A College Food Choices Case Study

1. Introduction
• Project Title: Comprehensive Analysis and Dietary Strategies with Tableau: A College Food Choices Case Study
• Team Members:
  - Boddapu Surendra – Team Lead / Data Visualization
   - Member 2: Balla Kusuma – Data Preparation
  - Member 3: Ch Hema Varshini – Data cleansing

2. Project Overview
• Purpose: Provide interactive insights into college students' food preferences, nutritional intake, and spending habits by integrating Tableau dashboards within a MERN stack web application.
• Features:
  - Responsive React frontend embedding Tableau visualizations
  - Secure Node/Express REST API for data ingestion and retrieval
  - MongoDB storage for survey and transaction data
  - Personalized nutrition and cost tracking for students
  - Admin analytics for cafeteria planning

3. Architecture
• Frontend: React app using React Router, Axios, and Tableau Embed API.
• Backend: Node.js with Express.js providing REST endpoints and JWT-based auth.
• Database: MongoDB Atlas with collections for Users, Meals, Transactions, Feedback.

4. Setup Instructions
• Prerequisites: Node.js 20+, MongoDB 7+, Tableau Server or Tableau Public.
• Installation:
  1. git clone <repository-url>
  2. cd server && npm install
  3. cd client && npm install
  4. Configure .env files for DB_URI, JWT_SECRET, TABLEAU_URL.

5. Folder Structure
• client/ : React components, pages, services
• server/ : controllers, routes, models, config

6. Running the Application
• Frontend: npm run dev (inside client)
• Backend: npm run dev (inside server)

7. API Documentation
• GET /api/meals – List meals; params: date, userId
• POST /api/transactions – Log meal purchase
• GET /api/analytics/spending – Student spending summary
• GET /api/analytics/nutrition – Nutrition intake dashboard data

8. Authentication
• JWT tokens stored in HttpOnly cookies; role-based middleware for Admin vs Student.

9. User Interface
• React UI with Material-UI components and embedded Tableau dashboards (screenshots TBD).

10. Testing
• Jest & Supertest for backend; React Testing Library for frontend.

11. Screenshots or Demo
• Demo link: https://example.com/tableau-dashboard-demo

12. Known Issues

• Data refresh delay (~15 min) between database update and Tableau extract.

13. Future Enhancements
• AI-based meal recommendation engine.
• Integration with campus ID card for auto logging purchases.

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