ÇANKAYA UNIVERSITY

Diet Plan Builder and Nutritional Value Counter

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Abstract

There is a major disease that affects all of us but specifically our children. This disease is obesity. Experts are trying to tell damage given by it and to make parents be aware of it. Also, in hospitals, dieticians are trying to give best diet for their patients. Of course, they are educated about calories of foods and nutrition values of food but they are only human beings so they cannot remember everything. In this paper, we study some researches about some specific food partition such

as proteins also we study a research about nutrition of mushrooms and study nutritional value of some specific source of meat like goat, pig, etc.

Introduction

Most of people are afraid of hearing the word: diet. Because, they think diet restricts them. Actually, they are both right and wrong. According to oxford dictionary [1], diet has two meaning. First one is: A special course of food to which a person restricts themselves, either to lose weight or for medical reasons. But the second one is: The kinds of food that a person, animal, or community habitually eats. Doctors are generally say we try to make a habit for you not restrict you. Whatever you think, doctors should give you a list for either decide what should eat and what should not or how much can you eat anything. For second case, they need nutritional values of foods because people have limit for these values and if you cross the limit, it affects your health in bad way. Nutritional value is an indication of the contribution of a food to the nutrient content of the diet [2].

So if people are not going to doctors directly because nearly all people are not comfortable in office of doctor and they can choose what to eat and do not eat, these “diets” can be more easily be a habit but of course we still need an expert opinion.

Knowledge is clearly an important requirement for nutritional value counter because experts are changing their minds like changing their clothes. One day a thing is good for your health and other day is not or one day 5 of it is good for you and other day 5 is too much. Because of this dataset of nutritional value is key. Also trust between people who change their eating habit and experts that approve their lists is an important requirement.

Of course, a lot research in recent years has been directed at storing nutritional values of foods but generally they are focusing just one value like protein or some kind of food like mushrooms so there will lots of researches about this.

This paper surveys some researches about nutritional values of foods and making diet making.

Calorie Analysis Based on Type

This dataset provides nutritional value of cereals and calories of them. Cereals are important for diet because it is quick for breakfast. In morning, mostly, time is limited for people and this is very common problem so cereals are good choice. In this dataset, there are names and manufacturer of cereals, type of eating style like cereal with hot milk or cold milk and calories per serving, grams of protein, fat, dietary fiber, complex carbohydrates and sugar, milligrams of sodium and potassium, vitamins and minerals of cereal. [4]

Nutrition Facts for McDonald’s Menu

This dataset provides nutrition values of products that in McDonald's menu but not only burgers but also breakfasts, sandwiches, fries, salads, coke, soda, coffee and tea, milkshakes and desserts. [5] According to research, these values are from McDonald's official website.

My Fitness Pal Calorie Tracker Usage in the Eating Disorders

My Fitness Pal is an application that allows people who are using it track and input their daily food intake. In addition, with this application human beings that using this app can set weight and nutrition goals and recommends the amount of calories needed to reach such a goal. [6]

Conclusion

Obesity is one of the biggest causes of diseases in the world. The World Health Organization has done many studies on this subject. It is doing research in all countries. People spend money on health problems. However, many find it difficult to reach healthy data. We will make the data more healthy with the application and record the values of nutrients taken daily with data. Thus, it is easily reached by the application.

References

[1] https://en.oxforddictionaries.com/definition/diet

[2] http://www.reference.md/files/D009/mD009753.html

[3] https://academic.oup.com/tbm/article-abstract/1/4/523/4562922

[4] https://www.kaggle.com/chandrabhatt/calorie-analysis-based-on-type/data

[5] https://www.kaggle.com/imarvind/calorie-intake-regression-model/data

[6] https://www.sciencedirect.com/science/article/pii/S1471015317301484

Software Requirments Specification

1. INTRODUCTION

1.1 Purpose

The purpose of this document is describing the application that is called Diet Plan Builder and Calorie Counter. Purpose of this application is to make a diet program with calculating calories of foods for people that wants to eat healthy. This document includes detailed information about requirements of the project. It reflects the identified constraints and proposed software functionalities. Moreover, the SRS document explains how participants interact with the application. This document explains how concerns of the stakeholders are met.

1.2 Scope of Project

Nearly all human beings know that they should eat healthy things but they don't know how to do it properly. Also, maybe they know what to eat but don't know how much. In addition to these, generally in hospitals, doctors give diet program that wrote on a paper and sometimes this paper would lose. Applications solve lost diet program but there are not much of them to give solution to other problems. The project has become necessary to develop due to lack of these applications.

Diet Plan Builder and Calorie Counter aims to design "Making Diet Program with Calories of foods" as a standalone application. To reach more people we chose android operating systems instead of iOS operating system [1]. This operating system allows the participants to interact with application more easily. These interactions occurs by choosing making a diet planner in application or see nutritional values of foods using their fingers Apart from planning diet and seeing nutritional values of foods, this application also includes an expert page so doctors check the diet and make sure it is healthy. This project creates opportunities such as frequent repeating, easier access, efficient cost etc.

There are three actors in the application which are participant, expert and admin. Participant can choose Make a Diet or Nutritional Values tabs in application. Make a Diet section is going to using for making a diet with specifications. Nutritional Values section is for see nutritional values of foods. Another actor is expert. It can change diets. Last actor is admin. Admin have permission that can add or remove experts.

1.3 Glossary

Term	Definition
Participant	The user who interacts with the application. Generally persons that want to know nutritional values of foods and want to eat healthy.
Admin	Person that decide about experts.
Expert	Persons that check diet plans. Generally dieticians.
Stakeholders	Any person who has contribution in the project.
Android	Operating system that generally used for mobile phones.[1]

1.4 References

[1] Apple vs. Android. 2017. Apple vs. Android-A comparative study 2017. [ONLINE] Available at: https://android.jlelse.eu/apple-vs-android-a-comparative-study-2017-c5799a0a1683. [Accessed 21 November 2018]

1.5 Overview of the Document

The second part of the document describes functionalities of the Diet Plan Builder and Calorie Counter. Informal requirements are described and it is a context for technical requirement specification in the Requirement Specification chapter.

Requirement Specification chapter is written for software developers and details of the functionality of the application are described in technical terms.

Both of the sections describe the functionalities of the same product. However, it is described differently because they are intended for different audiences.

2. OVERALLDESCRIPTION

2.1 Product Perspective

Diet Plan Builder and Calorie Counter is an application that has 2 purposes. They are making diet plan and show nutritional values of foods. The project divided into two parts: make a diet mode and nutritional values mode.

Make a diet mode had 2 segments. One of that is choosing category of food and the other one is choosing foods that participant doesn't want to eat. Nutritional values mode has no segment. It just lists foods and their nutritional values.

2.1.1 Development Methodology

There are 12 development models;

Waterfall Model	Extreme Programming Methodology
Prototype Methodology	Feature Driven Development
Agile Software Development Methodology	Joint Application Development Methodology
Rapid Application Development	Lean Development Methodology
Dynamic System Development Model Methodology	Rational Unified Process Methodology
Spiral Model	Scrum Development Methodology

Waterfall Model is very simple and easy to handle according to other development models, that's why we planning to use Waterfall Model. Waterfall model based on doing the processes into a linear flow with a specified sequence. Also have very important advantages;

1. Easy to understand and functional

2. Simple enough to handle

3. Saves substantially amount of time

4. Permits easy testing and analysis

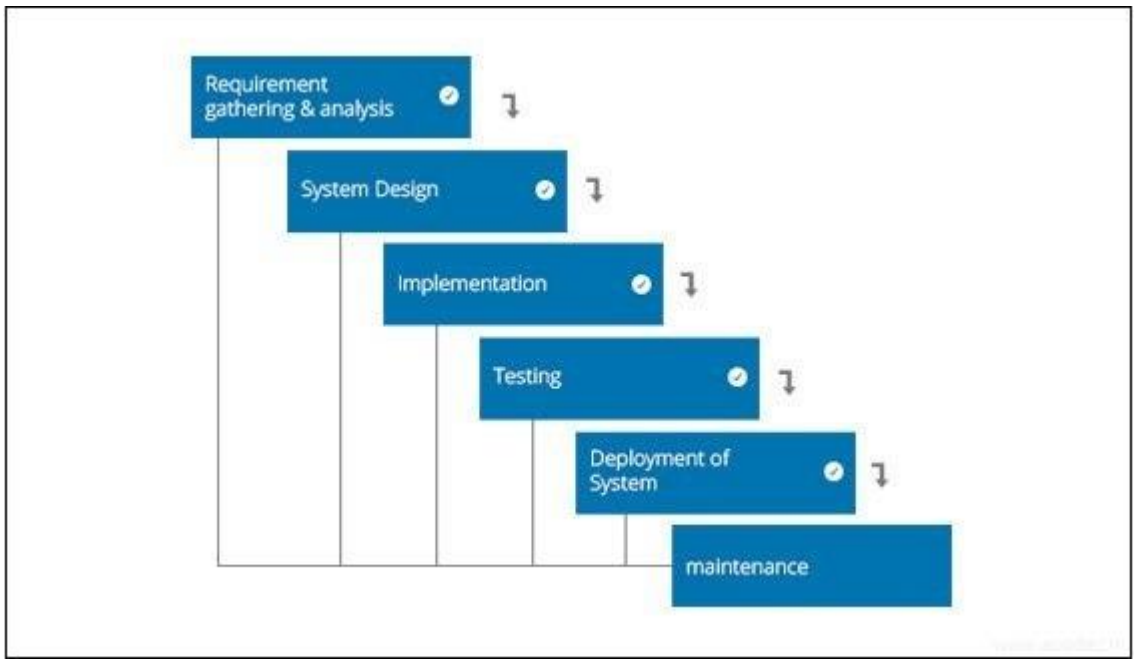

Figure 1 Structure of Waterfall Model

2.2 User Characteristic

3.1.1 Participants

2.2.1.1. Participant must read and understand Turkish language due to simulation language is Turkish.

2.2.1.2. Participant must know how to use mobile phone with touch screen.

2.1.2 Admin

2.2.1.3. Admin must read and understand Turkish language due to simulation language is Turkish.

2.2.1.4. Admin must know how to use a computer.

2.1.3 Expert

2.2.3.1. Expert must be a dietician.

2.2.3.2. Expert must read and understand English language due to application language is English.

2.3.3.3. Expert must to know how to use mobile phone with touch screen.

3. REQUIREMENTS SPECIFICATION

3.1 External Interface Requirements

3.1.1 User Interfaces

The user interface will be worked on Android.

3.1.2 Hardware Interfaces

The application needs a mobile phone that has touch screen.

3.1.3 Software Interfaces

The application needs Android Studio and MySQL softwares.

3.1.4 Communications Interfaces

There are no external communications interface requirements.

3.2 Functional Requirements

3.2.1. Profile Management Use Case

Use Case:

- User Login
- Expert Login
- Guest Login
- Log Off
- Choose Language
- Sign Up

Diagram:

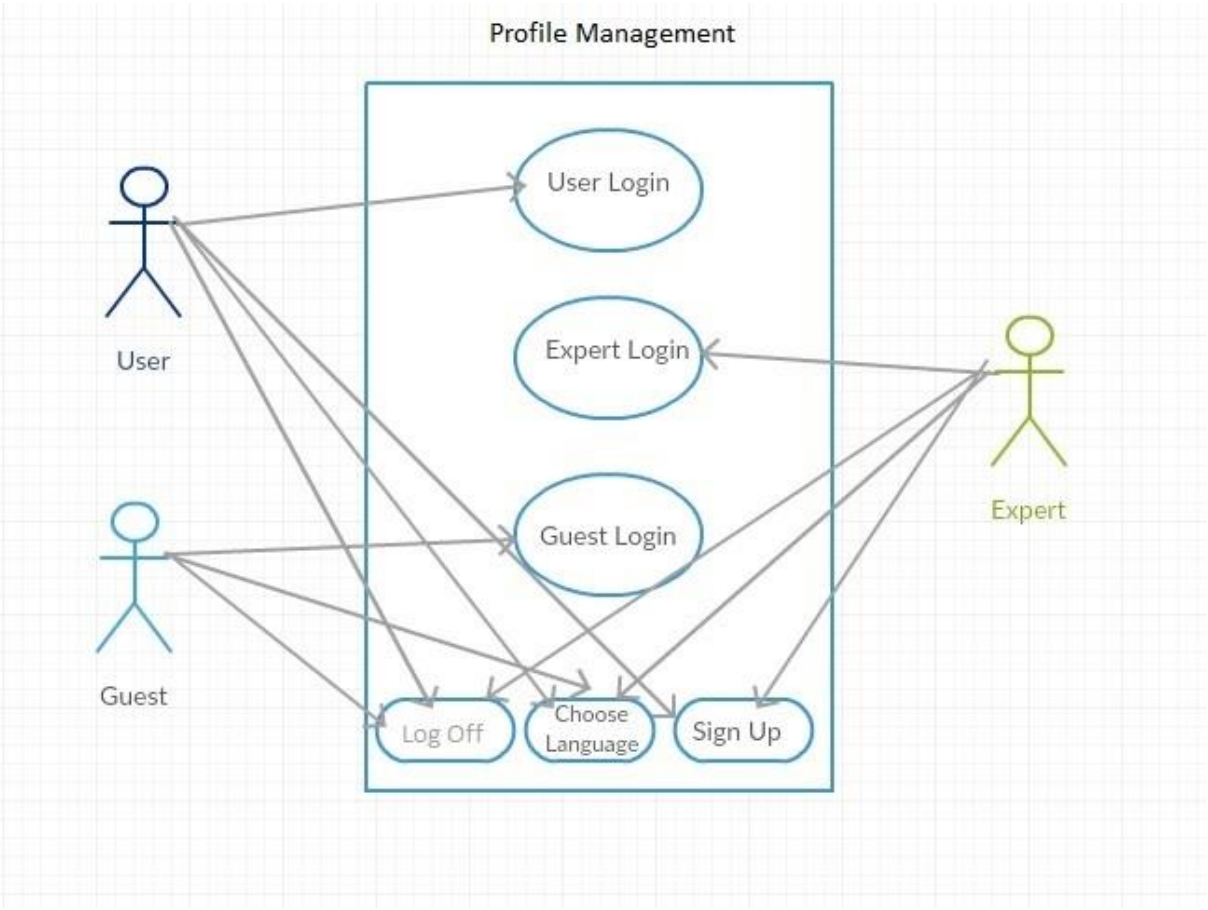

Figure 2 Profile Management Use Case

Brief Description:

In Profile Management diagram explains the basic operations which is related to entering system of user, guest and expert. User, Guest and Expert are able to use the following function: Log Off, Choose Language and Sign Up. Except those, User able to also use User Login function, Guest able to also use Guest Login function and Expert able to also use Expert Login function.When User, Guest or Expert choose to choose language, they can use different languages.

Initial Step by Step Description:

1. Guest would start system without login
2. User would start to the system with password
3. Expert would start to system with password.
4. Guest, User and Expert can choosel anguage.
5. Guest, User and Expert can exit from the system with Log Off.
6. Guest, User and Expert can choose languages.

3.2.2. User AndGuest Menu Use Case

Use Case:

- Choose Nutrition
- Choose Food
- Diet Plan
- Log Off
- Confirm

Diagram:

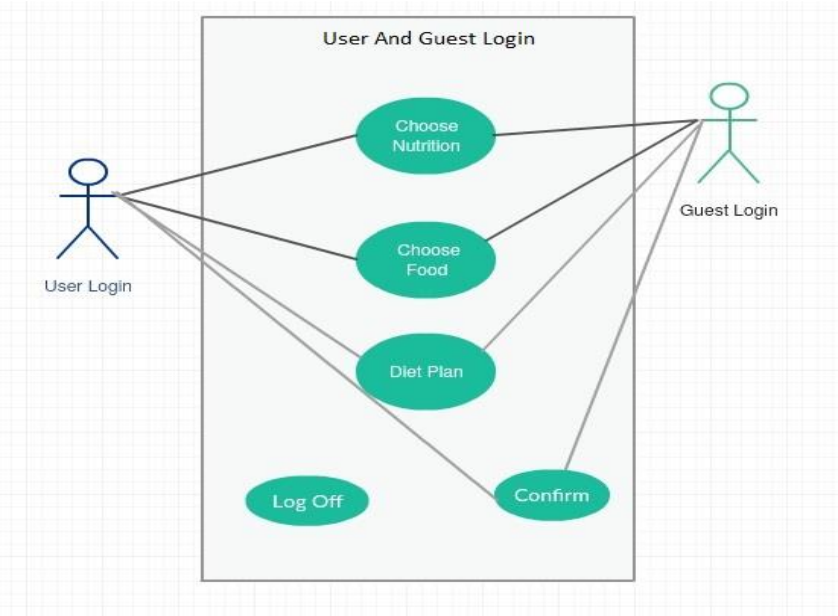

Figure 3 User And Guest Login Menu Use Case

Brief Description:

Figure shows User and Guest login menu use case diagram.When User and Guess entered choose nutrition, they choose the mode of nutrition. Then User and Guess can execute function of choose food. Once and for all, the diet plan created for user and guess.

Initial Step by Step Description:

1. User started system with password.
2. Guess started system without password.
3. User and Guest would choose nutrition.
4. User andGuess would choose food with the calories of meal.
5. User and Guess can view menü in diet plan.
6. User and Guess can confirm.

3.2.3. ExpertLoginUse Case

Use Case:

- Members List
- Log Off
- Check

Diagram:

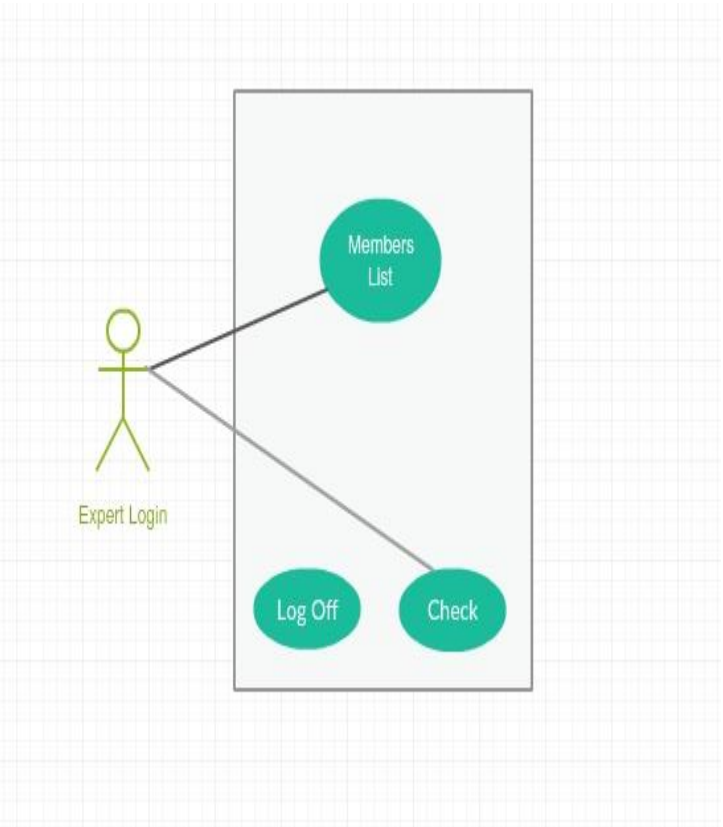

Figure 4 Expert Login Use Case

Brief Description:

Figure shows Expert login menu use case diagram. After User and Guest has approved the diet plan, expert can view diet plan on the members list. When expert view diet plan, she/he can reject or confirm. Once and for all, Expert can check the diet plans.

Initial Step By StepDescription:

1. Expert started system with password.
2. Expert view the diet menu in members list.
3. Expert can choose reject or confirm.
4. Expert can use check and log off.

3.3 Performance Requirement

Program should run smoothly and stable in the device, The minimum system requirements are as following;

1. Android 2.3 or later
2. 512 MB of RAM
3. Also an Internet Connection is needed

3.4 Software System attributes

3.4.1. Portability

Program can be run in any android devices that provides the minimum system requirements. Also with the membership system, all information of the member is reachable by user with using username and password from any device.

3.4.2. Performance

Creating of a diet program can be done in seconds. It requires fast processing of dataset and fast synchronization with the programs interface.

3.4.3. Usability

Creation of the diet program be able to done according to be compatible with different nutritional styles like kethogenic etc...

3.4.4. Adaptability

Program should be able to handle the situation if user changes his/her mind and wants to change nutrition style that will be using in building of the diet program.

3.4.5. Scalability

Program will already process a huge dataset in seconds. There is an overloading situation cannot be come up.

3.5 Safety Requirement

Program provides an expert approval system to confirm the created diet plan. It saves users from the health problems that can be emerging from using an incompatible diet plan.

Software Design Document

List of Figures

4. INTRODUCTION

1.6 Purpose

The purpose of this Software Design Document is describing the application that is called Diet Plan Builder and Calorie Counter.

The target audience is people that want to eat healthy or want to know nutritional values of foods that they eat.

Diet Plan Builder and Calorie Counter aims to design "Making Diet Program with Calories of foods" as a standalone application. To reach more people we chose android operating systems instead of IPhone operating system [1]. This operating system allows the participants to interact with application more easily. These interactions occurs by choosing making a diet planner in application or see nutritional values of foods using their fingers Apart from planning diet and seeing nutritional values of foods, this application also includes an expert page so doctors check the diet and make sure it is healthy. This project creates opportunities such as frequent repeating, easier access, efficient cost, etc.

Android is used to extend approachability of this project. Android is operating system that used in smart phones so it includes managing touchscreen.

In order to provide a better comprehension, this SDD includes various diagrams such as UML diagram of the project, activity diagram and block diagram.

1.7 Scope of Project

This document contains a complete description of the design of Diet Plan Builder and Calorie Counter.

Eclipse Software Development Kit (SDK) is open-source software that means is free under the terms of the Eclipse Public License. The Eclipse Software Development Kit (SDK) includes java development tools. Users can install plug-ins written for Eclipse Platform or write and contribute their own plug-in modules.

Scripting part of the project is occurred using Java scripts. Java is a general-purpose computer-programming language that is concurrent, class-based and object oriented. [3] The reason to choose this language is all members of our group have knowledge of Java or want to have knowledge about it and Java is one of the most important programming language that can be used in Android Studio.

There are three actors in the application, which are participant, expert and admin. Participant can choose Make a Diet or Nutritional Values tabs in application. Make a Diet section is going to using for making a diet with specifications. Nutritional Values section is for see nutritional values of foods. Another actor is expert. It can change diets. Last actor is admin. Admin have permission that can add or remove experts.

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1.9 Overview of the Document

The remaining chapters and their contents are listed below.

Section 2 is the Architectural Design, which describes the project development phase. In addition, it contains class diagram of the system and architecture design of the simulation that describes actors, exceptions, basic sequences, priorities, pre-conditions and post conditions. Additionally, this section includes activity diagram of scenario generator.

Section 3 is Use Case Realization. In this section, a block diagram of the system, which is designed according to use cases in SRS document, is displayed and explained.

1.5 Motivation

We are a group of senior students in computer engineering department. As a group, we are interested in android applications. We aimed to combine the fields of education and android technologies in this project. We have chosen Android Studio and for scripting, we choose Java because they fit perfectly. We choose android environment that is most popular operating system for smartphones.

2. ARCHITECTURE DESIGN

2.1. Program Design Approach

There are 12 development models;

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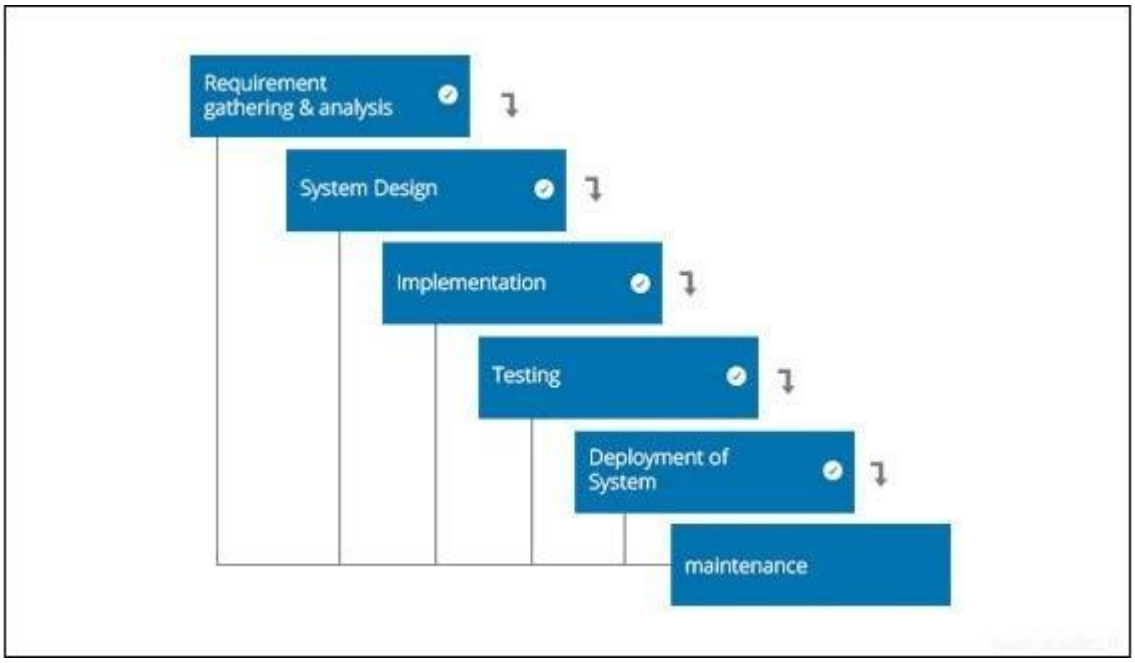

Figure 5 Structure of Waterfall Model

2.1.1 Class Diagram

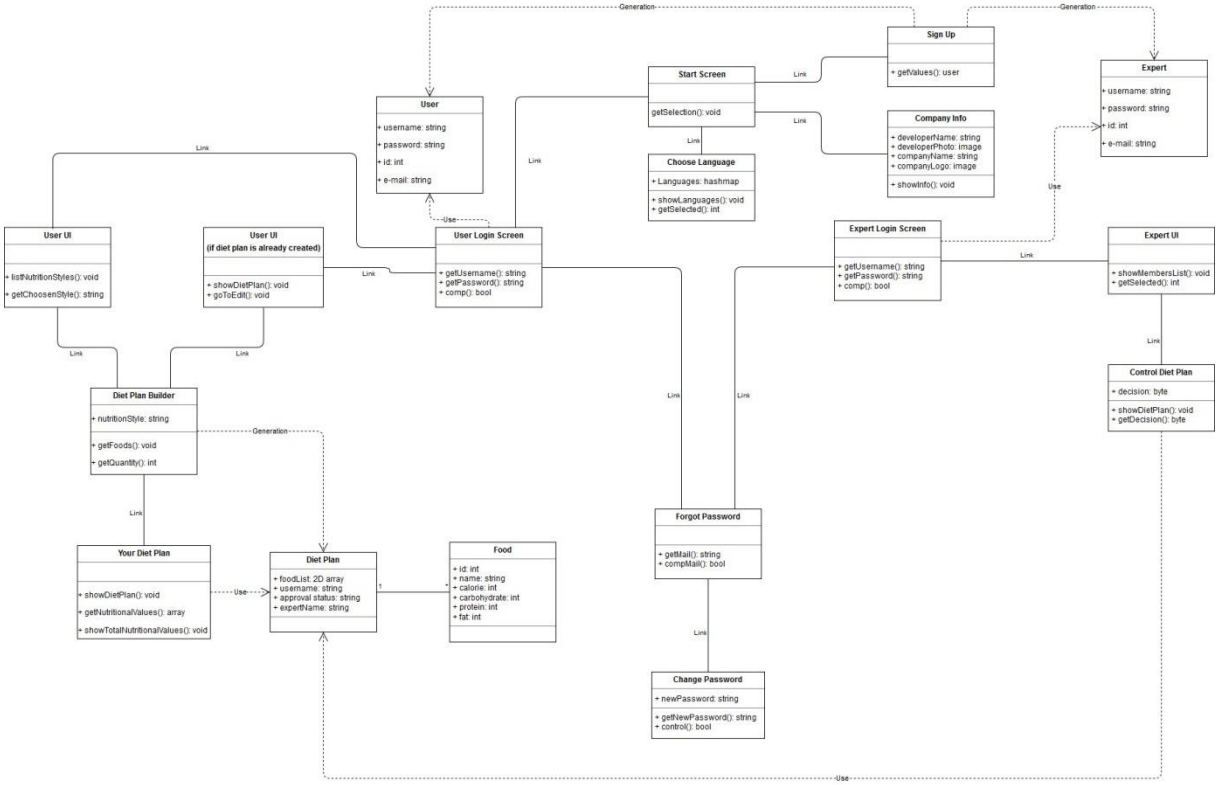

Figure 6 Class Diagram

When program starts, “Start Screen” will display. In start screen user can change language by go to “Choose Language” screen, can sign up by go to “Sign Up” screen, can display the company info by go to “Company Info” screen and can log in as user or expert by go to “User Login Screen(If a diet plan was created before, program goes to User UI (if diet plan is already created) screen)” and “Expert Login Screen”, also user or expert can change password if forgot it by go to “Forgot Password”. In Forgot Password screen user can change password by go to “Change Password” screen by entering e-mail. In User UI screen user can create a diet plan by go to “Diet Plan Builder” or edit diet plan (If a diet plan was created before). After the diet plan created or edited program shows diet plan and its nutritional values by go to “Your Diet Plan” screen. In Expert UI, screen expert can control diet plans created by users then can confirm or reject them.

2.2 Architecture Design of Application

2.2.1 Login System

Summary: This system is used by user, guest and admin. User can login and create diet plan and can edit it, also can reach from any device. Guest, also can create diet plan and can edit it but cannot reach from another devices. Expert can confirm or reject the diet plan of users.

Actor: User, Guest, Expert

Precondition: User and expert should create an account from sign up section.

2.2.2 Diet Plan Builder

Summary: Diet plan builder is used by user and guest. Information of user is store in local and in database in servers. However, guest’s information is store only in the device.

Actor: User, Guest

Precondition: User and guest must be logged in.

2.2.3 Validation System

Summary: Validation System is used by expert. Expert can confirm or reject the diet plans that created by users.

Actor: Expert

Precondition: Expert must be logged in.

2.2.4 Choose Language

Summary: Choose language is used by user, guest and expert. Language of the program can changeable by user, guest and expert.

Actor: User, Guest, Expert

Precondition: User and guest must be logged in.

3. USE CASE REALIZATIONS

Simulacrum Project

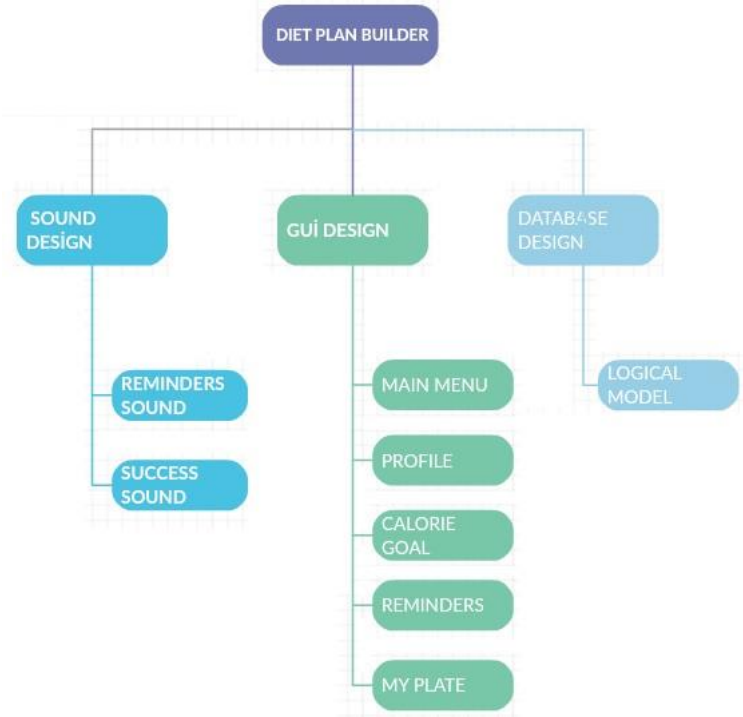

Figure 3 Project Component of Diet Plan Builder

3.1 Brief Description of Figure 3

Components of the Diet Plan Builder Project are shown in the Figure 3. All designed systems of the simulation are displayed in the block diagram in the figure. There are three main components of the system which have their own sub-systems.

3.1.1 Sound Design

Sound design module is responsible for all audios that are used in simulation in order to increase the warning of the simulation especially for diet mode. This system includes Reminders Sound, Success Sound.

3.1.2 Gui Design

GUI design is responsible for interaction between the users and the system. There are five sub-systems in this design that are Main Menu, Profile, Calorie Goal, Reminders and My Plate. Main Menu is a start page; participant can register, login and log out from the system. There are two ways the reach profile. First of all, when you sign in profile page shows up and you can change the values for diet plan. Second way is that after created your diet you can tap the symbol of profile after that tap the edit profile. Calorie goal is a section that you decide how much calorie you want to take in a day. Reminders section is to remind times of nutrition with notification. My plate section is of how much calorie that we have for rest of the day.

3.1.3 Database Design

Database design section is to store datasets for our application.

4. References

[1] Apple vs. Android. 2017. Apple vs. Android-A comparative study 2017. [ONLINE] Available at: https://android.jlelse.eu/apple-vs-android-a-comparative-study-2017-c5799a0a1683. [Accessed 21 November 2018]

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