ST. TERESA'S COLLEGE (AUTONOMOUS)

AFFILIATED TO MAHATMA GANDHI UNIVERSITY

PROJECT REPORT ON

HOUSE PRICE PREDICTION AND BOOKING SYSTEM

In partial fulfilment of the requirements for the award of the degree of

BACHELOR OF SCIENCE IN

COMPUTER APPLICATIONS

[TRIPLE MAIN]

Submitted By

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III B.Sc. Computer Applications [Triple Main]

Register No: SB21CA025

Under the guidance of

Professor

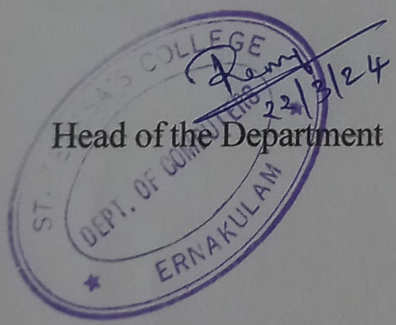
Ms. Megha George

DEPARTMENT OF COMPUTER APPLICATIONS

2021 – 2024

CERTIFICATE

This is to certify that the project report entitled "House Price Prediction and booking system " is a bona fide record of the work done by SWETHA SAJU (SB21CA025) during the year 2021– 2024 and submitted in partial fulfilment of the requirements for the degree of Bachelor of Science in Computer Applications (Triple Main) under Mahatma Gandhi University, Kottayam.



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22.3.24

External Examiner

Date: 21-03-2024

DECLARATION

I, SWETHA SAJU (Register no: SB21CA025), B.Sc. Computer Applications [Triple Main] final year student of St. Teresa's College (Autonomous), Ernakulam, hereby declare that the project submitted named "House price prediction and booking system " for the Bachelor's Degree in Computer Applications [Triple Main] is my original work. I further declare that the said work has not previously been submitted to any other university or academic body.

Date: 21-03-2024

Swetha

Place: Ernakulam

SWETHA SAJU

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I would like to convey my heartfelt gratitude to Rev. Dr. Sr. Vinitha (CSST) Manager, Director Rev. Sr. Emeline (CSST) and Principal Dr. Alphonsa Vijaya Joseph for providing me with this wonderful opportunity to work on a project with the topic House price prediction and booking system .

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Finally, I take this opportunity to thank all them who has directly or indirectly helped me with my project.

SWETHA SAJU

SYNOPSIS

House price prediction and booking system is a user-friendly platform that integrates advanced machine learning technology to predict house prices accurately and facilitate seamless property booking. By inputting various parameters such as location, size and amenities, users can obtain precise predictions of property values. The platform also offers a comprehensive database of available properties aiming to streamline the process of buying, selling, or renting properties .

Contents

1. INTRODUCTION

1.1 About Project

House price prediction and booking system is a online platform for predicting house prices and facilitating property bookings. Using advanced machine learning, users can receive accurate price estimates based on property details. The platform connects property owners and renters, offering seamless bookings with secure transactions. With a focus on user privacy and transparent data handling, the platform aims to revolutionize real estate transactions with convenience and reliability.

1.2 Objectives of the Project

The objective of the project to create an online platform for accurate house price prediction and seamless property bookings, revolutionizing real estate transactions with convenience and reliability.

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2.SYSTEM ANALYSIS

2.1 Introduction

The primary objective of system analysis is to identify any problems, weaknesses, or inefficiencies in the system and to develop strategies for improving its functionality. This may involve gathering and analysing data, conducting interviews and surveys, creating mathematical models, and developing computer simulations to test different scenarios. It can also be used to design and implement new systems or to integrate existing systems with new technologies or processes. Overall, system analysis plays a critical role in improving the performance, reliability, and effectiveness of complex systems, and it continues to be an essential tool for organizations and businesses seeking to stay competitive in today's fast-paced and rapidly changing environment.

2.2 Existing System

Traditional real estate transactions often lack efficient tools for price prediction and booking, leading to uncertainty and inconvenience for buyers, sellers, and renters. Manual processes and fragmented platforms contribute to inefficiencies and can hinder decision-making. House price prediction and booking system addresses these shortcomings by offering a unified online platform that integrates accurate price prediction and seamless property booking functionalities, enhancing the overall experience for users in the real estate market.

2.3 Proposed System

The proposed system is an integrated online platform that helps in real estate transactions by offering accurate house price prediction and seamless property bookings. Leveraging advanced machine learning algorithms and secure booking systems, users can confidently make informed decisions and conduct transactions with ease. This comprehensive solution aims to streamline the real estate process, providing convenience and reliability for buyers, sellers, and renters alike.

2.4 System Specification

A system specification is a formal document that outlines the functional and nonfunctional requirements for a proposed system. It provides a comprehensive description of the system's behavior, features, and limitations. A system specification

is used as a roadmap for the design, development, and implementation of the system. System specification specifies the hardware and software configuration of the new system. It helps to define the operational and performance guidelines of the system. A system specification is used as a roadmap for the design, development, and implementation of the system.

2.5 Operating System

The operating system required for proper execution of the system is 64-bit Microsoft® Windows® 8/10/11. Windows 11 includes improved network, application and Web services. It provides increased reliability and scalability, lowers your cost of computing with powerful, flexible management services, and provides the best foundation for running business application**.**

2.6 Language or Software Packages

- **Python:** Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation. Python is dynamically typed and garbage-collected. It supports multiple programming paradigms, including structured, object-oriented and functional programming.
- **MySQL:** MySQL is an open-source relational database management system. The SQL acronym stands for Structured Query Language. The database structure is organized into physical files optimized for speed. The logical data model, with objects such as data tables, views, rows, and columns, offers a flexible programming environment
- **Django:** Django is a free and open-source, Python-based web framework that runs on a web server. It follows the model–template–views architectural pattern. It is maintained by the Django Software Foundation, an independent organization established in the US as a 501 non-profit.
- **Html:** Hypertext Markup Language or HTML is the standard markup language for documents designed to be displayed in a web browser. It defines the content and structure of web content.

2.7 Hardware and Software Requirements

Hardware requirements:

- Processor: Intel core i3 10th generation or above
- RAM: 8 GB or above
- ROM: 10 GB or above
- Drive: SSD

Software requirements:

- Operating System: 64-bit Microsoft® Windows® 8/10/11
- Programming Language: Python
- Database Management System: MySQL
- Development tool: Html

3. SYSTEM DESIGN

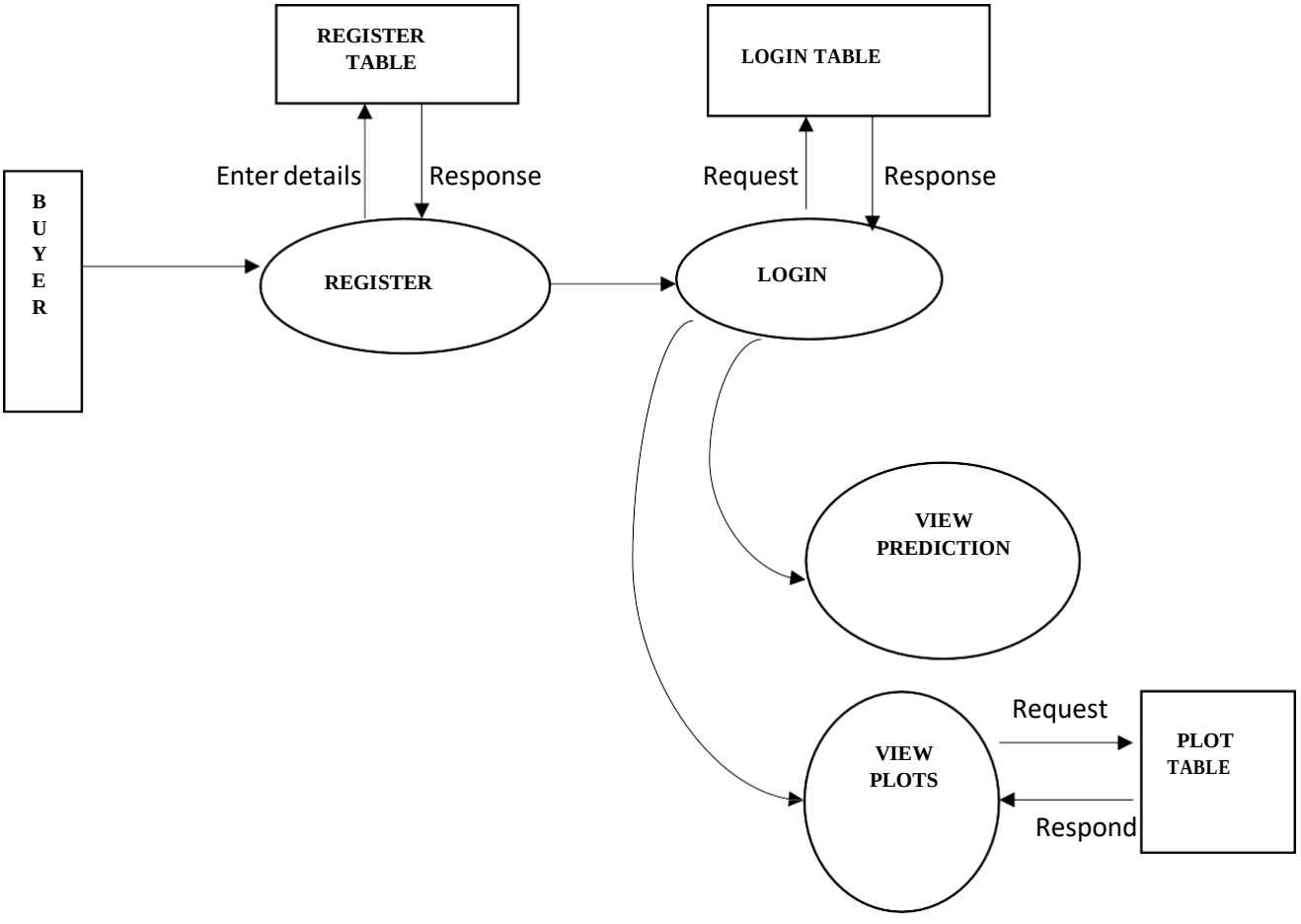
3.1 Introduction

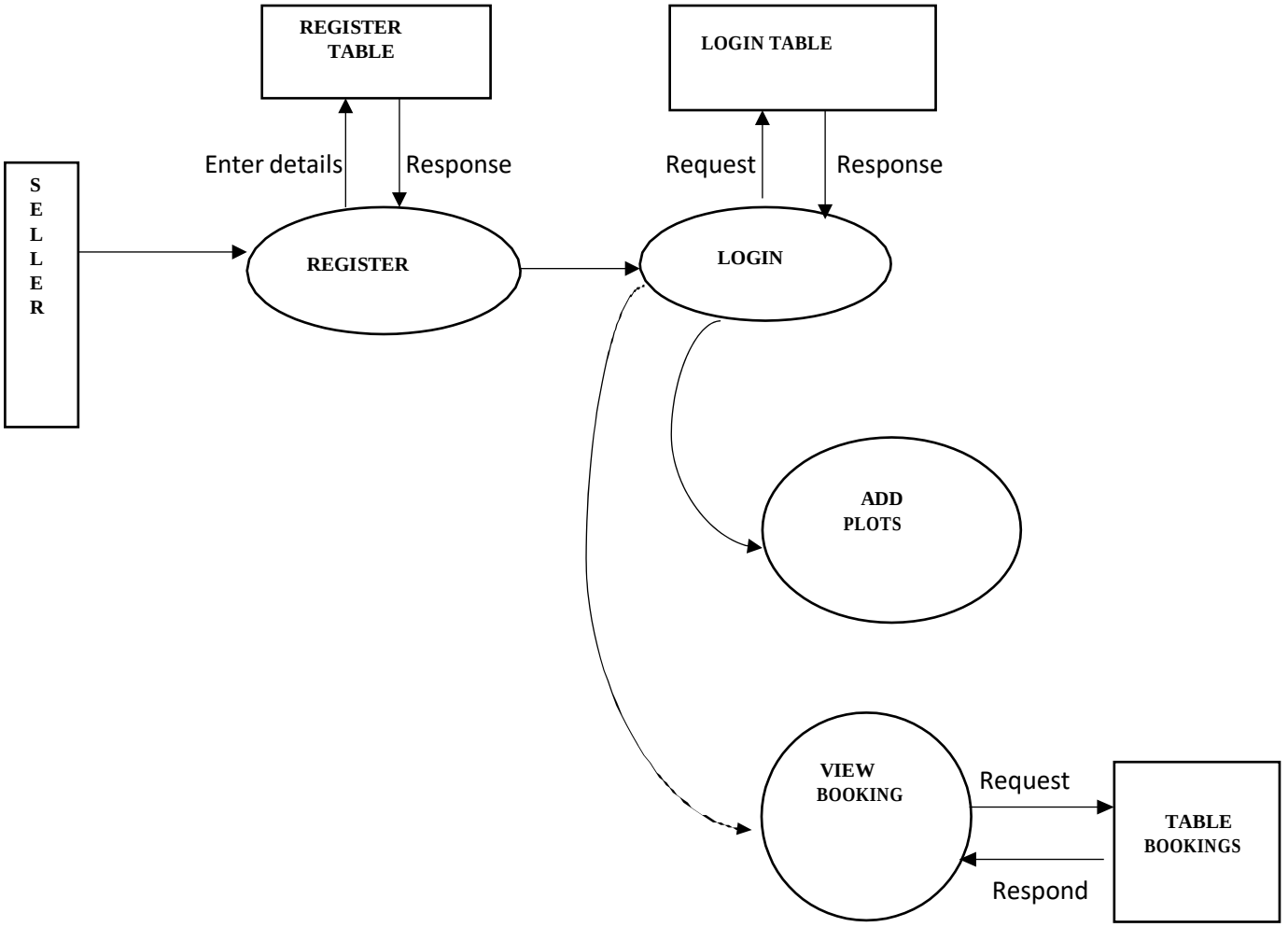
System design is the process of defining the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements. It is a critical step in the software development lifecycle that bridges the gap between the requirements analysis and implementation phases.

3.2 Data Flow Diagram

A data flow diagram (DFD) is a graphical representation of the flow of data through an information system. A DFD is often used as a primary step to create an overview of the system, which can later be elaborated. A DFD shows what will be the input of the system as well as the output. It clearly represents where the data will come from and go to and where the data will be stored.

DFD Level 1





3.3 Data Dictionary

A data dictionary is a collection of metadata that provides information about the data used in a database or information system. It serves as a reference guide for data elements and their definitions, as well as their relationships with other data elements in the system. A data dictionary is useful for ensuring data accuracy, consistency, and completeness. It can also help facilitate communication and collaboration among stakeholders who are involved in designing, developing, and maintaining a database or information system.

3.4 Data Design

Database design is the organization of data according to a database model. A well-designed database ensures data accuracy, consistency, and completeness and provides an intuitive and user-friendly interface for interacting with the data. Data design is the first design activity, which results in less complex, modular, and efficient program structure. The information domain model developed during analysis phase is transformed into data structures needed for implementing the software. The data objects, attributes, and relationships depicted in entity relationship diagrams and the information stored in data dictionary provide a base for data design activity.

Login

Column	Type	Null
Username	Varchar (100)	No
password	Varchar (100)	No
id	int(20)	No

Registration(buyer)

Column	Type	Null
id	int(20)	No
Name	Varchar (100)	No
Address	Varchar (100)	No
email	Varchar (100)	No
Phone no	Varchar (100)	No
Aadhaar no	Varchar (100)	No
password	Varchar (100)	No

Registration (seller)

Column	Type	Null
Name	Varchar (100)	No
id	int(20)	No
Address	Varchar (100)	No
email	Varchar (100)	No
Phone no	Varchar (100)	No
License no	Varchar (100)	No
Password	Varchar (100)	No

3. SYSTEM DEVELOPMENT

4.1 Introduction

Software Development is the process of analysing, designing, testing, implementation, and maintenance. It is called Software Development Life Cycle (SDLC). Different SDLC include waterfall, prototyping, iterative, incremental, spiral development, rapid application development and agile methodology

4.2 Process Description

Different processes of each module are given below:

- **Registration**

  The landowner should enter their name, address, email, phone no, license no and password in the registration fragment. And the buyer should enter their name, address, email, phone no, aadhaar no and password in the registration fragment

- **Login**

  The landowner and buyer must enter the existing username and password to login to their account in the login fragment

- **Prediction**

  This process predicts the price of a property based on its features and market trends. Linear regression is used to estimate the property's price. The user has to enter location, BHK, no of bathrooms and square foot for getting prediction

- **View Property**

  This process enables buyers to view detailed information about a specific property. Displays comprehensive information about a selected property, including features, amenities, images, and price

- **Make Booking**

  This process allows buyers to make a booking request for a property they are interested in. Initiates the booking process by submitting a request for a specific property.

- **Add plot**

  This process allows landowners to add image, location, price and other properties of the house on the platform.

4.3 Code Design

Prediction code:

```
import pandas as pd
import pickle
import numpy as np

def house_price_predictor(request):
data = pd.read_csv("cleaned_housedata.csv") pipe
= pickle.load(open("RidgeModel.pkl", "rb"))

    prediction = None
    if request.method == "POST":
        location = request.POST.get("location")
        bhk = int(request.POST.get("bhk"))
        bath = int(request.POST.get("bath"))
        sqft = float(request.POST.get("sqft"))

        input_data = pd.DataFrame(
            [[location, sqft, float(bath), bhk]],
            columns=["location", "total_sqft", "bath", "bhk"],
        )

          prediction = np.round((pipe.predict(input_data)[0] * 1e5), 2)
```

```
# Render the form with the prediction result
locations = sorted(data["location"].unique())
bhk_opt = [1, 2, 3, 4, 5, 6]
bath_opt = [1, 2, 3, 4, 5, 6]
context = {
    "locations": locations,
    "bhk_opt": bhk_opt,
    "bath_opt": bath_opt,
    "prediction": prediction,
}
return render(request, "User/house_predictor.html", context)
```

4. SYSTEM TESTING AND IMPLEMENTATION

5.1 Introduction

Software testing is a crucial process in the software development life cycle that involves evaluating the quality and functionality of software applications. The main goal of software testing is to identify defects or errors in the application before it is released to the end-users. The software testing process typically involves several steps, including test planning, test design, test execution, and test reporting.

5.2 System Implementation

Implementation is the action that must follow any preliminary thinking for something to happen. Software/hardware implementations should always be designed with the end user in mind and the implementation process usually benefits from user involvement and support from managers and other top executives in the company. If users participate in the design and implementation of the system, ideally it will serve their business objectives more accurately and reflect their priorities and the ways in which they prefer to work.

5.3 Debugging

Debugging is the process of identifying and resolving issues or errors in software applications. It is a critical step in the software development life cycle and is aimed at improving the quality and functionality of the application. During the development process, errors or bugs can occur in the code that can cause the application to behave in unexpected ways or not work at all. Debugging involves identifying and diagnosing these errors, tracing their root cause, and then making the necessary changes to fix them.

Different types of debugging methods used in this system are:

- **Unit Testing:** The application was divided into smaller components and tested individually. Each code was executed separately to ensure accuracy

- **Integration Testing:** Each small component was integrated or combined into a module to ensure that each module works properly when put together. This was done to check connectivity between module

- **System Testing:** The system was tested by combining every module. This was to ensure that each process have a particular order. This was to ensure that the system does not crash while using

5.4 System Security

Password encryption is used to protect each user's details.

5.5 Scope for future enhancement

The existing website only cover a limited geographic area or property types, limiting its usefulness for users looking for properties outside of the specified region or category. More geographic areas and properties could be added in future

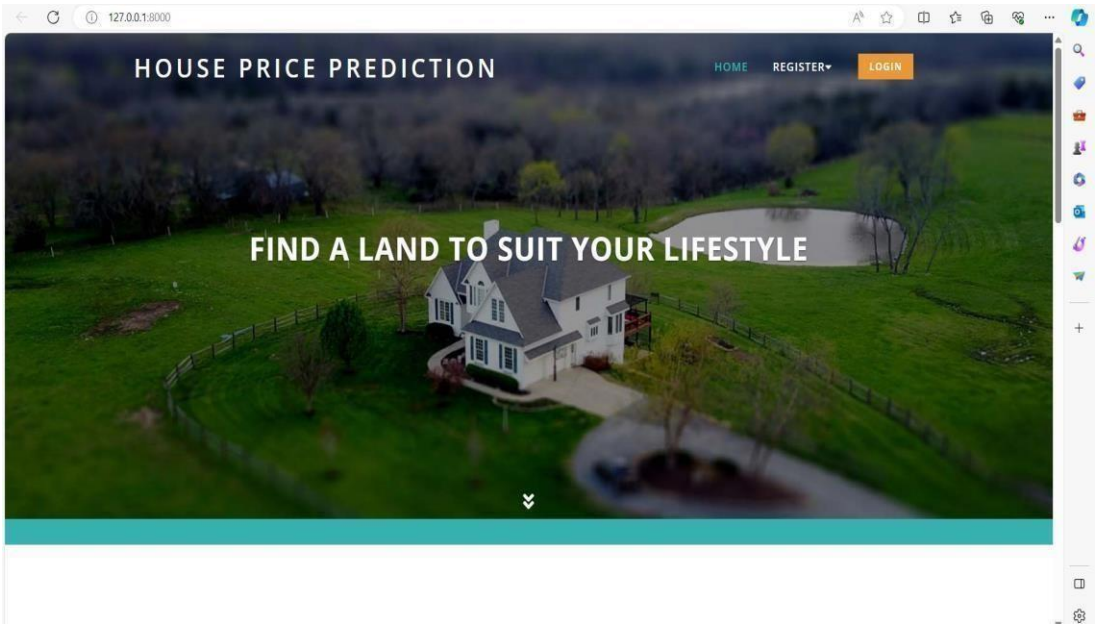
5. CONCLUSION

Conclusion:

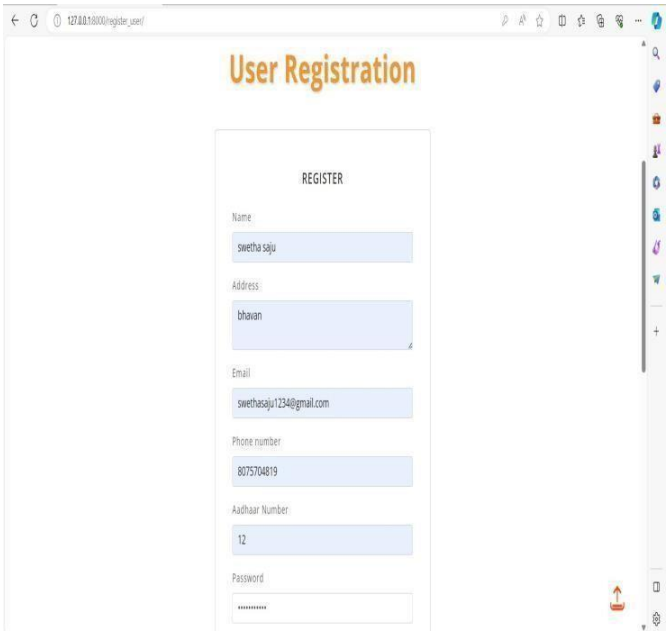
The house price prediction website offers a valuable service to users interested in understanding property values and trends. Through its existing features, it provides insight into real estate prices, aiding individuals in their property-related decisions. The system is issued to operate in a user-friendly manner. Proper documentation done from different areas provides smooth running of all the operations without difficulty. This project avoids errors. The project has been implemented and tested

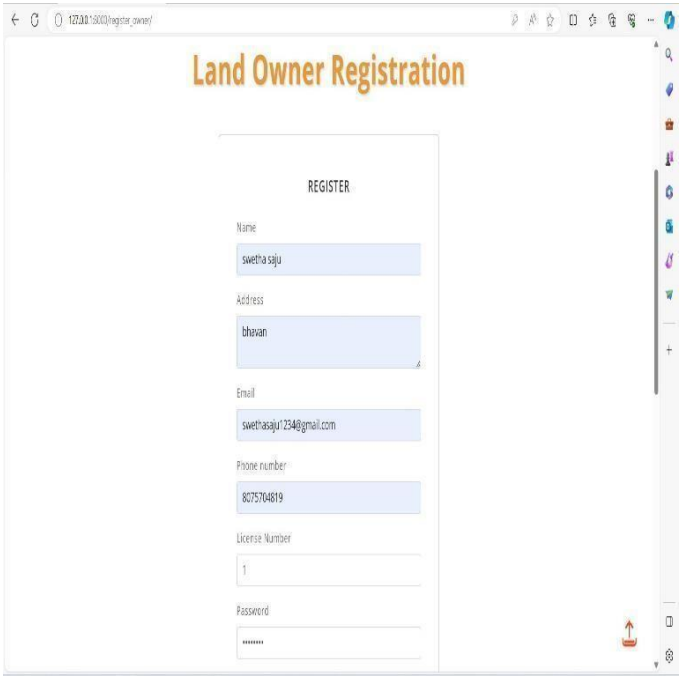
6. APPENDIX

Home Page

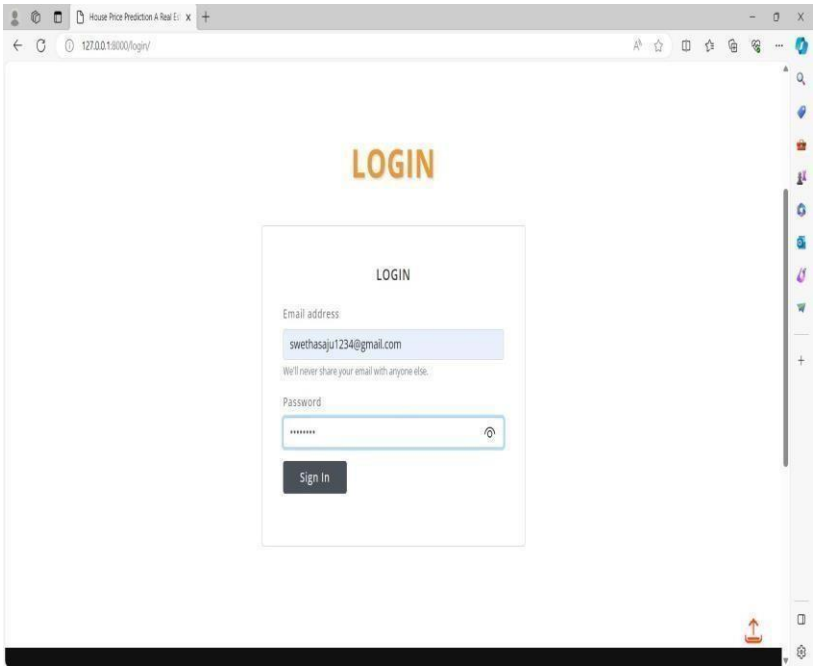


Registration Page

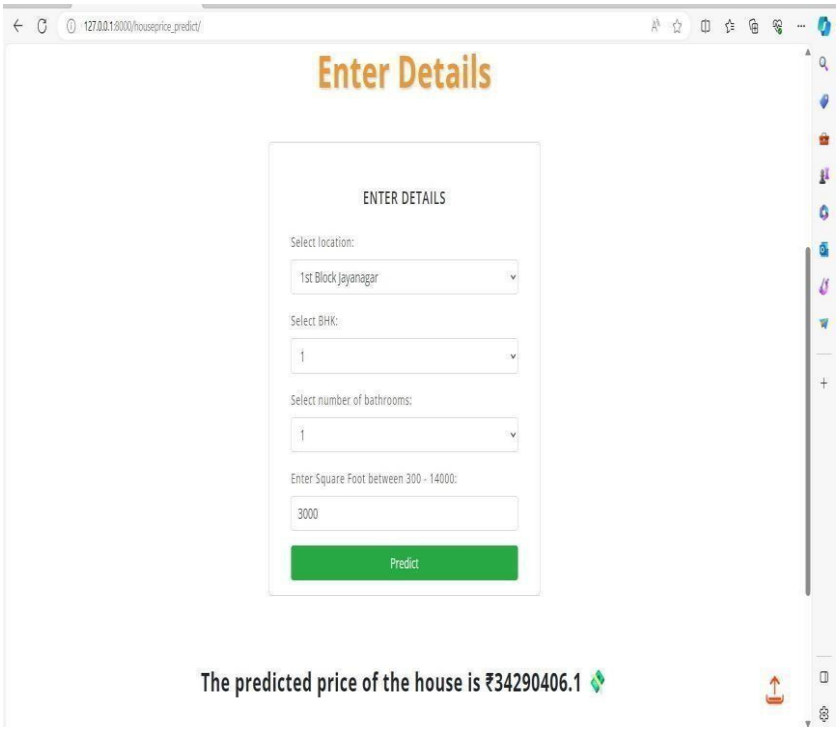




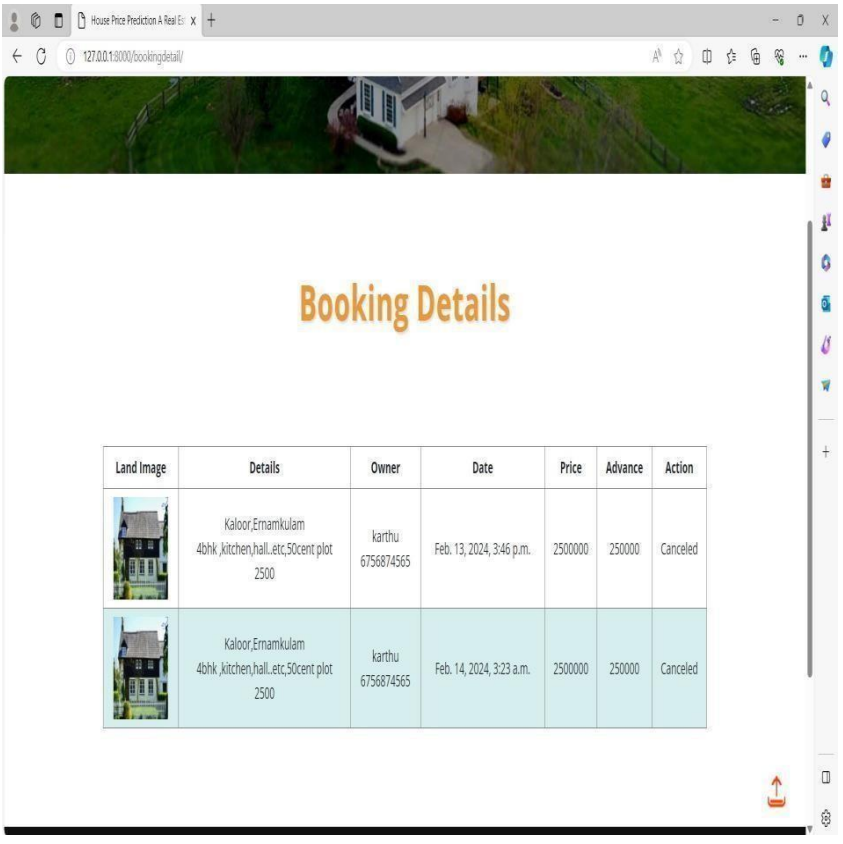
Login Page



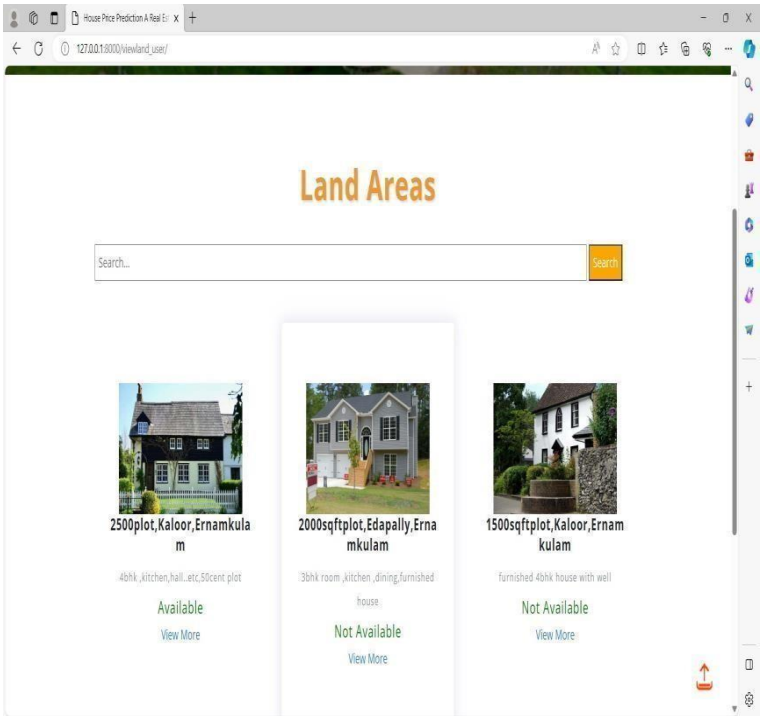
Prediction



Booking Details



Land Areas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Land Areas
Search...
Search
2500plot,Kaloor,Ernamkulam
4bhk ,kitchen,hall..etc,50cent plot
Available
View More
2000sqftplot,Edapally,Ernamkulam
3bhk room ,kitchen ,dining,furnished house
Not Available
View More
1500sqftplot,Kaloor,Ernamkulam
furnished 4bhk house with well
Not Available
View More

7. BIBLIOGRAPHY

8.1 References

- Scikit-learn
- Keras