

Health Diet Analyzer – Full Project Report

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Abstract

This project focuses on creating a simple and reliable Health Diet Analyzer that helps users

track their daily food intake and understand the nutritional breakdown of their meals. The application is written in Java and uses JSON-based storage for nutritional data. The goal was

to build something practical, easy to use, and helpful for everyday food awareness.

1. Introduction

The motivation behind this project came from observing how hostel students often eat without

knowing the calorie or nutrition value of their meals. This results in unhealthy eating habits.

The project tries to solve this by providing a small tool that calculates calories, protein, carbohydrates, and fats in a straightforward way.

2. Problem Statement

Many people want to eat healthy, but they do not have a convenient way to calculate what they

consume. Mobile apps exist, but they are either too complicated or require internet. A simple

local Java-based analyzer makes the task easier, especially for students.

3. Objectives

Allow users to enter food and quantity

Display calorie and nutritional totals

Use JSON to store structured nutritional data

Maintain clean and modular Java code

Provide extendable architecture for future GUI or REST API

4. Software Requirements

Java Development Kit (JDK 17 or higher)

Maven 3.6+

Jackson Databind for JSON parsing

JUnit for testing

5. Project Architecture

The system follows a modular architecture:

Model Layer: Contains POJO classes for food and nutrition.

Service Layer: Handles all calculations.

Data Layer: Loads JSON files and provides lookup functionality.

UI Layer: Console-based interaction with the user.

6. Use Case Diagram

User

■■■ Log Meal

■■■ View Summary

■■■ Get Recommendations

7. Sequence Diagram

User -> App: Enter Food

App -> Data: Fetch Nutrition

Data -> App: Return Values

App -> User: Display Summary

8. Implementation Summary

The code is divided into packages based on responsibility. JSON parsing is handled through

Jackson, ensuring reliable data loading. The console UI keeps the program simple. Maven

manages the build lifecycle, making the application easy to compile and package.

9. Sample Output

Food: Rice

Quantity: 1 bowl

Calories: 206 kcal

Protein: 4.3 g

Carbs: 45 g

Fats: 0.4 g

10. Testing

Basic tests were written to check JSON loading and nutritional calculations. These tests helped

catch small logical issues early. Smoke tests ensure the application builds and runs without

errors.

11. Future Enhancements

JavaFX GUI for better user experience

REST API version using Spring Boot

More detailed nutritional dataset

Daily history tracking and charts

12. Conclusion

The Health Diet Analyzer project provided a practical learning experience in Java development,

modular design, JSON handling, and basic software engineering concepts. It can be extended

easily and serves as a meaningful starting point for larger health-related applications.