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

Date	31 January 3035
Team ID	LTVIP2025TMID50297
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

Reference: https://developer.ibm.com/patterns/ai-powered-backend-system-for-order-processing-during-pandemics/

S.No	Component	Description	Technology
1	User Interface	How user interacts with Tableau dashboards (filters, charts, ma	Tableau Desktop, Tableau Server, Tableau Public
2	Application Logic-1	Data extraction, transformation, and loading (ETL)	Python / Tableau Prep
3	Application Logic-2	Data cleaning and validation logic	Tableau Prep / Python scripts
4	Application Logic-3	Visualization logic and calculated fields (aggregations, KPIs, filte	Tableau Calculated Fields
5	Database	Stores housing data with sale prices, property features, and loca	MySQL, PostgreSQL, SQL Server

S.No	Component	Description	Technology
6	Cloud Database	Cloud database service for storing and refreshing datasets	Amazon RDS, Google BigQuery, Snowflake
7	File Storage	File storage for datasets in CSV/Excel format	AWS S3, Google Cloud Storage
8	External API-1	Purpose of pulling external data sources, e.g., real-time housing	Zillow API, Realtor API
9	External API-2	Geolocation or demographic enrichment	Google Maps API
10	Machine Learning Model	Predict housing prices based on features	Linear Regression / XGBoost models in Python
11	Infrastructure (Server / Clo	Tableau deployment on server or cloud infrastructure	Tableau Server on AWS, Azure VM, Kubernetes if cor

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	Frameworks and libraries for data preprocessing and machine learning	Python (pandas, scikit-learn), R, Postgres
2	Security Implementations	Role-based access, encryption of data at rest and in transit, secure authentication	Tableau user roles, SSL/TLS encryption, IAM
3	Scalable Architecture	Scalable architecture with Tableau Server deployed on scalable cloud infrastructure	AWS EC2 / Azure VMs with auto-scaling groups

S.No	Characteristics	Description	Technology
4	Availability	High availability ensured by clustering Tableau Server and using load balancers	AWS ELB, Azure Load Balancer, Tableau High Availability
5	Performance	Optimized data extracts, aggregation tables, caching, and efficient data queries to handle large volumes	Tableau Hyper Engine, in-memory extracts, CDN

References:

https://c4model.com/ https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/ https://www.ibm.com/cloud/architecture https://aws.amazon.com/architecture https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d