PROJECT REPORT

1. INTRODUCTION

In today's real estate market, understanding housing trends is essential for buyers, sellers, agents, and developers. This project aims to analyze and visualize housing sale prices and related features such as location, year built, renovation status, etc., using Tableau. By turning raw housing data into meaningful visual insights, users can identify trends, outliers, and make informed decisions.

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2. IDEATION PHASE

The idea emerged from the increasing demand for real-time, data-driven real estate decisions. After brainstorming, the problem statement was framed:
"How can we help users understand housing price trends and the influence of various property features through interactive dashboards?"
Key goals identified:

- Visualize year-wise price trends
- Compare cities and neighborhoods
- Evaluate the impact of renovations, size, and age of properties

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3. REQUIREMENT ANALYSIS

- **Functional Requirements (FR):**
  - User Registration & Login
  - Interactive Dashboard with filtering
  - Export visualizations
  - Admin control panel

- **Non-Functional Requirements (NFR):**
  - Usability: Clean UI for all users
  - Performance: Fast dashboard loading

- Security: Secure login and data handling
- Scalability & Reliability

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4. PROJECT DESIGN

◇ **Solution Architecture**

- **Frontend**: Web portal/Tableau Interface
- **Backend**: Tableau Public / Tableau Server
- **Data Source**: CSV/Excel dataset from housing records
- **Security**: OAuth for Gmail/Facebook login

◇ **UI Design**

- **Homepage**: Login/Register
- **Dashboard**: Line charts, maps, bar graphs, filters
- **Admin Panel**: Manage users and track access

◇ **Data Flow Diagram (Level 0 & Level 1)****

(Can be shared as an image on request)

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5. PROJECT PLANNING & SCHEDULING

Phase	Activities	Duration
Ideation & Research	Problem Identification, Data Search	1 Week
Requirement Gathering	FRs, NFRs, User Stories	1 Week
Data Preparation	Cleaning, Processing	2 Weeks
Dashboard Design	Visualizations in Tableau	2 Weeks
Testing & Feedback	Functional/Performance testing	1 Week
Final Report	Documentation & Submission	1 Week

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6. FUNCTIONAL AND PERFORMANCE TESTING

◇ **Functional Testing:**

- Login/Registration forms
- Dashboard filtering
- Data accuracy in charts

◇ **Performance Testing:**

- Load time for each visualization (< 3 sec)
- Export response time
- Responsiveness across devices

All modules passed test cases under normal user load.

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7. RESULTS

Key findings from the dashboard visualizations:

- Renovated homes tend to have higher resale values.
- Certain cities show consistent price growth over years.
- Location and square footage heavily impact pricing.
- Visualization made it easy to detect trends and anomalies.

Screenshots of dashboards included in Appendix.

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8. ADVANTAGES & DISADVANTAGES

☑ **Advantages:**

- Easy to interpret visual insights
- Interactive filters enhance user experience
- Can help buyers, sellers, and analysts alike
- Secure and scalable design

❌ **Disadvantages:**

- Data quality limits accuracy if not updated
- Tableau Public has size and functionality limitations
- Some advanced features require paid Tableau licenses

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9. CONCLUSION

The project successfully demonstrates how Tableau can turn complex housing data into interactive dashboards that help visualize market trends. It simplifies the decision-making process for real estate stakeholders by providing real-time, actionable insights.

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10. FUTURE SCOPE

- Integrate real-time property listings via APIs
- Add predictive analytics using ML (e.g., future price estimates)
- Include mortgage calculator tools and ROI models
- Develop mobile app with embedded Tableau dashboards

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11. APPENDIX

- **Screenshots** of Tableau Visualizations
- **Data Dictionary**
- **Test Cases** Summary
- **Data Source**: (e.g., housing_data.csv)
- **References**
    - Tableau Public Documentation
    - Kaggle Housing Price Dataset
    - Real Estate Market Research Reports
