

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

Date	31 January 2025
Team ID	LTVIP2025TMID52074
Project Name	visualization tool for electric vehicle charge and range analysis
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

Here's your custom **Technology Stack** for the visualization tool for electric vehicle charge and range analysis project, presented in a clear and structured table format:

### EV Dashboard Technology Stack

Component	Tool / Technology	Purpose
Data Source Layer	ElectricCarData_Clean.csv, EVIndia.csv, Cheapestelectriccars-EVDatabase.csv, electric_vehicle_charging_station_list.csv	Raw datasets covering EV models, pricing, range, efficiency, and charging stations
Data Storage	CSV / SQL Workbench	Centralized repository for structured EV data from multiple sources
Data Processing	Python (pandas, NumPy)	Clean, normalize, and transform data (unit conversion, deduplication, merging)
Data Filtering	SQL Queries / Python	Apply filters on region, charger type, powertrain, price, efficiency
Statistical Modeling	Python (optional: scikit-learn, statsmodels)	Identify trends, correlations, and predictive patterns (e.g., price vs. range)
Visualization Engine	Tableau Desktop / Tableau Public	Design interactive dashboards (range vs cost, charger mapping, brand insights)
Web Framework	Flask	Serve Tableau stories and dashboards through a lightweight backend
Embedding Tool	Tableau IFrame / JavaScript API	Integrate dashboards cleanly within Flask frontend
Version Control	GitHub	Track development, store code, and manage deployment branches

### Deployment & Presentation

Component	Tool / Technology	Purpose
Deployment Platform	Render	Host the Flask app and embedded dashboards with CI/CD automation
Frontend Interface	HTML / Bootstrap	Ensure responsive, user-friendly UI across desktop and mobile
Documentation	Markdown / Jupyter Notebooks	Document preprocessing, dashboard logic, and deployment pipeline clearly