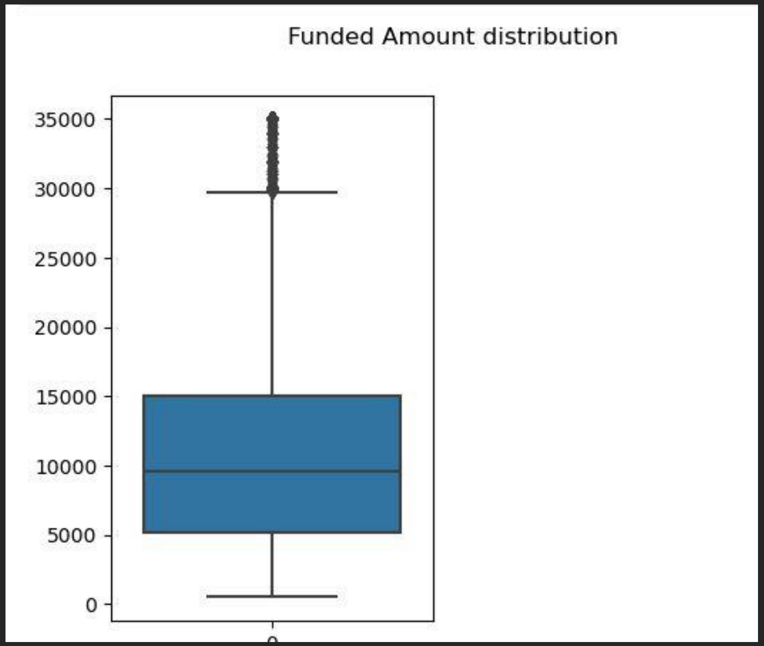
- Removal of Null Values columns
- Removal of columns with only 1-2 unique values
- Obtaining Derived Variables
- Data Type conversion
- Identifying important columns for analysis and taking them into consideration.

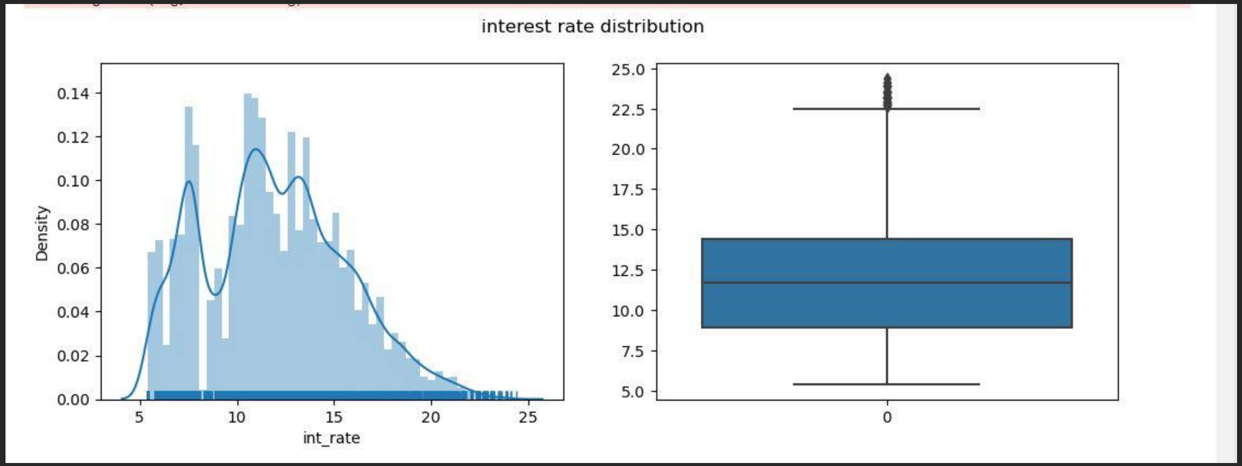
Univariate Analysis

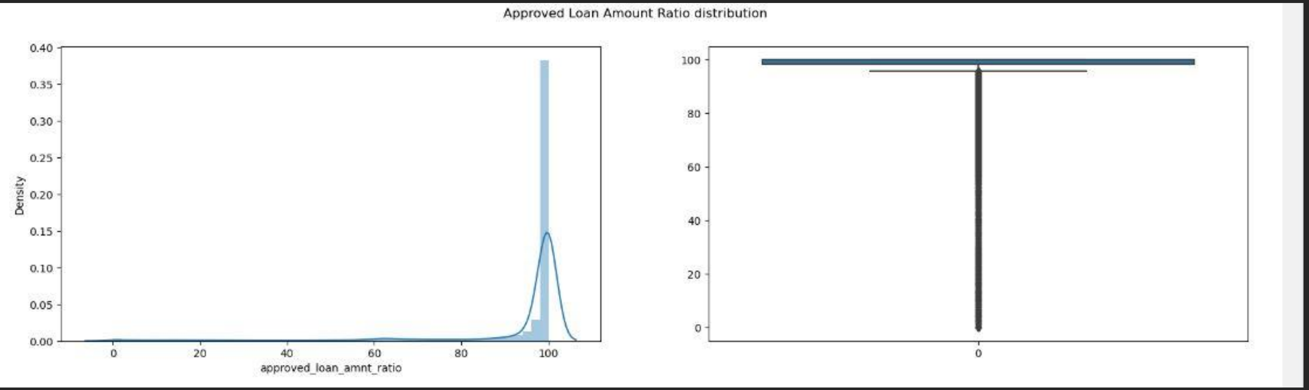
Observations:

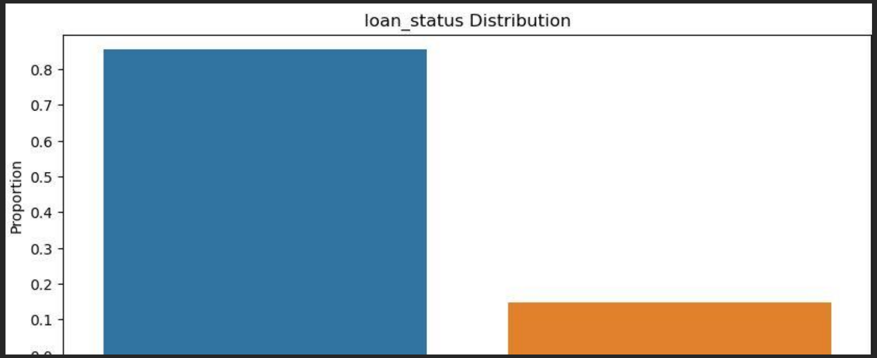
- More number of people took loan amount of 10000, and a very few people took more than 30000 loan amount.
- Lending club approved most of Applied loan amount.









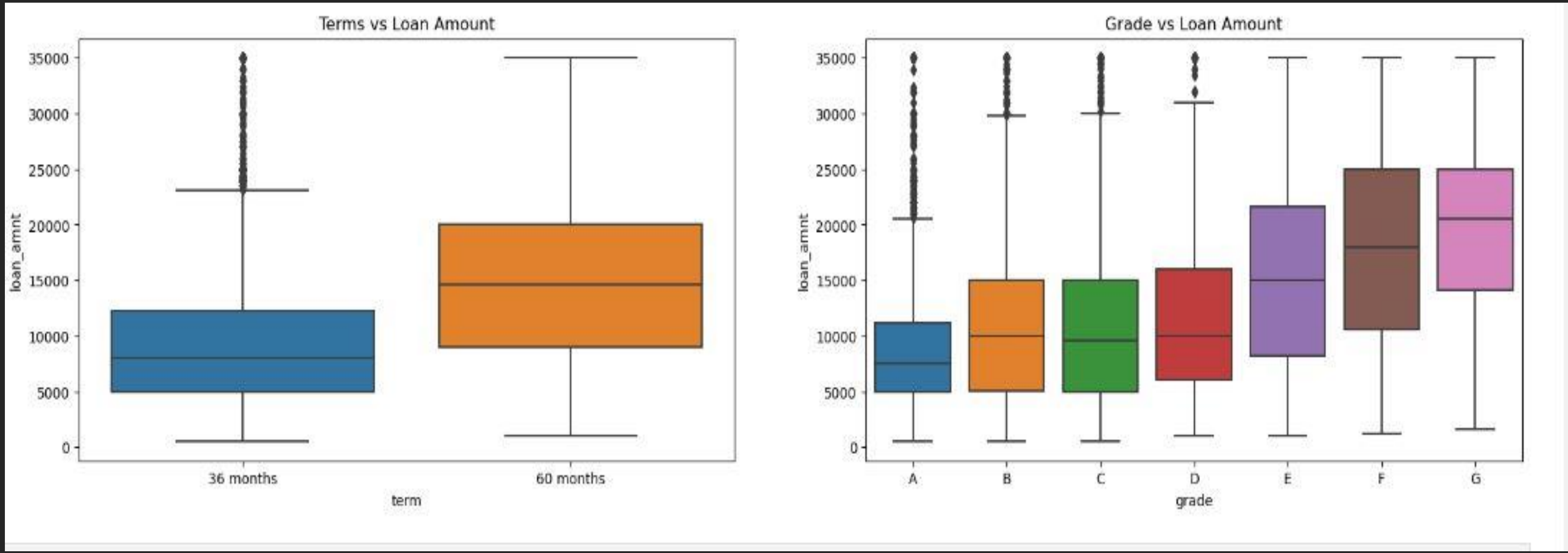


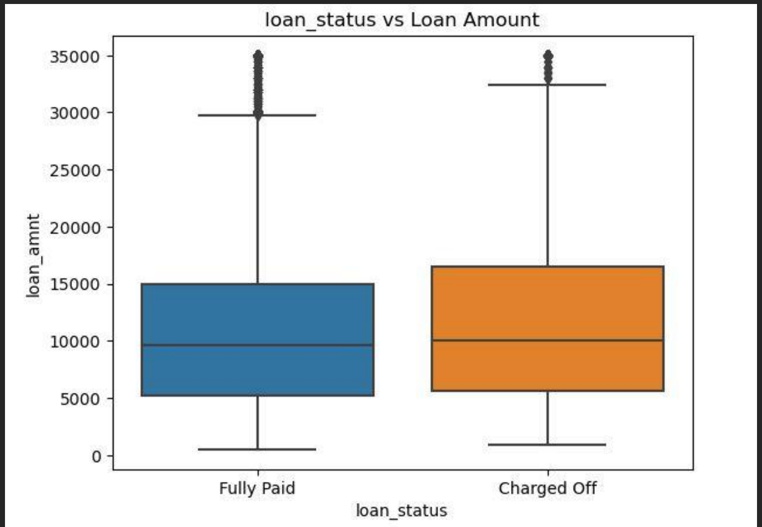
- 70% of Borrowers got 100% loan amount from investors.
- Most of the interest rates lies between 9% to 14.5%. Some people took loan at higher rates of interest i.e., 22.5%
- 85% of borrowers has paid the loan fully. where are 14% are defaulted the loan.

Segmented Univariate Analysis

Observations:

- Higher amount loans have high tenure i.e., 60 months.
- Grade 'G' and 'H' have taken max loan amount. As Grades are decreasing the loan amount is increasing.
- Charged Off loans have higher amounts than Fully Paid ones.

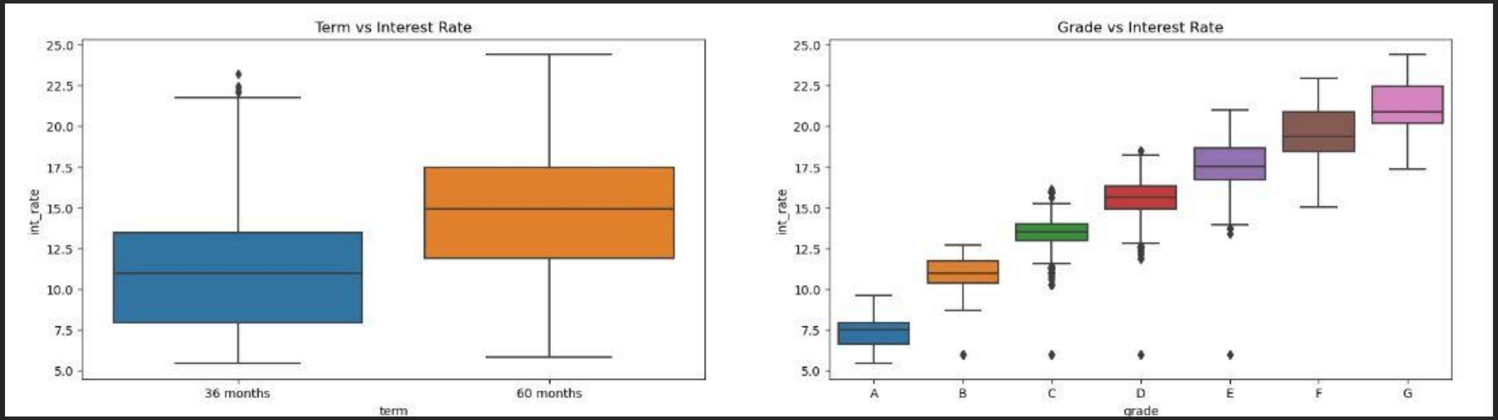


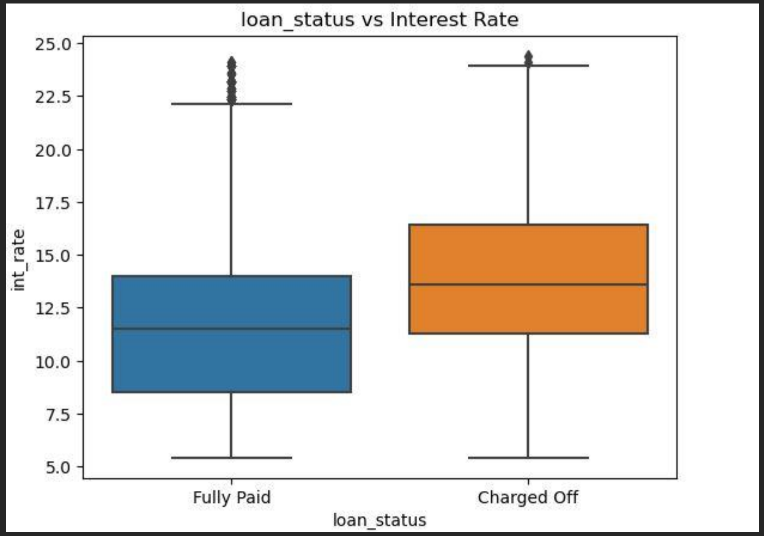


The interest rates are higher for Higher **tenure loans.**

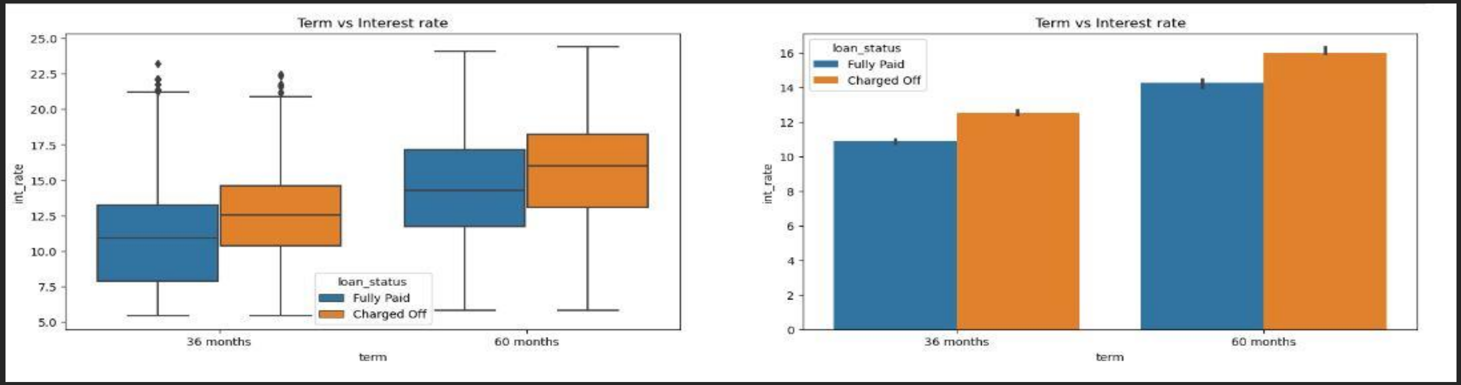
Interest Rates are Higher as Grades are Lowering (A to G).

Greater the interest rate more the chance of Defaulting the loan.



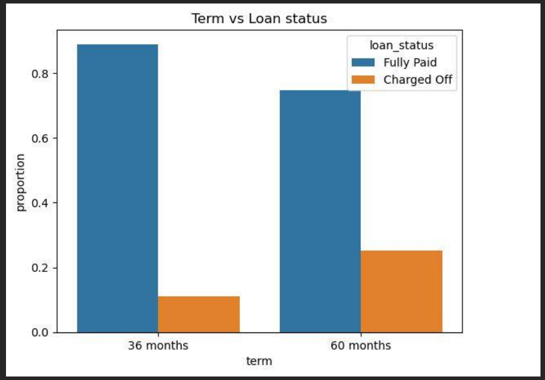


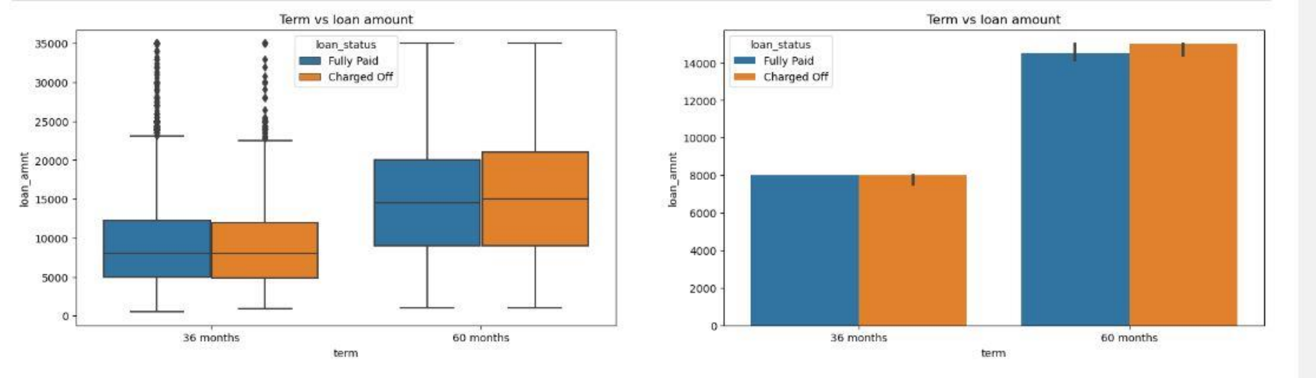
Bivariate Analysis

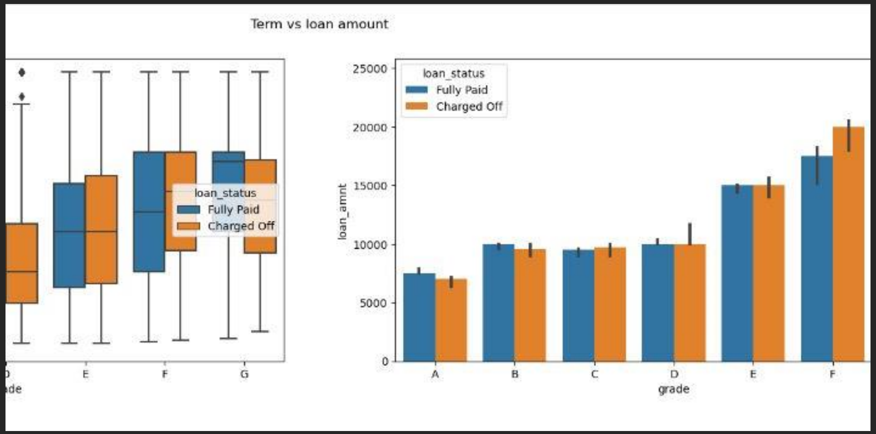


Observations:

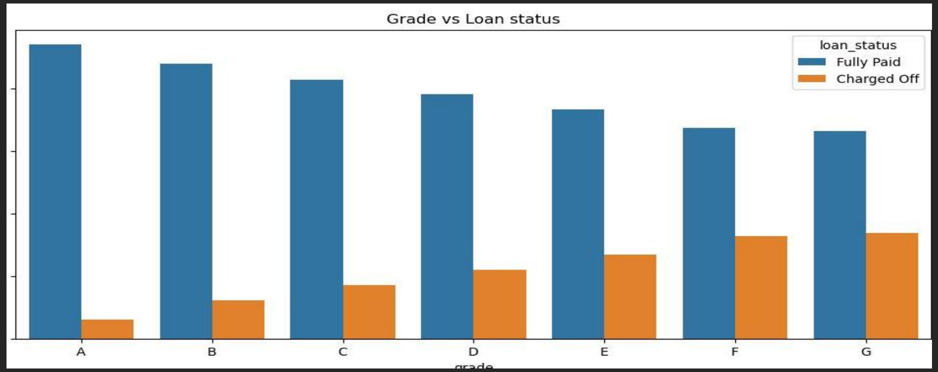
- Proportion of borrowers defaulted loan in 60 months term is more than in 36 months.
- Fully Paid rate is higher in 36 months tenure.
- Loan amount is not a decider for defaults in both 36 and 60 months.
- Borrowers have equal distribution is both default and non default for 36- and 60-months tenures.
- For higher interest rates the default rate is higher in both 36- and 60-months tenure.

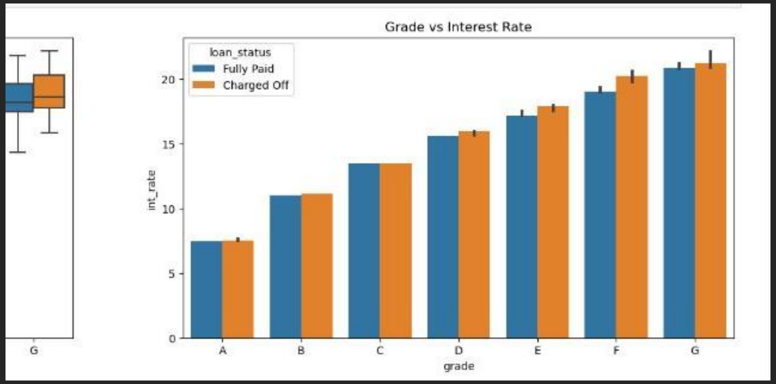






- Charged off increases as grades decreases.
- For lower grades 'F' and 'G' there are more difference between charged-off and fully paid.
- The lower grade people has taken higher amount of loans and also, they are more prone to default the loan.
- As grade decreases the interest rate gradually increases. and they are more and more prone to default the loan.

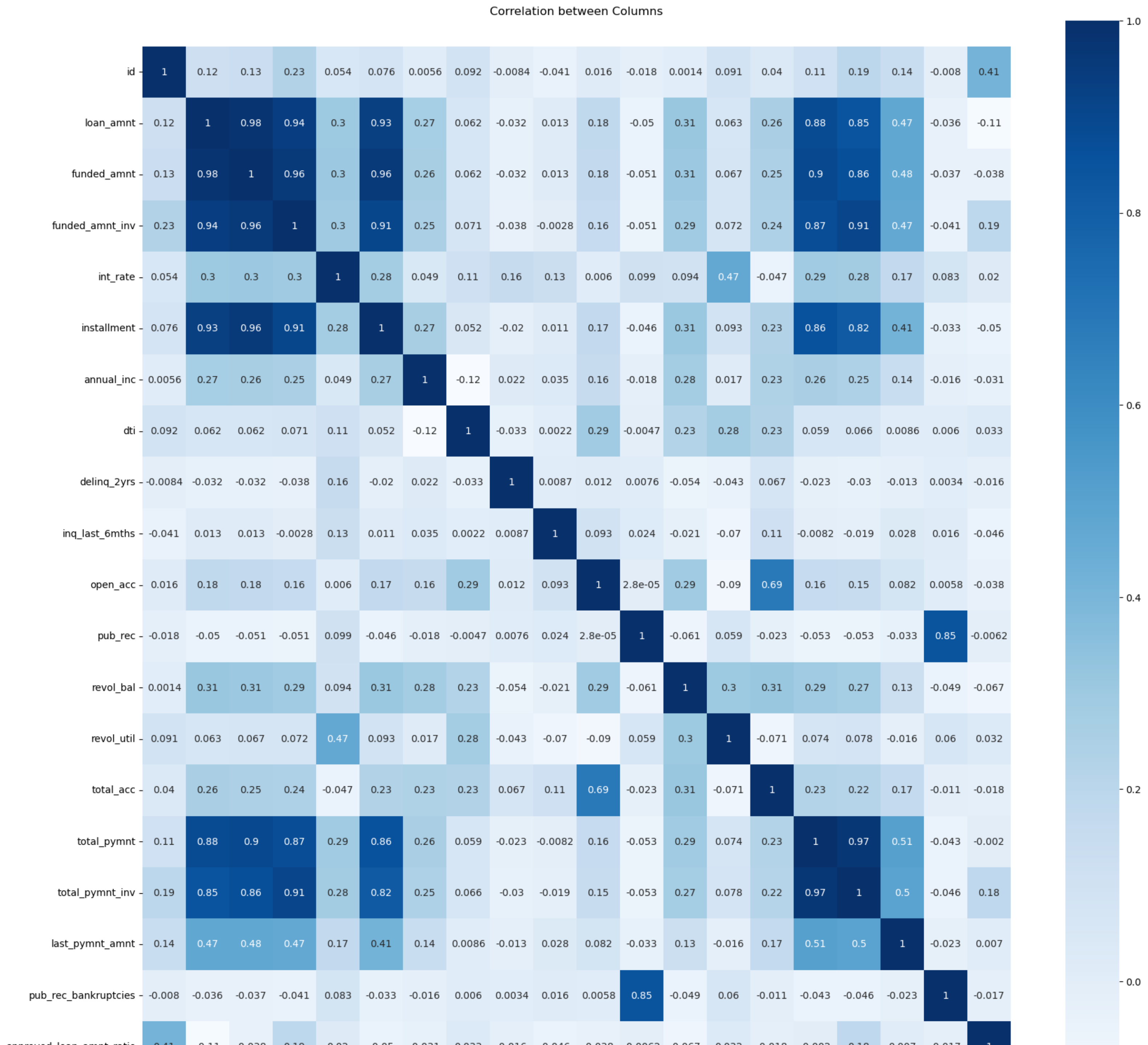




Correlation Matrix

Observations:

- The public derogatory records column is highly (+ve) correlated with public bankruptcies records.
- Interest rates are high for people with high revol utilization.



Conclusion

- Grades are a good metric for detecting defaulters. Lending club should examine more information from borrowers before issuing loans to low grade(G to A).
- Fully Paid rate is higher for 36 months tenure so the Lending club should give more loans for that tenure.
- The lower grade borrowers should be given less loans as they are more likely to default the loan.
- People with more public derogatory records are having more chances of filing for bankruptcy. Lending club should make sure that there are no records of derogatory for borrowers.