Data Collection and Preprocessing Phase

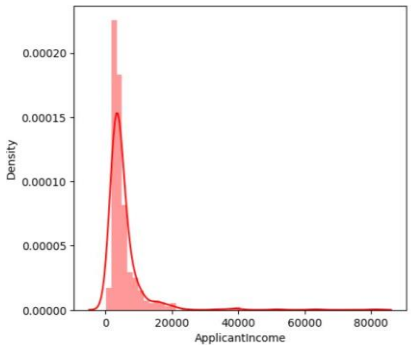
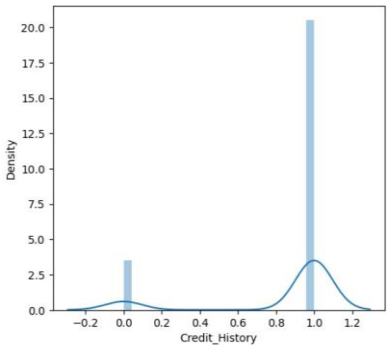
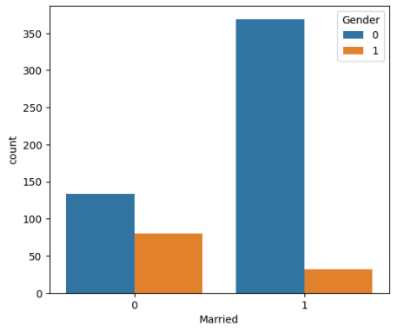
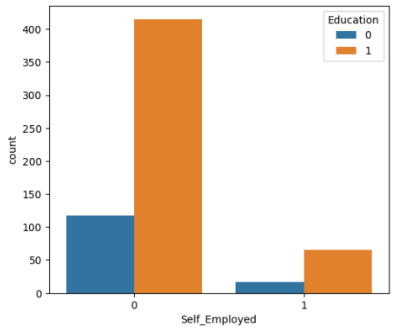
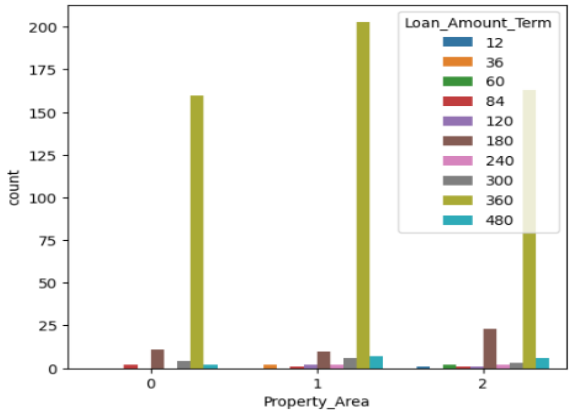
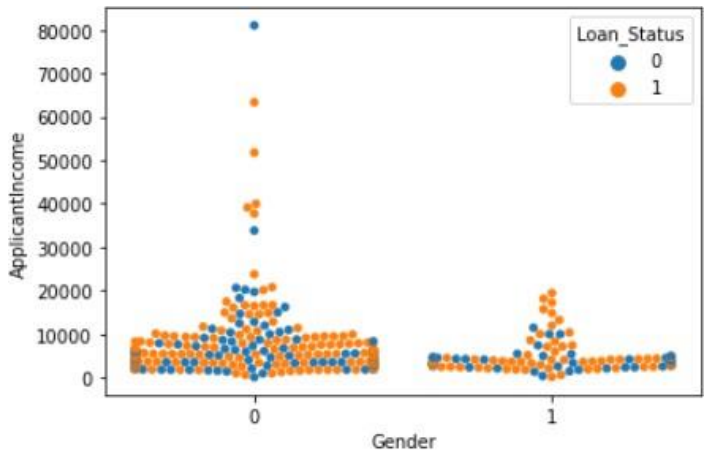
Date	28 April 2024
Team ID	738323
Project Title	SmartLender - Applicant Credibility Prediction for Loan Approval
Maximum Marks	6 Marks

Data Exploration and Preprocessing Report

Dataset variables will be statistically analyzed to identify patterns and outliers, with Python employed for preprocessing tasks like normalization and feature engineering. Data cleaning will address missing values and outliers, ensuring quality for subsequent analysis and modeling, and forming a strong foundation for insights and predictions.

Section	Description
Data Overview	Dimension: 614 rows × 13 columns Descriptive statistics:
Univariate Analysis	

	ApplicantIncome	CoapplicantIncome	LoanAmount	Loan_Amount_Term	Credit_History
count	614.000000	614.000000	592.000000	600.00000	564.000000
mean	5403.459283	1621.245798	146.412162	342.00000	0.842199
std	6109.041673	2926.248369	85.587325	65.12041	0.364878
min	150.000000	0.000000	9.000000	12.00000	0.000000
25%	2877.500000	0.000000	100.000000	360.00000	1.000000
50%	3812.500000	1188.500000	128.000000	360.00000	1.000000
75%	5795.000000	2297.250000	168.000000	360.00000	1.000000
max	81000.000000	41667.000000	700.000000	480.00000	1.000000

	 
Bivariate Analysis	  
Multivariate Analysis	

Outliers and Anomalies	-
Data Preprocessing Code Screenshots	

Loading Data	`#importing the dataset which is in csv file`
	`data = pd.read_csv('/content/Dataset/loan_prediction.csv')`
	`data`
	
	Loan_ID Gender Married Dependents Education Self_Employed ApplicantIncome CoapplicantIncome
	0 LP001002 Male No 0 Graduate No 5849 0.0
	1 LP001003 Male Yes 1 Graduate No 4583 1508.0
	2 LP001005 Male Yes 0 Graduate Yes 3000 0.0
	3 LP001006 Male Yes 0 Not Graduate No 2583 2358.0
	4 LP001008 Male No 0 Graduate No 6000 0.0

Handling Missing Data	`data['Gender'] = data['Gender'].fillna(data['Gender'].mode()[0])`
	
	`data['Married'] = data['Married'].fillna(data['Married'].mode()[0])`
	
	`#replacing + with space for filling the nan values`
	`data['Dependents']=data['Dependents'].str.replace('+','')`
	
	`<ipython-input-71-6ac39c248773>:2: FutureWarning: The default value of regex will change from`
	`data['Dependents']=data['Dependents'].str.replace('+','')`
	
	`data['Dependents'] = data['Dependents'].fillna(data['Dependents'].mode()[0])`
	
	`data['Self_Employed'] = data['Self_Employed'].fillna(data['Self_Employed'].mode()[0])`
	
	`data['LoanAmount'] = data['LoanAmount'].fillna(data['LoanAmount'].mode()[0])`
	
	`data['Loan_Amount_Term'] = data['Loan_Amount_Term'].fillna(data['Loan_Amount_Term'].mode()[0])`
	
	`data['Credit_History'] = data['Credit_History'].fillna(data['Credit_History'].mode()[0])`

Data Transformation	`data['Gender']=data['Gender'].map({'Female':1,'Male':0})`
	`data['Property_Area']=data['Property_Area'].map({'Urban':2,'Semiurban': 1,'Rural':0})`
	`data['Married']=data['Married'].map({'Yes':1,'No':0})`
	`data['Education']=data['Education'].map({'Graduate':1,'Not Graduate':0})`
	`data['Loan_Status']=data['Loan_Status'].map({'Y':1,'N':0})`
	
	`# perfroming feature Scaling op[eration using standard scaller on X part of the dataset because`
	`# there different type of values in the columns`
	`sc=StandardScaler()`
	`x_bal=sc.fit_transform(x_bal)`

Feature Engineering	Attached the codes in final submission.
Save Processed Data	-