CS335 Lab - Architectural Design

Monday 27th and Wednesday 29th April

HealthyLife application

HealthyLife is a web-based application designed to help users live healthier. It will be designed with the average person in mind with an emphasis on healthy eating.

The proposed functionalities of the app are:

- User profile management – The app allow users to register and to store their information such as the email address, password, date of birth, gender, telephone number and some basic health conditions of the user such as if the user gets high blood pressure, diabetes, etc.
- Nutrition recommendation: Based on the user profile, the average value of daily calories needed is provided. Some suggestion for healthy eating, healthy recipe and some recommendations on the food consumption habit such as what kind of food users need to avoid, etc. are provided to users in term of text format or table. These information are pulled from and calculated based on data in the database.
- Calorie Counter – Every day, the user will be able to input food types and portion sizes and the app will calculate and return the number of calories in the specified food from a linked database of values. The app will also return this calorie value as a percentage of the recommended calorie intake. Also in order to calculate the Calorie intake, it needs to access data from database.
- Reminders – User can set and edit the reminders times to best reflect their lifestyle (i.e. they can set their reminders for times they most often tend to snack to remind them to snack on fruit/healthy foods instead). The reminder is in term of sending a text message to user mobile phone. The reminder function can be turned on or off by the user and will consist of notifications to remind the user to drink plenty of water and to eat a piece of fruit."

(Adapted from Fit-Nice project, Aoife Reilly, Marian O'Reilly, Michael Savage and Owen O'Reilly, 2014)

This application relates with all data related to users such as user profile, user daily nutrition, user reminders.

There is another separate application for the administrator to update and maintain data in the database related to food type, calories of food, etc. which is the basis for the calories calculation of the HealthyLife app.

Questions:

You are a system designer, based on the Client-Server 3 tier architecture pattern; present the architecture for the HealthyLife system.

Your answers should include the following information:

1. An architecture with 3 tier using block diagram, and components as blocks in each tier

2. Describe in details each component in the architecture:

    a. Purpose/function: what they do or what service they provide

    b. Data involved for components at the Client/Interface tier, and Application server tier: i.e. input data, output data

At the Database server side, you can indicate what data is store in the database, you DON'T need to provide a class diagram, just list information.

3. Provide a Component diagram to describe the communication between the components at the Application Server side and the Client side.

Suggested steps:

- Identify main use cases

- Each use case may correspond to a component (at the first time)

- Locate these components to suitable blocks in the architecture

- Identify the services of each component (interface- input-output) at the application server side (business core function) which provide the services to the component at client side (who request the services)

- Review the granularity of components and redesign the architecture if necessary

- Develop the component diagram