**Project Design Phase – Solution Architecture**

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| **Date** | 01 July 2025 |
| **Team ID** | **LTVIP2025TMID48379** |
| **Project Name** | **Student Health and Lifestyle Analysis** |

**Solution Architecture**

**Objective:**

The goal is to design an architecture that transforms raw survey data about student lifestyles into interactive dashboards that provide insights about health, diet patterns, physical activity, and academic performance.

**Solution Description:**

* The solution takes data from a CSV file (food\_coded) containing student lifestyle information.
* Data is cleaned, transformed, and loaded into Tableau.
* Various calculated fields and filters are created to enable dynamic visual analysis.
* Dashboards are designed to present insights on diet, exercise, mental well-being, and academic correlations.
* A story is prepared to summarize the key takeaways for stakeholders.

**Key Components:**

* **Data Source:** CSV file (food\_coded) containing survey responses.
* **ETL Process:** Tableau’s inbuilt data cleaning and transformation.
* **Data Model:** Single datasource with relationships modeled using dimensions like Gender, GPA, Diet Status, Exercise Frequency, and Marital Status.
* **Visualization Layer:** 4 dashboards + 1 story to present analytical insights.
* **Interaction:** Filters, calculated fields, and dashboard actions enable user-driven exploration.

**Development Phases:**

1. **Data Ingestion:** Load survey data into Tableau.
2. **Data Cleaning & Transformation:** Remove nulls, create categories, and calculate derived metrics (BMI, meal skipping frequency, etc.).
3. **Data Modeling:** Design relationships and fields required for visualization.
4. **Dashboard Development:** Create dashboards focused on Lifestyle, Diet, Health, and Parental Influence.
5. **Story Creation:** Combine dashboards into a story for a summarized narrative.

**Solution Requirements:**

* **Software:** Tableau Desktop
* **Data Format:** CSV
* **User Roles:** Viewer (students, educators), Analyst (decision-makers)
* **Performance:** Handles small to medium datasets efficiently with instant filter-based interaction.

**Architecture Diagram:**