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NAME: GADUPUDI NIKHITHA

REG NO:11332310630

USERNAME:aut113323ecb16

DEPT:ECE

## **PHASE 5 :PROJECT DEMONSTRATION AND DOCUMENTATION**

**Title: AI-Powered Affordable House Finder**

### **Abstract:**

The AI Affordable House Finder project is developed to assist users in finding cost-effective housing options by utilizing artificial intelligence, geolocation services, and user-preference analytics. The system integrates real-time property listings, budget analysis, and personalized recommendations. This document covers the final phase, which includes a full system demonstration, technical documentation, performance results, and user feedback. The system aims to simplify housing searches while ensuring scalability, responsiveness, and data privacy.

### **1. Project Demonstration**

#### **Overview:**

A live walkthrough of the AI Affordable House Finder system will be conducted, highlighting real-time listing queries, user preference matching, filtering logic, and affordability analysis.

#### **Demonstration Details:**

- **System Walkthrough:** From user login to house recommendation results.

- **AI Matching Logic:** Showcases how machine learning evaluates listings based on income, location preference, and amenities.
- **Affordability Analysis:** Demonstrates integration with cost-of-living APIs and user financial input.
- **Performance Metrics:** System responsiveness, real-time listing updates, and concurrent user handling.
- **Security & Privacy:** Explanation of user data handling, encryption, and privacy protocols.

**Outcome:**

Stakeholders will see the tool's effectiveness in helping users find affordable housing with AI-powered personalization and secure data handling.

## **2. Project Documentation**

**Overview:**

Detailed documentation of system architecture, data sources, machine learning models, and usage guides.

**Sections:**

- **System Architecture:** Diagrams of backend, frontend, and third-party API integrations.
- **Code Documentation:** Well-commented source code for scraping, model training, filtering engine, and user interface.
- **User Guide:** Instructions for searching, filtering, and saving properties.
- **Admin Guide:** Managing listings, running updates, and monitoring user analytics.
- **Testing Reports:** Load tests, response time benchmarks, and model accuracy analysis.

**Outcome:**

Comprehensive guide for system use, modification, and scaling.

## **3. Feedback and Final Adjustments**

**Overview:**

Feedback collected from users and evaluators to refine system usability and performance.

**Steps:**

- Collect feedback via surveys.
- Implement UI/UX improvements.
- Improve matching model accuracy.
- Conduct final performance testing.

**Outcome:**

A refined and validated system ready for broader release.

**4. Final Project Report Submission****Overview:**

Summarizes the entire development process, key challenges, outcomes, and lessons learned.

**Sections:**

- **Executive Summary**
- **Phase Breakdown:** From concept to AI integration and deployment.
- **Challenges & Solutions:** E.g., inconsistent listing formats, API rate limits, data privacy concerns.
- **Outcomes:** AI accuracy, user satisfaction rates, and system readiness.

**Outcome:**

A detailed final report covering the end-to-end project journey.

**5. Project Handover and Future Works****Overview:**

Outlines plans for system expansion and maintenance.

**Handover Details:**

- **Next Steps:** Suggestions for multilingual support, mobile app integration, and partnership with real estate platforms.
- **Documentation & Access:** Source code, credentials, and deployment instructions handed over.

**Outcome:**

System is handed off with a roadmap for future scaling and maintenance.

PROGRAM:

main.py

Share

Run

```
1 import pandas as pd
2
3 # Simulated dataset
4 data = {
5     'Location': ['City Center', 'Suburb', 'Countryside', 'Suburb',
6                 'City Center'],
7     'Price': [500000, 250000, 150000, 200000, 550000],
8     'Bedrooms': [3, 4, 3, 2, 3],
9     'Bathrooms': [2, 2, 1, 1, 2],
10    'SquareFeet': [1500, 2000, 1200, 1300, 1600]
11 }
12
13 # Create DataFrame
14 df = pd.DataFrame(data)
15
16 # Define affordable threshold
17 affordable_price = 300000
18
19 # Phase 5 AI: Advanced Filtering Logic
20 # Filter affordable houses with at least 3 bedrooms
21 affordable_houses = df[
22     (df['Price'] <= affordable_price) & (df['Bedrooms'] >= 3)
23 ]
24
25 # Sort by price ascending
26 affordable_houses = affordable_houses.sort_values(by='Price')
```

Output

=== Affordable Houses (Phase 5 AI Logic) ===

	Location	Price	Bedrooms	Bathrooms	SquareFeet
2	Countryside	150000	3	1	1200
1	Suburb	250000	4	2	2000

=== Code Execution Successful ===