**9. Proposed Solution**

**9.1 Solution Overview**

To address the lack of dietary awareness and nutritional insight among college students, this project proposes a **data-driven dietary analysis platform** built using Tableau for visual analytics and Flask for web-based dashboard embedding.

The proposed solution transforms raw CSV data about students’ food habits, health perceptions, and lifestyle behaviors into **meaningful visualizations**, making the data actionable and insightful for both individuals and institutional decision-makers.

**9.2 Key Solution Components**

| **Component** | **Description** |
| --- | --- |
| **Tableau Dashboards** | Used to build interactive and real-time visuals representing dietary patterns |
| **CSV Dataset** | Source of raw data with over 30 columns on food habits, health, and lifestyle |
| **Data Cleaning Module** | Optional use of Tableau Prep or Excel to ensure clean, formatted data |
| **Story Boards** | Tableau "Story" feature used to create narrative flow across multiple visuals |
| **Flask Integration** | Lightweight web application to host and embed the dashboard for browser access |

**9.3 Functional Architecture**

[CSV Dataset]

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[Data Cleaning & Preparation]

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[Tableau Desktop]

→[Dashboard + Story Creation]

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[Tableau Public / Server]

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[Flask Web App]

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[End User (Students / Staff / Admins)]

You can optionally convert the above text diagram into a visual one using tools like Lucidchart, Canva, or draw.io.

**9.4 Features of the Proposed Solution**

| **Feature** | **Purpose** |
| --- | --- |
| ✅ **Interactive Filtering** | View trends by gender, GPA, diet type, exercise frequency |
| ✅ **Nutritional Trends Analysis** | Analyze intake of fruits, vegetables, vitamins, and fast foods |
| ✅ **Diet vs. Academic Correlation** | Study how diet affects GPA, healthy feelings, and self-perception |
| ✅ **Storytelling Scenes** | Visual narratives showing evolving trends or comparisons |
| ✅ **Web Embedding** | Dashboard embedded into a Flask web interface for seamless access |

**9.5 Benefits of the Proposed Solution**

* 📊 **Data-Driven Awareness**: Encourages students to reflect on their food habits
* 🏥 **Institutional Planning**: Helps universities deploy targeted wellness initiatives
* 📈 **Scalability**: The system can be extended with more data fields or updated datasets
* 🖥️ **Accessibility**: No login or complex setup; dashboards are public and responsive

This solution transforms raw dietary data into a **personalized, visual experience** — providing stakeholders with the tools needed to promote better nutrition, healthier habits, and improved student outcomes.