Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	22 October 2022
Team ID	PNT2022TMID41375
Project Name	AI-Powered Nutrition Analyzer for Enthusiasts
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	**Preparation of soy protein concentrates**	❖ Defatted soy flakes/grits were obtained from M/S Shakti soy, Coimbatore, Tamilnadu; it was processed according to the method of Obulesu and Bhagya (2006) and was powdered to pass through 60-mesh sieve.
FR-2	**Defatted sesame flour**	❖ The sesame cake was made into grits and defatted by repeated extraction with hexane in a ratio of 1:5 (w/v). The defatted meal was powdered to pass through 60-mesh sieve.
FR-3	**Chemical composition**	❖ Supplementary food formulations were analysed for moisture, protein (*N* × 6.25), fat, ash and crude fibre by AOAC method (2000). β-Carotene was estimated according to the method of Ranganna (1986). ✓ Phytic acid content was estimated according to the method of Thompson and Erdman (1982) by converting the ferric phytate; phosphorus content was analysed by Taussky and Shorr (1953). The Phytic acid content was derived from the phytate phosphorus content by multiplying by a factor of 3.55.Total iron, calcium and zinc were determined by Atomic Absorption Spectrometry (Shimadzu AAF-6701, Tokyo), using standard conditions as recommended by the supplier of equipment.

FR-4	**Amino acid analysis**	❖ Supplementary foods containing 5 mg of protein were hydrolysed for 24 h under vacuum at 110 °C using 5.8 mol/L HCl. Amino acid analysis was carried out by pre-column derivatisation using phenylisothiocyanate. ✓ The phenylthiocarbomyl amino acids were analysed using a water Pico-Tag amino acid analysis system (Bidlingmeyer et al. 1984). Tryptophan was estimated by the acid ninhydrin method (Pinter and Molnar 1990).
FR-5	**Chemical score**	The chemical score was calculated (FAO 1968) as $$\frac{\text{g EAA in test protein}}{\text{total EAA in test protein}} \times \frac{\text{g total EAA in egg}}{\text{g EAA in egg}} \times 100$$ where, **EAA** is essential amino acids.
FR-6	**Functional properties**	❖ The food formulations were subjected to determination of various functional properties such as water holding capacity as described by Prasannapa et al. (1972). Bulk density, was determined according to the method of Wang and Kinsella (1976), and Consistency (pat spread) was determined by the modified method of Bookwalter et al. (1968).

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Usability Usability defines how difficult it will be for a user to learn and operate the system. Usability can be assessed from different points of view: ✓ **Efficiency of use:** the average time it takes to accomplish a user's goals, how many tasks a user can complete without any help, the number of transactions completed without errors, etc. ✓ **Intuitiveness:** how simple it is to understand the interface, buttons, headings, etc. ✓ **Low perceived workload:** how many attempts users need to accomplish a particular task.
NFR-2	**Security**	❖ Security requirements ensure that the software is protected from unauthorized access to the system and its stored data. It considers different levels of authorization and authentication across different users roles. For instance, *data privacy* is a security characteristic that describes who can create, see, copy, change, or delete information. Security also includes protection against viruses and malware attacks.
NFR-3	**Reliability**	❖ Reliability defines how likely it is for the software to work without failure for a given period of time. Reliability decreases because of bugs in the code, hardware failures, or problems with other system components. To measure software reliability, you can count the percentage of operations that are completed correctly or track the average period of time the system before failing.

NFR-4	**Performance**	❖ Performance is a quality attribute that describes the responsiveness of the system to various user interactions with it. Poor performance leads to negative user experience. It also jeopardizes system safety when it's overloaded.
NFR-5	**Availability**	❖ Availability is gauged by the period of time that the system's functionality and services are available for use with all operations. So, scheduled maintenance periods directly influence this parameter. And it's important to define how the impact of maintenance can be minimized. When writing the availability requirements, the team has to define the most critical components of the system that must be available at all times. You should also prepare user notifications in case the system or one of its parts becomes unavailable.
NFR-6	**Scalability**	❖ Scalability requirements describe how the system must grow without negative influence on its performance. This means serving more users, processing more data, and doing more transactions. Scalability has both hardware and software implications. For instance, you can increase scalability by adding memory, servers, or disk space. On the other hand, you can compress data, use optimizing algorithms, etc.