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

Date	29 June 2025
Team ID	LTVIP2025TMID48638
Project Name	visualizing housing market trends: an analysis of sale
Maximum Marks	4 Marks

Technical Architecture:

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

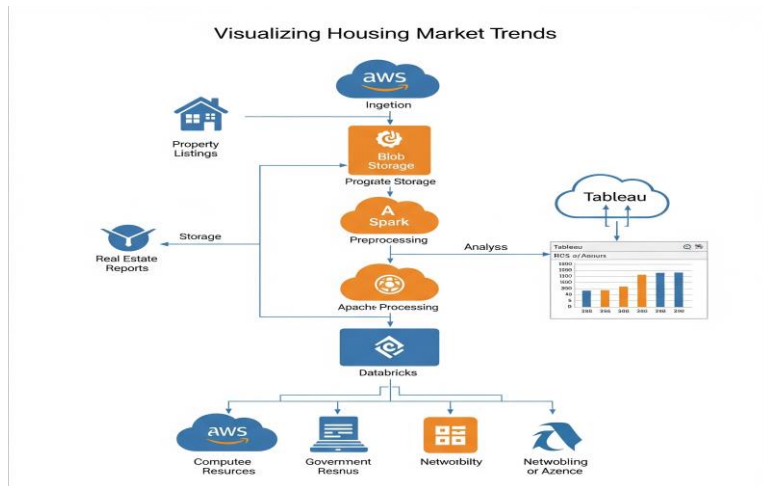**Example: Order processing during pandemics for offline mode**

Visualizing Housing Market Trends

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web interface for viewing trends	HTML, CSS, JavaScript, React.js

2.	Application Logic-1	Data preprocessing and aggregation	Python (Pandas, NumPy)
3.	Application Logic-2	Data visualization and trend generation	Tableau Public / Plotly / D3.js
4.	Application Logic-3	Optional NLP for interpreting user search queries	Python + spaCy or Hugging Face Transformers
5.	Database	Stores processed trend data.	PostgreSQL / MongoDB.
6.	Cloud Database	Cloud-hosted analytics database	Google BigQuery / AWS RDS.
7.	File Storage	Storage for uploaded datasets or exports	AWS S3/ Google cloud storage
8.	External API-1	API for real-time housing price	Zillow API / Realtor.com API
9.	External API-2	API for demographic/geographic data	Google Maps API / Census API.
10.	Machine Learning Model	Predictive trend modeling (e.g. price fore	Scikit-learn / TensorFlow.
11.	Infrastructure (Server / Cloud)	Deployment environment	Cloud (AWS EC2, Google Cloud VM, or Heroku)

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Frameworks and libraries used	React.js, Flask, Pandas, Plotly, D3.js
2.	Security Implementations	Securing API access, user data encryption, IAM	JWT, OAuth 2.0, HTTPS, IAM (Cloud), SHA-256
3.	Scalable Architecture	Modular services for UI, backend, and analytics	Microservices on Kubernetes / Docker containers
4.	Availability	High availability using cloud infrastructure and load balancers	AWS ALB/ELB, GCP Load Balancing

S.No	Characteristics	Description	Technology
5.	Performance	Optimized queries, caching, CDN	Redis, Cloudflare CDN, Database indexing