

FOOD TRACKER iPHONE APPLICATION

BY

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This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

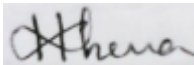
This Project / internship titled **Food Tracker iPhone Application** submitted by Md. Sufian Saury ID No:152-15-6101 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B. Sc.in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 06-12-2022.

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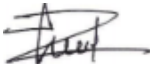
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DECLARATION

We hereby declare that, this project has been done by us under the supervision of, **Professor Dr. Md. Ismail Jabiullah, Department of CSE**, Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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ABSTRACT

The Main purpose of this Food Tracker iPhone Application project is to make the user more concern about their every days meal. In this project, we have two modules, Admin, and user. Admin in this Meal Tracker iOS Application project will log in with the default username and password and admin has authority to add new features and give user the access to track their meal and add meal photo as an image view and rate their foods and show it to table view cell. User can add their real time location with two different option standard and satellite mode. User can also able to create new account and sign in with their email and password. Finally, the User can also log in with their iCloud account to get their meal tracking data across the all iOS device. If the user feels any feedback need to give, he can provide feedback to admin.

TABLE OF CONTENTS

CONTENTS	PAGE NO
Acknowledgement	iv
Abstract	v
Table of Contents	viii-ix
CHAPTER	
Chapter 1: Introduction	1-4
1.1 Introduction	1
1.2 Motivation	1
1.3 Objectives	2
1.4 Expected Outcome	3
1.5 Report Layout	4
Chapter 2: Background	5-6
2.1 Introduction	5
2.2 Related Works	5
2.3 Comparative Studies	5
2.4 Scope of Problems 6 2.5 Challenges 6	
Chapter 3: Requirement Specification	7-10
3.1 Business Process Model	7
3.2 Requirement Collection and Analysis	8
3.3 Use Case Modeling and Description	8
3.4 Logical Data Model	9
3.5 Design Requirement	10

Chapter 4: Design Specification	11-13
4.1 Front-end Design	11
4.2 Back-end Design	11
4.3 Interaction Design and UX	12
4.4 Implementation Requirements	13
Chapter 5: Implementation and Testing	14-19
5.1 Implementation of Database	14
5.2 Implementation of Front-end Design	15
5.3 Implementation of Interaction	17
5.4 Testing Implementation	17
5.5 Testing Strategy	18
5.6 Test Approach	18
5.7 Black Box Testing	19
5.8 White Box Testing	19
Chapter 6: Conclusion and Future Scope	20
6.1 Discussion	20
6.2 Conclusion	20
6.3 Scope for Future Development	20
References	21
Appendix	22
Appendix B: Project Reflection	23

LIST OF FIGURES

FIGURES	PAGE NO
Figure 3.1: Business Process Modeling	7
Figure 3.2: The full use case model of Meal Tracker application	9
Figure 3.3: Logical Data Model	10
Figure 3.4: Design Requirement	10
Figure 5.1: The database table of the meal tracker application	14
Figure 5.2: Homepage	15
Figure 5.3: Registration Form	15
Figure 5.4: Log in Page	16
Figure 5.5: Image View	16
Figure 5.6: Meal Rating Control	16
Figure 5.7: Apps Testing	17

LIST OF TABLES

TABLES	PAGE NO
Table 3.1: Use Case Modeling and Description	8
Table 4.1: Tools and frameworks	12

CHAPTER 1

INTRODUCTION

1.1 Introduction

At present world, there has always been a modern world of blooming technology everywhere. Similarly, for growing companies, developing a business app has become a necessity. Statistics shows that, the highest percentage of traffic is received form smart phones. Be it for personal or for official use people have inclined towards this device exponentially. If we talk particularly about the prominence of iOS mobile apps, in 2018 there are around 2.2 million apps available in the Apple app store. In fact, in the year, 2016 Apple app store fetched the 2nd position in the app market. This shows how iOS devices are getting popular mainly for their unique performance and the perfect functionality features that users actually love using. The number of iOS application will increase day by day and to maintain inner relation between them and also to keep their data safe or control their data, we need to have an interactive media. If we look back, we can see there is no calculation how much food we contain regularly.

This application will establish a good communication between the user and their health. It will also build a great relation between everyday life. For some reason most of us do not even know what calorie they should take to lead a healthy life. Most of us do not know how diet is important to live a healthy life. Tracking the nutrition has so many benefits, it is help to increase energy, avoiding mood swings and fueling the rhythms of the day. So, the record is important to track the meal in daily bases.

1.2 Motivation

When we eat food, our body uses some calories for energy and some of the calories are stored fat. In this situation we need a balanced diet and keep tracking our meal. Meal tracker is the best way to maintain every meal. The objective of our meal tracker application is same. When user kept track their meal, they will know about how much calories they are consuming. So, the actual purpose of our meal tracker application is

to ensure a healthy life above all. This idea is to make meal tracker application is unique and will be useful for everyone.

1.3 Objectives

The main objectives to create this application is the real time features and be healthy. It counts our everyday meal and notify when we consume too much calories. Too much calorie is bad for health, it is gathering extra fat in our body. Meal tracker application allow user to create their account and record their meal and save it as future record. User also sign in with their iCloud account and pass data across all iOS devices. User can also skip this process. Finally, user can set the meal by simple input or by taking a meal photo and also user can give a rating of their meal. Moreover, user can share real time location. It is designed to get the following objectives: -

- Meal Tracker is an iOS application and all the iOS users can access the application at any time.
- In this application, Different types of controller manages the application data and controllers gives the users access to its functionalities, so the data is securely store and prevent redundant data.
- The data is stored programmatically, it is not necessary to have a mobile network connection.
- The main goal to create the application to maintain a balanced diet for all happy people.
- The application users can access their meal history in iCloud account and stored the data for future enquiry.
- Navigation controller help the users to navigate the meals.
- Finally, the application open, it seems like it is simple and straight forward, for any kind of iOS users.

1.4 Expected Outcome

- Meal Tracker is an iOS application and all the iOS users can access the application at any time.
- In this application, Different types of controller manages the application data and controllers gives the users access to its functionalities, so the data is securely store and prevent redundant data.
- The data is stored programmatically, it is not necessary to have a mobile network connection.
- The main goal to create the application to maintain a balanced diet for all happy people.
- The application users can access their meal history in iCloud account and stored the data for future enquiry.
- Navigation controller help the users to navigate the meals.
- Finally, the application open, it seems like it is simple and straight forward, for any kind of iOS users.

The proposed project is a meal tracker that provide different facilities of user's movement. I am looking forward that the outcome of our meal tracker application project will give user a healthy and happy life. I minimize our project work with little fragment that, it is going in the proper way of development. So, I prospect that the result will be satisfactory and user will get a simple and super handy meal tracker application. Also, this application provides a user-friendly environment. Users can get their meal tracker information and history from all of his devices. User can share their everyday meal with their family and friends. We are working on our data base so that user can securely store their meal records on safe database. Data parsing is very important for a user. So, we are always conscious between the correct data and corrupted data. We are working with authenticate sources to reduce any kind of user obstruction. Finally, I provide a sign-up option for new meal tracker user.

1.5 Report Layout

All reports are broadly organizing in three sections:

- Initial matter
- Test
- Back matter

The Initial matter consists of the title page, approval page, abstract summary, Acknowledgements, table contents, list of tables, list of figures, other lists and the Preface etc. Initial pages are paginated independently from whatever remains of the content. We have organized our report as follows:

Chapter 2: Discuss the background circumstances of our project. I also advise about the related work; the scope and challenges of the project and I am compared too many other candidate systems.

Chapter 3: Decide the requirements of the project. I am defined the data flow diagram, use case diagram and design requirements. I also discussed about the requirement collection and analysis process.

Chapter 4: Specified the front end and the back-end design of the project.

Chapter 5: Exhibited the implementation of the whole project and I am tested every section of the project weather the application is working as expected.

Chapter 6: Discussed about conclusion and the scope for further development of the project. At last of all report I give the related reference to ensure that the information in the report are must be correct.

CHAPTER 2

BACKGROUND

2.1 Introduction

The key aspects of this meal tracker application are to help user to full access their health and keep track their everyday meal. This application data is appropriate and precious to their user. The proper information for body helps a person to live a better life. Many of the developer develop iOS application, that is paid. But this way user can use a simple and effective meal tracker application. Food Tracker iPhone Application tries to build the gap by applying different cutting-edge technology to step forward. Also, User can connect this meal tracker application to their apple provided health care application. This application mainly focuses on how meal tracker is essential for a balance diet.

2.2 Related Works

There are a lot of meal tracker application in app store to keep track meals. But unfortunately, most of the great application are paid. But this meal tracker application is simple and free. Also, user can use various search engine to know and gather information about their meal. When user is able to know their location where he or she take the food, it is a great thing. It is also reminder the user how the user consumes food and travel. But there is no unified platform to use a great application on iOS. But meal tracker is taking care about it. So, we hope that this meal tracker iOS application will be helpful to all.

2.3 Comparative Study

We have developed this single view application “Food Tracker iPhone Application” is a complete iOS application solution and meet the benchmark of apple ecosystem. Before starting this project, we studied a lot of apple documents, to learn how iOS application works as a user friendly. This application fulfills the user requirement on specific part. On the other hand, our application will be better to use with best user experience. We have tried our best and still trying to fulfill all user needs and requirement from the very first version.

The main purpose of this project is to design and interactive application. We belief that the system will be a great useful application for the iPhone user around the world and it will be a modern addition to this new tech-based world.

2.4 Scope of the Problems

The scope of the problems in this meal tracker application is deprecated symbols. Deprecated is a review symbol that are no longer supported and find the replacement to use it. There are some categories deprecated class, deprecated protocols, deprecated function in UIKit framework. The main goal of our project is to provide a new brandnew iOS application. This meal tracker application has written on most advanced swift programming language. The system is mostly secure for its user. It will be also helpful for doctor who gives their patients a balance diet.

2.5 Challenges

The challenges of this meal tracker application of its safety. We are happy to inform the user that the system works with no data leak. The authenticate source information of this meal tracker application prevent those data leakage. But we are keep exploring the upcoming new problem and solve it for our system. The challenges of this meal tracker application are given below:

- Security of data
- Data exactitude
- Admin panel control
- Efficiency of working
- Time required have to be minimum
- User friendly
- Effective

CHAPTER 3

REQUIREMENTS SPECIFICATION

3.1 Business Process Model

The business process model is a process management and systems engineering that representing the process of the systems. How the systems work for expected outcome this represent the business process model. For this many companies were encouraged to think in process instead of functions and procedures. We know business process modeling is the graphical representation of an organization's business processes or workflows, as a result of identifying potential improvements and moves. Usually this business process modeling done through applying different graphing methods.

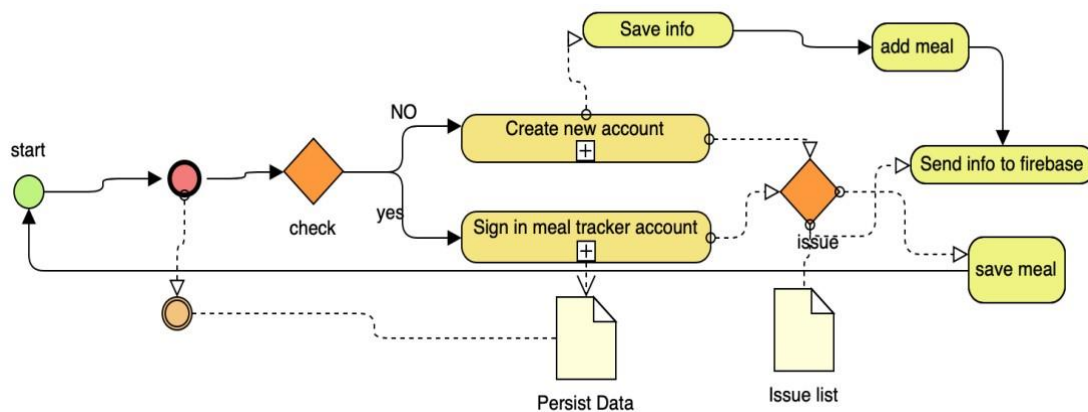


Figure 3.1: Business process modeling

Description:

This table shows some basic ideas on Business Process Modeling. It will give us an overall idea on Business Process Modeling.

3.2 Requirement Collection and Analysis

Requirements collection and analysis is very important in business process modeling. Collect requirements are needed for new modification of the application and requirements are analyzed and summarize according to user exceptions and actual basis. The countable relevant and detailed requirements are must for give user a better experience. It is done by Requirement analysis through gathering and specifying them user feedback. Generally, requirements are gathering by brainstorming, interviews, user observation, questionnaires and document research. In relevant area these requirements work well. By meeting with my supervisor, I listed the requirements from our perspective. Our supervisor is very cooperative and friendly about our project, so it was easy to collect real life requirements from us.

3.3 Use Case Modeling and Description

Use case diagram are used to gather requirements of this meal tracker application. Use cases are mainly used during the analysis phase of an application or any system to identify system functionality. Meal tracker separate the system into two parts. The two parts of this application is actors and use cases. Here the actors are:

Table 3.1: Use Case Modeling and Description

Rank	Issue	Description
1	Method Prosperity	Greater capability to prosper business method.
2	Perception	Admit into and compatible perception.
3	Communication	Exalted communication of business method.
4	Redaction Method	Finish on the basis of the models.

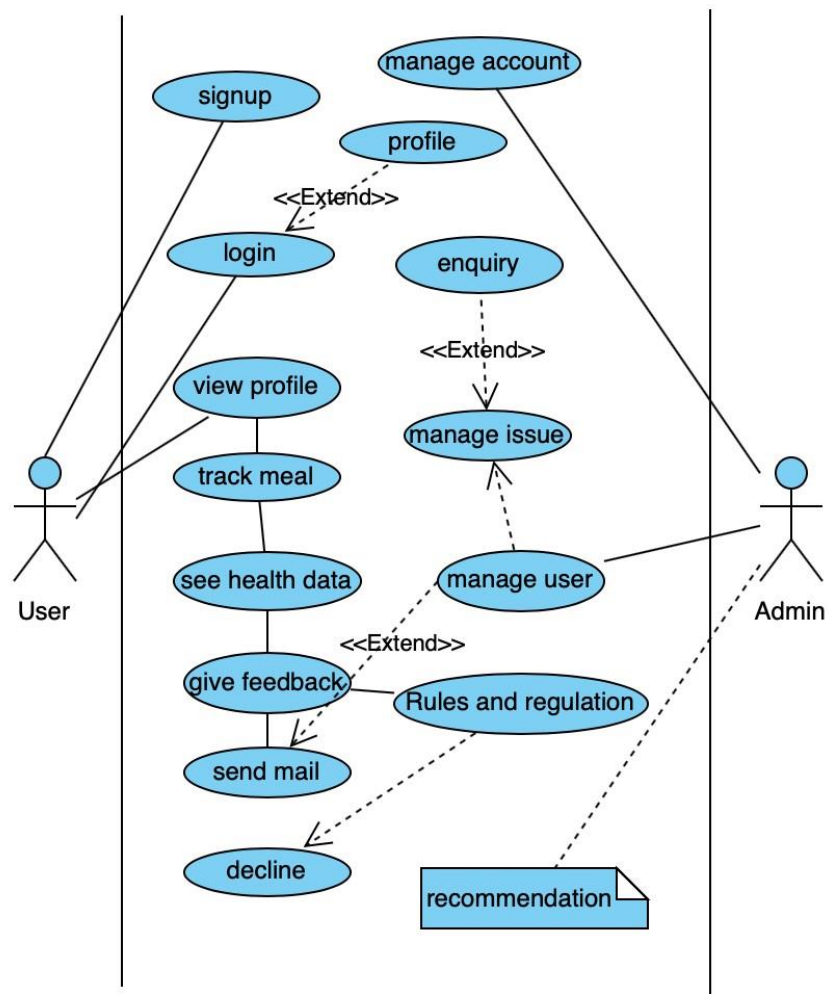


Figure 3.2: The full use case model of Food Tracker iPhone Application

3.4 Logical Data Model

To develop iOS single view application logical data model is needed to manage the application view controller. There are three view controllers to manage the data from over loading. Meal view controller manages the meal and image view, rating control stack manage the rating bar, and also navigate the real time location. Data passes from one cell to another and show it as a view in the user interface. The following figure 3.6 explain the meal tracker application.

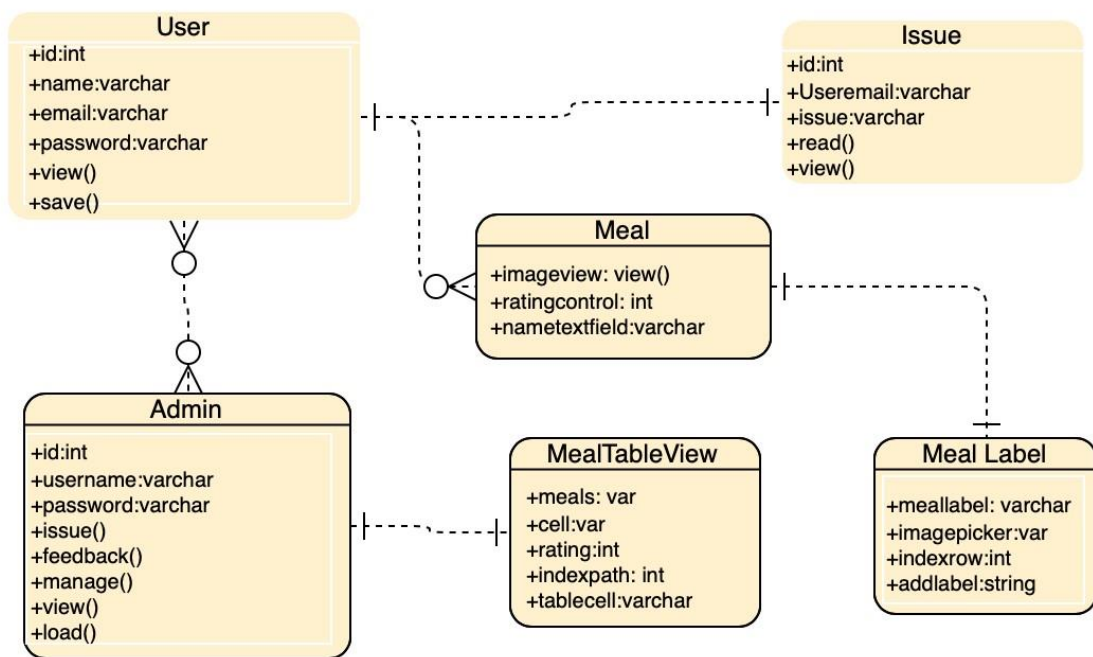


Figure 3.3: Logical Data Model

3.5 Design Requirements

Design requirements is very important for developing mobile application. A Systems design is the process the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements of an application. The system design of our application has been showed, where architectural design, use case diagram, sequence diagram, class diagram included. Whole design of this project is user friendly. Modern and most advanced design tools XCode is used to design the meal tracker application. In future any kind of edit is allowed as time permits. The meal tracker application working procedure is attached in the below figure. web application working procedure is attached below figure:

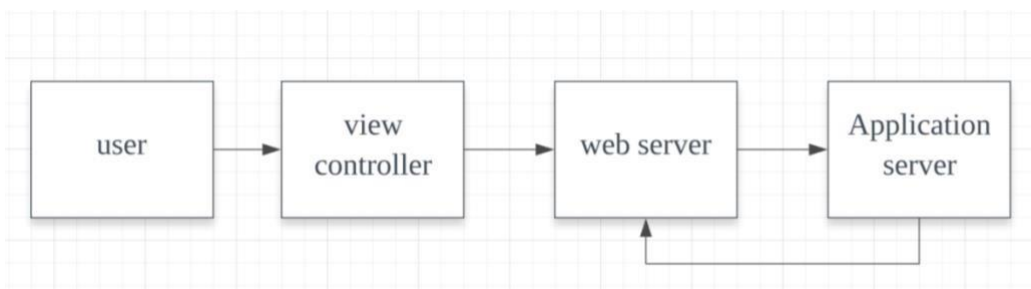


Figure 3.4: Design Requirement

CHAPTER 4

DESIGN SPECIFICATION

4.1 Font-end Design

XCode is used to develop this meal tracker application. This meal tracker application is an iOS based and run in iPhone. We use worlds most advanced programming language swift and version 5, to build this meal tracker application. Swift user interface (UI) handle this front-end design very cleverly.

- Swift 5
- XCode 11.0

4.2 Back-end Design

When we choose a right iOS single view application to develop a great application framework is must. In iOS development i used cocoa touch. From developer perspective, they have to choose a language and framework because they used it on their recent project or they are more familiar with it. Before beginning a new software application, developers want to assess which language and framework is the best fit for their required products. In this case i used apple based swift framework because of security, rapid development, scalability, versatility support. In the backend design, we used MySQL, firebase database management tools for our meal tracking application. Cocoa touch class is a framework of swift programming language. which uses MVC architecture in iOS development. It used for connecting presentation layer with data layer. In future swift increase frameworks to work smooth. SwiftUI is powerful engine to design best application with less code.

Below figure shows that the details about tools and technology.

Table 4.1: Tools and frameworks

Tools & Frameworks	API
Cocoa Touch	iPhone, iPod Touch, iPodOS, WatchOS
CloudKit	macOS and iOS
AVFoundation	iOS, macOS, tvOS and watchOS.

4.3 Interaction Design and UX

DESIGN

As the meal tracker application is a single view iPhone application, we need to implement it with swift programming language. Xcode 11.0 is a most powerful compiler to design iPhone, iPod touch, macOS, watchOS based application. A full loaded frameworks truck in integrated in Xcode. The best way to develop iOS application is used latest version of Xcode.

COMPLETION

This meal tracker application is user friendly and it is follow a huge impact in our everyday life. Every piece of code is this Food Tracker iPhone Application will be modified any time of year.

PROJECT DELIVERABLES

The meal tracker application iOS system projects must welcome changing requirements, even it can be late in development. Delivering working software frequently in possible shortest time. After that, iOS project delivery can be process improvements, new or improved features, Siri accessibility service quality improvements. This project improves the livelihood.

RESOURCE ALLOCATION

In the beginning of software planning process, the resource allocation intuition stage is a plan for using available resources for the development of this software. Moreover, human resources (HR), always a vital part of a software development project to achieve goals for the future.

4.4 Implementation Requirements

Requirement's analysis in meal tracker application, is very early phase to developing a iOS project those tasks that go into determining the needs or conditions to meet for a new or altered application. Therefore, a requirements analyst to taking account of the possibly conflicting requirements of the various analyzing, documenting, validating and managing application requirements.

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation of Database

This is the snapshot of our meal tracker application firebase database. Moreover, all of the features from our meal tracker application which will be the track records of the background system also. In this mobile application project, we work in pod files workbench tools for database data handling. Make the database and tables. Load the information. The database usage steps are: -

- Database Life Cycle.
- Requisite gathering.
- Analysis and exploration.
- Logical Design.
- Implementation.

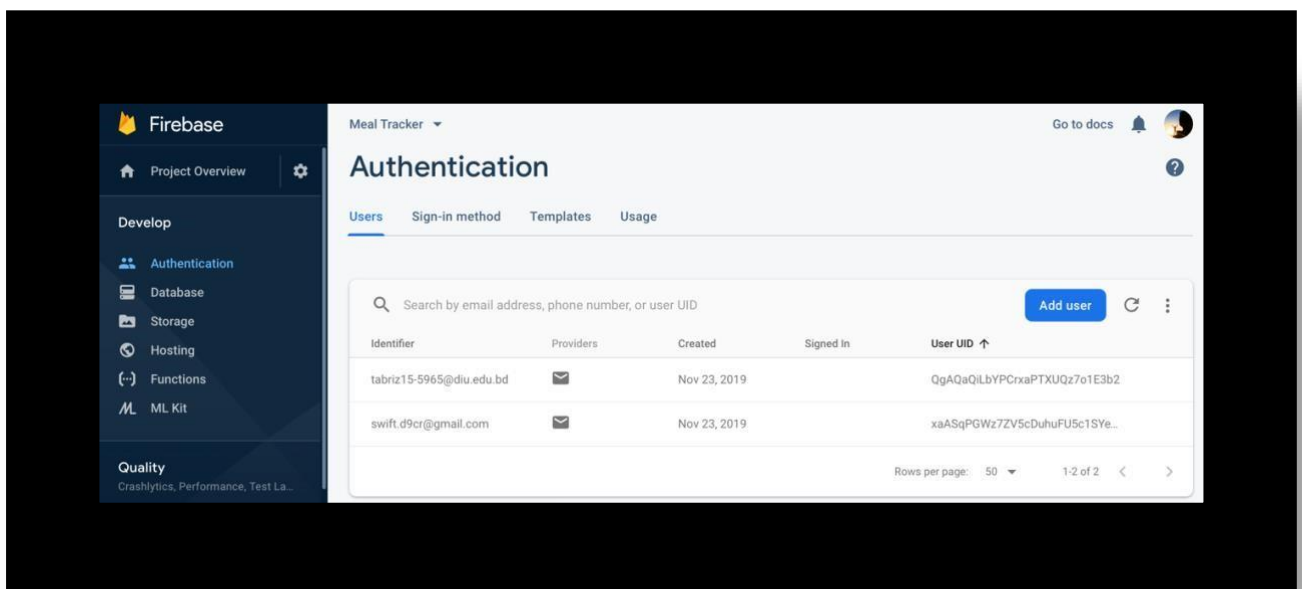


Figure 5.1: The database table of the meal tracker application

The usage stage is the place you indicate the DBMS on the requisite ingredient, upgrade the database to run best on that ingredient and programming stage, and make the database and load the information.

5.2 Implementation of front-end design

I defined user interface (UI) for meal tracker application in swift. For front end design swift has zero problems doing this whole work. Swift holds the whole front-end design for my application. The design of meal tracker application user interface (UI) is shown below: -

Homepage

User need to go to the meal tracker application to open the application to use the system. In the first view controller home page there are buttons for login and create new meal tracker account.

Registration

New meal tracker user needs to register with valid email and password to use this application.

Login

Registered meal tracker user can log in with their valid mail and password.

Input Meal

This meal view controller gives a chance to the user to input their meal and save it.

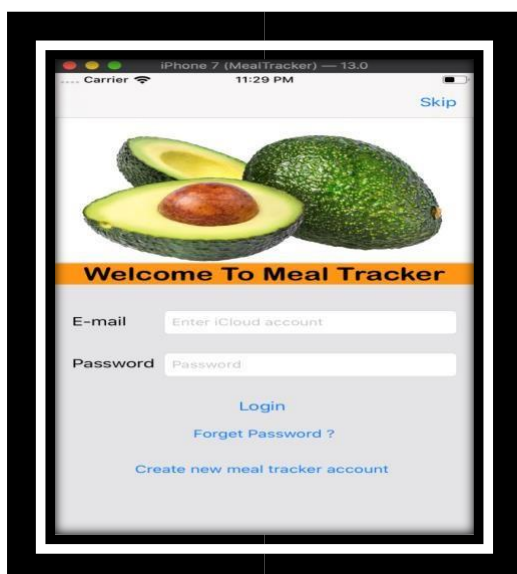


Figure 5.2: Homepage

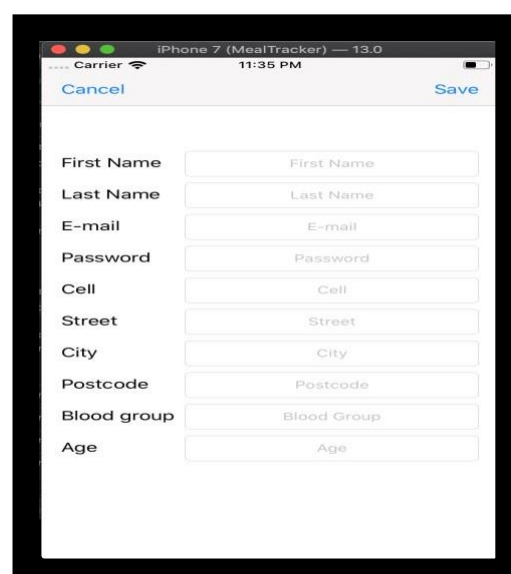


Figure 5.3: Registration



Figure 5.4: Log in Page

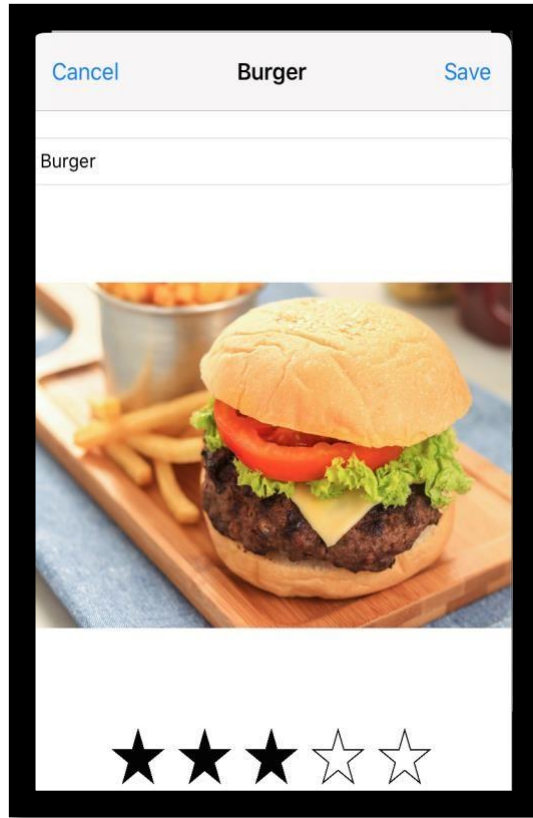


Figure 5.5: Image view

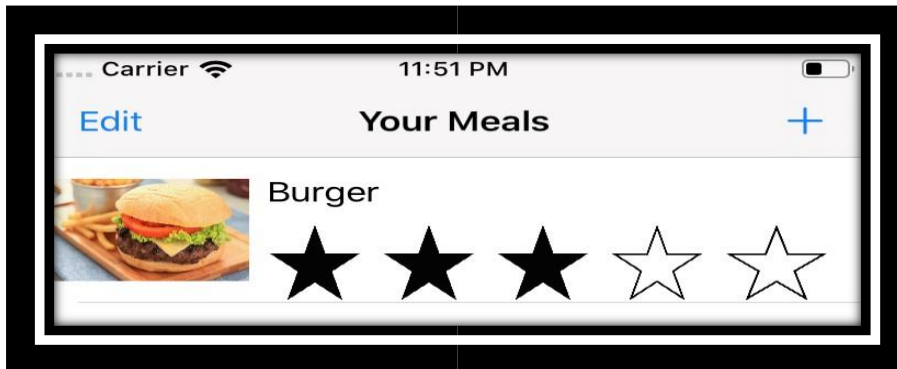


Figure 5.6: Meal Rating Control

5.3 Implementation of Interactions

Apple ecosystem build modern technology and innovations a new dimension for iPhone user which supply several tools and technology. In particular for meal tracker application it can make explicit particular aspects of activity so that they can track their meal recorded and evaluated. Many developers trying to integrate new technologies of meal tracker application developer. The meal tracker iOS application is on of the new stage of record every meal track using e-mail, and iCloud log in and other technologies to enhancing and facilitating tracking their meals.

5.4 Testing Implementation

XCode has a built-in module XCTest to testing the iOS application. A new test set off instruction is to be written for testing iOS application features and functionality. Different feature and functionality have different characteristics. Making change to add or modify new functionality to the existing application is generally considered as feature testing. To make the application more reliable, secured, useful, effective and efficient I have to design test set. To understand whether a system works properly or not testing is necessary. In this application testing mode meal tracker application passes all the stage.

The image shows a screenshot of the Xcode IDE. On the left, a sidebar displays a project tree with 'Meal_TrackerTests' expanded, showing two test cases: 'testMealInitializationSucceeds()' and 'testMealInitializationFails()'. The main editor area shows the Swift source code for 'Meal_TrackerTests.swift'. The code includes imports for XCTest and Meal_Tracker, and defines a class Meal_TrackerTests: XCTestCase. It contains two test methods: testMealInitializationSucceeds() which tests valid parameters (zero, positive, and highest positive ratings) and testMealInitializationFails() which tests invalid parameters (negative rating and rating exceeding maximum).

```
1 //
2 // Meal_TrackerTests.swift
3 // Meal_TrackerTests
4 //
5 // Created by shams tabriz on 18/10/19.
6 // Copyright © 2019 shams tabriz. All rights reserved.
7 //
8
9 import XCTest
10 @testable import Meal_Tracker
11
12 class Meal_TrackerTests: XCTestCase {
13
14
15
16 //MARK: Meal Class Tests
17
18 // Confirm that the Meal initializer returns a Meal object when passed valid parameters.
19 func testMealInitializationSucceeds() {
20
21 // Zero rating
22 let zeroRatingMeal = Meal.init(name: "Zero", photo: nil, rating: 0)
23 XCTAssertNotNil(zeroRatingMeal)
24
25 // Highest positive rating
26 let positiveRatingMeal = Meal.init(name: "Positive", photo: nil, rating: 5)
27 XCTAssertNotNil(positiveRatingMeal)
28
29 }
30
31 // Confirm that the Meal initializer returns nil when passed a negative rating or an empty name.
32 func testMealInitializationFails() {
33
34 // Negative rating
35 let negativeRatingMeal = Meal.init(name: "Negative", photo: nil, rating: -1)
36 XCTAssertNil(negativeRatingMeal)
37
38 // Rating exceeds maximum
39 let largeRatingMeal = Meal.init(name: "Large", photo: nil, rating: 6)
40 XCTAssertNil(largeRatingMeal)
41
42 }
```

Figure 5.7: App Testing

5.5 Testing Strategy

A general purpose of testing process in XCode is testing strategy. Testing strategy includes testing IB Designable class and function methods, testing object, total available foundation resources and frameworks. The strategy of testing is the indicator of test levels which should perform on the whole software development architecture. Quality assurance team prepares these strategies and reviewed by the developers. The different kinds of testing in software development strategies should be performed according to the system type that needed to test. In this meal tracker application user acceptance testing is done.

5.6 Test approach

To complete test process testers must take some approach. There are mainly two test approaches.

- **Automation Testing:** Automation testing is a technique in XCode to implement entire life cycle of iOS development. For this iOS software development provides efficiency and effectiveness to testing application. Apple script manages the automation testing is an automatic technique where the tester writes scripts by own and uses suitable application to test the software. This called an automation process of a manual process.
- **Manual Testing:** Manual testing is the process of using the functions and features of an application as an end-user would in order to verify the software is working as required. With manual testing, a tester manually conducts tests on the software by following a set of pre-defined test cases.

5.7 Black Box Testing

Black box testing is a method of XCode testing of a software testing method in which the internal structure/design of the item being tested is not known to the tester. These tests can be functional or non-functional, though usually functional. This method is named so because the software program, in the eyes of the tester, is like a black box; inside which one cannot see.

5.8 White Box Testing

In black box testing internal architecture or algorithm is not known to the tester, but in the white box testing whole architecture is known to the testers. A white box tester is usually a developer, as some degree of programming experience is required. By contrast, it can be useful for black box testers to lack such technical perspective, as their experience of the software should closely resemble that of an end user.

White box testing can be classified into some levels. Such as:

- Unit Testing
- Integration Testing
- System Testing

CHAPTER 6

CONCLUSION AND FUTURE SCOPE

6.1 Discussion

It took a lot of hard working, patients and persistency to build up this meal tracker application project according to the requirements our team. At beginning it looked hard for us, but after a raw sketch of design and analyzing the requirement, we found our work is simpler than before. We read a lot of developer apple documents to understand the iOS application life cycle. This is a single view application and it has database materials. So, database designing with proper relation looks easier when we finished up database design. From the raw perspective we designed user interface which is quite simple and easy to understand. After completing this user interface and adopting the auto layout we have started the backend logic of this meal tracker application. After completing the view controller development process, we have performed some testing with meal tracker test and it is pass few of the function and XCode gives warning about this application to be confident and finding bugs. It also helped us to ensure the quality of this project. Though the test was done by us but it was done with proper ethics.

6.2 Conclusion

Challenges doesn't make me weak but it will give me opportunity to do create better application and prove myself. By defending those obstacles and achieve something new will lead me the path of success. At the very beginning of this project, we only some basic of swift language. But complete this we understand the iOS application life cycle. By developing this project, we also learnt the need of development pre-plan.

6.3 Scope for the future development

Though this is not the final version of my meal tracker application, so I have some plan to improve meal tracker application to wrap some feature and gives voice control in this meal tracker application which will the physical disable people. It is making me happy when I am thinking about this application. In future development, I am planning to add IoT devices with real time services through big data analysis.

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APPENDIX

Appendix A Related Diagrams

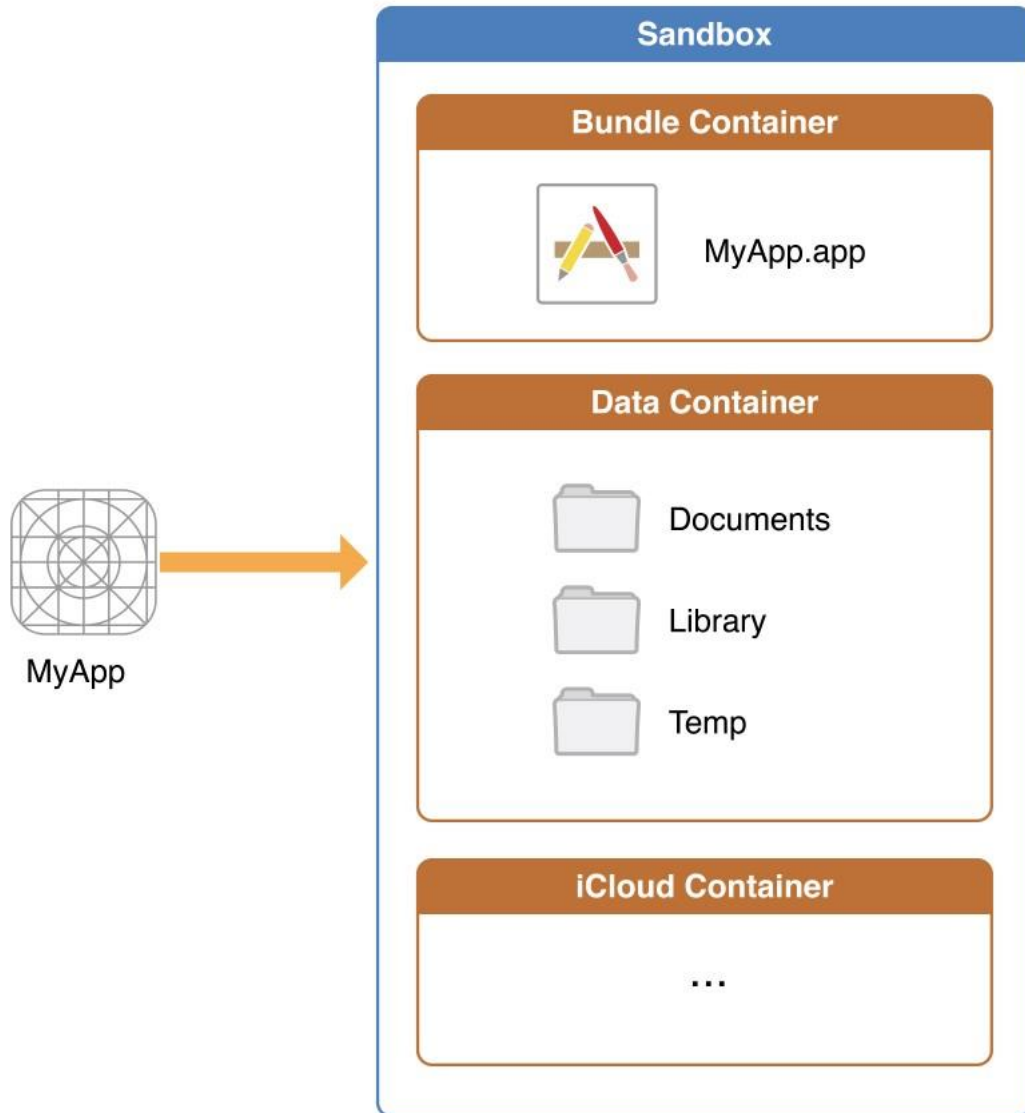


Figure A1: iOS app operates with its own sandbox directory.

Appendix B

Projection Reflection: From Summer-2019 semester I started my journey for make a iOS application called Meal Tracker. I followed the XCode project for improvement to implement and monitor my invention, and were able to reach my aim.

Name	Date Modified	Size	Kind
Meal Tracker	Today 12:22 AM	--	Folder
AppDelegate.swift	18 Sep, 2019 6:50 PM	2 KB	Swift Source
Assets.xcassets	29 Oct, 2019 8:08 PM	--	Xcode...Catalog
Base.lproj	Today 12:11 AM	--	Folder
GoogleService-Info.plist	Today 12:10 AM	1 KB	Property List
Info.plist	21 Sep, 2019 10:42 PM	2 KB	Property List
Meal.swift	27 Oct, 2019 11:19 PM	2 KB	Swift Source
MealTableViewCell.swift	18 Nov, 2019 5:54 AM	703 bytes	Swift Source
MealTableViewController.swift	15 Nov, 2019 3:20 PM	7 KB	Swift Source
MealViewController.swift	18 Nov, 2019 5:58 AM	5 KB	Swift Source
RatingControl.swift	16 Oct, 2019 2:31 PM	5 KB	Swift Source
Meal Tracker.xcodeproj	Today 12:22 AM	79 KB	Xcode Project
Meal TrackerTests	18 Oct, 2019 12:44 AM	--	Folder

Figure B2: Meal Tracker file delegate.

Assets.xcassets	29 Oct, 2019 8:08 PM	--	Xcode...Catalog
AppIcon.appiconset	18 Sep, 2019 6:50 PM	--	Folder
avocado.imageset	29 Oct, 2019 8:08 PM	--	Folder
Contents.json	29 Oct, 2019 8:08 PM	62 bytes	JSON Document
defaultPhoto.imageset	20 Sep, 2019 6:16 PM	--	Folder
emptyStar.imageset	24 Sep, 2019 9:56 PM	--	Folder
filledStar.imageset	24 Sep, 2019 9:56 PM	--	Folder
highlightedStar.imageset	24 Sep, 2019 9:56 PM	--	Folder
Image.imageset	18 Oct, 2019 1:55 AM	--	Folder
meal1.imageset	24 Sep, 2019 9:56 PM	--	Folder
meal2.imageset	18 Oct, 2019 1:56 AM	--	Folder
meal3.imageset	18 Oct, 2019 1:56 AM	--	Folder

Figure C3: Assets directory in Meal Tracker.

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