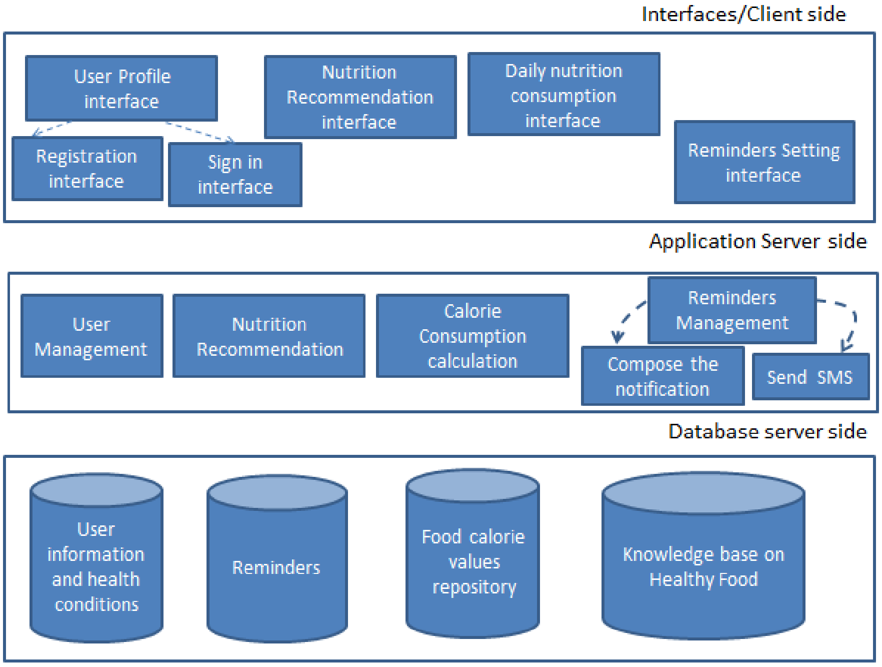
Architectural design

HealthyLife

SOLUTIONS

1) The architecture


Interfaces/Client side
User Profile interface
Nutrition Recommendation interface
Daily nutrition consumption interface
Registration interface
Sign in interface
Reminders Setting interface
Application Server side
User Management
Nutrition Recommendation
Calorie Consumption calculation
Reminders Management
Compose the notification
Send SMS
Database server side
User information and health conditions
Reminders
Food calorie values repository
Knowledge base on Healthy Food

2. Description

2.1 Interface tier

a. User profile interface

This interface allows user to Register/Sign up, edit information and Sign in.
To Register there are spaces for user to input their details information such as the email address, password, date of birth, gender, telephone number. It also allows to input user health conditions such as if the user gets high blood pressure, diabetes, etc.

To sign in it allows user to input the email address and password.

Input data: the email address, password, date of birth, gender, telephone number. It also allows to input user health conditions

Output: Email address, date of birth, gender, telephone number, user health conditions

In case users want to see their profile and edit data.

Output data can be a text message in case unsuccessful login.

b. Nutrition recommendation interface

This interface is a read-only interface; it displays nutrition recommendation to users such as

It can also have a button allows to calculate the recommendation

Output data:
-The average value of daily calories needed
- Suggestion for healthy eating, healthy recipe and some recommendations on the food consumption habit such as what kind of food users need to avoid.

c**. Daily nutrition consumption interface**

This component allows user to input their daily food consumption in term of what kind of food, the quantity. Once user submits their input, it will display back to user how many calories user has consumed and the percentage of recommended calories

Input: daily food consumption in term of what kind of food, the quantity
Output: how many calories user has consumed and the percentage of recommended calories

d. Reminder Setting interface

This page allows user to input/select a time and the content they would like to be remaindered for instance “Take a piece of fruit” or “Take a rest”.
This page also have an option allows user to turn on or off the reminders.

Input: Time, content, option ON/OFF
Output: the same data

2.2 Application server

This tier contains the business core components such as

a. User management

This component takes information input from *Registration* component and pass to the database layer to store in the DB.

In case it is a Sign in, it takes User email address and password then check user Authorization by accessing DB.

Registration:

Input: All user profile data

Output: error message in case unsuccessful registration (for instance email address exist already)

Sign in:

Input: Email, password

Output: True if successful login , False if unsuccessful login.

b. Nutrition recommendation

When the *Nutrition recommendation interface* is called, it will call this component at the application layer. This component will retrieve the user profile in database and then derive the recommendation based on the Knowledge based of healthy food. Data will be sent back to Nutrition recommendation interface for display.

Here it depends on how the system is designed, the nutrition recommendation data can be stored in DB as user profile after calculation, which means the calculation does not need to be performed every time the *Nutrition recommendation interface* is called. It just needs to recalculate when user want (for example when they have a new health conditions). If it is stored, then the *Nutrition recommendation interface* will call to retrieve the recommended data in DB and display.

If it is not stored then this component needs to calculate every time.

Input: User email (user ID) (once login, userID/Email will be stored in a global variable)

Output: Recommendation data

c. Calorie consumption calculation

This component is called by *Daily nutrition consumption interface*, and get all input passed from that interface, then it performs some searches in the *Food Calories values repository* to retrieve the corresponding calorie values and calculate the total calories consumed.

In case the recommended nutrition is stored, this component will search in DB to know the recommend daily calorie and calculate the percentage and display to user.

In case the recommended nutrition is not stored, this component needs to call *Nutrition recommendation* to calculate the recommended value and pass to it, so it can calculate the percentage (but this design is not good).

Input: food, size, quantity, user email (ID)

Output: total calorie, percentage of calories consumed.

d. Reminders management component

This component gets the reminders setting information from the *Reminders interface* and pass to DB, or retrieves reminders setting information from DB and display back to the interface. It also stores the information if the reminders function is turned on or off (this should be a system parameter or store in DB).

This component also has a function running all time to check reminder time, if the time arrives, it will call the *Compose the notification* component.

Once it receives the result from Compose the notification, it will call and pass the text to *Send SMS component*

Input: Reminder setting info , i.e. time, content, UserID/Email, On/off

Ouput: The same info when user wants to edit

Compose the notification

This component is called by *Reminders management component*, it will search in the Reminder DB and return to the *Reminders management component* the text (reminder) in an appropriate format.

Input: Time, User ID

Output: Content

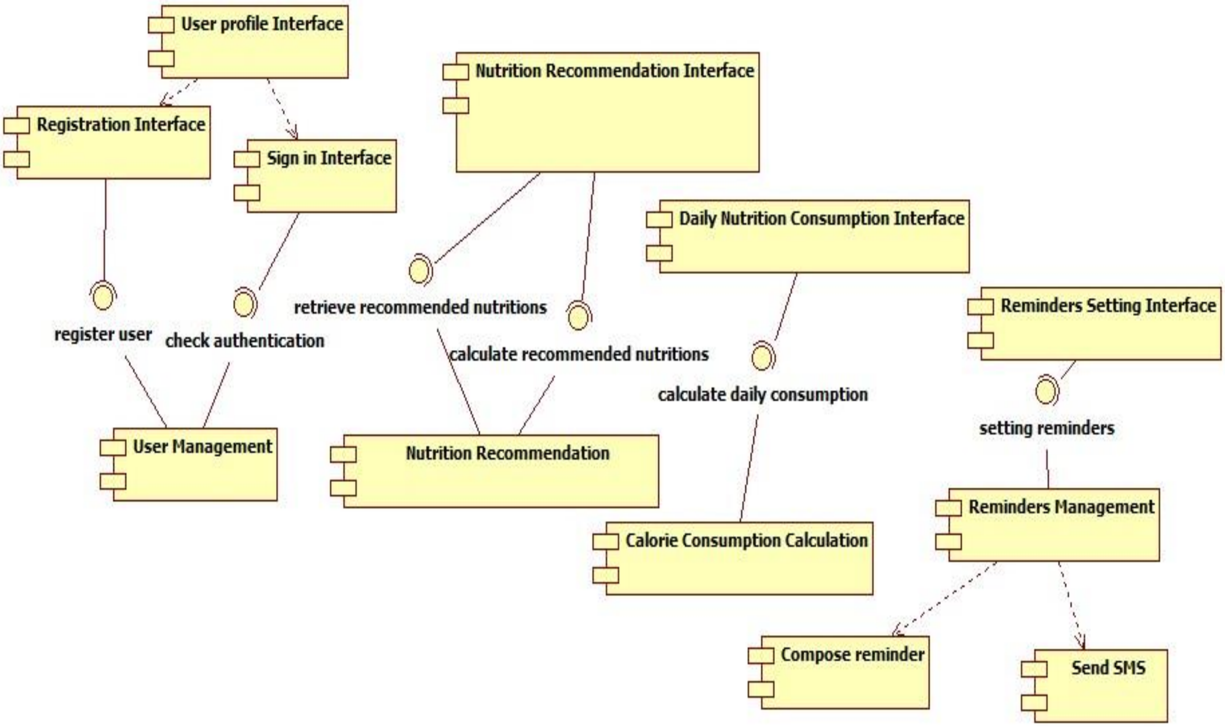
e. Send SMS

This component retrieves the user mobile number in DB and send the text to that number.

Input: Content

Output: True (Sucessful) /False (Not successful)

3. Component diagram


User profile Interface
Registration Interface
Sign in Interface
Nutrition Recommendation Interface
Daily Nutrition Consumption Interface
Reminders Setting Interface
register user
check authentication
retrieve recommended nutritions
calculate recommended nutritions
calculate daily consumption
setting reminders
User Management
Nutrition Recommendation
Calorie Consumption Calculation
Reminders Management
Compose reminder
Send SMS