

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

Date	26 June 2025
Team ID	LTVIP2025TMID48343
Project Name	Comprehensive Analysis and Dietary Strategies with Tableau: A College Food Choices Case Study
Maximum Marks	4 Marks

### Technical Architecture:

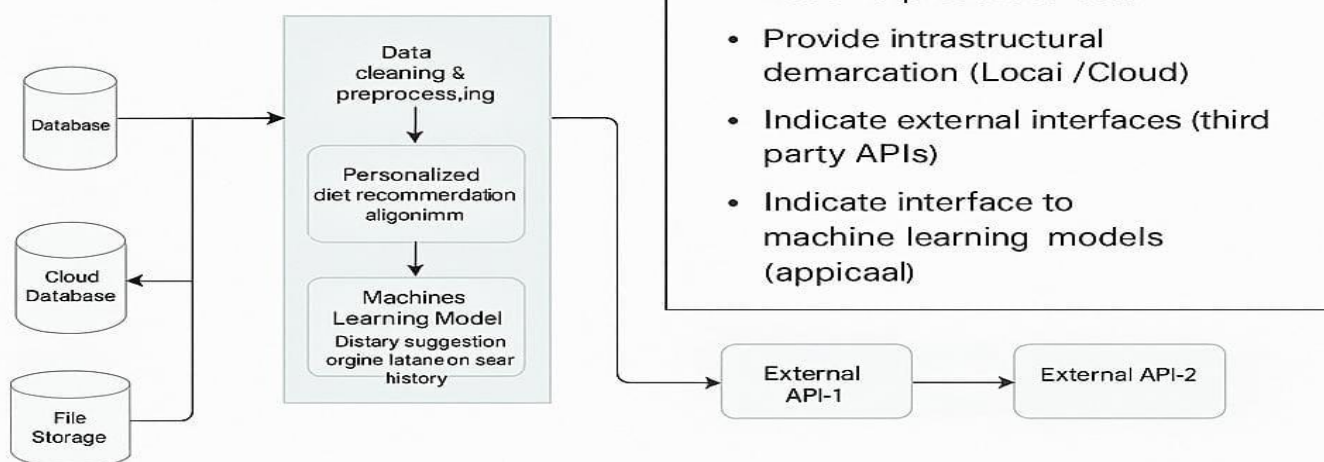
The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

### Example: A College Food Choices Case Study

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

## A College Food Choices Case Study

Understanding food consumption behavior and generating personalized dietary suggestions in a college



**Table-1 : Components & Technologies:**

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application Dashboard, Survey Input UI	Dashboard, Survey Input UI   Tableau Dashboards, React.js, HTML/CSS
2.	Application Logic-1	Data collection logic (surveys, cafeteria logs, manual entries)	Python scripts, Tableau Web Data Connectors
3.	Application Logic-2	Data cleaning & preprocessing	Tableau Prep, Python (Pandas)
4.	Application Logic-3	Personalized diet recommendation algorithm	Python (scikit-learn), ML Models
5.	Database	Storage of raw & processed dietary data	MySQL, NoSQL (MongoDB)
6.	Cloud Database	Cloud-based access to dietary datasets	. Google Firebase, AWS RDS, Snowflake

7.	File Storage	Storing reports, charts, and user uploads	AWS S3, Google Drive API, Tableau Public
8.	External API-1	Nutrition data from external sources	USDA Food Data Central API
9.	External API-2	Student info or campus data access	College ERP API, Google Forms API
10.	Machine Learning Model	Dietary suggestion engine based on user history	Python ML Model (KNN, Decision Tree)
11.	Infrastructure (Server / Cloud)	Hosting Tableau server or cloud dashboards	Tableau Server, AWS EC2, Google Cloud.

**Table-2: Application Characteristics:**

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Python (Pandas, NumPy, scikit-learn), MySQL
2.	Security Implementations	.Access control for student health data, APIs, and dashboards	OAuth 2.0, Encryption (SHA-256), IAM Roles
3.	Scalable Architecture	Modular layers: UI – Processing – Storage – ML – Visualization	Microservices, Docker, Tableau Extensions
4.	Availability	Hosted on cloud with dashboard backup, load-balanced APIs	Tableau Online, Load Balancer (AWS/GCP)
5.	Performance	Fast dashboard loading, efficient ML model execution, data caching	Tableau Extracts, CDN, Redis (optional)

#### 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>