# Decoding Data Science (DDS) Academy

# AI Application Building Challenge

## For students (instructor review required)

# Day 1 Idea Submission Template

## Project Title: Personalized AI-Powered Nutrition Planner

### Concept Summary:

(Briefly describe your idea, including its purpose and the problem it aims to solve.)

This application will serve as a personal nutrition assistant for a nutritionist's private practice. The core purpose is to move away from generic dietary plans and pre-packaged online software by creating a custom tool that allows the nutritionist to build and manage highly personalized meal plans for each client. The app will use AI to analyze a client's specific health data, dietary preferences, and goals, and then assist the nutritionist in generating and adjusting meal plans. Clients will also have the ability to view their plan, track their progress, and suggest modifications, which the nutritionist can then review and approve.

### Target Audience:

(Who will benefit from your project? Describe their needs.)

The primary target audience is a professional nutritionist who wants a more efficient and customizable way to manage client meal plans. This tool will free them from the constraints of rigid, off-the-shelf software, allowing for greater creativity and client-specific adjustments. The secondary audience is the nutritionist's clients, who will benefit from a highly tailored, interactive, and engaging nutrition plan that is directly managed by their professional. This helps them stay on track and feel more engaged in their health journey.

### Key Features:

(List the main features or functionalities of your application.)

**1. Client Profile and Data Intake:** A secure interface for the nutritionist to input and view client information, including health metrics, allergies, food preferences (likes/dislikes), and lifestyle factors.

**2. AI-Assisted Meal Planning:** An AI model that suggests dish variations and ingredient substitutions based on the client's profile, dietary goals, and existing pantry items. For example, if a client dislikes a particular vegetable, the AI can suggest several healthy, taste-specific alternatives.

**3. Recipe Customization and Generation:** The nutritionist can modify existing recipes or create new ones from scratch within the app. The AI can then automatically calculate nutritional information (calories, macros, etc.) for the customized dish.

**4. Client-Facing Dashboard:** A simple, intuitive interface for clients to view their daily and weekly meal plans, mark meals as completed, and track progress against their goals.

**5. Interactive Feedback Loop:** Clients can use the app to request modifications to their plans (e.g., "I want to try a new breakfast recipe") or log their feedback. These requests will be sent directly to the nutritionist for approval, fostering a dynamic and collaborative relationship.

## Technical Approach:

(How do you plan to implement your idea? Mention technologies or methods.)

The application will be developed as a web-based app using a modern framework like React for a responsive and user-friendly front end. The back end will be powered by a robust server-side technology, with a database to securely store client data, recipes, and meal plans. The AI functionality will be implemented by integrating with a large language model (LLM) API. This model will be prompted to perform tasks like suggesting recipe variations, calculating nutritional facts from ingredient lists, and providing alternative ingredients based on user preferences.

## Expected Challenges:

(What potential obstacles do you foresee, and how will you address them?)

**1. Data Privacy and Security:** Handling sensitive client health information requires robust security measures. This will be addressed by using a secure, cloud-based database with proper authentication and encryption protocols to ensure all data is protected.

**2. AI Integration and Prompt Engineering:** It will be challenging to create effective and reliable prompts for the LLM to generate consistently accurate and helpful nutritional suggestions. This will require careful testing and iterative refinement of the prompts to ensure the AI's output is always safe and relevant.

**3. UI/UX for Two User Types:** Designing an app that is easy for both the nutritionist (a power user with specific needs) and the client (a casual user) will be a key challenge. I will address this by focusing on clear, separate interfaces and conducting user experience testing throughout the development process.

## Submission Format:

(Outline how your submission should be presented: documents, slides, etc.)

The final submission will include:

- A fully functional web application (hosted on a server or as a shareable code bundle).
- A short project summary document (similar to this one) detailing the final features and outcomes.
- A brief video demonstration of the app's key functionalities.

## Expected Outcome:

(What do you aim to achieve by the end of the challenge?)

By the end of this challenge, I aim to have a prototype of a functional, AI-powered nutrition planning application. The goal is to prove that a customized tool can be a more effective and personal alternative to generic software, leading to better client outcomes and a more efficient workflow for the nutritionist. I also hope to gain hands-on experience in integrating AI models into a real-world application, while also understanding the importance of user-centric design in a healthcare context.

## Additional Notes (Optional):

The potential for future development is vast. I envision adding features such as automated grocery list generation, progress tracking with charts, and a content library for educational materials. This project is not just a challenge submission; it's a foundation for a future business tool.