

Quick Loan

UNDER SUPERVISION

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Outline

1. Introduction
2. Problem statement
3. Related works
4. Problem solutions
5. Research Objectives
6. System Methodology
7. Requirements
8. Tools
9. Back-End
10. Current progress
11. Time plans
12. Video
13. References



1

Introduction

Introduction

Loans are the core business of banks

The main profit comes directly from the loan's interest.

The loan companies grant a loan after an intensive process of verification and validation.

however, they still don't have assurance if the applicant is able to repay the loan with no difficulties.

Loan eligibility prediction systems used by financial organizations assess the likelihood of a borrower repaying a loan data points and employing algorithms. by analyzing various these systems leverage historical data to identify trends and build predictive models for accurately evaluating a borrower's creditworthiness and eligibility for a loan.



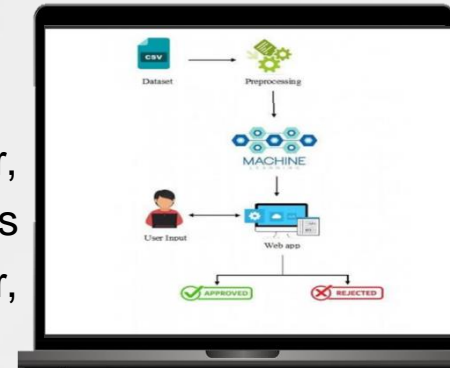
2

Problem Statement

Problem Statement

Company wants to automate the loan eligibility process is done (real-time) based on the customer details provided while filling the online application form. these details are gender, marital status, number of educational dependents, income, loan amount, credit history, etc. to automate this process , we have given a problem to identify customer segments, those who are eligible for the loan amount so that they can target these customers specifically. here we have provided a partial dataset.

The project seeks to vet loan applicants based on factors like gender, education, and dependents. automation using train and test data sets enhances efficiency. the machine learning model, trained on the former, predicts loan eligibility based on the latter.





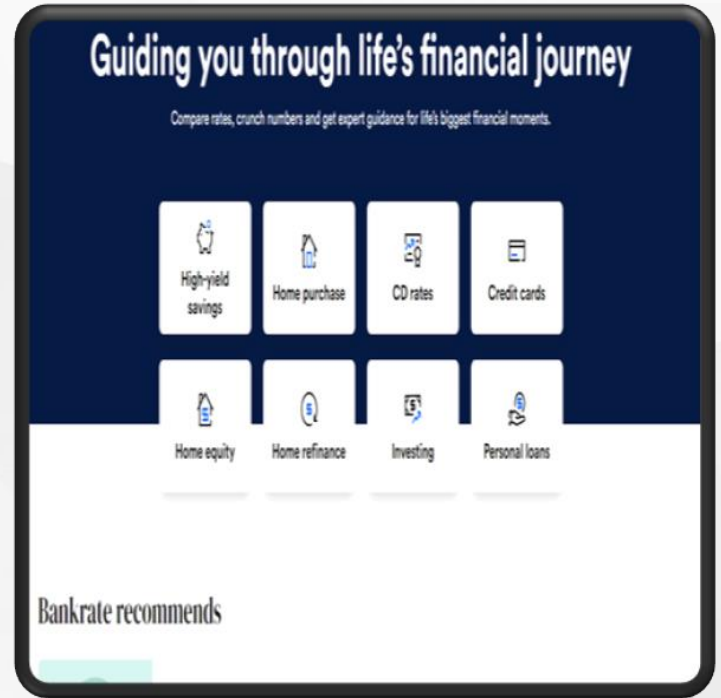
3

Related Works

Related Works

Bankrate website

Is a comprehensive financial resource website that provides tools and information for various financial products, including loans. It offers loan calculators, rate comparisons, and educational articles.

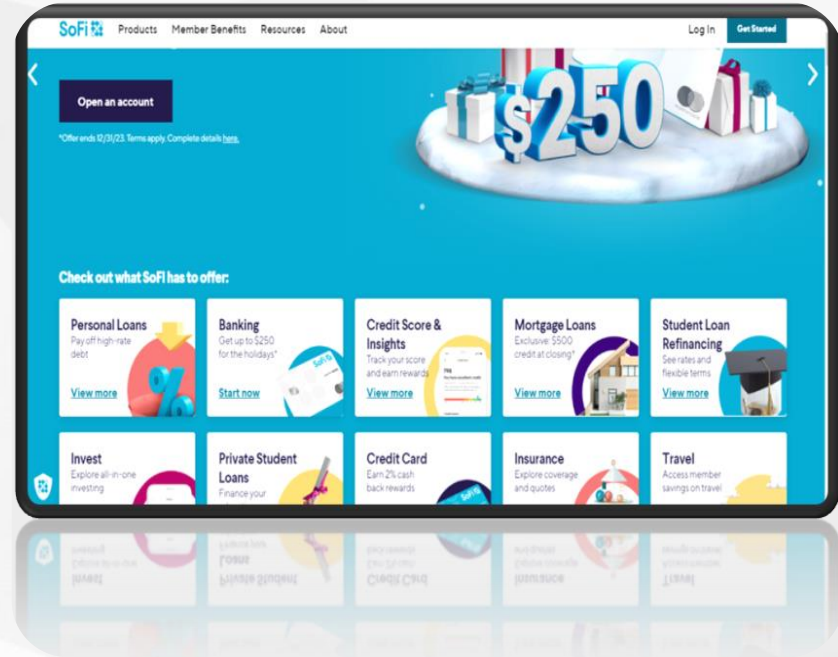


Related Works

SoFi

Is an online lending platform that specializes in student loan refinancing, personal loans, mortgages, and other financial products.

It also offers career services and financial planning tools.



Literature Review

Bank Loan Approval Prediction Using Machine Learning Techniques2021

The research concludes that gradient boosting is the most effective model for predicting loan defaults, followed by Xgboosting, while decision trees, random forests, and logistic regression perform poorly.

Prediction for Loan Approval using Machine Learning Algorithm2021

The paper titled “Loan Approval Prediction Using Machine Learning Algorithm” emphasizes the importance of loan approval prediction and the challenges in predicting customer loan repayment.

It advocates the use of machine learning algorithms, with particular emphasis on the Naïve Bayes model for loan forecasting, with reference to the SVM and Naïve Bayes algorithms for safety forecasting.

Literature Review

Predict Loan Approval in Banking System Machine Learning Approach for Cooperative Banks Loan Approval 2020

R. Shinde discusses the application of machine learning algorithms in predicting loan approval for cooperative banks. It offers two main categories of machine learning: supervised learning, which involves predicting features using a target variable, and unsupervised learning, used to cluster entities without a target variable. The paper aims to extract important information from loan data using various machine learning algorithms, thus facilitating informed decisions on loan applications. In addition, it explores the use of classification algorithms, such as neural networks and Naive Bayes, to predict loan defaulters and improve credit risk assessment in the banking sector.

Loan Approval Prediction Using Machine Learning 2021

The document is a research paper titled “Loan Approval Prediction Using Machine Learning”, the study focuses on predicting loan defaulters to reduce non-performing assets (NPA) in banks. The authors use a logistic regression model, using Kaggle data and looking at variables such as personality traits and checking account information. The paper is organized into sections covering data collection, AI model comparison, framework training, and testing, with keywords including support vector machine (SVM), machine learning, and loan prediction.



4

Problem Solutions

Steps Of Solution

Data Exploration

Examine the provided partial data set and understand the data distribution for each feature Identify any missing values, outliers, or patterns in the data.

Data Preprocessing

Clean the data by handling missing values, encoding categorical variables



Steps Of Solution

Model Selection

Choose the appropriate machine learning algorithm for binary classification.

Experiment with different models to find the one that performs best for your specific data set

Model Training

Split the data set into training and test sets.

Train the selected machine learning model on the training set, using loan eligibility as the target variable.



Model Evaluation

Evaluate the model's performance on the test set using appropriate metrics such as precision , precision , recall , F1 score , and area under the ROC curve.





5

Research Objectives

Research Objectives

1. Accept and reject using artificial intelligence
2. Without human intervention
3. Reduce errors
4. Saving Money
5. Reduce bribery
6. save time
7. Saving energy





6



System Methodology

System Methodology

1. The website is easy for the user to use. when the user access the bank's website, the bank's home page will appear, which contains information about the bank and loan details.the user then requests an application for the loan he needs and enters his data, such as name, date of birth, nationality, current address, monthly income, marital status, city, and mobile number to obtain the loan.
2. The Ai analyzes the data, compares it to the data set , compares it to the most accurate algorithm, and then approves or rejects it. After training, testing, and confirming the data entry.
3. After that, if the loan is approved, the loan will be calculated and its installments will be determined over a specific period of time.

Machine Learning Algorithms

Machine Learning in the banking sector is revolutionizing loan approval processes.

By training analytical models with various algorithms such as K Nearest Neighbor, Decision Tree, Random Forests, SVM, and Logistic Regression, Neural Network , Naive Bayes, Xgboost ,accurate results can be obtained when applying these models to test data.

The main objective of this report is to swiftly provide precise loan approval decisions to eligible customers, eliminating the need for cumbersome paperwork and ensuring efficiency in the lending process.

Machine Learning Algorithms

After researching and training algorithms we may look forward to the best algorithm being a neural network

We use artificial neural networks because they learn a lot efficient and adaptable. They have the ability to learn “How” to solve a particular problem from its training data receive. After learning, it can be used to solve that specific problem solve the problem quickly, efficiently and with high accuracy. And as it can be seen that the database distribution is unbalanced.

Machine Learning Algorithms

Data set size	93.136
Number of classes	16

Algorithm Used

Number	Model	Accuracy
1	XGB_SC	99.957930
2	K Neighbors	98.990324
3	Random Forest	86.916281
4	Neural Network	85.023138

Number	Model	Accuracy
5	Decision Tree	81.573412
6	Logistic Regression	72.233908
7	Naive Bayes	71.182162
8	SVM	61.127472

Classes

Variable	Description
Loan_ID	Unique Loan ID
Gender	Male/ Female
Experience	Number of years of work experience
CD Account	Certificate of deposit (Have , No)
MaritalStatus	Applicant married (married/single)
Dependents	Number of family members
Education	Applicant Education (Graduate/ student)
Self_Employed	Self employed (Y/N)

Classes

ApplicantIncome	Applicant's monthly salary/income
CoapplicantIncome	Additional applicant's monthly salary/income
LoanAmount	loan amount in thousands
Loan_Amount_Term	Term of a loan in days
Credit_History	Credit history meets guidelines
Property_Area	Urban/ Semi-Urban/ Rural
CarsAvailable	BMW/Chevrolet/Mercedes
Loan_Status	Loan approved (Yes/No)



7

Requirements



Requirements

1. **Personal Documentation**
2. **Income and Repayment Capacity**
3. **Providing Collateral**
4. **Credit History**





8

TOOLS



Tools

Visual studio



Kaggle



Colab



the many PowerPoint
sites that has been
officially designed.



9

Backend



Backend

We built a user interface in React to collect user data and send it to the Flask server for analysis and response. The form contains a set of fields such as gender, marital status, income, and others. When you click the "Submit" button, the entered data is sent to the server for analysis and then stored.

The `send data()` function is called when the "Submit" button is clicked. This function collects data from the fields entered in the form, then sends it using the `fetch` API to the specified endpoint on the Flask server.

After the response from the server, the returned data can be processed by the `then()` method, and can be stored according to requirements.

Backend

The screenshot shows a VS Code editor interface with the following components:

- EXPLORER:** Displays the project structure with folders like `BusinessBank` and `Footer`, and files like `main.py`, `model.ipynb`, `requirements.txt`, `setupTests.js`, and `sqlite.db`.
- SQLITE VIEWER:** A plugin window showing a table named `loan_data` with 152 rows. The table has columns: `Gender`, `MaritalSt...`, `Depende...`, `Education`, and `Self_Empl...`. The data is as follows:

	Gender	MaritalSt...	Depende...	Education	Self_Empl...
146	Male	Single	100	Student	1
147	Female	Single	100	Student	1
148	Female	Single	100	Student	1
149	Female	Single	100	Student	1
150	Male	Single	50	Student	1
151	Female	Single	50	Student	1
152	Male		5000	Student	1

The **TERMINAL** window at the bottom shows the following output:

```
C:\Python312\Lib\site-packages\sklearn\base.py:486: UserWarning: X has feature names, but MLPClassifier was fitted without feature names
  warnings.warn(
127.0.0.1 - - [20/May/2024 16:17:15] "POST /predict HTTP/1.1" 200 -
127.0.0.1 - - [20/May/2024 16:19:54] "OPTIONS /predict HTTP/1.1" 200 -
C:\Python312\Lib\site-packages\sklearn\base.py:486: UserWarning: X has feature names, but MLPClassifier was fitted without feature names
  warnings.warn(
127.0.0.1 - - [20/May/2024 16:19:54] "POST /predict HTTP/1.1" 200 -
```




10


Current Progress

Current Progress

Home

logo



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LOAN**

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[Get what matters](#)

Start or grow your own business

Get your dream in a few simple steps, and without any guarantees! Get a loan from your income

[Apply Now](#)

Current Progress

About

About Us

Learn about how Quick LOAN works

1.5M Active Customer

There are many variations of passages of Lorem Ipsum available, but the majority have.

30k Business Partners

There are many variations of passages of Lorem Ipsum available, but the majority have.



Current Progress

Loan calculate

loan Calculator

Calculate and confirm your loans

Loan term

Loan Amount

0LE

Interest Rate

0Y

Loan Duration

0%

Loan Details

Monthly Payment: NaN

Total Payment: NaN

Total Interest: NaN

Current Progress

Bussines Bank

Business Bank

Loan Payment

Required Documents

The Conditions

Credit



We appreciate your trust in us and are delighted to offer you this loan.

You can repay the loan over a flexible period that suits your needs and financial capabilities. We will provide you with convenient and suitable repayment options, allowing you to choose between fixed monthly installments or a lump sum payment at a specific time. Our goal is to make the loan repayment process comfortable for you. Therefore, you can determine the repayment period that you prefer, whether it is short-term or long-term.

Current Progress

Contact

Contact

GET IN TOUCH

Have Queries Befor The Appointment?

Lets Talk

phone:01204244567

email:sandra@gmail.com

Timing

Mon - Sat : 09:00AM - 06:00PM

Sunday : Closed

Location

EL-gomhoria st

Dont Hesited TO Contact Us

Message

Send

Current Progress

Quick LOAN is a leading bank in the worldzone and prominent international banking institution

COTATION

2023-01-05 14:00(INTERNATIONAL TIME)

Quick LOAN

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[Our Responsibility](#)

[Our Core Businesses](#)

Publication

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Current Progress

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[Apply](#)

Loan Apply

Home Loan Apply



Current Progress

Apply

① Documents Upload

② Personal Details

Selfie photo

Your personal photo. The photo must be done by yourself. The photo must show your face and your both shoulders.

ID Card

Valid Government ID card must be shown. Front and back side. Original ID card. Full photo. All parts of the ID card must show on the photo.

Choose a file:

Choose File

No file chosen

Send

Current Progress

Apply

① Documents Upload

② Personal Details

Number of Dependents

Applicant Income

Coapplicant Income

Loan Amount

Loan Amount Term

Total Income

Enter Age

Experience

Select Gender



Select Education



Select Self Employed



Select Marital Status



Select Credit History



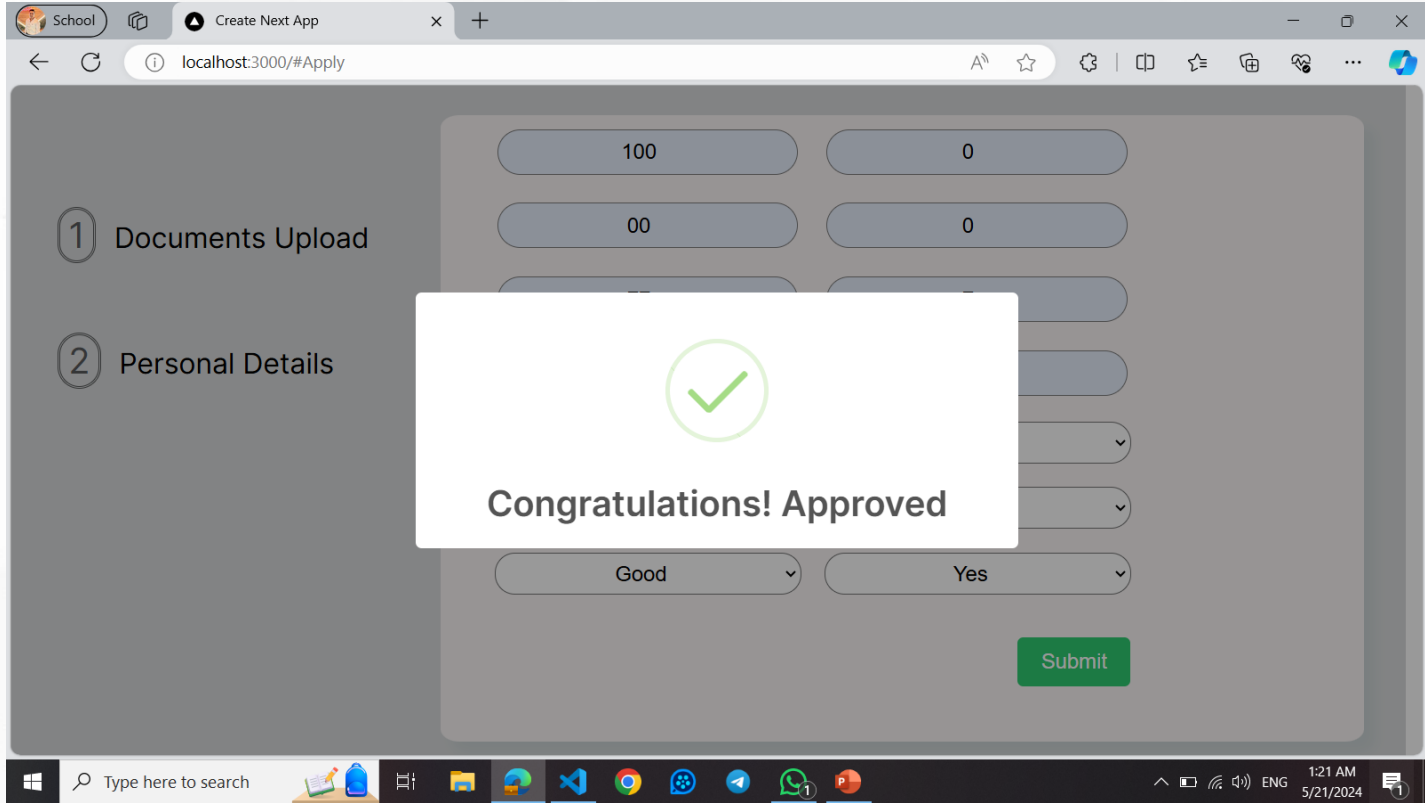
CD Account



Submit

Current Progress

Apply



Current Progress

Apply

① Documents Upload

② Personal Details

100

0

00

0



Sorry, Rejected

Good

Yes

Submit



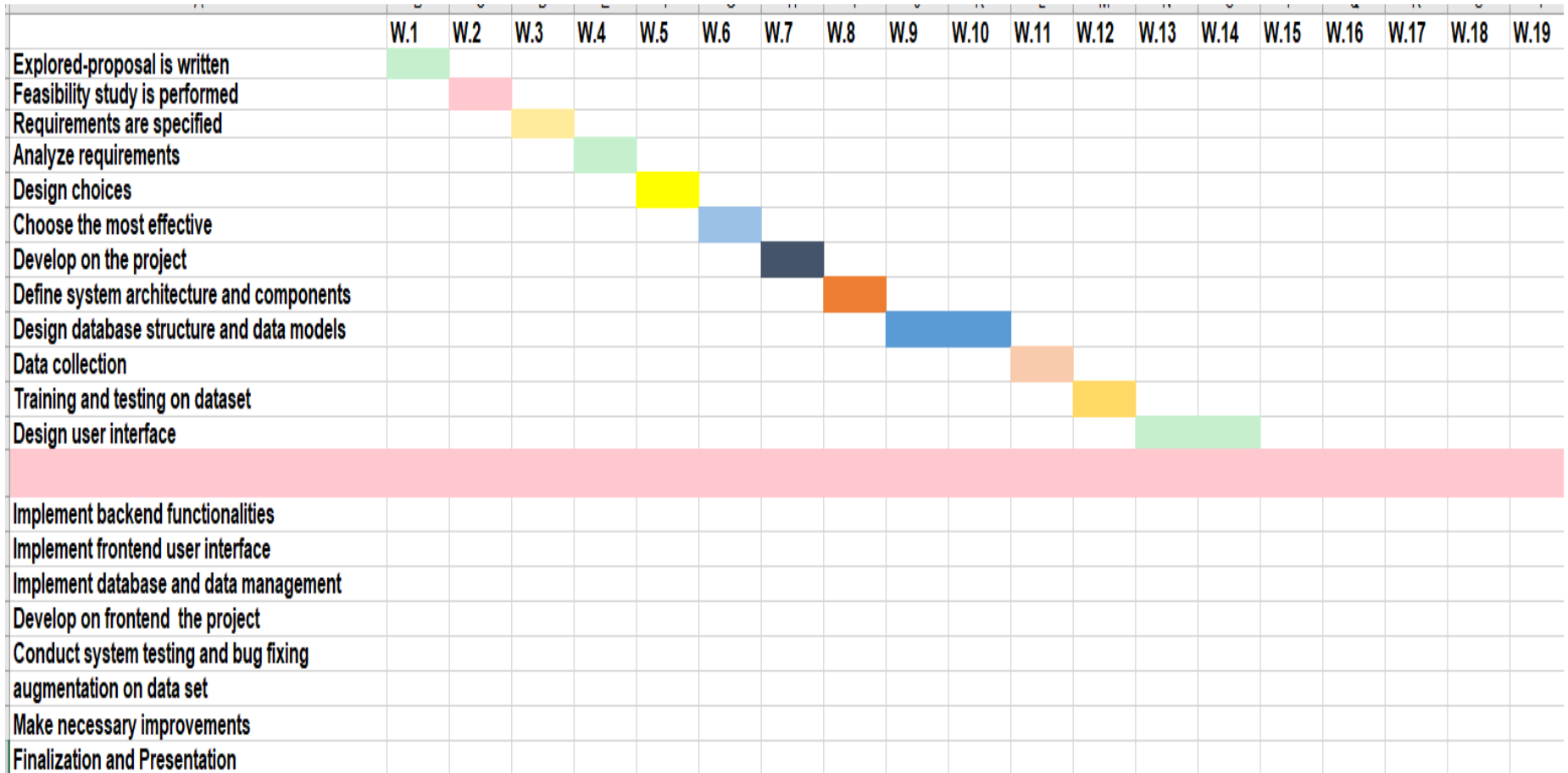
11

Time Plans

Time Plans

[illegible]

Time Plans



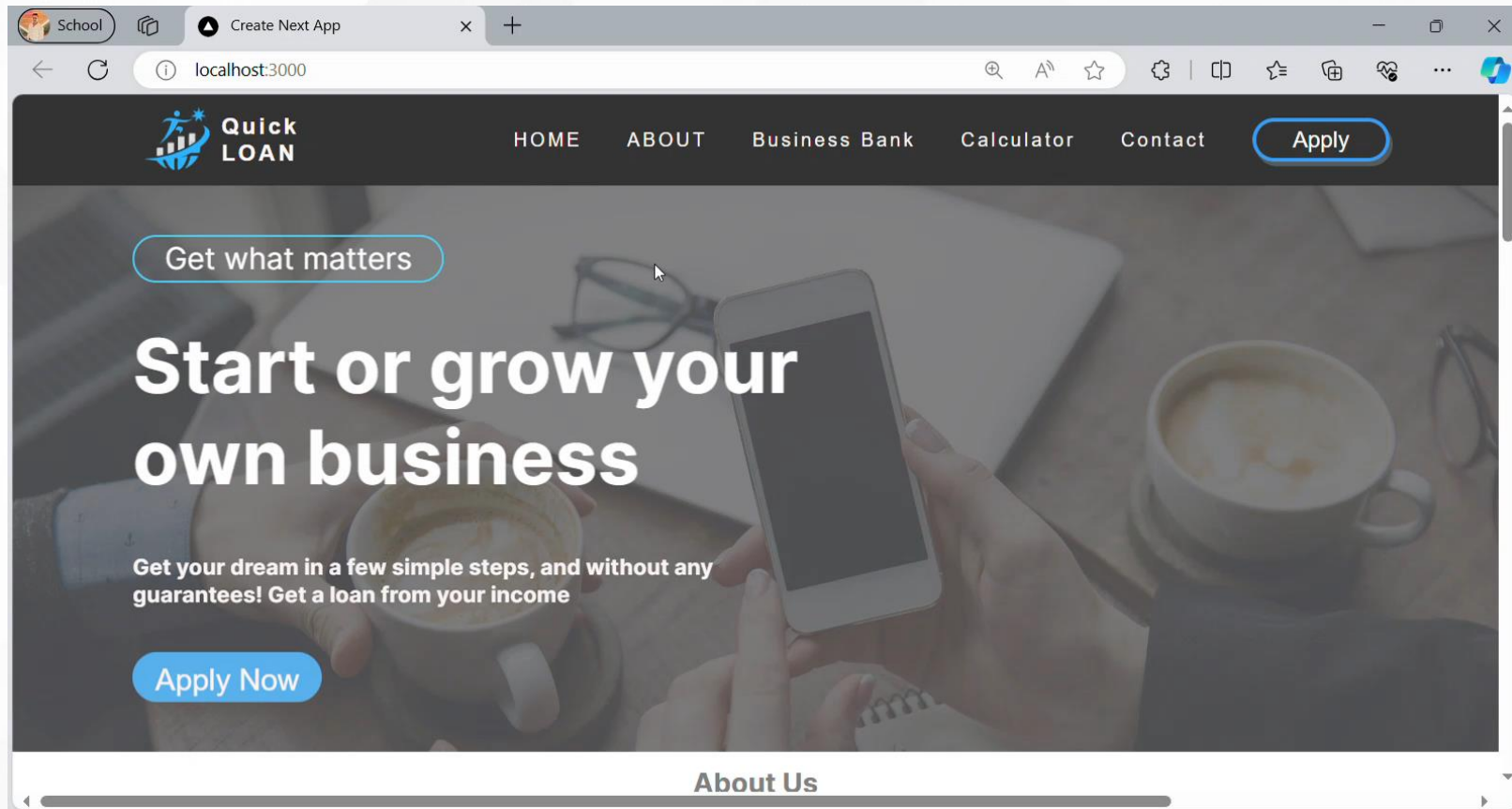


12

Video



Video





13

References

References

Front end :HTML . CSS .JS ^React.dev^

Paper

- Predict Loan Approval in Banking 2021
- System Machine Learning Approach 2020
- for Cooperative Banks Loan Approva2021
- Loan Approval Prediction Using Machine Learning 2020



THANKS