

# **DIET ILLNESS (DIABETES DIET APP)**

**Submitted in partial fulfillment of the requirements**

**of the degree of**

**Bachelor of Engineering**

**by**

- 1. Gloria V. Dias**
- 2. Deepika A. Gurav**
- 3. Alfiya B. Sayed**

**Supervisor:**

**Asst.Prof.Sushree Satapathy**



**Department of Information Technology**

**Don Bosco Institute of Technology**

**2017-2018**

**AFFILIATED TO**

**UNIVERSITY OF MUMBAI**

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# **DON BOSCO INSTITUTE OF TECHNOLOGY**

**Vidyavihar Station Road, Mumbai - 400070**

**Department of Information Technology**

## **CERTIFICATE**

This is to certify that the project entitled **“Diet Illness (Diabetes Diet App) ”** is a bonafide work of

- 1.Gloria V. Dias**
- 2. Deepika A. Gurav**
- 3. Alfiya B. Sayed**

submitted to the University of Mumbai in partial fulfillment of the requirement for the award of the degree of **Undergraduate** in **Bachelor of Information Technology**

**Date: 23/04/2018**

**(Asst.Prof. Sushree Satapathy)**  
**Supervisor**

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**HOD, IT Department**

**(Dr. Prasanna Nambiar)**  
**Principal**

# **DON BOSCO INSTITUTE OF TECHNOLOGY**

**Vidyavihar Station Road, Mumbai - 400070**

**Department of Information Technology**

## **Project Report Approval for B.E.**

This project report entitled “**Diet Illness (Diabetes Diet App) ”** by **Gloria V.Dias, Deepika A.Gurav and Alfiya B.Sayed** is approved for the degree of **Bachelor of Engineering in Information Technology**

**(Examiner’s Name and Signature)**

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**(Supervisor’s Name and Signature)**

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**( Chairman)**

1. \_\_\_\_\_

**Date: 23/04/2018**

**Place: Mumbai**

# **DON BOSCO INSTITUTE OF TECHNOLOGY**

**Vidyavihar Station Road, Mumbai - 400070**

## **Department of Information Technology**

### **Declaration**

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea / data / fact / source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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**Date: 23/04/2018**

## **Abstract**

The proposed system is to develop an android application for diabetes patient. Diabetes is a long-term condition that causes high blood sugar levels. So to maintain the sugar level we need to have a proper diet plan along with proper exercises as well as water intake. There are many application available which provides diet plan. But these plan may vary depending upon each individual. So we will be providing a diet plan according to users age, blood sugar, calories required, gender and weight.

Many application nowadays provide static diet plan. Either the plan is not suitable for the user or it is not according to their preference. The system aims to add features of providing a dynamic diet plan based on their preferences. As water is an essential part in a diet, the feature of water intake will be added.

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# Chapter 1

## Introduction

Diabetes is a disease in which your blood glucose, or blood sugar, levels are too high. Glucose comes from the foods you eat. Diabetes of all types can lead to complications in many parts of the body and can increase the overall risk of dying prematurely. Possible complications include heart attack, stroke, kidney failure, leg amputation, vision loss and nerve damage. In pregnancy, poorly controlled diabetes increases the risk of fetal death and other complications. Diet plays an important role in managing diabetes. In fact, diet and lifestyle are important aspects of diabetes management and treatment. One reason is that the food which is eaten on a day to day basis has a direct impact on the blood sugar levels. For instance, high carb foods raise blood sugar levels. People who exercise regularly are better able to control their diabetes, thereby reducing their risk of diabetes complications. The bodies of people with diabetes require more fluid when blood glucose levels are high. This can lead to the kidneys attempting to excrete excess sugar through urine. Drinking water helps to re-hydrate the blood when the body tries to remove excess glucose through urine.

### 1.1 Problem Statement

To build a dynamic android app for diabetic patients. The diet plan will change according to the patient's health information, exercise, glucose level, calories required as well as their choice of meal keeping in mind.

### 1.2 Scope of the Project

A diabetes diet is a healthy-eating plan that's naturally rich in nutrients and low in fat and calories. The intake of calories, carbohydrates, blood sugar will be

tracked. The water consumption as well as exercises done at daily basis will also be tracked. Medicine reminder will also be added.

### 1.3 Current Scenario

There are many apps for diabetes diet which provide a static diet chart. But none of them give a diet chart which changes according to individual's health and preferences. Some apps track the glucose, give health and exercise tips. Some are daily activity trackers for patients and all give a static diet plan. The proposed system aims to provide a dynamic diet plan along with features like glucose tracker, exercise tracker, medicine reminder and water intake.

The comparison of existing applications in the market is given in the table below.

Features	Dr.Mohan's	Diabeto	Diabetes Diet Diet Chart	Diabetes
1. Signup along with weight information	YES	YES	NO	NO
2. Glucose monitoring	YES	YES	NO	NO
3. Exercise plan	GOAL SETUP	NO	YES	YES
4. Medicine Reminder	YES	NO	NO	NO
5. Diet Tracking	YES	NO	YES	YES
6. Activity Tracking	YES	YES	NO	NO
7. Calories Count	NO	NO	YES	YES
8. Dynamic diet plan based on weight height, sugar level, age	NO	NO	NO	NO
9. Analysis report daily/weekly	YES	NO	NO	NO
10. Chat session with diabetologist	YES	YES	NO	NO
11. Water intake level	NO	NO	NO	NO

**Table 1.1:** Comparison between existing applications

### 1.4 Need for the Proposed System

A diabetes diet simply means eating the healthiest foods in moderate amounts and sticking to regular meal times. A healthy diet plan is needed by diabetic patients to control their body glucose.

## 1.5 Summary of the Results / Task completed

### Bmr

BMR is the amount of energy you expend each day when at rest. Gender, age, height and weight are important for this calculation.

1.BMR for Men =  $66.47 + (13.7 * \text{weight [kg]}) + (5 * \text{size [cm]}) (6.8 * \text{age [years]})$

2.BMR for Women =  $655.1 + (9.6 * \text{weight [kg]}) + (1.8 * \text{size [cm]}) (4.7 * \text{age [years]})$  **BMI Calculator**

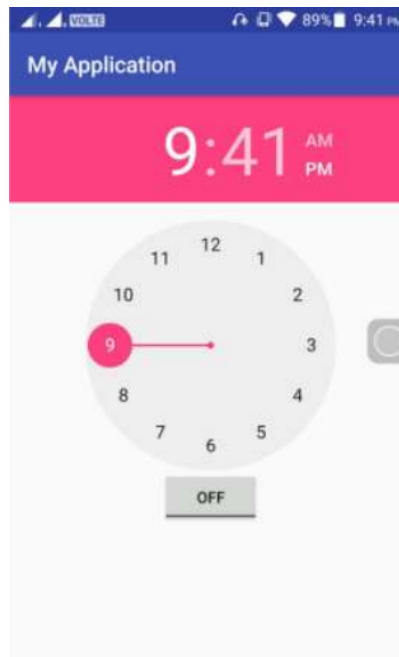
Body Mass Index (BMI) is a measure of body fat based on height and weight. The formula is  $\text{BMI} = \text{kg/m}^2$  where kg is a person's weight in kilograms and m<sup>2</sup> is their height in metres squared. We built BMI calculator as shown in figure 1.1



**Figure 1.1:** BMI Calculator API

### Alarm app

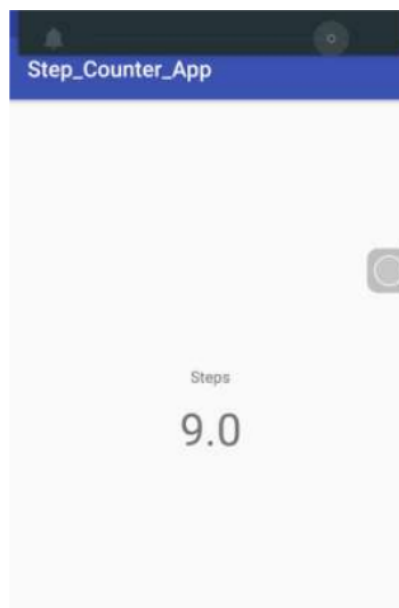
Diabetes Diet App will provide medicine reminder feature, so as per that feature patient can set reminder for medicines. We have built Alarm API in which we can set Alarm and it will give notification at set time to take medicine. Alarm API is as follows figure 1.2



**Figure 1.2:** Alarm API

### Step Counter

The step counter sensor is used to get the total number of steps taken by the user since the last reboot (power on) of the phone. When the phone is restarted, the value of the step counter sensor is reset to zero. we are using this step counter sensor for achieving feature that is activity tracking . It will work as shown in following figure 1.3



**Figure 1.3:** Step Counter API

### Steps to Calories burnt converter

In diabetes diet app, Exercise Tracking will be one of the features , in which we will be using pedometer.By this we will calculate total number of steps user/-patient has walked and then convert that steps into total number calories burned by the user [4]. So for that we are referring the table as shown in Table 1.1. From this we will get to know how much calories have been burned by the user.

#### Convert Your Steps to Calories

2000 Steps per Mile - Calories Burned by Step Count and Weight										
Weight	100 lb	120 lb	140 lb	160 lb	180 lb	200 lb	220 lb	250 lb	275 lb	300 lb
Steps	45 kg	55 kg	64 kg	73 kg	82 kg	91 kg	100 kg	114 kg	125 kg	136 kg
1000	28 cal.	33	38	44	49	55	60	69	75	82
2000	55	66	76	87	98	109	120	137	150	164
3000	83	99	114	131	147	164	180	206	225	246
4000	110	132	152	174	196	218	240	274	300	328

**Table 1.2:** Conversion table of steps to calories burned

### Water Intake

The bodies of people with diabetes require more fluid when blood glucose levels are high.Water will not raise blood glucose levels, which is why it is so beneficial to drink when people with diabetes have high blood sugar, as it enables more glucose to be flushed out of the blood.The steps for water intake is mentioned below:

- 1.Your weight:Take the input of the weight.
- 2.Multiply by 2/3:Multiply the weight by 2/3 or 63 percent.
- 3.Activity Level:Depending upon a person's activity,water intake can be adjusted.

## Chapter 2

### Review of Literature

#### 2.1 Summary of the investigation in the published papers

People with diabetes type 2 need help in planning and accepting a daily diet which contains the appropriate amounts of carbohydrates, protein, fat and fibre, together with adequate amounts of vitamins and minerals [1]

Diabetes is a serious, chronic disease that occurs either when the pancreas does not produce enough insulin (a hormone that regulates blood sugar, or glucose), or when the body cannot effectively use the insulin it produces. Diabetes of all types can lead to complications in many parts of the body and can increase the overall risk of dying prematurely. Possible complications include heart attack, stroke, kidney failure, leg amputation, vision loss and nerve damage. In pregnancy, poorly controlled diabetes increases the risk of fetal death and other complications. Type 1 diabetes is characterized by deficient insulin production in the body. People with type 1 diabetes require daily administration of insulin to regulate the amount of glucose in their blood. If they do not have access to insulin, they cannot survive. Type 2 diabetes results from the body's ineffective use of insulin. Symptoms may be similar to those of type 1 diabetes, but are often less marked or absent. Gestational diabetes is a temporary condition that occurs in pregnancy and carries long-term risk of type 2 diabetes. The condition is present when blood glucose values are above normal but still below those diagnostic of diabetes. Women with gestational diabetes are at increased risk of some complications during pregnancy and delivery, as are their infants. When diabetes is not well managed, complications develop that threaten health and endanger life. Acute complications are a significant contributor to mortality, costs and poor quality of life. Abnormally high blood glucose [2]

Adults can reduce their risk of type 2 diabetes and improve insulin sensitivity and glucose uptake through regular and adequate levels of physical activity and



healthy diets that include sufficient consumption of dietary fiber, and replacing saturated fatty acids with polyunsaturated fatty acids.[3]

So to ensure that a diabetic patient will lead a healthy life we will try to provide a better solution and help them to live a normal life by providing a healthy diet plan.

## **2.2 Algorithm**

Step 1. Count total calories input according to users basic details such as gender, age, weight and Type of diabetes.

Step 2. Calculate BMI and BMR.

Step 3. Divide total calories into no of meals.

Step 4. Provide diet plan for user by following query

SELECT ROWS FROM TABLE-NAME ORDER BY RAND() LIMIT TO 1;

Step 5. Update the Diet plan.

## Chapter 3

# Analysis and Design

### 3.1 Methodology / Procedure adopted

The proposed system is intended to be developed by following the Iterative Model. In Iterative model, iterative process starts with a simple implementation of a small set of the software requirements and iteratively enhances the evolving versions until the complete system is implemented and ready to be deployed.

Iterative and Incremental development is any combination of both iterative design or iterative method and incremental build model for software development. The combination is of long standing and has been widely suggested for large development efforts. The idea behind this method is to develop a system through repeated cycles (iterative) and in smaller portions at a time (incremental), allowing us to take advantage of what was learned during development of earlier parts or versions of the system. Learning comes from both the development and use of the system, where possible key steps in the process start with a simple implementation of a subset of the software requirements and iteratively enhance the evolving versions until the full system is implemented. At each iteration, design modifications are made and new functional capabilities are added.

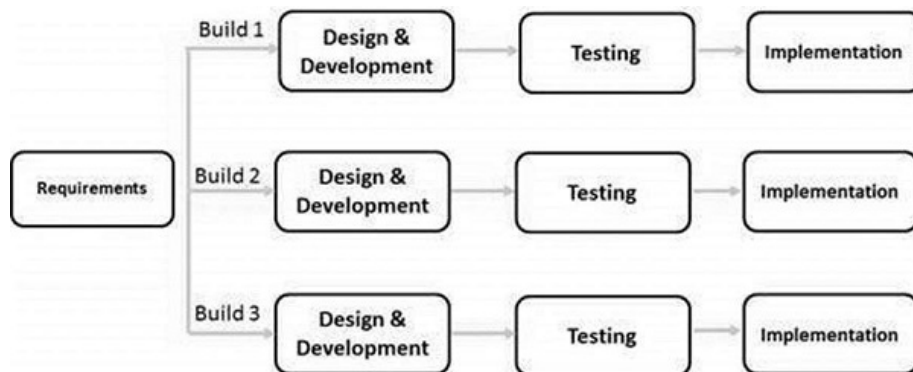


Figure 3.1: Iterative Model

The iteration involves the redesign and implementation of iteration is to be simple, straightforward, and modular, supporting redesign at that stage or as a task added to the project control list. The level of design detail is not dictated by the iterative approach. In a light-weight iterative project the code may represent the major source of documentation of the system; however, in a critical iterative project a formal Software Design Document may be used. The analysis of an iteration is based upon user feedback, and the program analysis facilities available. It involves analysis of the structure, modularity, usability, reliability, efficiency, and achievement of goals. The project control list is modified in light of the analysis results.

The pictorial representation of Iterative model is shown in Figure 3.1 The weekly meeting are managed and controlled by Professor Sushree Sathapaty .The project is monitored and measured by checking the implementation plan on a regular basis.

## **3.2 Analysis**

We met a Dietitian Dr.Kale-Karve DDN,DFT(Diet and Fitness Consultant). She suggested us normal diet plan for diabetic patient of any type . Also she recommended to walk 15000-20000 steps or 6 KM walk per day.Based on her diet plan as shown in figure 3.2, we will make various other diet plan keeping the other factors in mind.Calories,fat as well as sugar level will be tracked accordingly.

### Diet plan recommended by Dr.kale

Below image shows us the detail diet plan provided by the doctor. The meal time, dish, energy, quantity, calories are mentioned in this chart.

Meal time	Dish	Food Group	Exchange	Energy	Calories
8.00 AM	Toast	Wheat Bread	1	73.2	
	Tea	Milk	1/4	25.12	
		Sugar	1/4	24.87	123.19
10.30 AM	Fruit	Apple	1	29.5	
		Cherries red	1	32	
		Milk	1/2	50.24	111.74
1.00 PM	Chapati	Wheat flour	2	204.6	
	Vegetable	French beans	1	226	
	Rice		1	104.7	
	Dal	Peas dry	1	94.5	
		Tomato	1/4	2.5	
	Salad	Monthbean	1/2	49.5	
	Sprouts	Onion	1/2	25	
		Tomato	1/2	2.5	
		Cucumber	1/2	6.5	
		Beetroot	1/2	21.5	537.3
4.30 PM	Tea		1/4	25.12	
			1/4	24.87	
	Bhel	Rice Puffed	1	97.5	
		Onion	1/2	25	
		Tomato	1/2	5	
		Cucumber	1/2	6.5	
		Spruts	1/2	49.5	233.49
6.30 PM	Fruits	Mausambi	1	21.5	
		Plum	1	26	47.5
8.30 PM	Bhakri	Ragi	2	196.8	
	VEG	Amranth (1)	1	44	
		Onion	1/2	25	
	Dal	Cowpea	1	96.9	
		Tomato	1/4	2.5	
	Butter Milk	Butter Milk	1	22.5	
	Salad	Onion	1/2	25	
		Beetroot	1/2	21.5	
		Tomato	1/2	5	439.2
	Sugar	Sugar	1/2	49.74	
	Cooking Oil		2	198	247.74
					Total = 1741.16

Figure 3.2: Diet Plan

The diet provided is of a single day. Based on this the system is made.

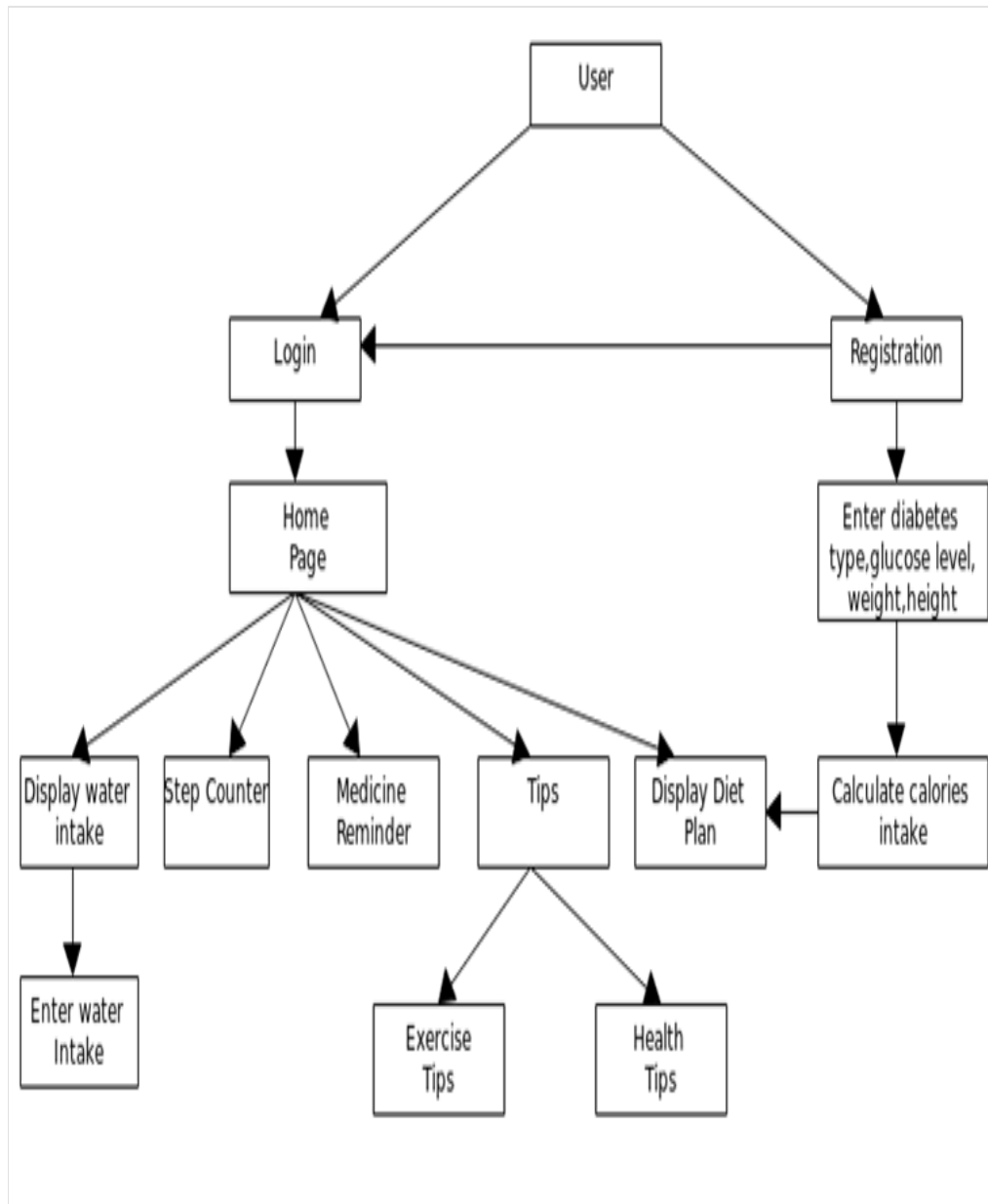
#### 3.2.1 Software Requirement Specification

Attached as an appendix.

### 3.3 Proposed System

#### Block Diagram

The image below shows us the block diagram of the system. Here, in user block, the user enters the system. Then the system shows the login page. If new user then the registration page is shown. User details are taken.



**Figure 3.3:** Block Diagram

After registration, again the user is taken to login page. Homepage is displayed at the time of successful login.

### 3.3.1 Hardware / Software requirements

#### Hardware requirements:

- Windows/Ubuntu
- 2 GB RAM minimum

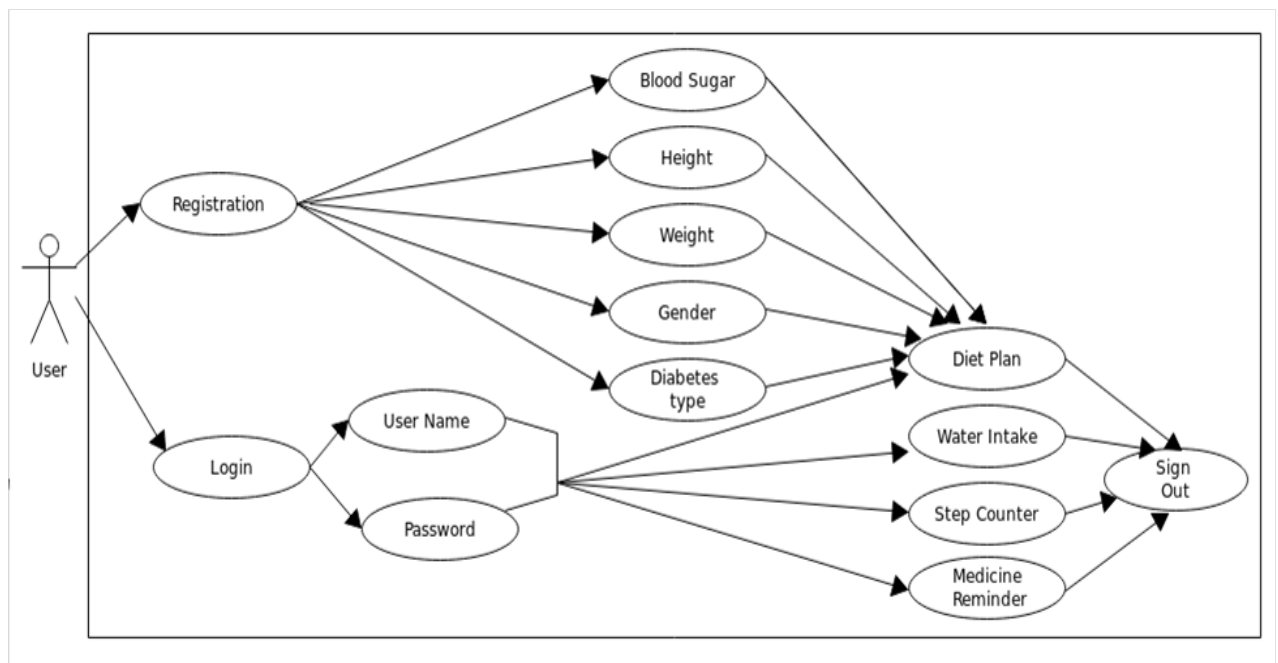
#### Software requirements:

- Android studio latest version
- SQLite database
- JDK

### 3.3.2 Design Details

#### Use Case Diagram

The image below shows us the use case diagram of the system. Here the user can either go to registration page or login page. In registration the user has to enter the details asked by the system.



**Figure 3.4:** Use Case Diagram

After the registration, the user has to login. Based on the user's details the diet plan is provided. Water intake, steps walked per day and medicine reminder is also provided. The user can sign out as well.

# Chapter 4

## Implementation

### 4.1 Implementation plan of Sem 8

Implementation Plan for the Sem 8 to include the following:

Below is the image of the timeline chart. This chart provides list of events along with the duration performed.

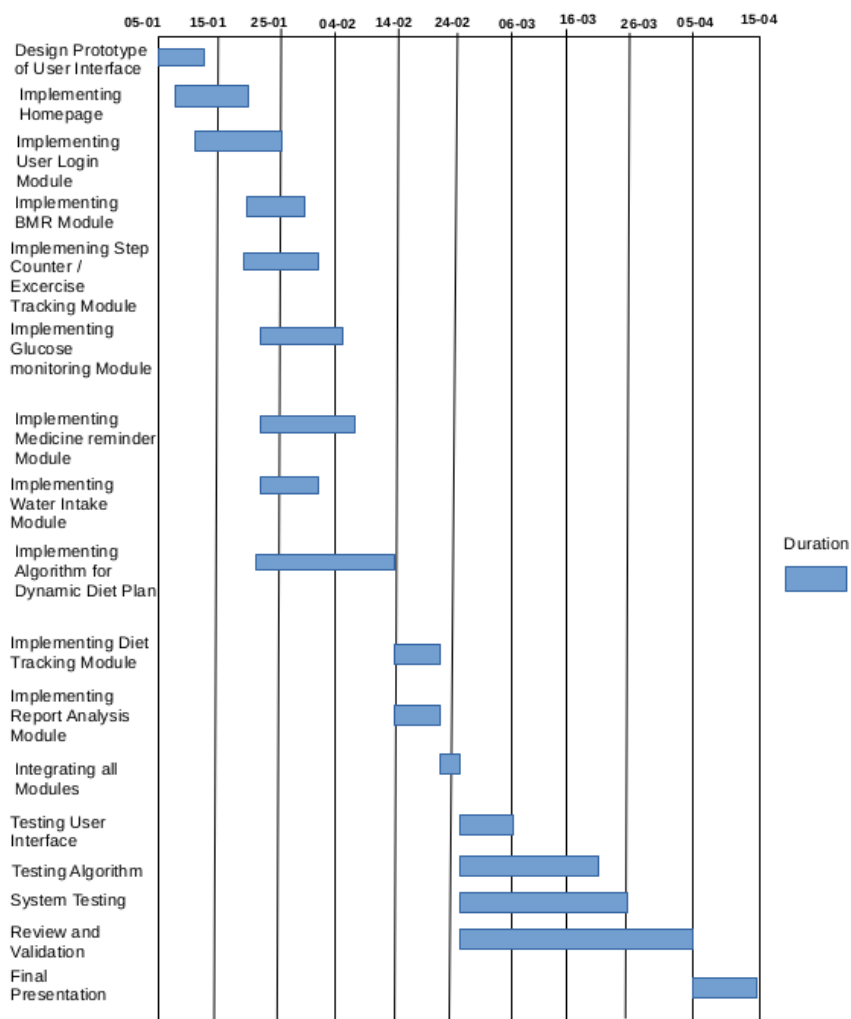


Figure 4.1: Timeline Chart for Sem 8



Various events like implementation of various modules along with the date at which it is performed are mentioned.

## 4.2 Coding Standard

### Variables :

Except for variables, all instance, class, and class constants are in mixed case with a lowercase first letter. Internal words start with capital letters. Variable names should not start with underscore or dollar sign characters, even though both are allowed. Variable names should be short yet meaningful. The choice of a variable name should be mnemonic- that is, designed to indicate to the casual observer the intent of its use. One character variable names should be avoided except for temporary "throwaway" variables. Common names for temporary variables are i, j, k, m, and n for integers; c, d, and e for characters.

Example:

```
int i;  
char c;  
float myWidth;
```

### Functions :

Function names should always be lower-case English words, separated by underscores. They should be named in such a way that they are relevant to the action they are to perform.

Example 1:

```
void setup  
Serial.begin(9600);  
Serial.flush;
```

Example 2:

```
int i;  
char c;  
float myWidth;
```

### Comment Formats

Short comments can appear on a single line indented to the level of the code that follows. The `//` comment delimiter can be used.

long comments can appear on a multiple lines indented to the level of the code that follows. The comment delimiter can be used.

## 4.3 Testing

### **Integration testing**

In this testing, we test each module individually in unit testing phase, and then modules are integrated incrementally and tested to ensure smooth interface and interaction between modules. In this approach, every module is combined incrementally, i.e., one by one till all modules or components are added logically to make the required application, instead of integrating the whole system at once and then performing testing on the end product. Integrated modules are tested as a group to ensure successful integration and data flow between modules. As in integration testing, the primary focus of doing this testing is to check interface, integrated links, and flow of information between modules. This process is repeated till the modules are combined and tested successfully.

### **Functional Testing**

Functional testing performs on the functional behavior of the application to ensure that the application is working as per the requirements. It performs on mobile devices manually, not automatically, it is going to be extremely complex, exhaustive and time-consuming task due to various mobile-specific challenges like; various mobile devices, mobile operating systems, and functions applications involve with mobile devices. Teams can combine automated tests with selected manual test scenarios to balance the coverage and efficiency of the functional testing. To test some functionality of the application tester go for manual testing process, later on tester combines manual testing and automation testing for better result.

### 4.3.1 Test cases

Test cases for modules/components

Test Case no.	Test case	Input	Obtained result	Expected result	Status
1	If user is new to the system,he/she enters information like email-id,password and confirm password	gloria@gmail.com ,***** *****	Toast is shown on a screen that user is registered successfully and directed to basic information activity	User details stored in database, Toast is shown on a screen that user is registered successfully and directed to basic information Activity.	Pass
2	User enters his/her basic profile information like User,age, height(cm),weight(kg),gender, food preference,type of diabetes,glucose level,doctors contact number and Save	Abc,21,169,59, 5,1234567890	User is directed to the login page	User is directed to the login page	Pass
3	Input 1-User enters glucose level and submit	7	Your HBA1c level is above 6% which is not normal. Consult your doctor immediately	Your HBA1c level is above 6% which is not normal. Consult your doctor immediately	Pass
4	Input 2-User sets the medicine reminder	7:00 am,11:30am	Notification is giving to take the medicine set by the user	Notification is giving to take the medicine on the time set by the user & Notification is giving to take the medicine on the time set by the user	Pass
5	Input 3 –User enters the weight, height and glucose level	63,169,6	Toast is shown of BMR,BMI and diet is provided based on the information for that day	Toast is shown of BMR,BMI and diet is provided based on the information for that day	Pass
6	Input4-age,height,weight	23,171,55	Toast where the user is underweight is shown	Toast where the user is underweight is shown	Pass
7	User enter logout		Toast of Successful l signed out is shown and user is taken back to the login page	Toast of Successful l signed out is shown and user is taken back to the login page	Pass

Figure 4.2: Test Cases

### 4.3.2 Results of Testing and System Performance

Below are the screen shots of the Diabetes Diet Application:

When the user opens the application, they will be taken to the login page. If the user is new, they have to click the new user button which is below the login button. (Figure 4.3)



**Figure 4.3:** Login Page

If the user is already registered they can directly login with their email-id and password.

In sign up, the user needs to give a valid email id, only google authenticated user can register. The password needs to be set (password length should be minimum 6 characters) (Figure 4.4).

**Figure 4.4:** Sign up

The user has to put a valid email id as it will authenticate the users. The user will be taken to basic information page after sign up. Now the user is successfully registered. (Figure 4.5)

**Figure 4.5:** Successful Signup

Toast will appear where sign up successful will be shown.

In this, the user has to fill basic details like user name, age, weight(kg), height(cm), gender. (Figure 4.6)

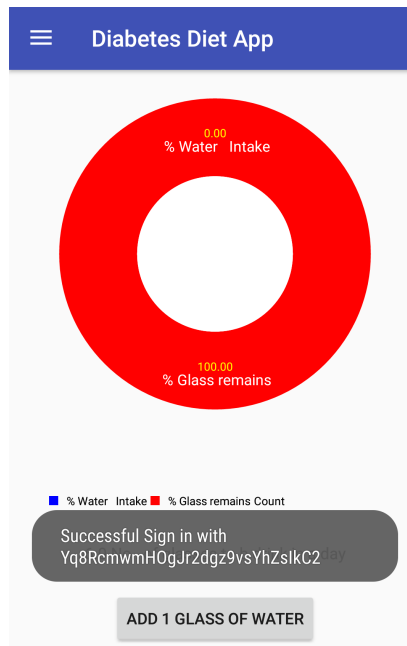
The screenshot shows a mobile app interface titled "Diabetes Diet App". It contains a form for user registration with the following fields and values:

- Name: Abcd
- Age: 21
- Weight: 167
- Height: 59
- Gender: ☒ Female (Other option: ☐ Male)
- Diet Type: ☒ Non-Vegetarian (Other option: ☐ Vegetarian)
- Diabetes Type: Type 2 Diabetes (dropdown menu)
- Doctor's Number: 1234567890
- Button: SAVE AND CONTINUE

**Figure 4.6:** User Information Page

Also the preferences, diabetes type, glucose level and doctors number will be taken. This will be stored in database.

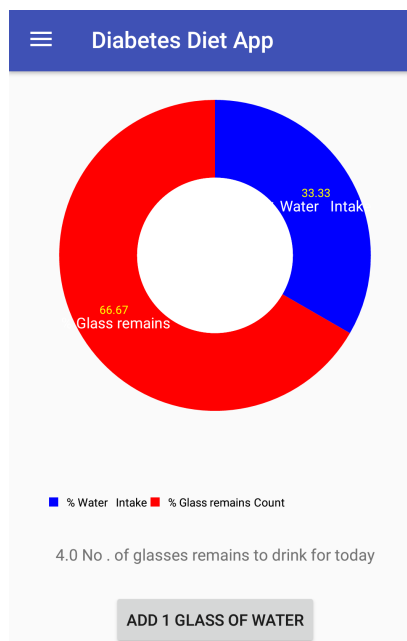
After the user has filled the details and saved, the user will be taken back to login page. The user has to login from their Email ID and password which they had set previously. (Figure 4.7)



**Figure 4.7:** Home Page

After that the user is taken to the home page which is the water intake.

In this, number of glasses of water to be had per day is mentioned along with pie chart. This is calculated based on individual's weight and height. (Figure 4.8)

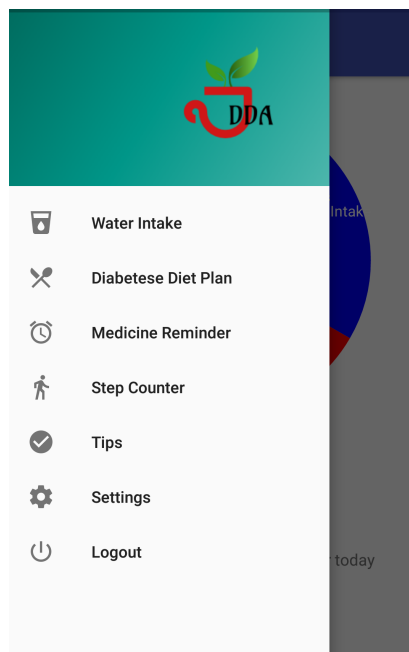


**Figure 4.8:** Water Intake

The user has to click the button below for the number of glass had. The pie chart gets updated and the how many number of glass left for a day will be men-

tioned.

Through navigation bar,the user can go to diabetes diet plan,medicine reminder or step counter.(Figure 4.9)



**Figure 4.9:** Navigation

Other activities like tips or setting ,users can use.If the user wants to log out,they can do it by the navigation bar.

Here the user will be provided with a complete day diet plan.This diet plan will be based on BMR value which was calculated based on their height,weight and age. (Figure 4.10)



Diabetes Diet App	
**** PREBREAKFAST ****	
1 Apple	37.8 calories
6 Almonds	37.8 calories
****BREAKFAST****	
Wheat, bread(brown)	244 calories
Dosa	100 calories
Vegetable Raita	58 calories
Paratha homemade	180 calories
Sabudana wada (5 pieces)	176 calories
**** Lunch ****	

**Figure 4.10:** Diet Plan

Also the sugar level is taken into consideration. Here what all to eat at pre-breakfast, breakfast is given along with the calories it contains.

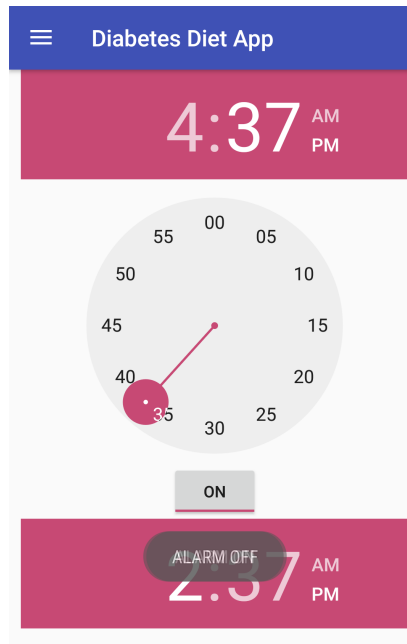
The Lunch and dinner to be had along with the calories also mentioned. The diet is of low calories and low sugar. (Figure 4.11)

Diabetes Diet App	
Vegetable Raita	58 calories
Paratha homemade	180 calories
Sabudana wada (5 pieces)	176 calories
**** Lunch ****	
yellow rice, large grain(1 cup)	150 calories
Phulka(2 servings)	140 calories
Vegetable chettinad	110 calories
**** Dinner ****	
Phulka(2 servings)	140 calories
Paneer darbari	120 calories

**Figure 4.11:** Diet Plan (continuation)

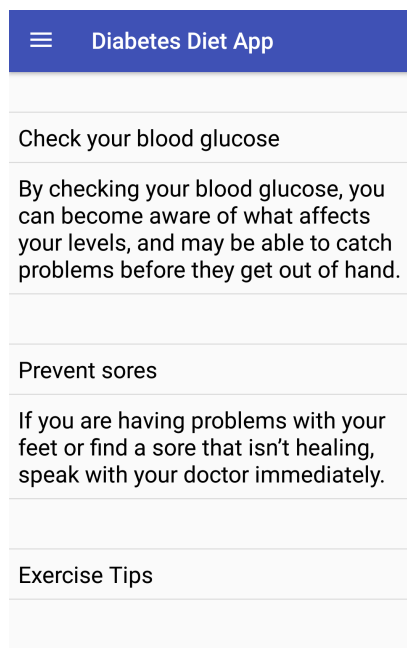
The diet mainly consist of Basic Indian cuisine which is had everyday.

The user can set reminder for their medicine intake. According to the time set the reminder will notify to take medicine at that time. (Figure 4.12)



**Figure 4.12:** Medicine Reminder

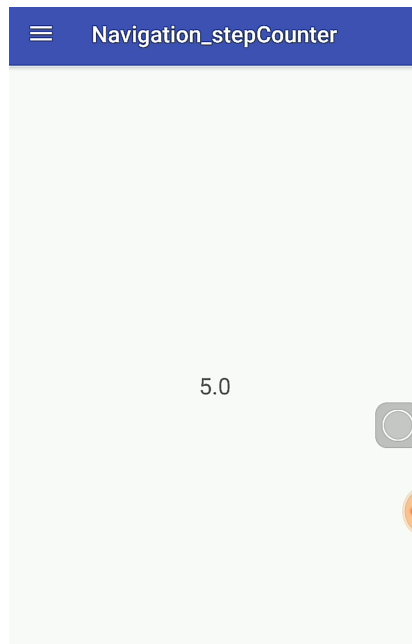
Along with notification the alarm will ring to notify the user. The user can also get tips on health and exercises. (Figure 4.13)



**Figure 4.13:** Exercise and health tips

The tips will focus mainly on diabetes related.

Here, the user can track their steps walked per day. The step counter will be useful to calculate how much calories are burnt. (Figure 4.14)



**Figure 4.14:** Step Counter

From the calories burnt, the diet will be made accordingly. This will be added in future.

If the user has not updated their glucose level, they will be taken to the setting activity after every 20 days. The user can update their basic information in this. (Figure 4.15)

**Figure 4.15:** Setting Page

Age, weight, glucose level and doctor's number can be updated through setting activity.

If the user's glucose level is higher than the limit level they will get warning. (Figure 4.15)

**Figure 4.16:** Warning and Call Doctor

Also the call button will be provided to directly call the doctor.

## Chapter 5

### Results and Discussion

The diabetes diet app for diabetic patients solely focuses on their health. This application will first register the user. Personal details will be stored in database. Based on these details diet plan will be made. The main feature is the dynamic diet plan where the app provides a diet chart based on individual user/patient. The diet plan will change according to individual's choice. Also the plan will be made according to calories, carbohydrates, fats and sugar level of the user. The So even if the user has missed certain amount of calorie in a particular meal it can compensate in other meal.

Other than the main features the other features will be keeping a track on glucose level. Step counter is added where the users step count in a day is recorded and how much calories are burnt will be tracked. Medicine reminder is added where the application will notify the user to take medicine at time saved. Water reminder is another feature added where the user will track their daily intake of water per day.

#### Contribution of Team Members:

Implementation of Algorithm	Deepika Gurav
Developing of Android app	Alfiya Sayed Deepika Gurav
Documentation	Gloria Dias Deepika Gurav
UI Designing Of the android app	Gloria Dias

## **Chapter 6**

### **Conclusion**

The objective of this project is to provide a healthy diet for diabetic patients along with keeping track of sugar level. We have done a survey on proper diet from a dietitian where she provided us detail information on what must a patient have. The BMI of the patients will be calculated. Medicine reminder where the user will be notified time to time is also added. The app will suggest diet plan as well as keep a track on what has the user consumed in a day. The water intake feature will also be added to keep a track on daily consumption of water. The further work to be carried will be working on the algorithm and implementing it.

# **Appendix - I**

## **Software Requirement Specification**

### **1.Introduction**

#### **1.1 Purpose**

Diabetes diet app is build to help diabetic patients.It will provide a dynamic diet plan according to their glucose,weight,height .There are many apps for diabetes diet but none of them gives a dynamic diet chart. All diet applications gives a static diet chart and some health tips.Some apps tracks the glucose , gives health and exercise tips. Some are daily activity tracker for patient and some gives a static diet plan.Diabetes diet app will provide a healthy diet plan will change according to the patient's health,keep track of water intake of user,generate analysis report.

#### **1.2 Scope**

App will include all the listed features:

Registration and sign in

Dynamic diet plan

Water intake

Medicine reminder

Exercise and health tips

Analysis report

#### **1.3 Overview**

To build an android app for diabetic patients which will be dynamic.Diet plan will change according to the patient's health information , exercise ,glucose level , calories as well as their choice of meal keeping in mind.

## **2. Specific requirements**

### **2.1 External interface requirements**

#### **2.1.1 User interface**

- User registration
- User sign-in.

#### **2.1.2 Hardware interface**

The app will be installed on an android phone version greater than 4.4.

#### **2.1.3 Software interface**

- Operating system: windows, linux
- Development tools: Android studio latest version.
- Database: SQLite

### **2.2 Software system attributes**

#### **2.2.1 Reliability**

The application has to be very reliable as there is daily data of user is stored in the application database. The android phone needed for application to install should be version 4.4 or greater.

#### **2.2.2 Availability**

The system must guarantee 24\*7 availability.

#### **2.2.3 Security**

The user has its own login credentials ie. Username and password for signing into the application and its data is separated from other users.

#### **2.2.4 Portability**

The app will be installed on android device of minimum version 4.4. The user can access their data by signing in to any device having Diabetes diet app.

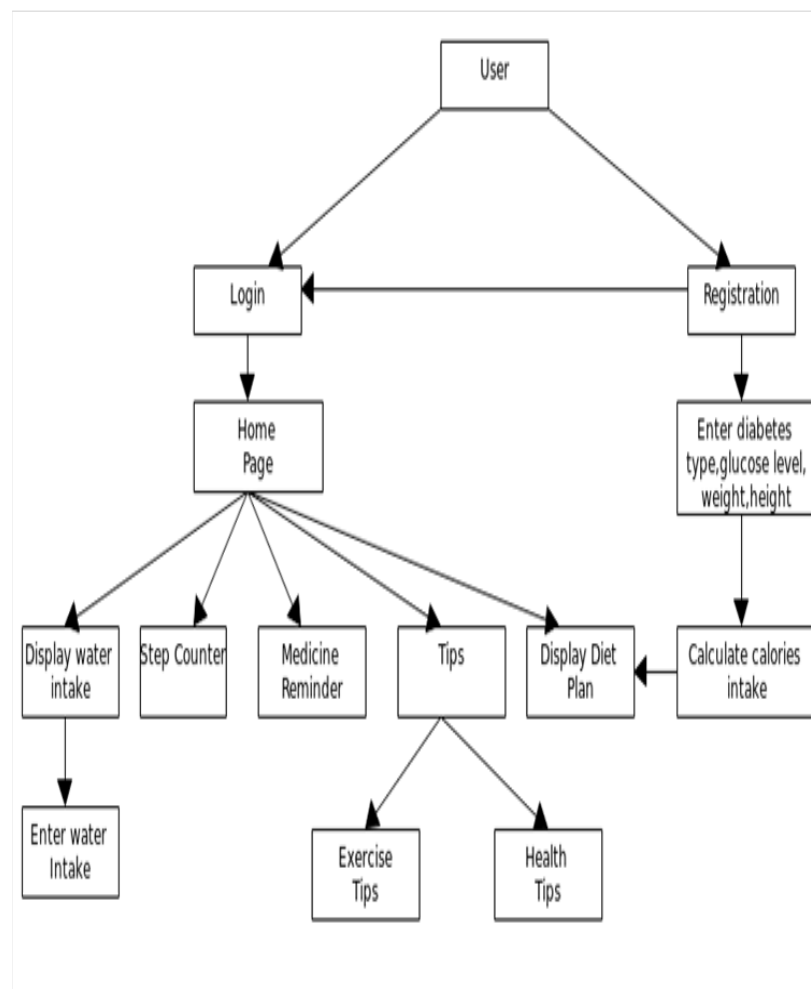


## 2.3 Database requirements

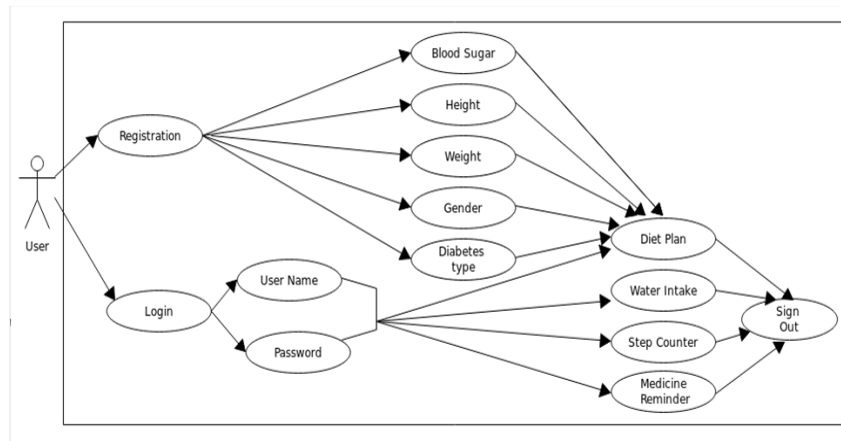
SQLite is required.

## 3. Additional material

### Block Diagram



## Use Case Diagram



## References

- [1] D. Krishnan, X. Zhou, S. Chakraborty, R. Gururajan and R. Gururajan, "Software development for managing nutrition intake for Type II diabetes mellitus," 2016 10th International Conference on Software, Knowledge, Information Management Applications (SKIMA), Chengdu, 2016, pp. 215-219. doi: 10.1109/SKIMA.2016.7916222 keywords: medical computing;software engineering;Nutritracs;T2DM;nutrition assessment software;nutrition intake;software development;type II diabetes mellitus;Databases;Diabetes;Employee welfare;Interviews;Servers;Software,
- [2] NP Steyn ; Diet, nutrition and the prevention of type 2 diabetes ; Public Health Nutrition ; IS No.1a Vol No.7; Year published: 2004
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- [4] Article title: Pedometer Steps to Calories Converter Website title: Verywell URL: <https://www.verywell.com/pedometer-steps-to-calories-converter-3882595>

## Acknowledgements

We would like to express our deepest gratitude to our experienced and knowledgeable guide Asst.Prof. Sushree Satapathy for giving us an opportunity to carry out our project under her excellent guidance. We would like to place on record the constant encouragement, support and guidance that we received from her in abundance.

We owe sincere gratitude to our Principal, Dr. Prasanna Nambiar and our Head of Department Prof. Janhavi Baikerikar. We would like to thank our Project Coridinator Prof.Tayyabali Sayyed for their greatful support and guidance . We would also thank our management, institution and faculty members without whom our project would have been a distant reality. We also extend our heartfelt thanks to our family members and well wishers.

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**Date: 23/04/2018**

## References

- [1] D. Krishnan, X. Zhou, S. Chakraborty, R. Gururajan and R. Gururajan, "Software development for managing nutrition intake for Type II diabetes mellitus," 2016 10th International Conference on Software, Knowledge, Information Management Applications (SKIMA), Chengdu, 2016, pp. 215-219. doi: 10.1109/SKIMA.2016.7916222 keywords: medical computing;software engineering;Nutritracs;T2DM;nutrition assessment software;nutrition intake;software development;type II diabetes mellitus;Databases;Diabetes;Employee welfare;Interviews;Servers;Software,
- [2] NP Steyn ; Diet, nutrition and the prevention of type 2 diabetes ; Public Health Nutrition ; IS No.1a Vol No.7; Year published: 2004
- [3] 1. Diabetes Mellitus – epidemiology. 2. Diabetes Mellitus – prevention and control. 3. Diabetes, Gestational. 4. Chronic Disease. 5. Public Health. I. World Health Organization ; Global report on diabetes ; World Health Organization 2016
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**Date: 23/04/2018**