Eat-Wise

Diet Tracker

Start Your Journey to Healthy Eating Here

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Hi! I'm Eat-Wise

You can easily look up the nutritional information for a wide variety of foods, create personalized diet goals, log your daily food and water intake, and view your nutritional data in a visually appealing and easy-to-understand dashboard.

Problem Statement

In a world where dietary habits significantly impact health and well-being, individuals often struggle to manage their food intake effectively. Despite the availability of various dietary tracking applications, many users face challenges in accurately monitoring their nutrition, setting personalized goals, and staying motivated to maintain healthy eating habits. This highlights the need for a comprehensive dietary management system that provides intuitive tools for tracking food consumption, analyzing nutritional data, setting achievable goals, and offering personalized recommendations to promote healthier lifestyles.

How Are We Solving it?

- Food Logging: Users can log their daily food intake, including details such as food items consumed, portion sizes, and meal times.
- Nutritional Tracking: The system calculates and displays nutritional information for logged foods, including calories, macronutrients, vitamins, and minerals.
- Goal Setting: Users can set personalized dietary goals based on their nutritional needs, dietary preferences, and health objectives.
- Progress Monitoring: Food Logger tracks users' progress towards their dietary goals over time, providing insights and feedback to support healthy eating habits.
- User Management: The platform includes user authentication, registration, and profile management functionalities to ensure secure and personalized access.
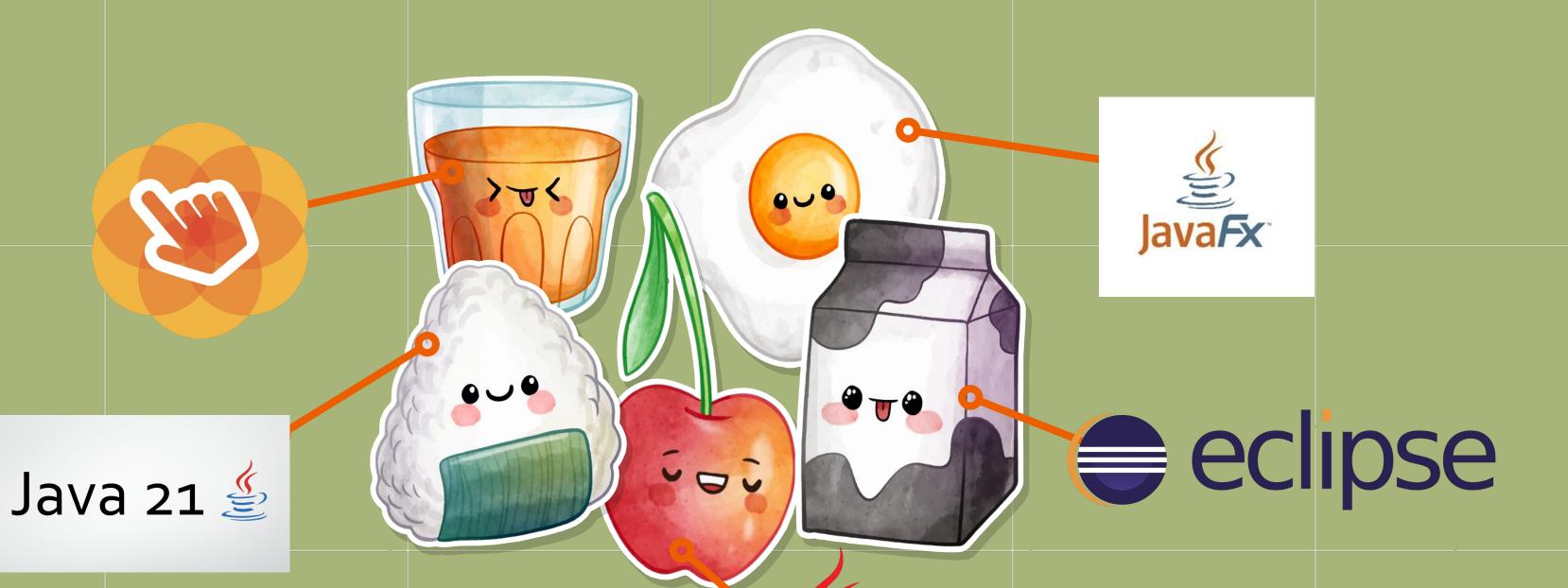
My Tech Stack

Java 21

JavaFx

eclipse

Java

Tech Stack In Detail

- Data Structures: Lists, collections, maps (HashMaps), binary search trees (BST), and graphs.
- Core Concepts: Object-oriented design principles, including encapsulation, inheritance, polymorphism and recursion.
- JavaFX: User interface development framework for creating interactive GUI applications.
- FXML: XML-based markup language for designing JavaFX GUI layouts.
- CSS: Cascading Style Sheets for styling and customizing the appearance of JavaFX UI components.
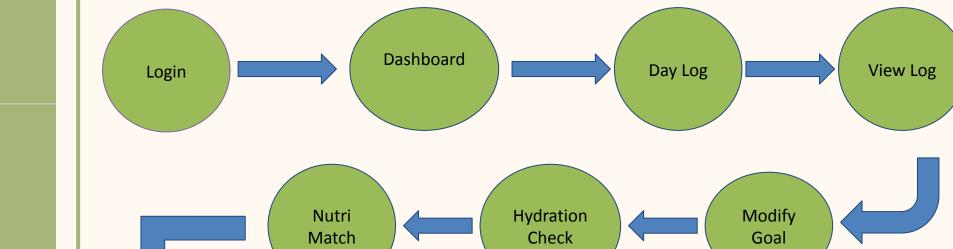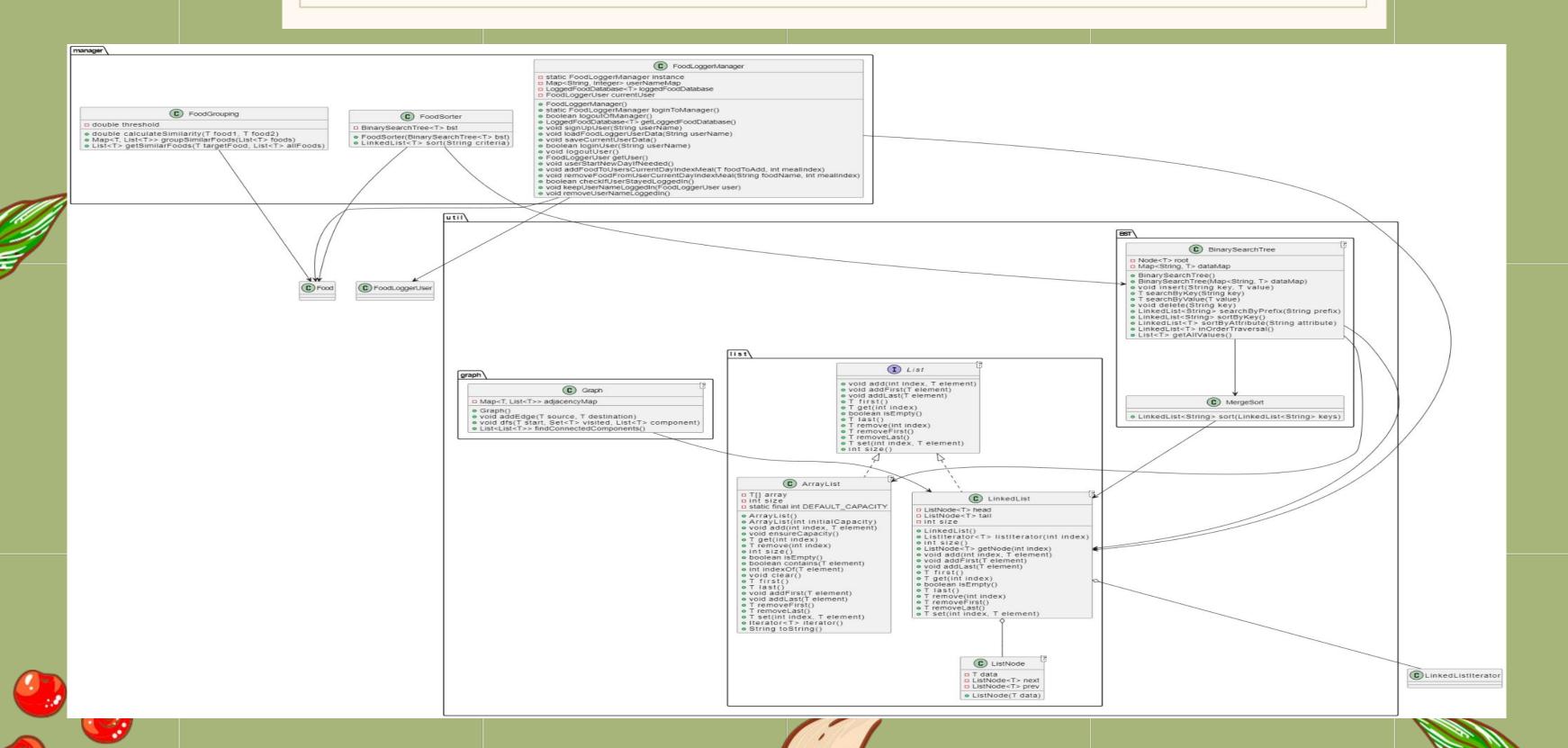- Algorithms Used: Merge Sort, Euclidean distance for similarity.

System Design - UML Diagram

System Design - Architecture Overview

The system architecture comprises high-level modules organized into packages, each responsible for specific functionalities:

- model.implementation: Classes implementing core data models and business logic.
- model.io: Input/output utilities for data persistence.
- model.manager: Management classes for handling data operations and business logic.
- model.util: Utility classes for data manipulation and algorithmic operations.
- view_controller.fx: User interface components developed using JavaFX, including controllers and FXML files.
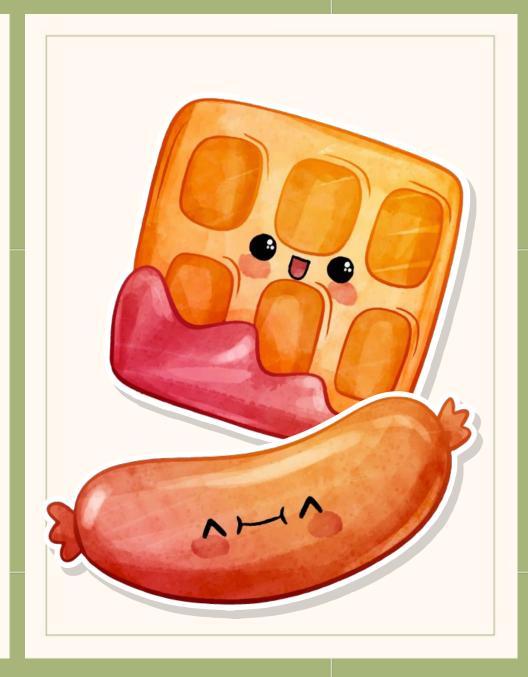- module-info.java: Module descriptor for Java module system.

System Design - Dashboard and Log Functionality

- Dashboard Activity:
  - Dashboard provides an overview of user's daily food consumption and progress towards set goals.
  - Features:
    - Display of logged meals with nutritional breakdown.
    - Visual representation of calorie intake against daily goal.
    - Quick access to log food items and view nutritional details.
- Log Activity:
  - Log activity enables users to track their daily food intake and nutritional information.
  - Functionality:
    - Logging of food items with portion sizes and meal times.
    - Calculation of calories, macronutrients, vitamins, and minerals.
    - Storage of logged data for future reference and analysis.

System Design - Goal and water tracker

- Modify Goal Activity:
  - Goal activity enables users to set and monitor personalized dietary goals.
  - Features:
    - Creation of dietary goals based on nutritional requirements and objectives.
    - Tracking of progress towards set goals over time.
    - Adjustment of goals to adapt to changing dietary needs or preferences.
- Water Intake Tracker Activity:
  - Water tracker functionality helps users monitor their daily water intake.
  - Features:
    - Recording of water consumption throughout the day.
    - Visualization of water intake against recommended daily intake.
    - Notification alerts to remind users to stay hydrated.

System Design - Nutri Matcher

- Nutri Match feature enables users to discover similar foods based on a selected food item.
- Features:
  - Selection of a food item from the database.
  - Identification and display of foods with similar nutritional profiles.
  - Comparison of key nutritional attributes such as calorie content, macronutrient composition, and micronutrient levels.
  - Option to explore alternative food choices that align with dietary preferences and goals.
- Algorithms Used:
  - Graph Representation with Adjacency Matrix:
    - Description: Foods and their nutritional attributes are represented as nodes in a graph, with edges weighted by the Euclidean distance between their nutritional profiles.
    - Implementation: The adjacency matrix stores the distances between all pairs of food items, facilitating efficient computation of similarities using Euclidean distance.
    - Usage: When a user selects a food item, the application retrieves its nutritional profile and calculates the Euclidean distance to every other food item, generating a similarity matrix for matching.
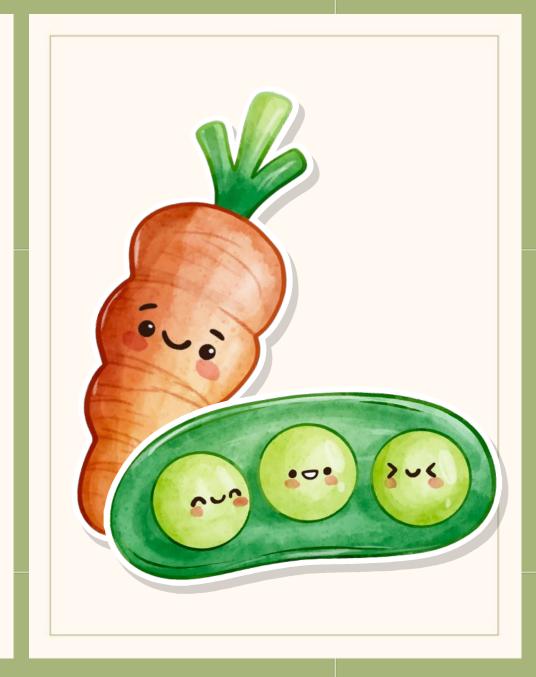
System Design - Nutri Sort

- Nutri Sort functionality allows users to organize and prioritize food items based on nutritional value.
- Features:
  - Sorting of food items by calorie content, macronutrient composition, or other nutritional factors.
  - Customization of sorting criteria to meet individual dietary preferences and goals.
  - Visualization of sorted food items in an intuitive and user-friendly interface.
- Algorithm Used:
  - Merge Sort:
    - Description: Merge Sort is employed for sorting food items within each subtree of the BST, ensuring that the items are arranged in the desired order.
    - Usage: When displaying sorted results to the user, the application performs Merge Sort on the food items stored in each subtree of the BST, ensuring that the items are presented in the correct sorted order.

Difficulties Faced

- Designing and implementing pie charts and graphical bar charts while ensuring they accurately represent the intended data was a challenging task.
- Incorporating tables into the Nutri Match and Nutri Sort pages posed a significant challenge, requiring careful design and implementation to ensure they effectively display the relevant information.
- Achieving seamless integration between JavaFX UI designs crafted in Scene Builder and the Eclipse IDE posed a notable task, necessitating meticulous attention to detail to ensure smooth compatibility and functionality.
- Navigating event handling between JavaFX controllers and Scene Builder–designed UI elements within Eclipse proved to be a challenging endeavor, requiring careful coordination to ensure smooth interaction and functionality.

Future Scope

- Explore machine learning and AI algorithms to provide personalized recommendations based on users' dietary preferences, health goals, and nutritional needs. This could improve user engagement and satisfaction.
- Explore opportunities to integrate with external APIs, such as nutrition databases, recipe databases, or food delivery services. This could provide users with access to a wider range of resources and functionalities.
- Implement social features that allow users to connect with each other, share recipes, meal plans, and tips. This could foster a sense of community and support among users, enhancing engagement and motivation.
- Extend the project to support multiple platforms, such as web, mobile (iOS and Android), and desktop applications. This would enable users to access the system seamlessly across different devices.

Conclusion

In conclusion, the project addresses key challenges in dietary management by offering a user-friendly interface and insightful analytics. Despite initial hurdles in design and data management, collaborative efforts led to a robust solution. Moving forward, the system has potential for further enhancement, including additional features and improved user experience. Overall, it demonstrates technology's capacity to improve health outcomes and lifestyle choices.

Let's EatWise and be Wise About our Health.

Thank You!!!