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

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| Date | 27 June 2025 |
| Team ID | LTVIP2025TMID59682 |
| Project Name | Comprehensive Analysis and Dietary Strategies with Tableau: A College Food Choices Case Study |
| Maximum Marks | 4 Marks |

Technical Architecture:

The system architecture follows a data analytics pipeline approach, designed to process, analyze, and visualize college student food choice data to derive meaningful dietary insights and strategies.

**Table-1: Components & Technologies**

| S.No | Component | Description | Technology |
|---|---|---|---|
| 1. | User Interface | Interactive web dashboard for data visualization and analysis results | HTML5, CSS3, JavaScript, Bootstrap |
| 2. | Data Visualization Engine | Primary visualization and analytics platform for creating interactive dashboards | Tableau Desktop/Public |
| 3. | Data Processing Layer | Data cleaning, transformation, and preprocessing of survey data | Python (Pandas, NumPy) |
| 4. | Database | Storage for processed datasets and analysis results | SQL |

**Table-2: Application Characteristics**

| S.No | Characteristics | Description | Technology |
|---|---|---|---|
| 1. | Open-Source Frameworks | Utilizes open-source data processing and analysis libraries | Python (Pandas, NumPy, Matplotlib, Seaborn), Jupyter Notebooks |
| 2. | Security Implementations | Ensures data privacy and secure handling of student survey data | Data anonymization, SSL/TLS encryption, Access controls, GDPR compliance measures |
| 3. | Scalable Architecture | Modular design allowing for additional datasets and analysis modules | Microservices architecture with containerization (Docker) |
| 4. | Availability | Ensures consistent access to dashboards and analysis results | Load balancing, redundant storage, automated backups |
| 5. | Performance | Optimized for handling large datasets and real-time dashboard updates | Data indexing, caching mechanisms (Redis), optimized SQL queries, CDN for static assets |

**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