Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	26 June 2025
Team ID	LTVIP2025TMID60628
Project Name	Visualizing Housing Market Trends: An Analysis of Sale Prices and Features using Tableau
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Technical Architecture Diagram:

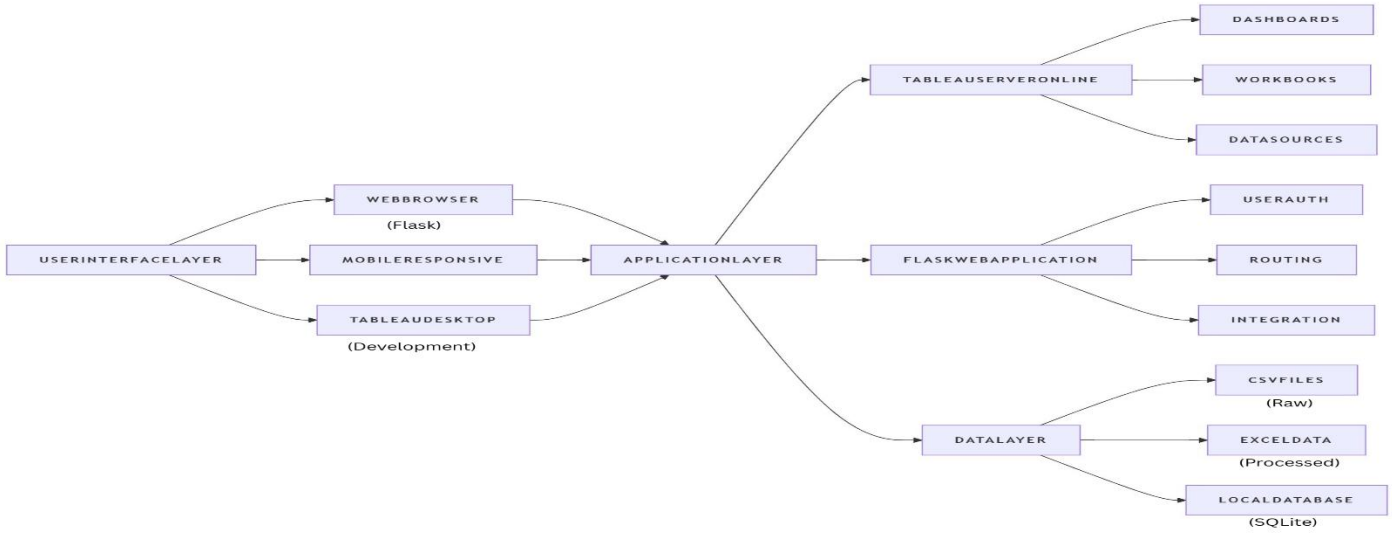

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web-based dashboard interface for data visualization and interaction	HTML5, CSS3, JavaScript, Bootstrap
2.	Web Framework	Backend web application for user authentication and dashboard embedding	Python Flask
3.	Visualization Engine	Primary tool for creating interactive dashboards and data visualizations	Tableau Desktop/Public
4.	Data Processing	Scripts for data cleaning, transformation, and preparation	Python (Pandas, NumPy)
5.	Database	Local database for storing processed housing data and user sessions	MySQL/SQLite
6.	File Storage	Storage for raw housing data files and exported reports	Local File System
7.	Authentication	Simple user login and role-based access control	Flask-Login, Flask-Session
8.	Data Validation	Scripts to validate data quality and handle missing values	Python (Custom Scripts)
9.	Export Services	Functionality to export dashboards and reports	Tableau Export APIs
10.	Development Environment	Code editor and version control for project development	VS Code, Git
11.	Infrastructure	Local development server with option for cloud deployment	Local Server (Development) Heroku/PythonAnywhere (Production).

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Utilizing free and open-source technologies to minimize costs while maintaining functionality	Flask (Python), Bootstrap (CSS), SQLite/MySQL, Pandas, NumPy

S.No	Characteristics	Description	Technology
2.	Security Implementations	Basic security measures appropriate for internal business use	Flask-WTF (CSRF Protection), Password Hashing (Werkzeug), Session Management, HTTPS for Production
3.	Scalable Architecture	Simple 3-tier architecture that can be expanded as needed	Presentation Layer (HTML/CSS/JS), Application Layer (Flask), Data Layer (SQLite/Files)
4.	Availability	Reliable system with basic redundancy and backup strategies	Local backup scripts, Git version control, Simple error handling and logging
5.	Performance	Optimized for typical business usage with reasonable response times	Tableau caching, Efficient data loading, Compressed image assets, Minimal database queries