

MEAL TRACKER iOS APPLICATION

BY

MOHAMMAD SHAMS TABRIZ MIAH

ID: 152-15-5965

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

Supervised By

Professor Dr. Md. Ismail Jabiullah
Professor
Department of CSE
Daffodil International University



DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

DECEMBER 2019

APPROVAL

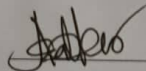
This Project titled “Meal Tracker iOS Application”, submitted by Mohammad Shams Tabriz Miah, ID 152-15-5965 to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering (B.Sc) and approved as to its style and contents. The presentation has been held on

BOARD OF EXAMINERS

Dr. Syed Akther Hossain
Professor and Head

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

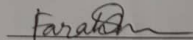
Chairman



Abdus Sattar
Assistant Professor

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

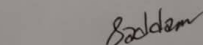
Internal Examiner



Farah Sharmin
Senior Lecturer

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

Internal Examiner



Dr. Md. Saddam Hossain
Assistant Professor

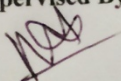
Department of Computer Science and Engineering
United International University

External Examiner

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.

Supervised By:



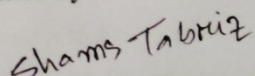
Professor Dr. Md. Ismail Jabiullah

Professor

Department of CSE

Daffodil International University

Submitted By:



Mohammad Shams Tabriz Miah

ID: 152-15-5965

Department of CSE

Daffodil International University

ACKNOWLEDGEMENT

First, we express our heartiest thanks and gratefulness to almighty Allah for His divine blessing makes us possible to complete the final year project/internship successfully.

We sincerely and heartily grateful to our advisor **Professor Dr. Md. Ismail Jabiullah, Professor**, Department of Computer Science & Engineering, Daffodil International University, Dhaka. Deep Knowledge & keen interest of our supervisor in the field of “*iOS Development*” to carry out this project. Her endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior drafts and correcting them at all stage have made it possible to complete this project.

We would also like to wish our deepest heartiest gratitude to **Prof. Dr. Syed Akhter Hossain, Head**, Department of CSE for his lot of deepest help to fulfill our final year project and also thanks to other faculty members and the employees of CSE department of Daffodil International University.

We would like to thank our entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

Finally, I must acknowledgement with due respect the constant support and patients of my parents.

ABSTRACT

The Main purpose of this Meal Tracker iOS Application project is to make the user more concern about their everyday's 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. Meal tracker 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 “Meal Tracker 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 brand-new 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.

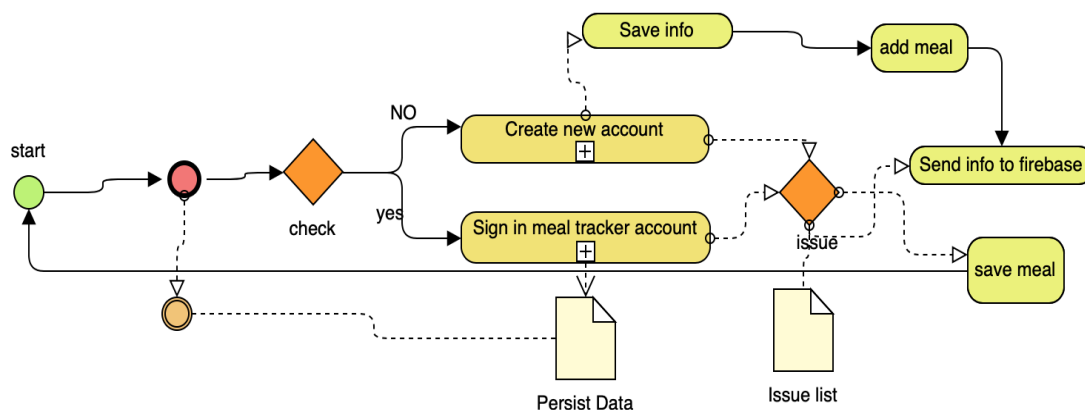


Figure 3.1: Business process modeling

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. |

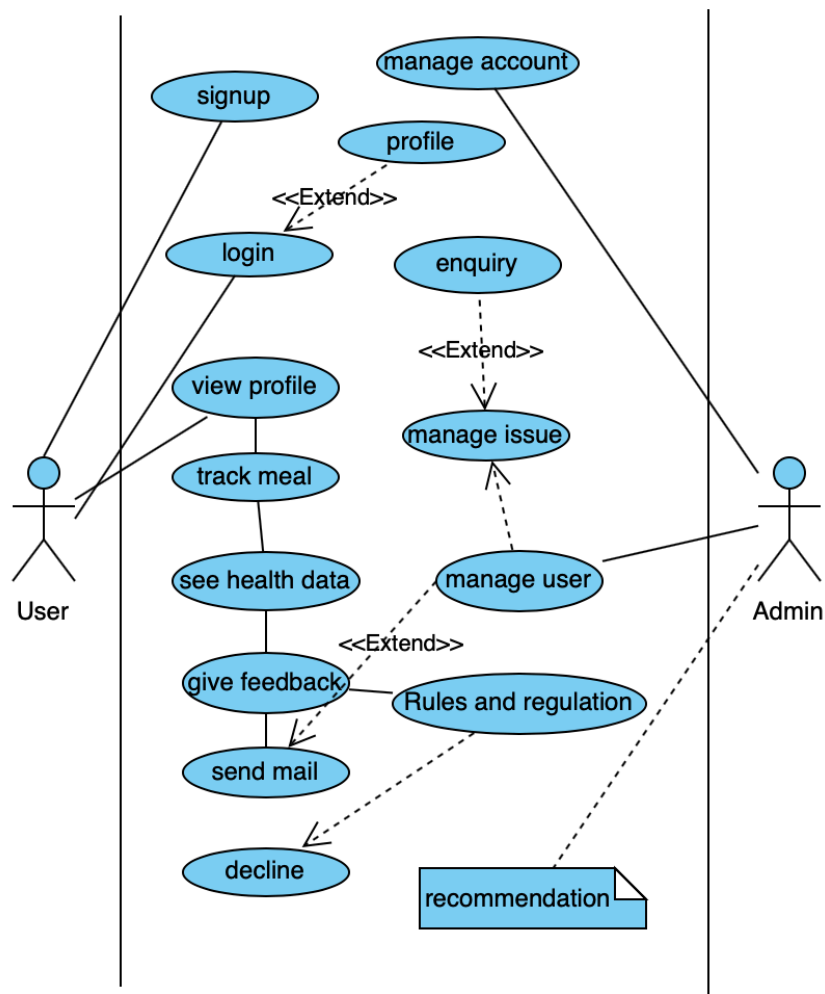


Figure 3.2: The full use case model of Meal Tracker application

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.

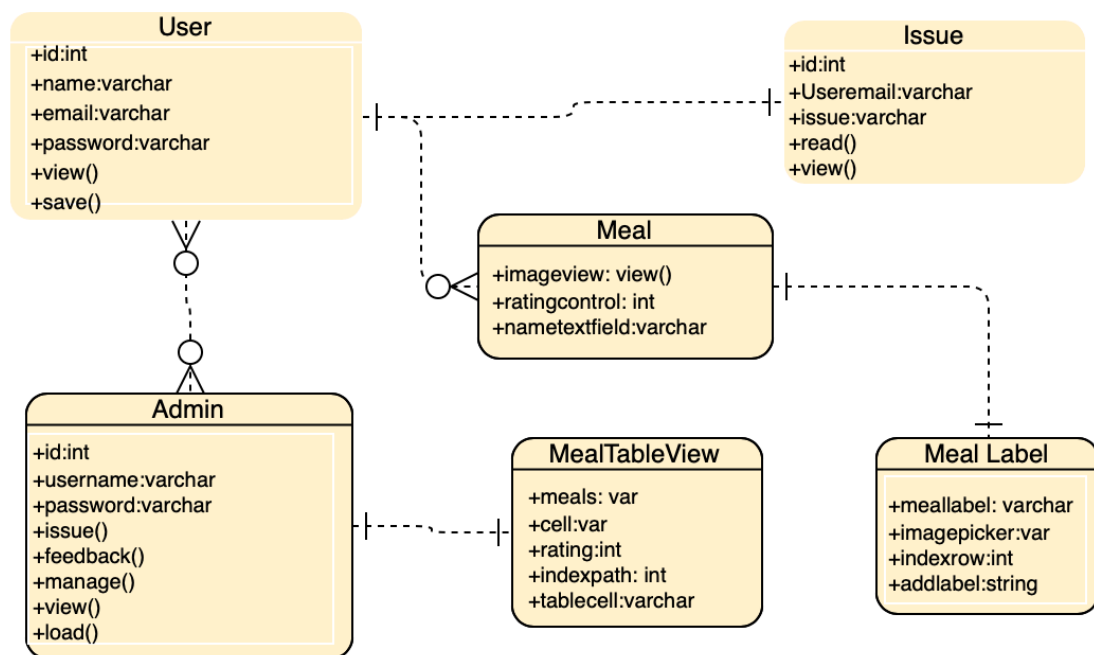


Figure 3.3: Logical Data Model

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:

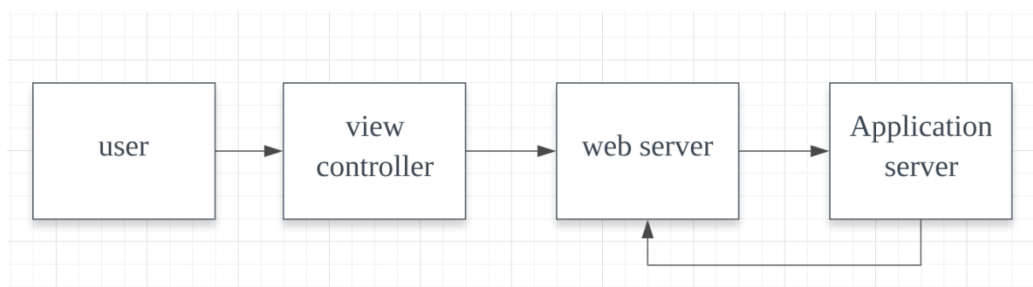


Figure 3.4: Design Requirement

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 meal tracker 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

Requirements 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.

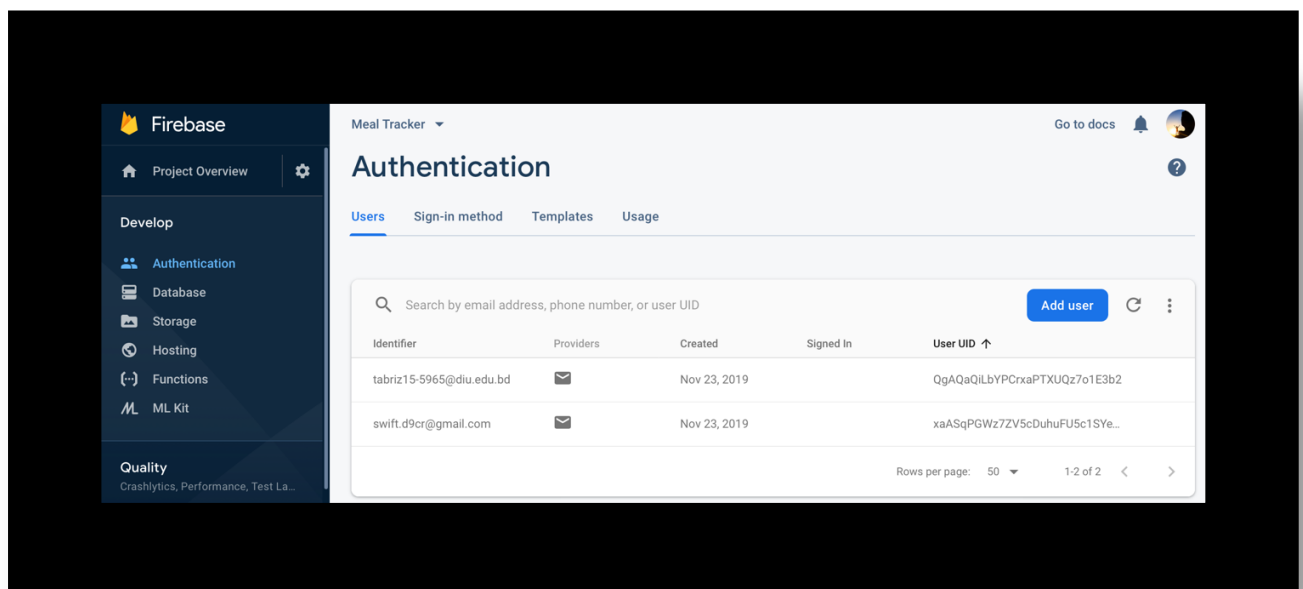


Figure 5.1: The database table of the meal tracker application

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

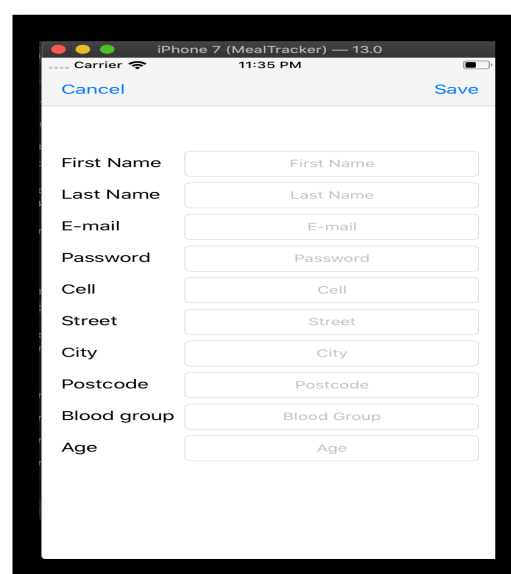


Figure 5.3: Registration



Figure 5.4: Log in Page

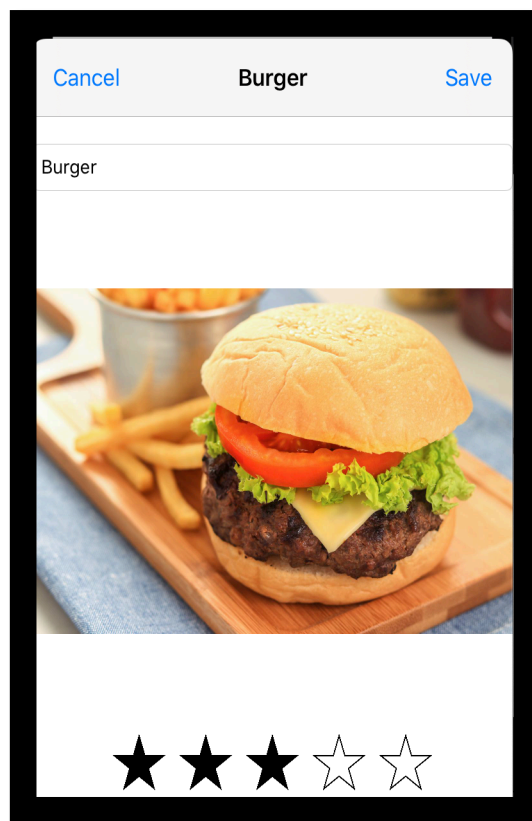


Figure 5.5: Image view

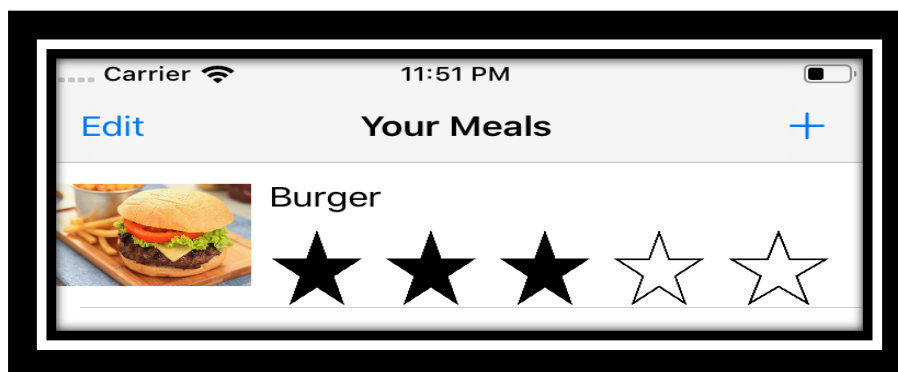


Figure 5.6: Meal Rating Control

5.3 Implementation of Interactions

Apple eco system 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.

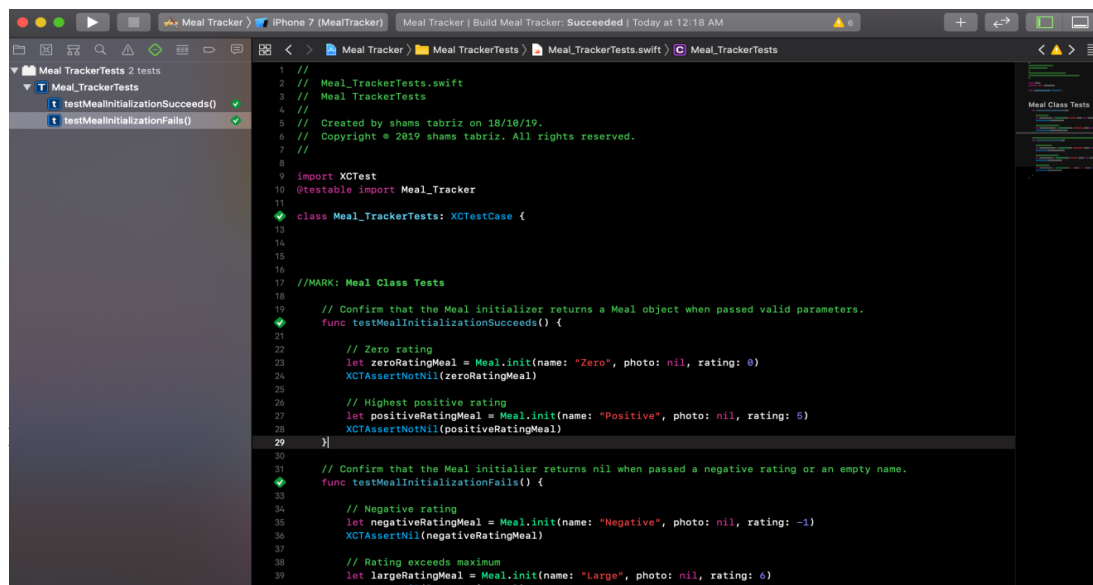


Figure 5.7: App Testing

5.5 Testing Strategy

A general purpose of testing process in XCode is testing strategy. Testing strategy includes testing IBDesignable 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 think about this application. In future development, I am planning to add IoT devices with real time services through big data analysis.

REFERENCES

- [1] Apple Inc, The Swift Programming Language, Swift 5.1 Edition, Apple Inc., Apple Inc 2014 June 2, pp. 500.
- [2] JD Gauchat, Introduction to Swift, Swift 4.2 Edition, Mink Books, 2018 August 15, pp. 810
- [3] Apple Developer, available at<<[<<https://developer.apple.com>>](https://developer.apple.com)>>, last accessed on 23-11-2019 at 3.00 AM
- [4] CodeWithChris – The Leader in iOS Foundations Training, available at <<[<<https://codewithchris>>](https://codewithchris)>>, last accessed on 15-10-2019 at 2:30 AM
- [5] Learn iOS App Development, available at << last accessed on 21-10-2019 at 9:23 PM.
<https://learnappmaking.com/learn-ios-development-how-to/>
- [6] Jesse Feiler, iOS App Development for Dummies, 1st Edition, John Wiley & Sons, Inc, 2014, pp.576
- [7] Diagrams, available at << <https://www.smartdraw.com/uml-diagram/>>>, last accessed on 10-11-2019 at 8:30 PM.
- [8] From Wikipedia, available at <<[<<https://en.wikipedia.org/wiki/Business_process_modeling>>](https://en.wikipedia.org/wiki/Business_process_modeling)>> last accessed on 20 October, 2019 at 12.30 AM.
- [9] Learn about Database Server and Administration Tools, available at<<
[<<https://console.firebase.google.com>>](https://console.firebase.google.com)>>, last accessed on 22-11-2019 at 1:30 AM.
- [10] The Configuration of swift Package, available at
<<[<<https://developer.apple.com/documentation/swift_packages/package>>](https://developer.apple.com/documentation/swift_packages/package)>>, last accessed on 21-10-2019 at 10:30 PM.

APPENDIX

Appendix A

Related Diagrams

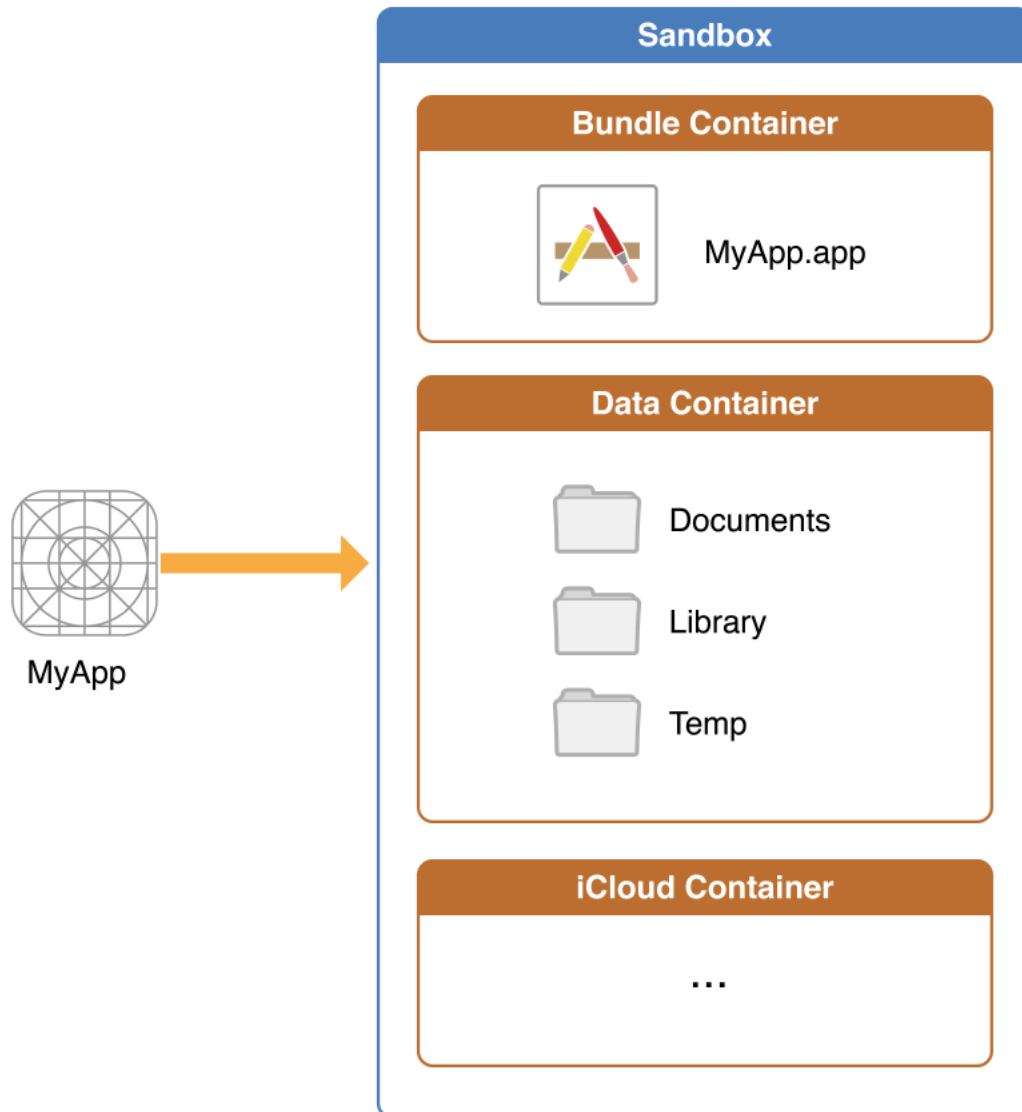


Figure A1: iOS app operates with its own sandbox directory.

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.

Turnitin Originality Report

Processed on: 02-Nov-2019 16:37 +06
 ID: 1205475210
 Word Count: 4185
 Submitted: 1

Similarity Index

20%

Similarity by Source

| | |
|-------------------|-----|
| Internet Sources: | 13% |
| Publications: | 2% |
| Student Papers: | 18% |

Meal Tracker By Shams Tabriz

3% match (student papers from 05-Apr-2018)

[Submitted to Daffodil International University on 2018-04-05](#)

3% match (Internet from 19-Oct-2019)

<https://www.impingesolutions.com/advantages-of-ios-mobile-app-development/>

2% match (Internet from 11-Sep-2017)

<http://www.ijarcsms.com/docs/paper/volume3/issue10/V3I10-0018.pdf>

1% match (Internet from 25-Aug-2019)

http://share.its.ac.id/blog/index.php?blogpage=15&comment_area=format_blog&comment_component=blog&comment_context=88422&comment_itemid=997&nonjscomment

1% match (Internet from 24-Sep-2019)

<https://blog.testlodge.com/what-is-manual-testing/>

1% match (Internet from 30-Aug-2019)

<https://www.singlemindconsulting.com/blog/white-box-vs-black-box/>

1% match (Internet from 03-Dec-2018)

<https://www.softwaretestingclass.com/what-is-automation-testing/>

1% match (Internet from 21-Aug-2019)

<https://www.toolsqa.com/software-testing/boundary-value-analysis/>

1% match (student papers from 04-Apr-2018)

[Submitted to Daffodil International University on 2018-04-04](#)

1% match (student papers from 20-Oct-2018)

[Submitted to Trident University International on 2018-10-20](#)

< 1% match (student papers from 05-Apr-2018)

[Submitted to Daffodil International University on 2018-04-05](#)

< 1% match (student papers from 19-Oct-2011)

[Submitted to Western Governors University on 2011-10-19](#)

< 1% match (student papers from 10-Jan-2013)

[Submitted to University of Greenwich on 2013-01-10](#)

< 1% match (student papers from 05-Apr-2018)

[Submitted to Daffodil International University on 2018-04-05](#)

< 1% match (student papers from 21-Jan-2014)

[Submitted to University of Greenwich on 2014-01-21](#)

< 1% match (student papers from 18-Dec-2013)

[Submitted to University of Greenwich on 2013-12-18](#)

< 1% match (student papers from 19-Mar-2019)

[Submitted to University of London External System on 2019-03-19](#)

< 1% match (student papers from 10-Dec-2012)

[Submitted to University of Huddersfield on 2012-12-10](#)

< 1% match (Internet from 14-Nov-2017)

https://publications.theseus.fi/bitstream/handle/10024/133727/Tuladhar_Palisa.pdf?isAllowed=y&sequence=1

< 1% match (Internet from 06-May-2014)

<http://207.67.83.164/software/2013/04/software-quality-second-quarter-2013.pdf>

< 1% match (student papers from 29-Apr-2013)

[Submitted to University of Huddersfield on 2013-04-29](#)

< 1% match (student papers from 09-Jun-2015)

[Submitted to University of Greenwich on 2015-06-09](#)

| |
|---|
| < 1% match (student papers from 09-Apr-2018) Submitted to Daffodil International University on 2018-04-09 |
| < 1% match (student papers from 30-May-2018) Submitted to Gusto International College on 2018-05-30 |
| < 1% match (student papers from 07-Oct-2019) Submitted to University of Glamorgan on 2019-10-07 |
| < 1% match (Internet from 07-Mar-2016) http://ir.canterbury.ac.nz/bitstream/handle/10092/8608/thesis_fulltext.pdf?sequence=1 |
| < 1% match (student papers from 07-Apr-2018) Submitted to Daffodil International University on 2018-04-07 |
| < 1% match (student papers from 30-Oct-2019) Submitted to Daffodil International University on 2019-10-30 |
| < 1% match (student papers from 27-Nov-2014) Submitted to Chester College of Higher Education on 2014-11-27 |
| < 1% match (Internet from 23-Feb-2019) http://swethawebtestingnotes.blogspot.com/search?max-results=32&updated-max=2013-01-01T00%3A00%3A00-08%3A00&updated-min=2012-01-01T00%3A00%3A00-08%3A00 |
| < 1% match (Internet from 31-Aug-2010) http://version2.fateback.com/1/archive/Jul_2002.html |
| < 1% match (student papers from 07-Apr-2018) Submitted to Daffodil International University on 2018-04-07 |
| < 1% match (student papers from 11-Jun-2019) Submitted to Muscat College on 2019-06-11 |
| < 1% match (student papers from 16-Feb-2014) Submitted to Coastal Carolina University on 2014-02-16 |
| <p>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. Stats shows that, the highest percentage of traffic is received from 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 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. 1.3 Objectives The main objectives to create this application is the real time features and be healthy. It count our everyday meal and notify when we consume too much calories .To much calorie is bad for health, it is gather 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. The main features are: a. Login b. Log out c. Add Meal d. Update/delete Meal e. Rate Meal f. Count Meal Admin: a. Manage User c. Manage Database d. Manage Update e. Manage Enquiries. 1.4 Expected Outcome We look forward that the outcome of our meal tracker application project will give user a healthy and happy life. We minimize our project work with little fragment that, it is going in the proper way of development. So, we prospect that the result will be satisfactory and user will get a simple and super handy meal tracker application. User can select multiple option to keep track his own way out. 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 we provide a sign up option for new meal tracker user. 1.5 Report Layout A full overview of our application and related work and terminologies are given sequentially. Recently we made an experiment for this development and find what is more scope to develop this existing project. In chapter 2 we describe the challenges and facing problem which is make difficult for us. Another chapter 3 we describe the three stage of background. We also describe the requirement specification and try to disclose users demand. In, chapter 4 and 5 we disclose how we solve the problem and what we use to implement the project. Finally, in chapter 6 we remark some concluding and suggestions for future works. CHAPTER 2 BACKGROUND 2.1 Introduction The key aspects of this meal tracker application is 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 help a person to live a better life. Many of the developer develop iOS application,</p> |

that is paid. But this way user can use a simple and effective meal tracker application. Meal tracker application tries to built 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 consume food and travel. But there is no unified platform for 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 "Meal Tracker 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 fulfill the user requirement on specific part. On the other hand our application will be better to use with best user experience. We have try 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 brand new 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. **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 works 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](#) [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 works 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: • User • Admin Figure 3.2: Use case modeling and description Table 3 [.3: Use case description](#) of User (a) [Use case number 1 Use case](#) Manage account [Goal User](#) can sign up & log in into the meal tracker application to view profile, and see track meal history. Success end condition User successfully sign up & log in into the meal tracker application, view profile, add meal as an image view, set label, and successfully records the meal. [Failed end condition User failed to sign up. Primary actor User Secondary Actor](#) Admin Main Description / Step Action Success Scenario 1.1 User start using the application. [1.2 Click on](#) sign up [1.3 Enter](#) first [name](#), last [name, email and password](#) 1. 4 [Click](#) on create account & account created 2.1 Click on sign in [2.2 Enter](#) email and [password](#) [2.3 Click sign in](#) and log in into the meal application 3.1 Click on view profile 3.2 Profile viewed 4.1 Click on meal records 4.2 Appear the meal records in table view cell 5.1 Add more meal for records 5.2 Data save on database and show across the devices 6.1 Click meal history 6.2 View the meal in real time 7.1 Click on suggestion and feed back 7.2 Notification send to admin to take action Alternative Flows User can't sign up for the system or can't view their profile or can't book. [Table 3.4: Use case description of Admin](#) (b) [Use case number 2 Use case](#) Manage User [Goal Admin](#) can log in into the meal tracker application, view user profile and approve the feedback. Success end Admin successfully log in into the meal tracker application, view condition user profile and approve the feedback. Failed end condition Admin failed log in into the meal tracker application, view user profile but can not response the feedback. Primary actor Admin Description / Main Success Scenario Step Action 1.1 Admin look up the whole system [1.2 Click on](#) admin login [1.3 Enter user name and password](#) [1.4 Click on](#) sign in 2.1 Log in to the meal tracker application 2.2 Click on user details 2.3 View the user details 3.1 Click manage account 4.1 View meal history 4.2 Approve/cancel the feedback 5.1 Feedback successfully approved/canceled Alternative Flows User can not log in into the meal tracker application Table 3.5: [Use case description of Manage Activity](#) (c) [Use case number 3 Use case](#) Manage Activity. [Goal Admin](#) can create interesting feature to move forward, manage enquires, manage trouble shooting, manage issue, feedback and recommendation. Success end Admin successfully manage enquires, manage trouble shooting, condition manage issues and also recommendation balance diet. Failed end condition Primary actor Admin Description / Step Action Main Success 1.1 Open the application Scenario 1.2 Log in as admin 1.3 Click manage activity 1.4 Insert additional information, see feedback and then create 1.5 Create feedback message successfully 2.1 Click on manage feedback data 2.2 View details 2.3 Insert required features & update new version 2.4 New updated successfully inserted to the cell 3.1 Click on recommendation 3.2 See the upcoming recommendation 3.3 Confirmation send to the user 3.4 Send proper notification 3.5 Cancel update history send to the user 4.1 Click on manage enquires and stop sending notification 4.2 Read the enquires 5.1 Click on manage issues and then view 5.2 View the issues and trouble shooting need. Alternative User cannot sign up into the meal tracker application or can't view Flows their profile or cannot add their meal. [3.4 Logical Data Model Figure 3. 6: Logical Data Model](#) To develop iOS single view application logical data model is needed to manage the application view controller. There are three view controller 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. 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

3.7: [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 a iOS based and run in iPhone. We use worlds most advanced programming language swift and version 5, to build this meal tracker application. ? 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 meal tracker 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 improve 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, i.e., human resources (HR), always a vital part of a software development project to achieve goals for the future. 4.4 Implementation Requirements Requirements 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 SQLite workbench tools for database data handling. Figure 5.1: The database table of the meal tracker [application 5.2 Implementation of front-end design](#) 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. Figure 5.2: Screenshot of the meal tracker Home Page Registration New meal tracker user needs to register with valid email and password to use this application. Figure 5.3: Screenshot of the meal tracker Register Page Log In Registered meal tracker user can log in with their valid mail and password. Figure 5.4: Screenshot of the Log in Page Input Meal This meal view controller give a chance to the user to input their meal and save it. Figure 5.5: Screenshot of the image view Meal Table View In this cell user add their meal with plus sign and edit it in edit button. Figure 5.6: Screenshot of the Meal List 5.3Implementation of Interactions Apple eco system 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 developer trying to integrate new technologies of meal 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. 5.5 Testing Strategy A general purpose of testing process in Xcode is testing strategy. Testing strategy includes testing IBDesignable 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. 5.4.3 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 [.4.4 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.](#) 5.4.5 Equivalent Class Partition [Equivalence partitioning \(EP\) is a specification-based or black-box technique. It can be applied at any level of testing and is often a good technique to use first. In equivalence- partitioning technique there need to test only one condition from each partition. This is because assuming that all the conditions in one partition will be treated in the same way by the software. If one condition in a partition works, assume all of the conditions in that partition will work, and so there is little point in testing any of these others.](#) 5.4.6 Boundary Value Analysis [In software testing, the boundary value analysis is a black box design technique based on test cases. This technique is applied to see if there are any bugs at the boundary of the input domain.](#) 5.4.7 [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 and Conclusion 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 perform 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. 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. 6.2 Scope for the further development Though this is not the final version of my meal tracker application, so we have some plan to improve and add some feature and gives voice control in this meal tracker application which will the physical disable people. It is make me happy when i think about this application. In our future development, we are planning to add IoT devices with real time services through big data analysis. REFERENCES [1] "Documentation", [available at: <<https://developer.apple.com/>>](https://developer.apple.com/), [online] (Last accessed on 1st Nov, 2019) [2] "Java-script", available at: (Last accessed on 14th Oct, 2019) <>, [online] [3] "UML/Use Case", available at: (Last accessed on 7th July, 2019) <>, [online] [4] "Tutorial", [available at: <<https://www.tutorialspoint.com/>>](https://www.tutorialspoint.com/), [online] (Last accessed on 7th October, 2019) [5] "iOS Developer", Books for iOSNotesForProfessionals (Last accessed on 7th October, 2019) APPENDICES Appendix A: Project Reflection Figure R1: View Controller Figure R2: Main Storyboard Figure R3: Project Assets Category [Daffodil International University 1](#) [Daffodil International University 2](#) [Daffodil International University 3](#) [Daffodil International University 4](#) [Daffodil International University 5](#) [Daffodil International University 6](#) [Daffodil International University 7](#) [Daffodil International University 8](#) [Daffodil International University 9](#) [Daffodil International University 10](#) [Daffodil International University 11](#) [Daffodil International University 12](#) [Daffodil International University 13](#) [Daffodil International University 14](#) [Daffodil International University 15](#) [Daffodil International University 16](#) [Daffodil International University 17](#) [Daffodil International University 18](#) [Daffodil International University 19](#) [Daffodil International University 20](#) [Daffodil International University 21](#) [Daffodil International University 22](#) [Daffodil International University 23](#) [Daffodil International University 24](#) [Daffodil International University 25](#) [Daffodil International University 26](#) [Daffodil International University 27](#) [Daffodil International University 28](#)