Smart Lender Applicant Credibility Prediction for Loan Approval

IBM-Project-31088-1660196090

Team Members

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Chapter 1: INTRODUCTION

1.1 Project Overview

The credit system governed by the banks is one of the most important factors which affect our country's economy and financial condition. Also, credit risk is one of the main functions of the banking community. The prediction of credit defaulters is one of the difficult tasks for any bank. This problem occurs when the banks need to provide loans to the customers who are in need of the money. But by forecasting the loan defaulters, the banks definitely may reduce their loss by reducing their non-profit assets.

1.2 Purpose

People who need loan and want to check whether they are eligible for loan or not.

Chapter 2: LITERATURE SURVEY

2.1 References

S.NO	TITLE	AUTHOR	ABSTRACT
1.	Modern Approach for Loan Sanctioning in Banks Using Machine Learning	Golak Bihari Rath. Debasish Das.BiswaRanjan Acharya.	As the needs of people are increasing,the demand for loansin banks is also frequently gettinghigher every day. Usually, banks process the loan ofany applicant afterthe verification andchecking of its eligibility which is atough and time-taking process. In some cases, someapplicants default in payment resulting inloss of capital in banks. Machine learning approach would be an ideal solution to reduce human efforts and effective decision making in the loan approval process byimplementation of machine learning tools using classification algorithms to predictthe deserving applicants for loanapproval. In this paper, we build a system to construct amodel by training thesystem with records and approval results of the previously applied loan applicants. Model building is done by classification algorithms on the basis of some predictive featuresthat categorize an outcome value as approve or

			disapprove. We foundthe logistic regression model has the best performancein comparison with other models and canbe used as a predictive modelreducing the risk factor in selecting thedeserving applicants for loan repayment saving a lot of bank efforts and assets. Further, this model can be implementedin the banking sectorallowing faster processing of loans.
2.	Loan CredibilityPrediction System using Data Mining Techniques	Anuja Kadam. Pragati Namde. Sonal Shirke. Siddhesh Nandgaonkar.Dr.D.R.Ingle.	As we know that now-a-days there is arapid growth in the banking sector, resulting in lots of people applying for bank loans. Findingout the applicant to whom the loan will beapproved is a difficult process. Data mining techniques are becoming very popular nowadays because of the wide availability of huge quantities of dataand the need for transforming such data into knowledge.Techniques of data mining are implemented in various domains such as retail industry, telecommunication industry, biological data analysis, etc. Inthis paper, we proposed a model which predicts loan

			approval/rejection ofan applicant using data mining techniques. This canbe done by training the model with the data of the previous records of the peopleapplied for loan.
3.	Loan Prediction usingDecision Tree and Random Forest	Kshitiz Gautam. Arun Pratap Singh. Keshav Tyagi. Mr. Suresh Kumar.	In India, the numberof people or organizations applying for loans increases every year.The bank employeeshave to put in a lot ofwork to analyze or predict whether the customer can pay back the loan amountor not (defaulter or non-defaulter) in the given time. The aim of this paper is to findthe nature or background or credibility of the client that is applyingfor the loan. We use exploratory data analysis techniques to deal with the problem of approvingor rejecting the loan request or in short loan prediction. The main focus of this paper is to determinewhether the loan given to a particular person or an organization shall beapproved or not.
4.	Logistic Regression Based Loan Approval Prediction	Sai Aparna Vangaveeti.Naga Likitha Venna.	As we know that now-a-days there is arapid growth in the banking sector, resulting in

		Prasanna Naga Sri RamyaYajaman am Kidambi. Harika Marneni. Naga Satish KumarMaganti	lots of people applying for bank loans. Findingout the applicant to whom the loan will beapproved is a difficult process. In this paper,we proposed a modelwhich predicts loan approval/rejection of an applicant using machine learning techniques. This can be done by training the model with the data of the previous records of the peopleapplied for loan

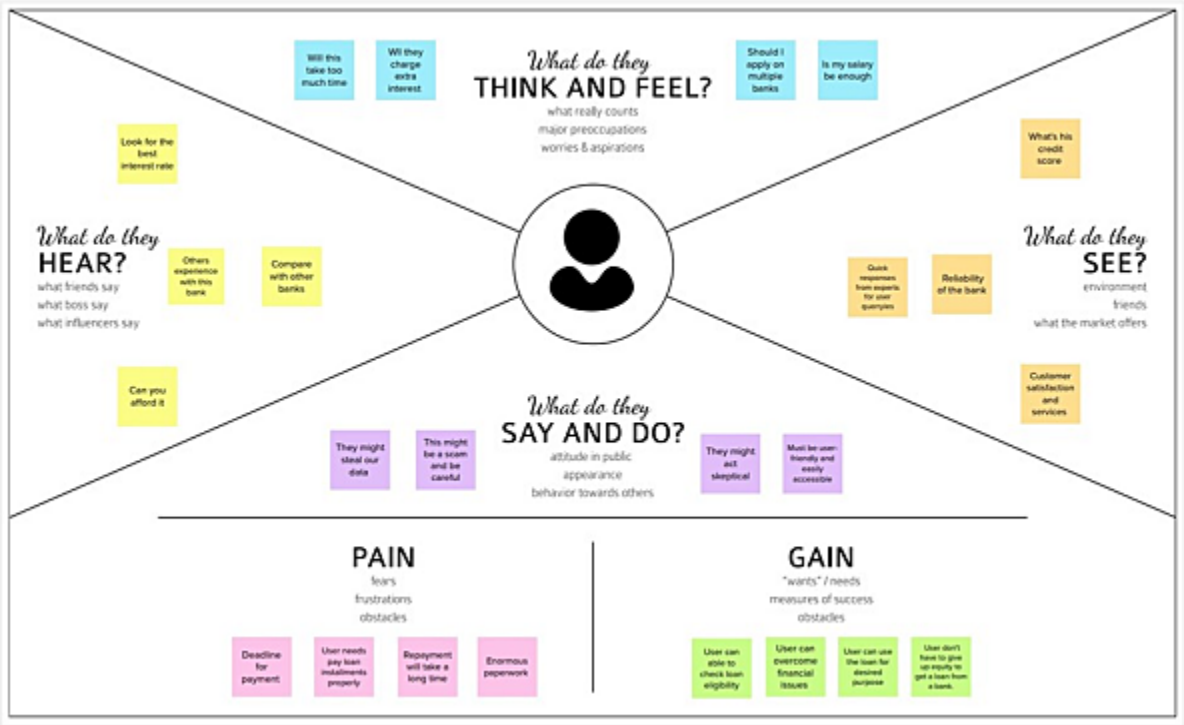
2.2 Problem Statement Definition

The credit system governed by the banks is one of the most important factors which affect our country's economy and financial condition. Also, credit risk is one of the main functions of the banking community. The prediction of credit defaulters is one of the difficult tasks for any bank. This problem occurs when the banks need to provide loans to the customers who are in need of the money. But by forecasting the loan defaulters, the banks definitely may reduce their loss by reducing their non-profit assets.

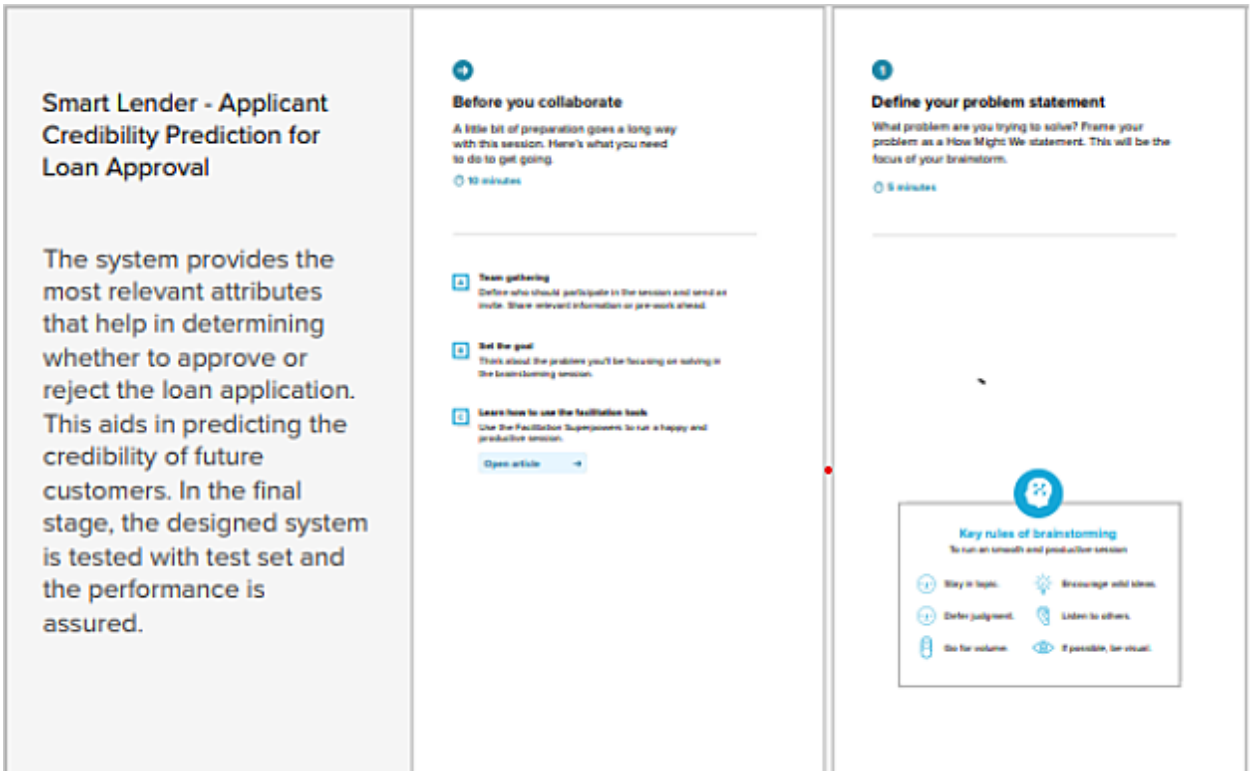
Chapter 3: IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviours and attitudes. It is a useful tool to help teams better understand their users. Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.



3.2 Ideation & Brainstorming



Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

SAVITHA

Bank coverage

Decrease computation cost.

SUBBALAKSHMI

Increase accuracy

Usage of multiple models

Check loan range

Multi - Label classification

Increase accessibility

SIVAPRIYA

Get monthly income

Check bank statements

VINITHA.

Get educational status

Flexible for multiple conditions

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

20 minutes

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

20 minutes

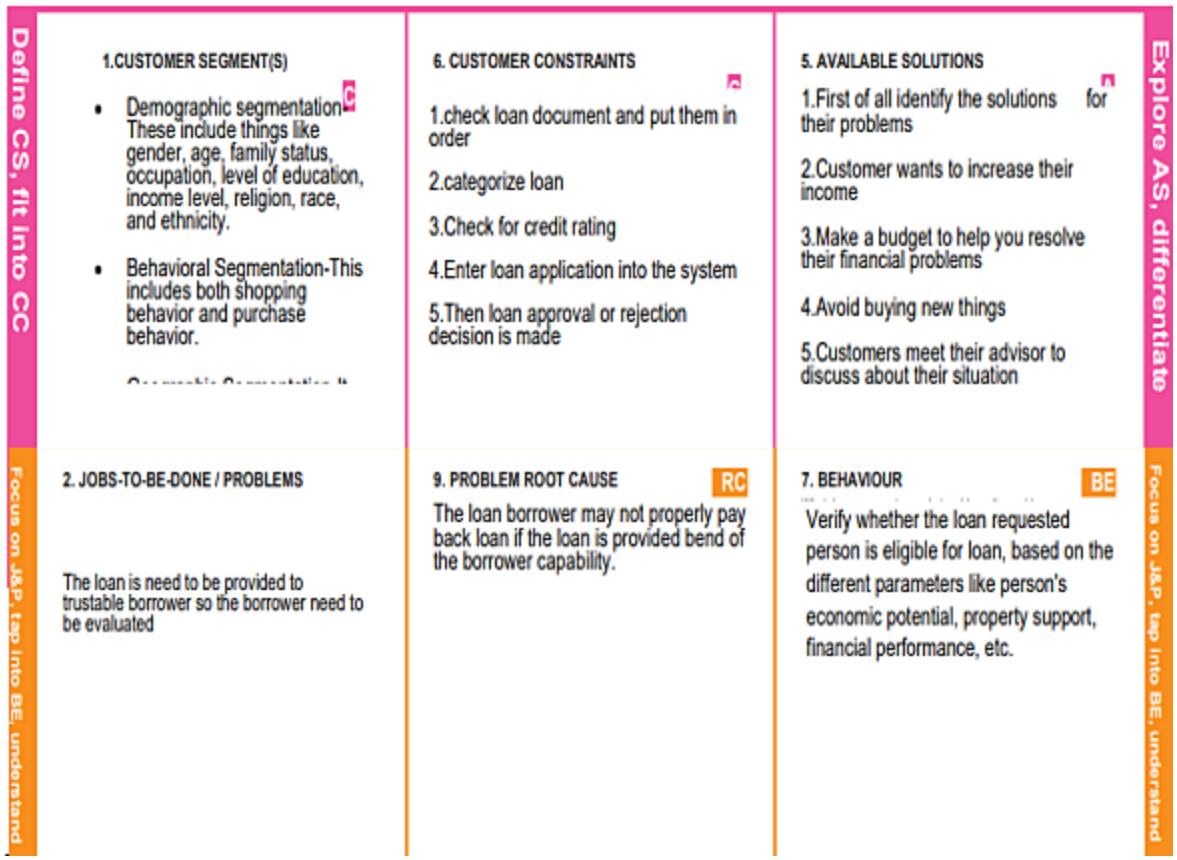
TIP

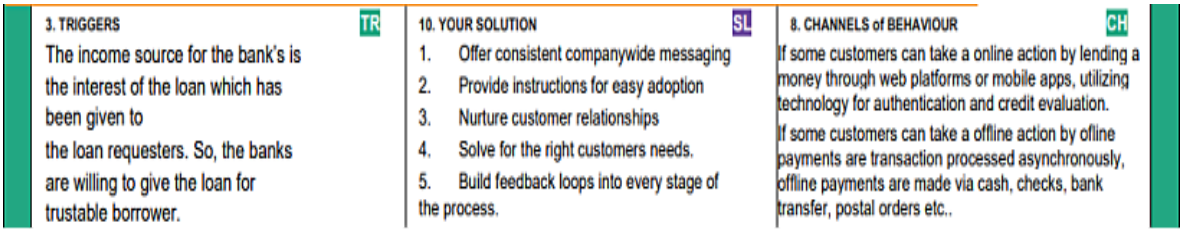
Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

3.3 Proposed Solution

S.No.	Parameter	Description
1	Problem Statement (Problem to be solved)	Insufficient Income . Not having steady source of income.
2.	Idea / Solution description	A steady source of income is the proof for any lender that you are capable of repaying your personal loan.
3.	Novelty / Uniqueness	Banks have set a minimum monthly salary cap.
.4.	Social Impact / CustomerSatisfaction	In the absence of a job, ensure that you have other sources of income.
5.	Business Model (RevenueModel)	Avoid applying for a loan when you have just switched jobs.
6.	Scalability of the Solution	Interest payouts or rental income, that will help you make EMI payments.

3.4 Problem Solution fit





4. EMOTIONS: BEFORE / AFTER EM While evaluating the loan applicant the bankers struggle in deciding how to evaluate the loan applicant, which are the things to be considered and what are the criteria level needed to be checked. If the loan borrowers are not paying back the loan at specified intervals then the banks are not able to generate income which is necessary for maintaining the bank and providing the interest for the depositors. providing the interest for the depositors.		Flexibility for customer to pay through offline payment methods can help extend customers business.

Chapter 4: REQUIREMENT ANALYSIS

4.1 Functional requirement

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	• Registration through Form • Registration through Gmail • Registration through LinkedIN
FR-2	User Confirmation	• Confirmation via Email • Confirmation via OTP
FR-3	User Application	• Filling of application • Modification of application • Verification of application
FR-4	Loan Issuance	• Checking status of loan • Loan Approval • Loan Rejection

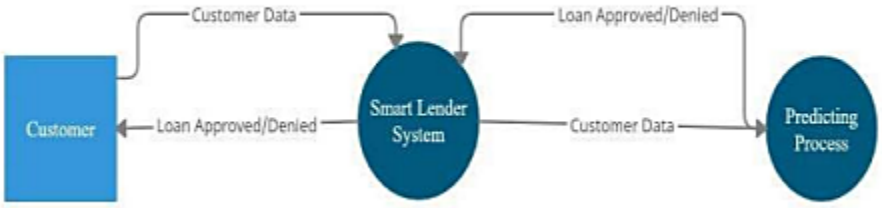
4.2 Non-Functional requirements

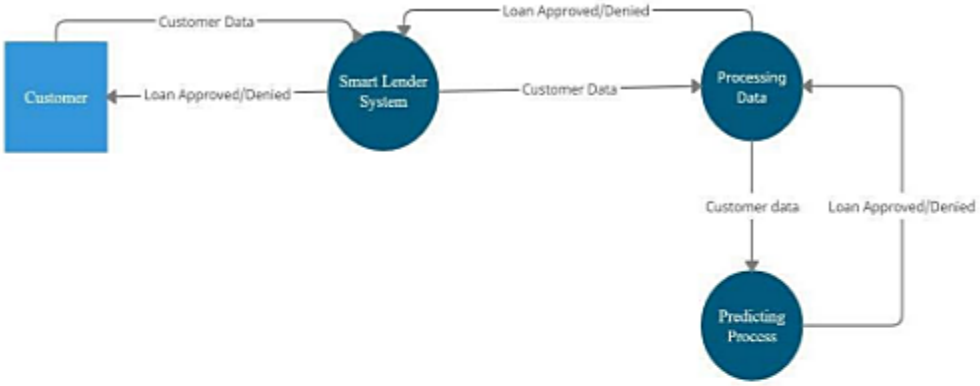
FR No.	Non-Functional Requirement	Description
NFR-1	Usability	● Easy to use and self-explaining website. ● Easy navigation between pages. ● Simple structure for faster access.
NFR-2	Reliability	● Ensembling the outputs of various ML models.
NFR-3	Performance	● Web Based Application. ● Ability to indicate user inputs of erroneous data types.
NFR-4	Availability	● Application is available 24 / 7 as it is hosted on IBM cloud. ● Simple web browser is enough to access the website.
NFR-5	Scalability	● Can be extended for other types of loans. ● Aadhar and PAN verification can also be implemented.

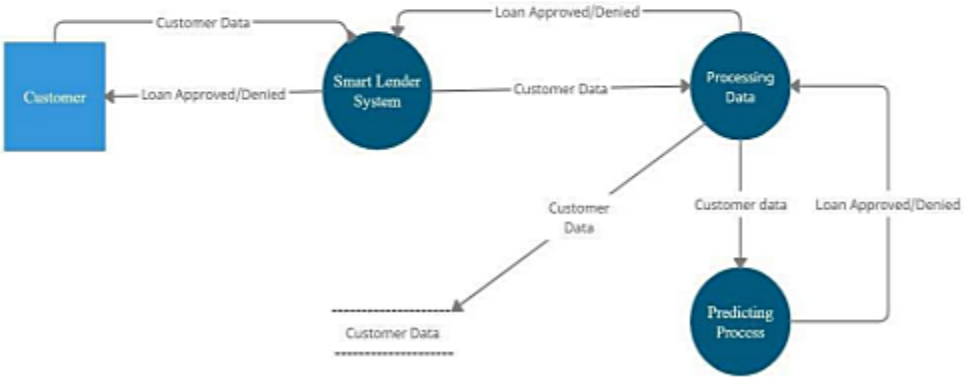
Chapter 5: PROJECT DESIGN

5.1 Data Flow Diagrams

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.





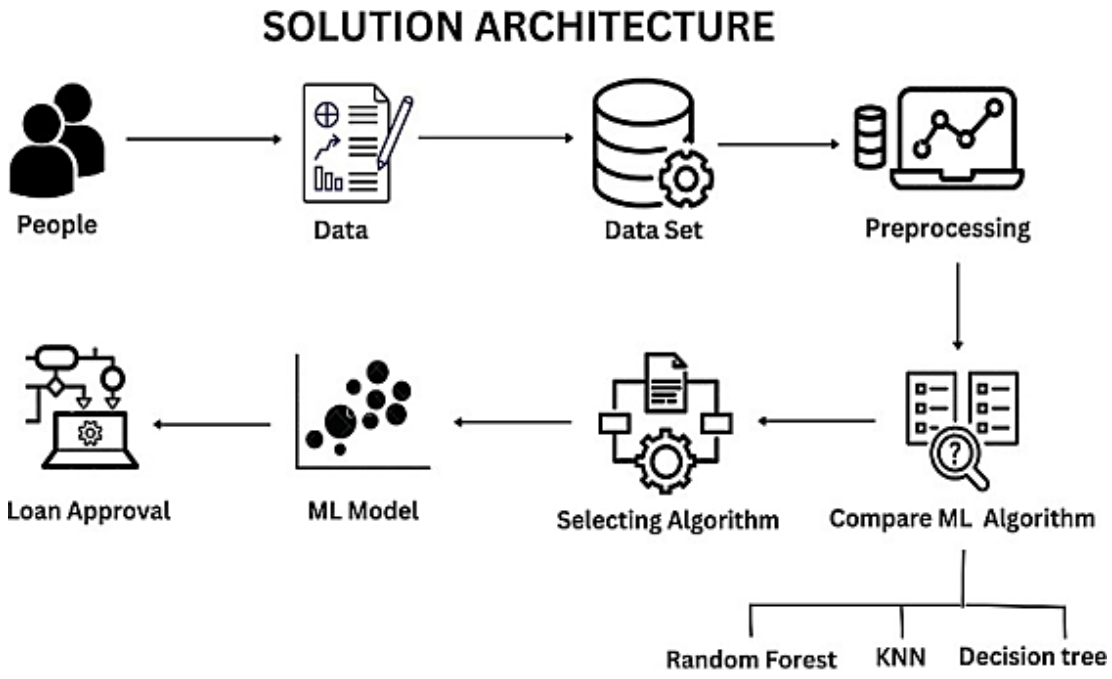


5.2 Solution & Technical

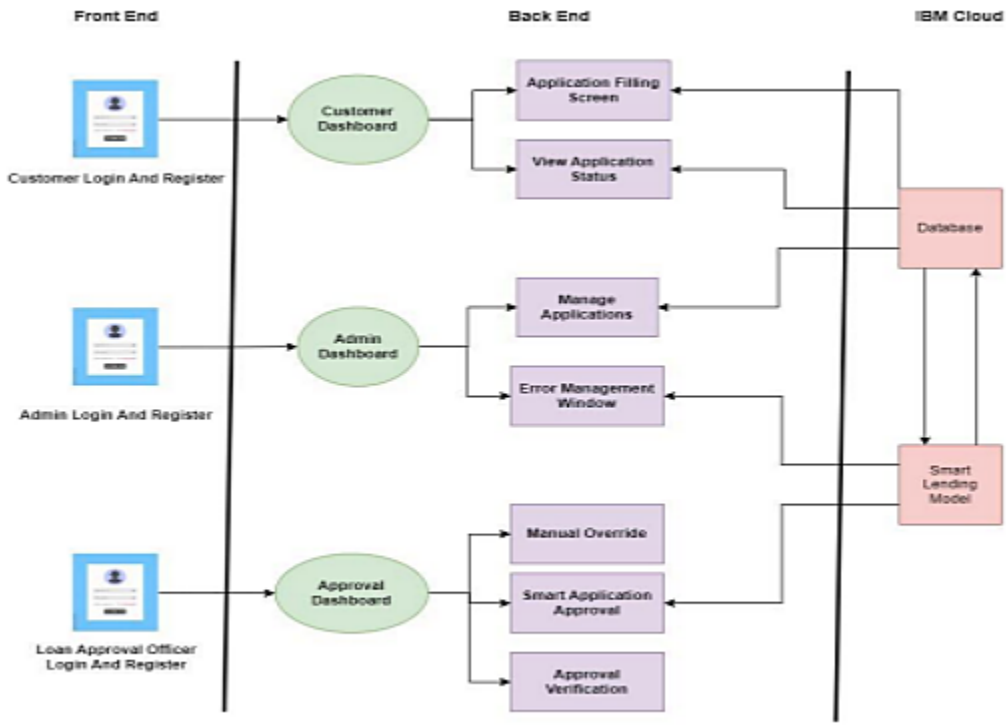
ArchitectureSolution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems
- Describe the structure, characteristics, behavior, and other aspects of the software to projectstakeholders.
- Define features, development phases, and solution requirements
- Provide specifications according to which the solution is defined, managed, and delivered.



Technical Architecture:



5.3 User Stories

User Type	Functional Requirement	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Money lender (Web user)	Dashboard	USN-1	As a user, I should be able to access the dashboard.	Access the dashboard	Low	Sprint 3
		USN-2	Select the type of loan	Select the typeof loan	Medium	Sprint 3
	Check for loan eligibility	USN-3	Fill the application with the details of the borrower.	Check the eligibility of the borrower.	High	Sprint 4
Borrower	Dashboard	USN-4	Should be able to access the dashboard.	Access the dashboard.	Low	Sprint 3
		USN-5	Choose the type of loan	Choose the typeof loan	Medium	Sprint 3

Chapter 6: PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

Product Backlog, Sprint Schedule, and Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High	Savitha, Sivapriya, Subbalakshmi, Vinitha
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Savitha, Sivapriya, Subbalakshmi, Vinitha
Sprint-2		USN-3	As a user, I can register for the application through Facebook	2	Low	Savitha, Sivapriya, Subbalakshmi, Vinitha
Sprint-1		USN-4	As a user, I can register for the application through Gmail	2	Medium	Savitha, Sivapriya, Subbalakshmi, Vinitha
Sprint-1	Login	USN-5	As a user, I can log into the application by entering email & password	1	High	Savitha, Sivapriya, Subbalakshmi, Vinitha

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
	Dashboard					Savitha, Sivapriya, Subbalakshmi, Vinitha

6.2 Sprint Delivery Schedule

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	29 Oct 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	29 Oct 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	29 Oct 2022

Velocity

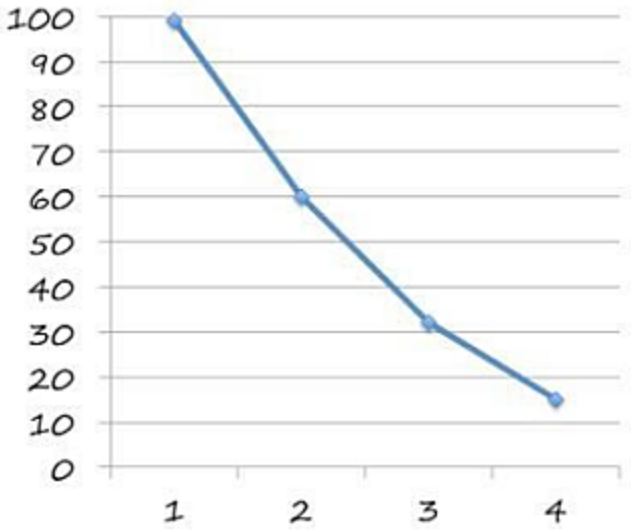
Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

$$AV = \frac{sprint\ duration}{velocity} = \frac{20}{10} = 2$$

Our Project velocity

Velocity: Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

AV = sprint duration/velocity = 20/10 = 2



In our project,there are 4 sprint activities.

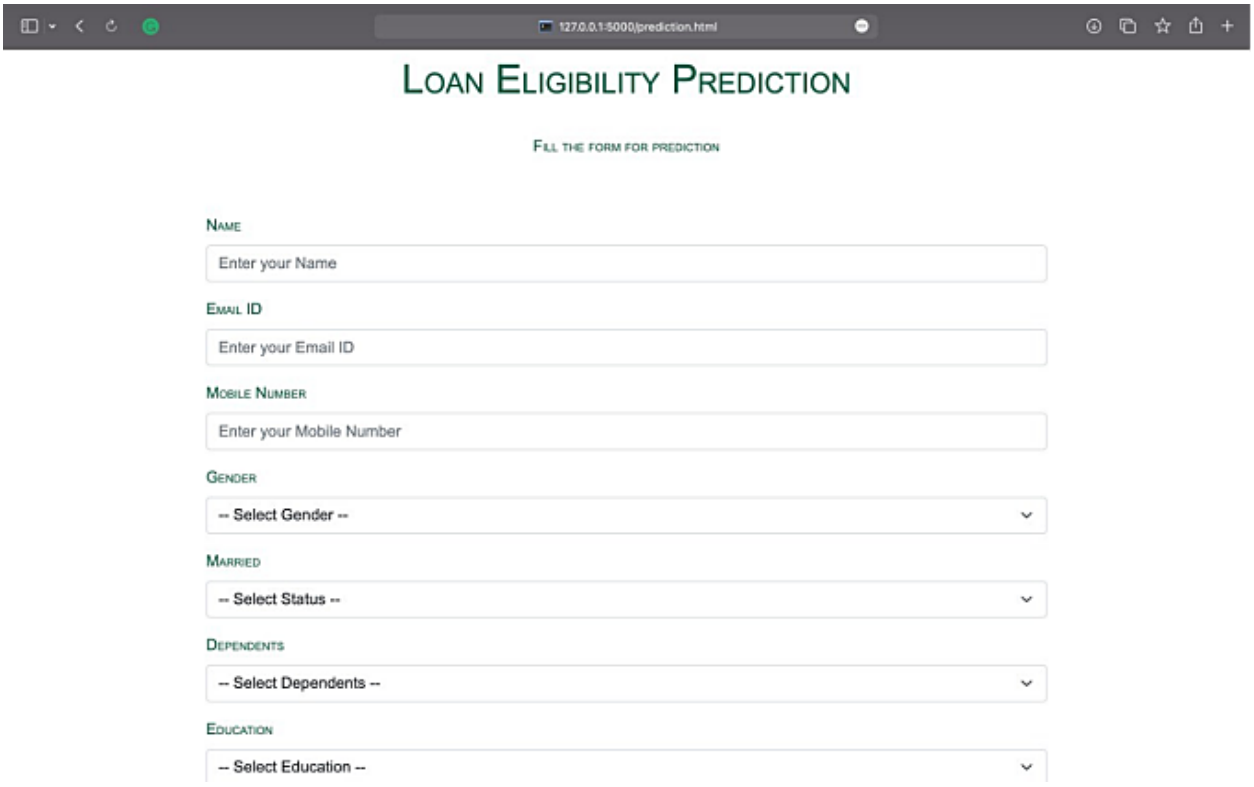
This chart is drawn by taking

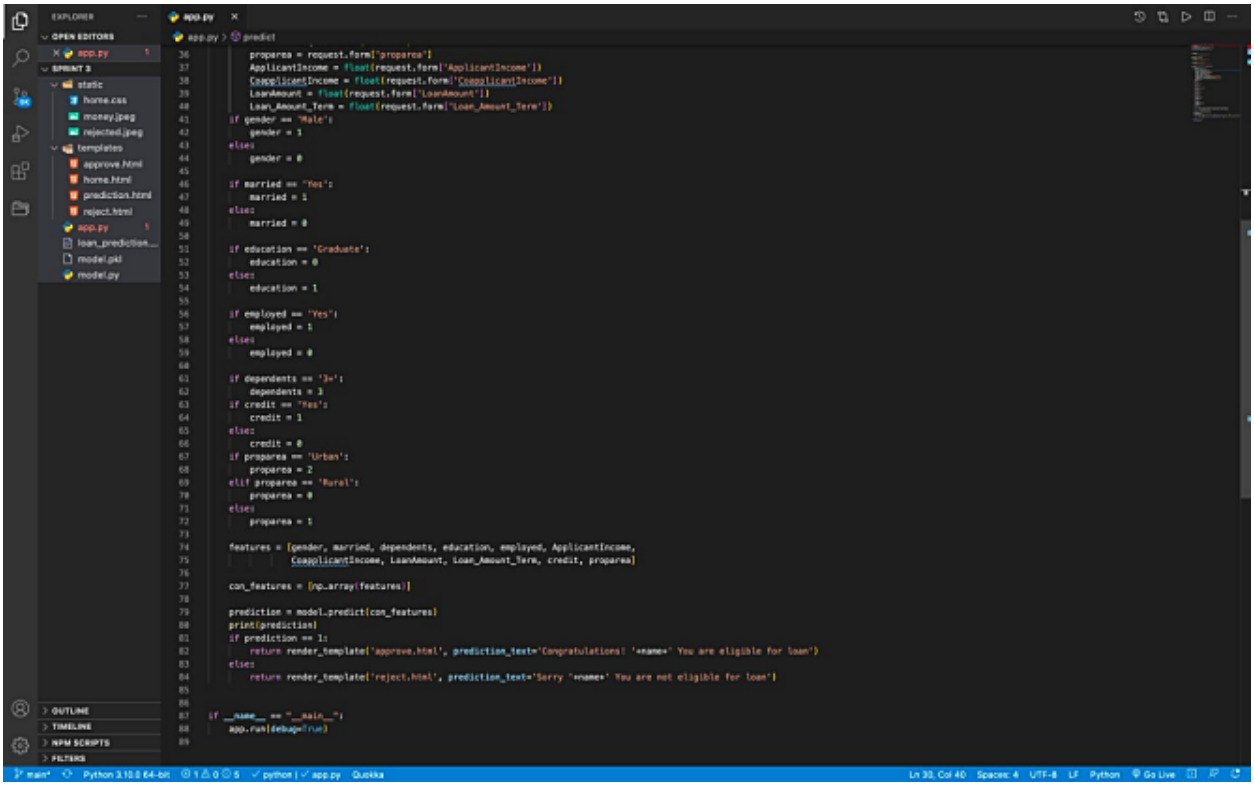
X - sprint and

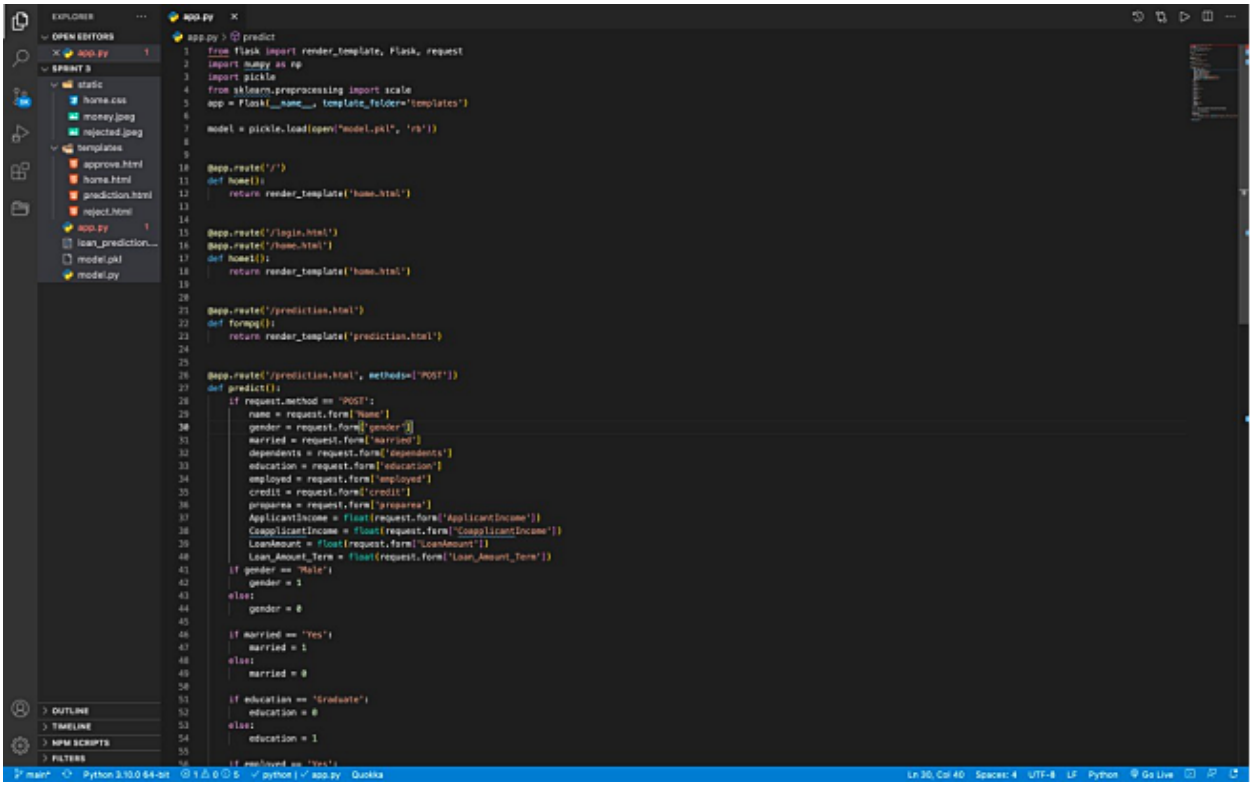
Y - Pending hours.

Chapter 7: CODING & SOLUTIONING

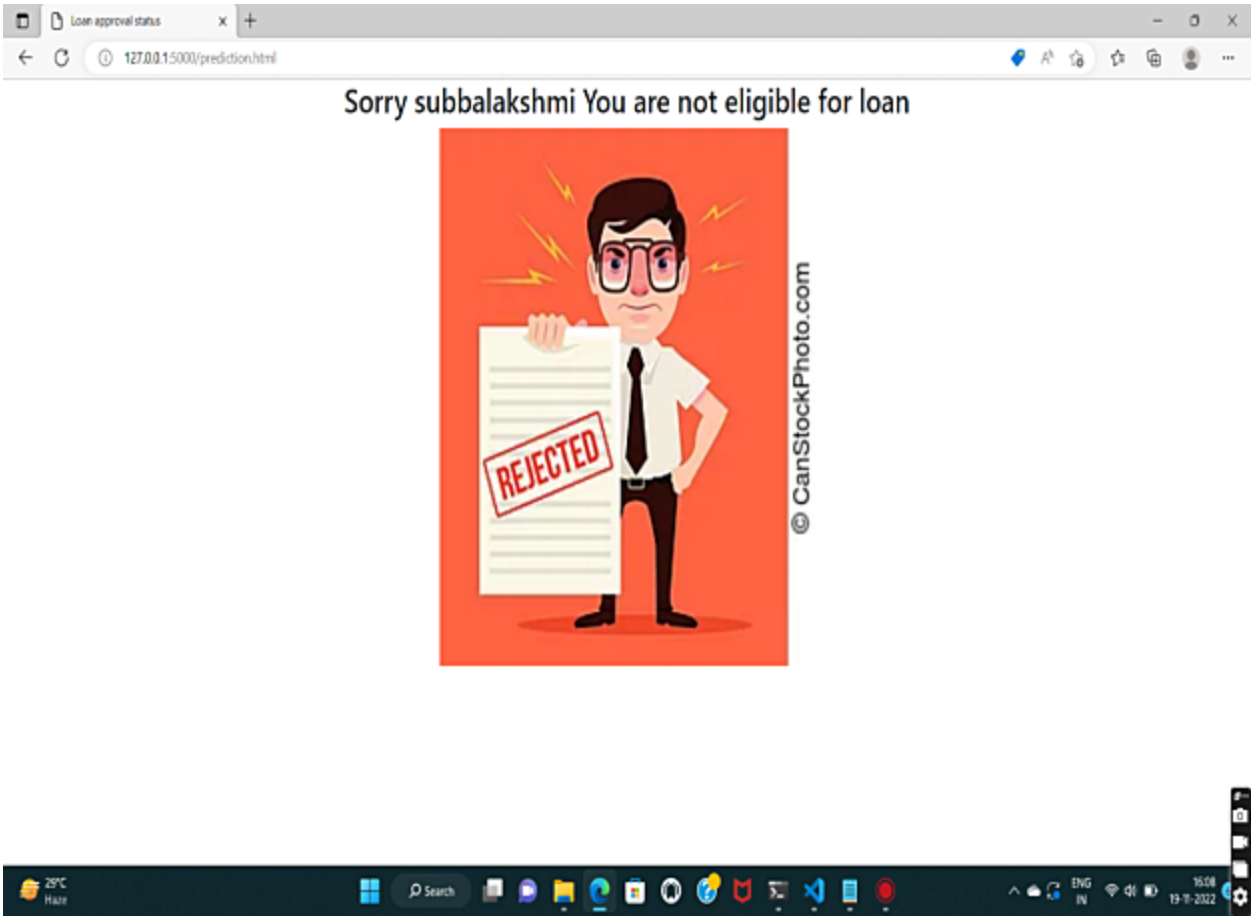
7.1 Feature 1

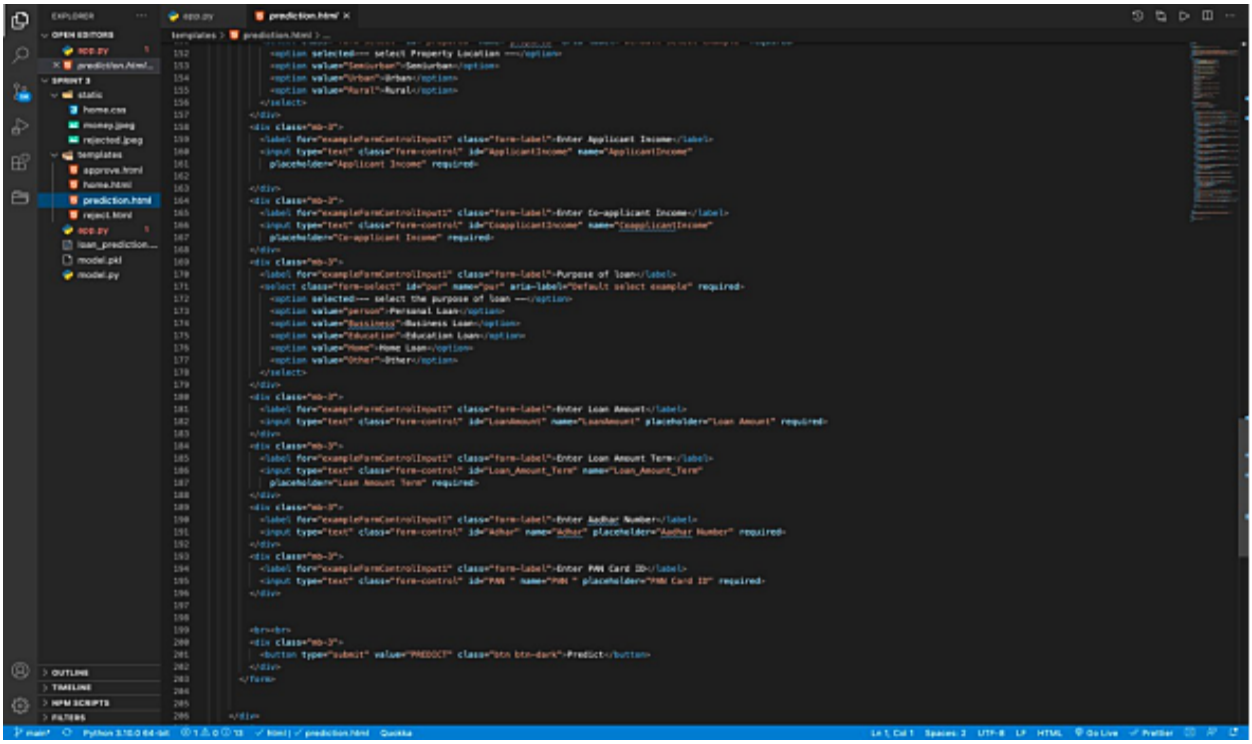


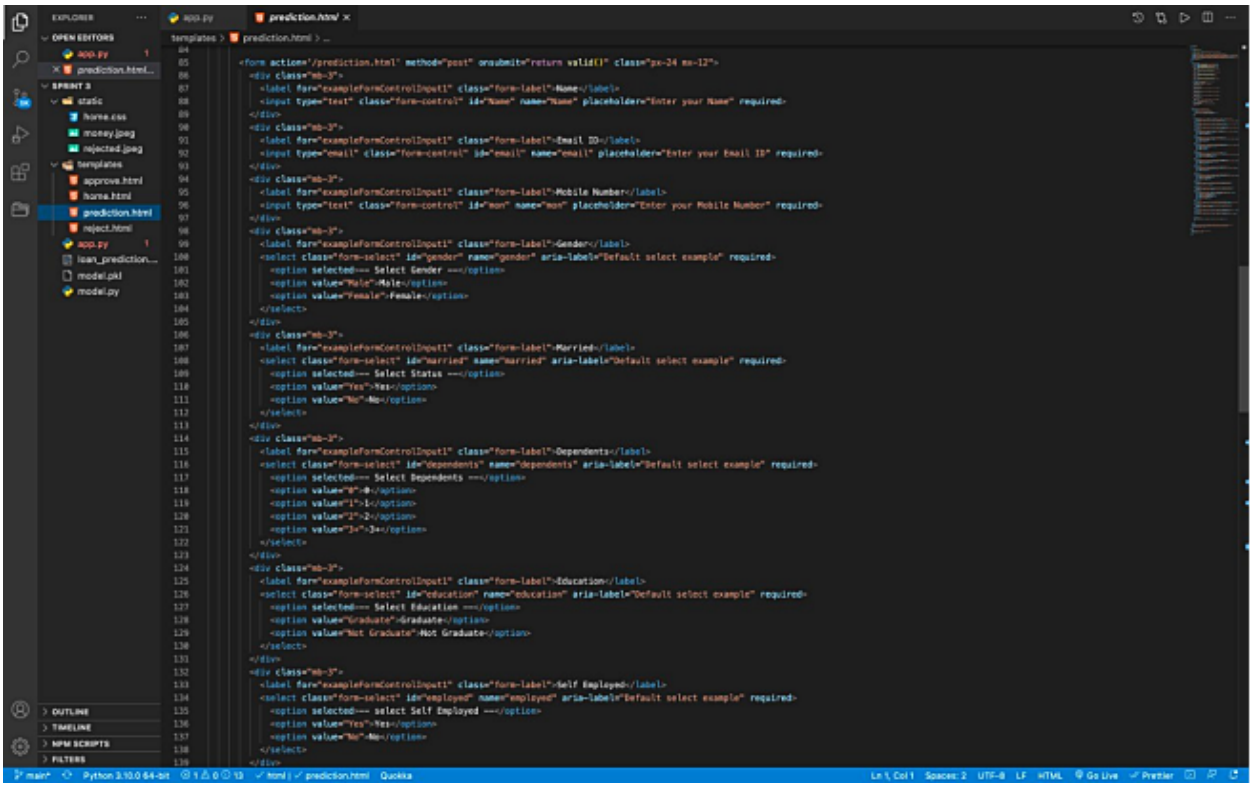



app.py
from flask import render_template, Flask, request
import numpy as np
import pickle
from sklearn.preprocessing import scale
app = Flask(__name__, template_folder='templates')
model = pickle.load(open("model.pkl", 'rb'))
@app.route('/')
def home():
return render_template('home.html')
@app.route('/login.html')
@app.route('/home.html')
def home1():
return render_template('home.html')
@app.route('/prediction.html')
def formpg():
return render_template('prediction.html')
@app.route('/prediction.html', methods=['POST'])
def predict():
if request.method == 'POST':
name = request.form['Name']
gender = request.form['gender']
married = request.form['married']
dependents = request.form['dependents']
education = request.form['education']
employed = request.form['employed']
credit = request.form['credit']
propArea = request.form['propArea']
ApplicantIncome = float(request.form['ApplicantIncome'])
CoapplicantIncome = float(request.form['CoapplicantIncome'])
LoanAmount = float(request.form['LoanAmount'])
Loan_Amount_Term = float(request.form['Loan_Amount_Term'])
if gender == 'Male':
gender = 1
else:
gender = 0
if married == 'Yes':
married = 1
else:
married = 0
if education == 'Graduate':
education = 0
else:
education = 1

7.2 Feature 2


Loan approval status
127.0.0.1:5000/prediction.html
Sorry subbalakshmi You are not eligible for loan
REJECTED
© CanStockPhoto.com





Chapter 8: TESTING

8.1 Test Cases

Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	TC for Automation(Y/N)	BUG ID	Executed By
Functional	e Page	Verify user is able to click on Predict button		1.Enter URL and fillthe form 2.Click on Predict button		Loan form should display	Working as expected	Pass				
Functional	Home Page	The web page is getting refreshed		1.Automatic page reload		Loan form must appear automatical ly after page reload	Working as expected	Fail	No steps needed	Y	BUG-1234	
Functional	Home page	Field address validation		1. Double-click on theE-mail address field		User should navigate to E-mail address field	Working as expected	Pass				
Functional	Output page	Loan Credibili ty predicted output		1. Click on predict button 2. View the predicted results		User should access the Loan credibili ty predicted result	Working as expected	Pass				

8.2 user Acceptance Testing

1. Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the [ProductName] project at the time of the release to User Acceptance Testing (UAT).

2. Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and how theywere resolved

Resolution	Severity1	Severity2	Severity3	Severity4	Subtotal
By Design	9	3	1	2	15
Duplicate	0	0	4	0	4
External	1	2	0	0	3
Fixed	10	5	4	21	40
Not Reproduced	0	0	0	0	0
Skipped	0	0	0	0	0
Won't Fix	0	0	0	0	0
Totals	20	9	9	23	64

Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested.

	Total Cases	Not Tested	Fail	Pass
Print Engine	5	0	0	5
Application	46	0	0	46
Security	4	0	0	4
Outsource Shipping	3	0	0	3
Exception Reporting	7	0	0	7
Final Report Output	4	0	0	4
Version Control	2	0	0	2

Chapter 9: RESULTS

9.1 Performance Metrics

Model Performance Testing:

Project team shall fill the following information in the model performance testing template.

	Parameter	**Screenshot / Values**
1	Data Responsiveness	The ML model takes about 0.3 seconds to process thedataset. The credibility result is predicted in approximately 0.9 seconds.
2	Utilisation of DataFilters	Sufficient data filters have been used for ideal modelbuilding
3	Effective User Story	No of Scene Added - 15
4	Descriptive Reports	No of Visualisations / Graphs - 13

Chapter 10: ADVANTAGES & DISADVANTAGES

Advantages:

Keep Control of the Company

A bank loans money to a business based on the value of the business and its service the loan by making payments on time and in full. Unlike with equity business issues shares, banks do not take any ownership position in businesses. Bank also do not get involved in any aspect of running a business to which a bank grants means you ghet to retain full management and control of your business with interference.

Bank Loan is Temporary

Once a business borrower has paid off a loan, there is no more obligation to or the bank lender unless the borrower wishes to take out a subsequent loan. equity finance, where the company may be paying out dividends to shareholders for as business exists.

Interest is Tax Deductible

The interest on business bank loans is tax-deductible. In addition, especially with in which the interest rate does not change during the course of a loan, loan remain the same throughout the life of the loan. This makes it easy for businesses to plan for monthly loan payments. Even if the loan is an adjustable-rate loan, business use a simple spreadsheet to compute future payments in the event of a change in rates.

Disadvantages:

Tough to Qualify

One of the greatest disadvantages to bank loans is that they are very difficult to small business has a substantial track record or valuable collateral such as real estate careful to lend only to businesses that can clearly repay their loans, and they also able to cover losses in the event of default. Business borrowers can be required to provide personal guarantees, which means the borrower's personal assets can be seized in the event the business fails and is unable to repay all or part of a loan.

High Interest Rates

Interest rates for small-business loans from banks can be quite high, and the amount of bank funding for which a business qualifies is often not sufficient to completely meet its needs. The high interest rate for the funding a business does receive often stunts its expansion, because the business needs to not only service the loan but also deal with additional funding to cover funds not provided by the bank. Loans guaranteed by the U.S. Small Business Administration offer better terms than other loans, but the requirements to qualify for these subsidized bank loans are very strict.

Chapter 11: CONCLUSION

The analysis starts from data cleaning and processing missing value, exploratory analysis and finally model building and evaluation of the model. The best accuracy on public test set is when we get higher accuracy score and other performance metrics which will be found out. This project can help to predict the approval of bank loan or not for a candidate.

Chapter 12: FUTURE SCOPE

In order to analyse the risk associated for the bank, credit evaluation largely involves gathering information about the customer and examining the project's technical, financial,and economic viability and this process developed a lot.

Chapter 13: APPENDIX

Source Codeindex.html

```
<form action='/prediction.html' method="post" onsubmit="return valid()" class="px-24 mx-12">
 <div class="mb-3">
  <label for="exampleFormControlInput1" class="form-label">Name</label>
    <input type="text" class="form-control" id="Name"
name="Name" placeholder="Enter your Name" required>
 </div>
 <div class="mb-3">
  <label for="exampleFormControlInput1" class="form-label">Email ID</label>
    <input type="email" class="form-control" id="email"
name="email" placeholder="Enter your Email ID" required>
 </div>
 <div class="mb-3">
  <label for="exampleFormControlInput1" class="form-label">Mobile Number</label>
      <input type="text" class="form-control" id="mon"
name="mon" placeholder="Enter your Mobile Number" required>
 </div>
 <div class="mb-3">
  <label for="exampleFormControlInput1" class="form-label">Gender</label>
                <select class="form-select" id="gender"
name="gender" aria-label="Default select example" required>
    <option selected>-- Select Gender --</option>
    <option value="Male">Male</option>
<option value="Female">Female</option>
```

```
  </select>
 </div>
 <div class="mb-3">
  <label for="exampleFormControlInput1" class="form-label">Married</label>
   <select class="form-select" id="married" name="married" aria-
label="Default select example" required>
    <option selected>-- Select Status --</option>
    <option value="Yes">Yes</option>
    <option value="No">No</option>
  </select>
 </div>
 <div class="mb-3">
  <label for="exampleFormControlInput1" class="form-
  label">Dependents</label>
     <select class="form-select" id="dependents"
name="dependents" aria-label="Default select example" required>
    <option selected>-- Select Dependents --</option>
    <option value="0">0</option>
    <option value="1">1</option>
    <option value="2">2</option>
    <option value="3+">3+</option>
  </select>
 </div>
 <div class="mb-3">
  <label for="exampleFormControlInput1" class="form-
  label">Education</label>
```

```
        <select class="form-select" id="education"
name="education" aria-label="Default select example" required>
    <option selected>-- Select Education --</option>

    <option value="Graduate">Graduate</option>

    <option value="Not Graduate">Not Graduate</option>

  </select>

 </div>

 <div class="mb-3">

  <label for="exampleFormControlInput1" class="form-label">Self
  Employed</label>

        <select class="form-select" id="employed"
name="employed" aria-label="Default select example" required>
    <option selected>-- select Self Employed --</option>

    <option value="Yes">Yes</option>

    <option value="No">No</option>

  </select>

 </div>

 <div class="mb-3">

  <label for="exampleFormControlInput1" class="form-label">Credit
  History</label>

       <select class="form-select" id="credit" name="credit" aria-
label="Default select example" required>
    <option selected>-- select Credit History --</option>

    <option value="Yes">Yes</option>

    <option value="No">No</option>


  </select>
```

```
</div>

<div class="mb-3">

<label for="exampleFormControlInput1" class="form-label">Property
Location</label>

        <select class="form-select" id="proparea"
name="proparea" aria-label="Default selectexample" required>


<option selected>-- select Property Location --</option>

<option value="Semiurban">Semiurban</option>

<option value="Urban">Urban</option>

<option value="Rural">Rural</option>

</select>

</div>

<div class="mb-3">

<label for="exampleFormControlInput1" class="form-label">Enter Applicant
Income</label>

<input type="text" class="form-control" id="ApplicantIncome"

name="ApplicantIncome"placeholder="Applicant Income" required>


</div>

<div class="mb-3">

                <label for="exampleFormControlInput1"
class="form-label">Enter Co-applicantIncome</label>

<input type="text" class="form-control"

id="CoapplicantIncome" name="CoapplicantIncome"

placeholder="Co-applicant Income" required>

</div>
```

```
<div class="mb-3">
  <label for="exampleFormControlInput1" class="form-label">Purpose of
  loan</label>
        <select class="form-select" id="pur" name="pur" aria-
label="Default select example"required>
    <option selected>-- select the purpose of loan --</option>
    <option value="person">Personal Loan</option>
    <option value="Bussiness">Business Loan</option>
    <option value="Education">Education Loan</option>
    <option value="Home">Home Loan</option>
    <option value="Other">Other</option>
  </select>
</div>
<div class="mb-3">
  <label for="exampleFormControlInput1" class="form-label">Enter Loan
  Amount</label>
        <input type="text" class="form-control" id="LoanAmount"
name="LoanAmount"placeholder="Loan Amount" required>
</div>
<div class="mb-3">
        <label for="exampleFormControlInput1" class="form-
label">Enter Loan AmountTerm</label>
                <inputtype="text"class="form-
control"id="Loan_Amount_Term"name="Loan_Amount_Term"
    placeholder="Loan Amount Term" required>
</div>
<div class="mb-3">
```

```
<label for="exampleFormControlInput1" class="form-label">Enter Aadhar
Number</label>

<input type="text" class="form-control" id="Adhar"
name="Adhar" placeholder="Aadhar Number" required>
</div>
<div class="mb-3">
<label for="exampleFormControlInput1" class="form-label">Enter PAN Card
ID</label>

<input type="text" class="form-control" id="PAN " name="PAN
" placeholder="PAN Card ID" required>
</div>

<br><br>
<div class="mb-3">
<button type="submit" value="PREDICT" class="btn btn-
dark">Predict</button>
</div>
</form>
```

app.py

```
from flask import
render_template,
Flask, requestimport
numpy as np
import pickle
from sklearn.preprocessing import scale
app = Flask(_name_, template_folder='templates')
```

```
                model = pickle.load(open("model.pkl", 'rb'))
@app.route('/')def home():
                return render_template('home.html')
@app.route('/login.html') @app.route('/home.html')def home1():
                return render_template('home.html')
@app.route('/prediction.html')def formpg():
                return render_template('prediction.html')
@app.route('/prediction.html', methods=['POST']) def predict():
  if request.method == 'POST': name = request.form['Name'] gender = request.form['gender']
married = request.form['married']
dependents = request.form['dependents']education =
request.form['education'] employed =
request.form['employed'] credit =
request.form['credit']proparea =
request.form['proparea']

ApplicantIncome = float(request.form['ApplicantIncome'])

CoapplicantIncome =

float(request.form['CoapplicantIncome']) LoanAmount =

float(request.form['LoanAmount']) Loan_Amount_Term =

float(request.form['Loan_Amount_Term'])


if gender == 'Male':gender = 1

else:

gender = 0


if married == 'Yes':married = 1
else:

married = 0


if education == 'Graduate':education = 0

else:

education = 1


if employed == 'Yes':employed = 1
else:
```

```
employed = 0

if dependents == '3+':dependents = 3
if credit == 'Yes':credit = 1
else:
credit = 0

if proparea == 'Urban':proparea = 2
elif proparea == 'Rural':proparea = 0
else:
proparea = 1


features = [gender, married, dependents, education, employed, ApplicantIncome,

CoapplicantIncome, LoanAmount, Loan_Amount_Term, credit, proparea]

 con_features = [np.array(features)]

prediction = model.predict(con_features)print(prediction)

if prediction == 1:

return render_template('approve.html', prediction_text='Congratulations! '+name+'

You are eligible for loan')

else:

return render_template('reject.html', prediction_text='Sorry '+name+' You are not

eligible for loan')

 if _name_ == "_main_": app.run(debug=True)
```

GitHub& Project

Demo Link

Github Link:

https://github.com/IBM-EPBL/IBM-Project-31088-1660196090

Project Link:

https://drive.google.com/file/d/1_VpNEYa_2Ywbw9VBW8vvANW8GmeZcPsJ/view?usp=share_link