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ENGINEERING AND SCIENCE
UECS1144 OBJECT-ORIENTED APPLICATION
DEVELOPMENT
GROUP ASSIGNMENT
June 2023 Trimester

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Software Requirements Specification (SRS) for the Dietary Management System

1. Introduction

1.1 Purpose

The Dietary Management System is designed to assist individuals in managing their diets effectively, with a focus on popular and scientifically proven diets for weight loss and overall well-being. It empowers users to make informed dietary choices and achieve their dietary goals.

1.2 Scope

The system caters to end users keen on losing weight, improving dietary habits, and exploring diets to enhance health. It is a single-user system without user registration or login.

2. System Features and Functionalities

2.1 Profile Building

2.1.1 Purpose

Allows users to edit their personal profiles to personalize their dietary experience.

2.1.2 Tasks

- Allow editing of user profile details (such as name, weight, and target weight)
- Display profile above main menu

2.2 Diet Selection & Personalization

2.2.1 Purpose

Enables users to choose from a list of popular diets based on their dietary goals and preferences.

2.2.2 Tasks

- Allow user to choose and view descriptions for 6 diets
- Allow selection of a diet plan (chosen when editing profile)
- Display recommendations food and drinks based on selected diet of user

2.3 Grocery List

2.3.1 Purpose

To simplify managing a shopping list based on necessary diet ingredients.

2.3.2 Tasks

- Allow user to input ingredient and quality
- Allow user to add and remove meal ingredients
- Allow user to clear the grocery list
- Allow user to view ingredients information

2.4 Meal Instructions

2.4.1 Purpose

Provides users with important meal information and preparation instructions.

2.4.2 Tasks

- Display meals
- Allow user to select a meal for instructions
- Display meal instruction to user on top of their profile

2.5 Meal Plan

2.5.1 Purpose

Enables users to customize a weekly meal schedule.

2.5.2 Tasks

- Display a weekly meal plan
- Allow user to edit meal plan based on day and meal period (e.g., Monday and dinner).

2.6 Meal Categorization

2.6.1 Purpose

Categorizes meals based on criteria like calorie, fat, protein, and carbohydrate content to form list of high and low content (e.g., high fat meals) to inform the user of dietary information.

2.6.2 Tasks

- Categorize meals
- Display categorized lists of meals

3. System Constraints

- Single-user, local machine system
- No user registration or login
- Offline operation
- Local meal instructions and dietary data
- Focus on meal and diet management, not personalized health advice

4. Conclusion

The Dietary Management System empowers users to manage their diets effectively. With features like diet selection, grocery list management, meal instructions, meal planning, and meal categorization, it provides a comprehensive solution for dietary improvement and well-being.

5 References & Terminology

The system adapts and utilizes the information of the top 6 Diets from an article titled "Weight Loss Diets: Which Are Most Effective?" as source material. The diets are listed and briefly described below:

<https://ro.co/health-guide/weight-loss-diets-which-are-most-effective/> (link)

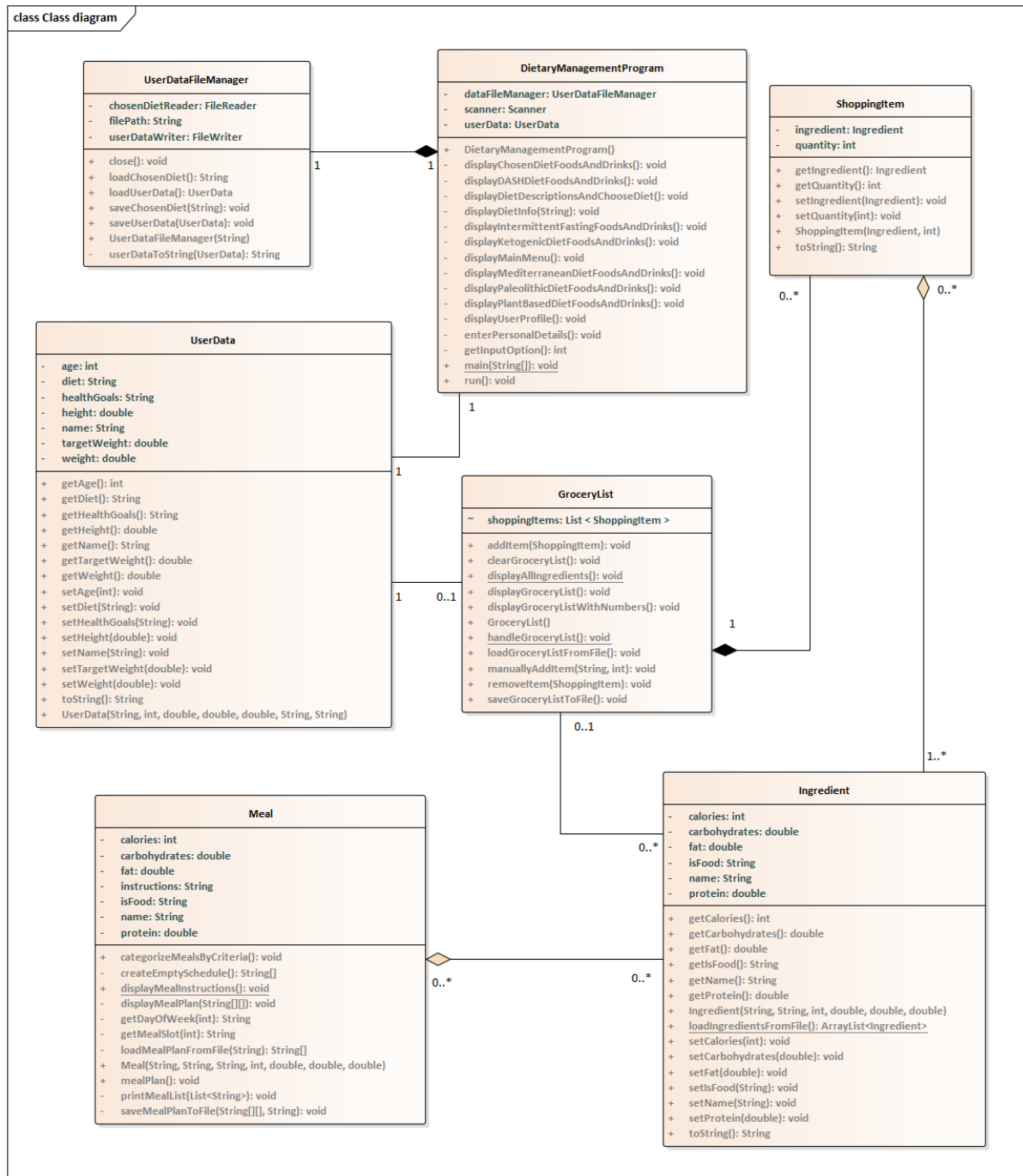
1. Mediterranean Diet
<ul style="list-style-type: none">• Focuses on healthy foods like fruits, vegetables, nuts, whole grains, and olive oil.
<ul style="list-style-type: none">• Promotes heart health, lowers cholesterol, and may help with weight loss.
<ul style="list-style-type: none">• Allows for moderate consumption of lean meats and dairy.
<ul style="list-style-type: none">• Sustainable and balanced approach to eating.
2. DASH Diet (Dietary Approaches to Stop Hypertension)
<ul style="list-style-type: none">• Designed to lower high blood pressure through a focus on whole foods.
<ul style="list-style-type: none">• Emphasizes fruits, vegetables, whole grains, and lean proteins.
<ul style="list-style-type: none">• Reduces sodium intake, which is beneficial for heart health.
<ul style="list-style-type: none">• May aid in weight loss and improve overall health.
3. Plant-Based Diet
<ul style="list-style-type: none">• Encourages the consumption of fruits, vegetables, nuts, and whole grains.
<ul style="list-style-type: none">• Offers various options, including vegetarian and vegan diets.
<ul style="list-style-type: none">• May help with weight loss and reduce the risk of certain diseases.
<ul style="list-style-type: none">• Requires attention to nutrient intake, especially for vegans.
4. Intermittent Fasting
<ul style="list-style-type: none">• Alternates between eating and fasting periods.
<ul style="list-style-type: none">• Reduces overall calorie intake by controlling when you eat.
<ul style="list-style-type: none">• May be easier to sustain for some individuals due to flexibility.

<ul style="list-style-type: none"> Requires healthy food choices during eating windows.
5. Ketogenic Diet (Keto)
<ul style="list-style-type: none"> Low-carb, high-fat diet that promotes ketosis for fat burning. Can lead to rapid initial weight loss, including water weight. May help control appetite due to high-fat content. Requires strict adherence and monitoring for potential side effects.
6. Paleo Diet
<ul style="list-style-type: none"> Attempts to replicate the diet of our hunter-gatherer ancestors. Focuses on lean meats, fish, fruits, vegetables, nuts, and healthy fats. High protein and high-fiber content may aid in feeling fuller longer. May promote short-term weight loss and improved blood markers

Specified terminology defined in the system.

Ingredient	Ingredient – the smallest component (food or drink) of a meal (e.g., chicken for chicken sandwich).
Meal	A dish prepared by a recipe or made up of one or more ingredients (e.g., chicken sandwich). Some ingredients can be meals (e.g., grapes) but meals are usually not considered ingredients.
Shopping Item	An ingredient plus the quantity the user intends to buy it in. e.g., 3 apples.

Part 3: Class Diagram



This UML Class Diagram was made using Enterprise Architect (EA), a UML modelling tool provided by Sparx Systems.

Part 4: Sample output

User is presented with their profile and the main menu upon starting the program. They are prompted to select a feature.

```
=====
|YOUR PROFILE|
|NAME:| John Tan
|AGE:| 21
|WEIGHT:| 80.0 kg
|HEIGHT:| 180.0 cm
|TARGET WEIGHT:| 76.0 kg
|HEALTH GOALS:| 1.To lose 4kg. 2. Feel more energetic and happy.
|DIET:| Ketogenic Diet
=====

=====
||===== MAIN MENU =====||
|| 1. Edit Personal Details and Choose Diet ||
|| 2. View Diet Descriptions ||
|| 3. View Chosen Diet Recommended Foods and Drinks ||
|| 4. Grocery List ||
|| 5. Quick Meal Info/Instructions Reference ||
|| 6. Meal Weekly Plan ||
|| 7. Meal Nutrient Categories ||
||=====||
=====
0. Exit
=====
Enter option: 1|
```

Edit Personal Details and Choose Diet – user is prompted to choose the personal detail they want to edit or choose a diet.

```
=====
|YOUR PROFILE|
|NAME:| John Tan
|AGE:| 21
|WEIGHT:| 80.0 kg
|HEIGHT:| 180.0 cm
|TARGET WEIGHT:| 76.0 kg
|HEALTH GOALS:| 1.To lose 4kg. 2. Feel more energetic and happy.
|DIET:| Ketogenic Diet
=====
```

Edit Personal Details

```
=====
|| Select the attribute to edit by entering a number1: ||
|| 1. Name ||
|| 2. Age ||
|| 3. Weight (in kg) ||
|| 4. Height (in cm) ||
|| 5. Target Weight (in kg) ||
|| 6. Health Goals ||
|| 7. Diet (choose from popular Diets) ||
|| 0. Return to Main Menu ||
=====
```

Enter option: 1|

Edit Personal Details

```
=====
|| Select the attribute to edit by entering a number1: ||
|| 1. Name ||
|| 2. Age ||
|| 3. Weight (in kg) ||
|| 4. Height (in cm) ||
|| 5. Target Weight (in kg) ||
|| 6. Health Goals ||
|| 7. Diet (choose from popular Diets) ||
|| 0. Return to Main Menu ||
=====
```

Enter option: 1

Enter new Name: John Tan |


```

=====
|| Select the attribute to edit by entering a number1: ||
|| 1. Name ||
|| 2. Age ||
|| 3. Weight (in kg) ||
|| 4. Height (in cm) ||
|| 5. Target Weight (in kg) ||
|| 6. Health Goals ||
|| 7. Diet (choose from popular Diets) ||
|| 0. Return to Main Menu ||
=====
Enter option: 7
*****
* Choose a Diet by entering a number: *
* 1. Intermittent Fasting *
* 2. Mediterranean Diet *
* 3. DASH Diet *
* 4. Ketogenic Diet *
* 5. Paleolithic Diet *
* 6. Plant-based diet *
*****
Enter Option:
6

```

View Diet Descriptions – user is prompted to choose a diet they want information on.

```

|Diet Descriptions|
*****
* 1. Intermittent Fasting *
* 2. Mediterranean Diet *
* 3. DASH Diet *
* 4. Ketogenic Diet *
* 5. Paleolithic Diet *
* 6. Plant-based diet *
*****
0. Go back to Main Menu
Enter option: 2|

```

```
**Mediterranean Diet**

**Description and How it Works:**
The Mediterranean diet is based on the eating patterns of Mediterranean countries.
It promotes a diet rich in fruits, vegetables, nuts, legumes, whole grains, and monounsaturated fats (e.g., olive oil),
with moderate consumption of lean meats and dairy.
Red meat is limited in this diet, focusing on foods that provide satiety and potentially reducing calorie intake.

**Benefits:**
The Mediterranean diet may improve heart health, lower cholesterol, reduce blood pressure, and stabilize blood sugar levels.
It can also play a role in cancer prevention.

**Disadvantages:**
While effective for weight loss, it may not be superior to other diets for individuals with obesity.
Adhering to the diet consistently can be challenging for some.

**What to Avoid:**
Moderation is key. Prioritize vegetables, fruits, and whole grains,
but be mindful not to overconsume fats, nuts, and alcohol.
Avoid excessive red wine consumption, especially if pregnant or with liver disease.

|Diet Descriptions|
*****
* 1. Intermittent Fasting          *
* 2. Mediterranean Diet            *
* 3. DASH Diet                     *
* 4. Ketogenic Diet                *
* 5. Paleolithic Diet              *
* 6. Plant-based diet              *
*****
0. Go back to Main Menu
Enter option:
```

View Chosen Diet Recommended Foods and Drinks – user is shown recommended foods and drinks based on their current diet choice.

```
=====
Foods and Drinks for Plant-Based Diet
=====

Foods for Plant-Based Diet:

1. Fruits (e.g., apples, bananas): A variety of natural sweetness.
2. Vegetables (e.g., broccoli, carrots): Rich in vitamins and fiber.
3. Legumes (e.g., beans, lentils): Excellent plant-based protein.
4. Whole grains (e.g., brown rice, quinoa): Satisfying and nutritious.
5. Nuts and seeds (in moderation): Healthy fats and protein sources.

Drinks for Plant-Based Diet:

1. Water: The best choice for staying hydrated.
2. Herbal tea (non-caloric): A caffeine-free option for variety.
3. Plant-based milk (e.g., almond milk): A dairy-free alternative.

Press '=' to return to the main menu...
```

Grocery List – user is allowed to build their grocery list by adding, removing, or clearing the list. They may also view the program’s preloaded ingredients details as reference.

```
Enter Option: 1
Grocery List:
1. ShoppingItem: Sweet Potato (5)
2. ShoppingItem: Chicken Breast (2)
3. ShoppingItem: Low-Fat Yogurt (4)
4. ShoppingItem: Whole Wheat Bread (2)

Grocery List Menu:
1. Add Item to Grocery List
2. Remove Item from Grocery List
3. Clear Entire Grocery List
4. Display All Ingredients
5. Exit
Enter your choice:
```

Add.

```
Ingredient: Water
Is Food (N for drink): N
Calories: 0
Protein: 0.0g
Carbohydrates: 0.0g
Fat: 0.0g

Ingredient: Whole Wheat Bread
Is Food (N for drink): Y
Calories: 90
Protein: 3.0g
Carbohydrates: 15.0g
Fat: 1.0g

Ingredient: Zucchini Noodles
Is Food (N for drink): Y
Calories: 40
Protein: 1.0g
Carbohydrates: 7.0g
Fat: 4.0g

Enter the name of the ingredient to add (or '=' to exit): avocado
Enter the quantity: 3
```

Remove.

```
Enter your choice: 2
Grocery List:
1. ShoppingItem: Sweet Potato (5)
2. ShoppingItem: Chicken Breast (2)
3. ShoppingItem: Low-Fat Yogurt (4)
4. ShoppingItem: Whole Wheat Bread (2)
5. ShoppingItem: avocado (3)
Enter the number of the item to remove: 5|
```

Display ingredients.

```
Ingredient: Vegetable Soup
Is Food (N for drink): Y
Calories: 120
Protein: 4.0g
Carbohydrates: 22.0g
Fat: 1.0g

Ingredient: Water
Is Food (N for drink): N
Calories: 0
Protein: 0.0g
Carbohydrates: 0.0g
Fat: 0.0g

Ingredient: Whole Wheat Bread
Is Food (N for drink): Y
Calories: 90
Protein: 3.0g
Carbohydrates: 15.0g
Fat: 1.0g
```

Quick Meal Info/Instructions Reference – user selects a meal they want info or preparation instruction on, it gets displayed on top of their profile.

```
35. Olive Oil
36. Omelette
37. Orzo Salad
38. Pistachios
39. Quinoa
40. Quinoa Salad
41. Red Wine
42. Roasted Red Peppers
43. Salad
44. Smoothie
45. Spinach Pie
46. Spinach Salad
47. Steak
48. Steamed Asparagus
49. Steamed Broccoli
50. Sweet Potato
51. Tuna Salad
52. Vegetable Soup
53. Water
54. Whole Wheat Bread
```

Select the meal by entering the meal number

(the info will be shown above your profile): 44|

```
*****
Smoothie: Blend banana, strawberries, yogurt, and almond milk to create a creamy and fruity smoothie.
*****
```

```
=====
|YOUR PROFILE|
```

```
|NAME:| John Tan
```

```
|AGE:| 21
```

```
|WEIGHT:| 80.0 kg
```

```
|HEIGHT:| 180.0 cm
```

```
|TARGET WEIGHT:| 76.0 kg
```

```
|HEALTH GOALS:| 1.To lose 4kg. 2. Feel more energetic and happy.
```

```
|DIET:| Plant-based diet
=====
```

Meal Weekly Plan – user can view their current custom weekly diet schedule and build it by selecting the day of the week and mealtime period before entering the description of the meal(s).

```
-----
6. SATURDAY
-----
| Breakfast |
Empty

| Lunch |
Empty

| Dinner |
Empty

=====

-----
7. SUNDAY
-----
| Breakfast |
Empty

| Lunch |
Empty

| Dinner |
Empty

=====

Enter the day (1 for MONDAY...7 for SUNDAY) or '=' to exit to the main menu: 7
Enter the meal slot (1 for Breakfast...3 for Lunch): 1
Enter the meal description (anything can be written): bananas with a cup of milk |
```

6.SATURDAY

|Breakfast|
Empty

|Lunch|
Empty

|Dinner|
Empty

=====

7.SUNDAY

|Breakfast|
bananas with a cup of milk

|Lunch|
Empty

|Dinner|
Empty

=====
Enter the day (1 for MONDAY...7 for SUNDAY) or '=' to exit to the main menu:

Meal Nutrient Categories – user can view a set of high/low macronutrient meal lists to help them build their diet. The meals are loaded from the program's files and calculated based on the program's criteria.

High in Calories:

- Bacon and Eggs
- Baklava
- Brown Rice
- Chicken Breast
- Grilled Lamb
- Grilled Salmon
- Omelette
- Quinoa
- Spinach Pie
- Steak
- Tuna Salad

Low in Calories:

- Almond Milk
- Apple
- Artichoke Hearts
- Avocado
- Berries
- Butter
- Cauliflower Mash
- Celery Sticks
- Coffee
- Coconut Oil
- Cucumber Salad
- Feta Cheese
- Grapes
- Greek Yogurt
- Green Tea