

Infant Food Frequency Questionnaire 2.0

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Problem

Infants require a special nutritional care to guarantee their progress toward wellness and healthy growth. Several diseases can be avoided by implementing an appropriate diet in early stages of life.

Dr. Cristina Palacios of the **FIU Department of Dietetics and Nutrition** and her team, developed an Infant Food Frequency Questionnaire that allows pediatricians assess the dietary habits of the infants from 0 to 24 months age. The goal of the second iteration of this web application is to make a software intended to provide the necessary tools to save and retrieve the questionnaires results, manipulate the food items and its nutrients in the database and, elaborate recommendations based on the questionnaire responses implemented in the version 1.0.

Current System

	Age of infant		
	0 to 6 months	7-12 months	13-24 months
Intake	EAR/AI	EAR/AI	EAR/AI
Energy (kcal)			
Protein (g)	9.1	11	13
CHO (g)	60	95	130
Fat (g)	31	30	19
Vit A (Retinol) (mcg)	400	500	210
Vit D (mcg)	10.0	10.0	10.0
Vit E (mg)	4.0	5.0	5.0
Vit K (mcg)	2.0	2.5	30.0
Vit C (mg)	40.0	50.0	15.0
Vit B1 (Thiamin) (mg)	0.2	0.3	0.4
Vit B2 (Riboflavin) (mg)	0.3	0.4	0.4
Vit B3 (Niacin) (mg)	2.0	4.0	5.0
Pantothenic Acid (mg)	1.7	1.8	2.0
Vit B6 (mg)	0.1	0.3	0.4
Vit B9 (Folate) (mcg)	65.0	80.0	120
Vit B12 (mcg)	0.4	0.5	0.7
Calcium (mg)	200	260	500
Phosphorus (mg)	100	275	380
Magnesium (mg)	30.0	75.0	65.0
Iron (mg)	0.3	6.9	3.0
Zinc (mg)	2.0	2.5	2.5
Copper (mg)	0.2	0.2	0.3
Potassium (mg)	400	700	3000

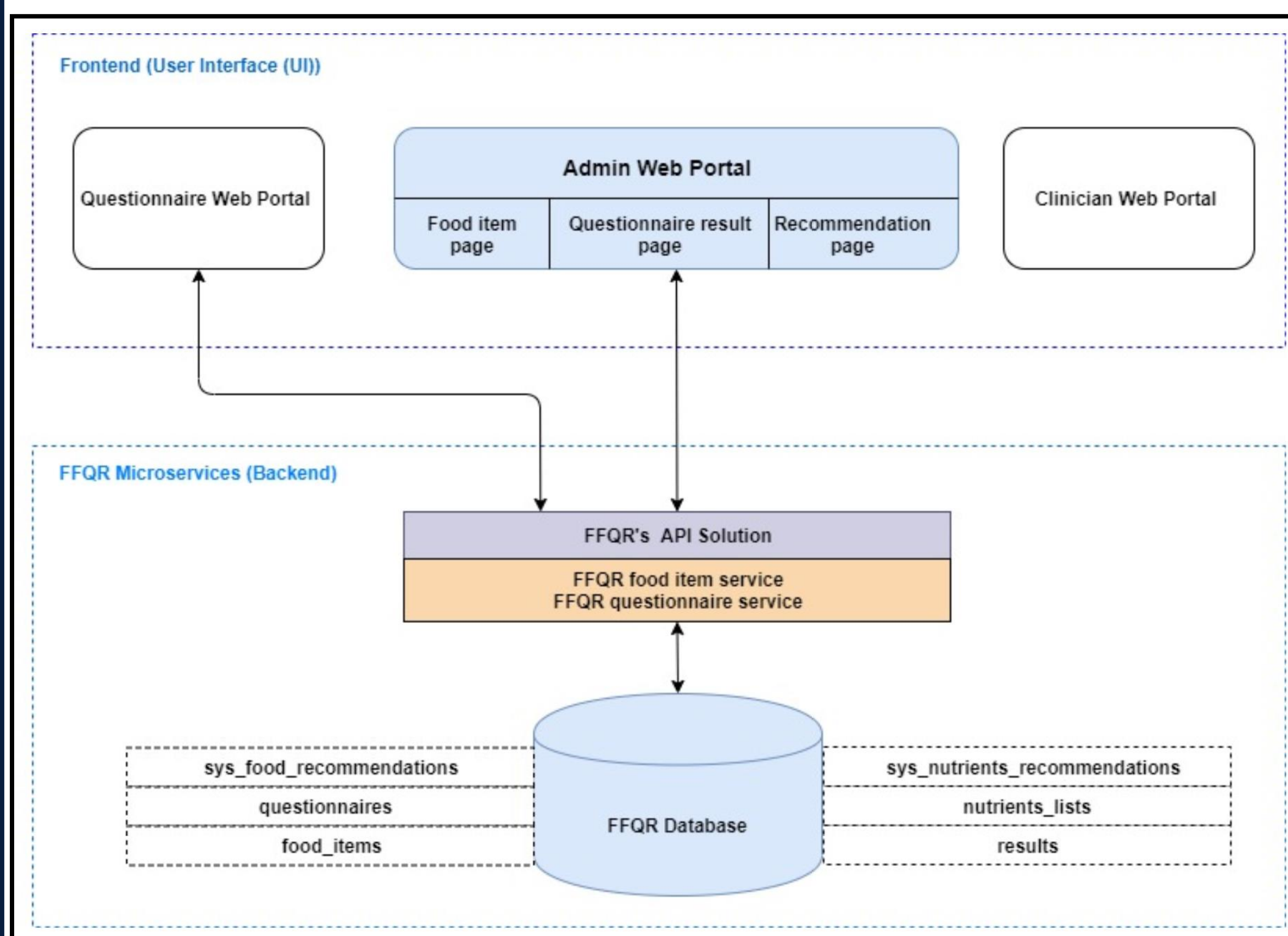
EAR: Estimated average requirement

Component	Level of consumption	6-12 months	13-24 months
Breastmilk/Formula/Cows Milk/Other milks (l oz/day)	Adequate	16.0-24.0	10.0-28.0
	A little below the recommendation	0-15.9	0-9.9
	A little over the recommendation	24.1-26.0	28.1-35.0
Whole Grains (oz/day)	Adequate	0	0-1.5
	A little below the recommendation	n/a	n/a
	A little over the recommendation	n/a	n/a
Refined Grains (oz/day)	Adequate	0	0-1.5
	A little below the recommendation	n/a	n/a
	A little over the recommendation	n/a	n/a
Proteins (oz/day)	Adequate	0	0-1.5
	A little below the recommendation	n/a	n/a
	A little over the recommendation	n/a	n/a
Vegetables (oz/day)	Adequate	0	0-1.5
	A little below the recommendation	n/a	n/a
	A little over the recommendation	n/a	n/a

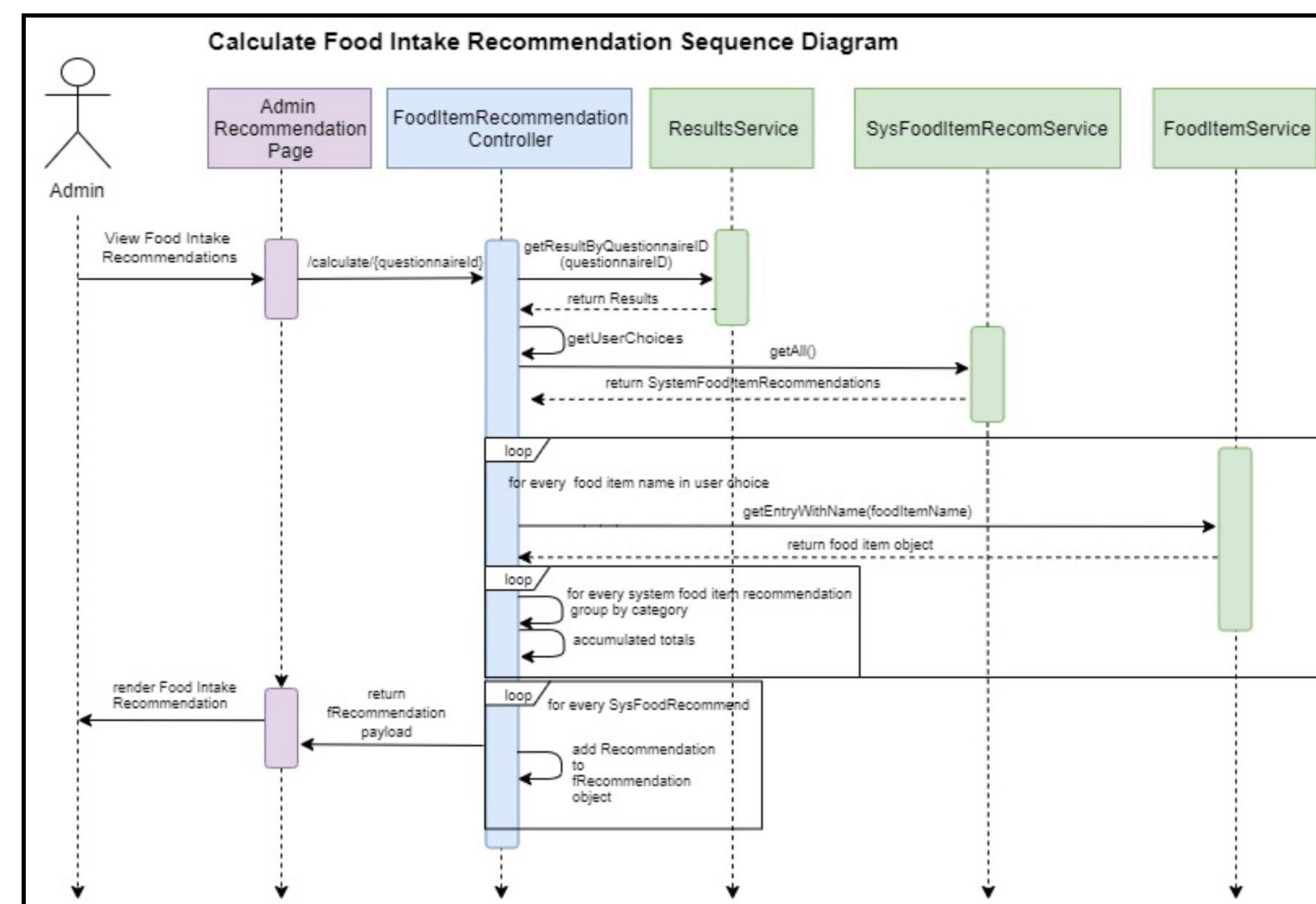
Requirements

- Design and implement the **Admin's Portal**. This portal will hold inside three basics components: **Food Items** page, **Questionnaire Results** page and the **Recommendations** page. It is running in: **http://localhost:4200/admin**
- Food Items** page: *Admin* can edit, add or delete food items and its nutrients into the database (CRUD operations)
- Questionnaire Results** page: *Admin* have access to all previously submitted questionnaires. *Admin* can see all user choices and the calculations breakdown corresponding to each questionnaire.
- Recommendations** page: *Admin* can see the recommended values for food intake and nutrients consumption corresponding to each questionnaire submitted.

System Design



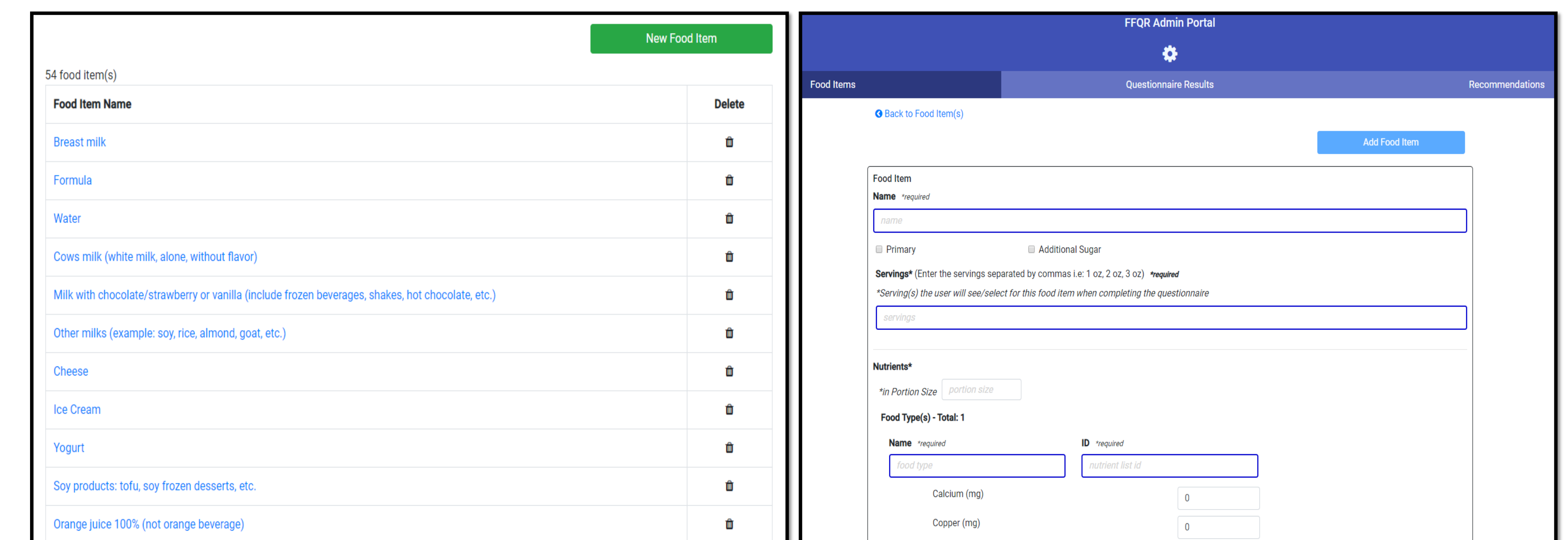
Object Design



Implementation

- Build with Spring Boot 2.0 and Maven (Java 8 SDK)
- Angular 7 framework used for web client (HTML, CSS and TypeScript)
- MongoDB for the implementation of the database.
- Docker for web application deployment.

Screenshots



Verification

Unit testing via Angular's Jasmine framework.

Test case ID: FFQR-2-T09

Description: Food item page will not let user add new food item until food name, serving, food item category and ID are filled out by the user.

Pre-condition:

- Admin portal and food item service is running.
- Food name and/or serving and/or food category and/or ID fields are left out empty by the user.
- User is not able to click add new food item.

Expected Results:

- Add Food Item Button is not highlighted (unclickable).

Actual Result: Result as expected

Status: Passed

Summary

- Admin portal holds and displays all the information regarding food items, food nutrients, questionnaires results, food and nutrients recommendations.
- All food items and its respective food nutrients are handled by the application. *Admin* can Add, Update and Delete any food item and its nutrients (127 nutrients and 54 food items).
- Questionnaires results are saved, when retrieved from the database it displays the user choices and the nutrient breakdown calculation for that questionnaire ID.
- When click in the **Recommendation** page, *Admin* have access to each nutrients and food items recommendation per questionnaire submitted.

Acknowledgement

The work in this poster is based upon the efforts and help received by **Dr. Cristina Palacios**. I am thankful to the help of my group member **Dariana Gonzalez**.