

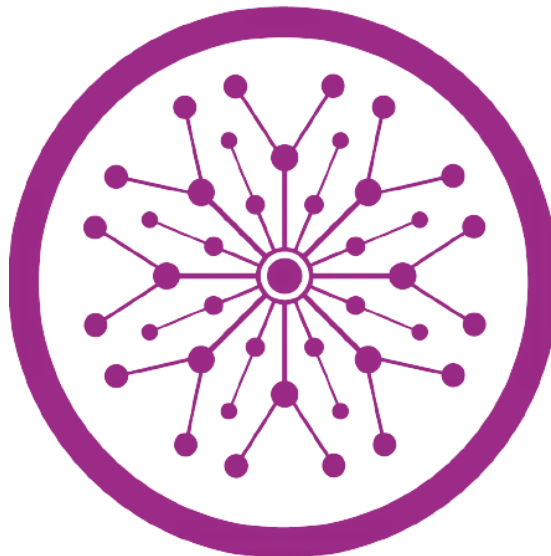
“KHAJAONGA mobile application to reduce the food deficiency in kids.”

Final Year Project

Session 2017-2021

A project submitted in partial fulfillment of the degree of

BS in Computer Science



Department of Computer Science

Faculty of Computer Science & Information Technology

The Superior University, Lahore

Fall 2021

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FYP ID	FYP-BCSM-S21-021			
Project Group Members				
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*The candidates confirm that the work submitted is their own and appropriate credit has been given where reference has been made to work of others

Plagiarism Free Certificate

This is to certify that, I **FAIZ UR REHMAN** S/D of **Muhammad Saleem**, group leader of FYP under registration no **BCSM-F14-187** at **Computer Science Department**, The Superior University, Lahore. I declare that my FYP report is checked by my supervisor.

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Designation: ASSISTANT PROFESSOR

Designation: Assistant Professor

Signature: _____

Signature: _____

Head of the Department (HOD): DR. IRFAN UD DIN

Signature: _____

Project Report

KHAJAONGA mobile application to reduce the food deficiency in kids

Change Record

Author(s)	Version	Date	Notes	Supervisor's Signature
	1.0		<Original Draft>	
			<Changes Based on Feedback from Supervisor>	
			<Changes Based on Feedback From Faculty>	
			<Added Project Plan>	
			<Changes Based on Feedback from Supervisor>	

APPROVAL

PROJECT SUPERVISOR

Comments: _____

Name: Mr. Fawad Naseem

Date: _____ Signature: _____

PROJECT MANAGER

Comments: _____

Date: _____ Signature: _____

HEAD OF THE DEPARTMENT

Comments: _____

Date: _____ Signature: _____

Dedication

This work is dedicated to our beloved parents who support us to get quality education in quality institute.

A special feeling of gratitude to our team and superior family, we will always appreciate all they have done.

Acknowledgements

I've taken endeavors in this project report. Nevertheless, it would not have been imaginable without the benevolent support and help of numerous people and associations for supporting us all through our Degree. We wish to communicate our true gratitude to our Supervisor, **Mr. Fawad Naseem** for his patient direction, significant ideas, supportive data, enthusiastic encouragement and useful critiques of this project. Without his guidance and grim help, this project would not have been possible.

We also wish to express our sincere thanks to Superior University for accepting us into the bachelor program and feeding us quality education throughout our degree

Executive Summary

We are working on a mobile application-based system to reduce food deficiency in kids with the help of their mothers by providing a full-fledged mobile application having all the necessary content to guide those mothers about how they can motivate their kids to take healthy food and nutrients essential for them and improve their health. Convincing kids to take care of their health isn't an easy task to do. But, in the era of modern technology and equipment's this isn't difficult anymore. Now a days, kids like to spend their most of the time in front of television screens or mobile screens and they tend to like more and more visual contents. So, we are passionate about improving the health of kids through technology from an intuitive user experience with a modern interface.

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Chapter 1

Introduction

Chapter 1: Introduction

1.1. Background

Helping mothers to reduce the food deficiency in their kids. We are passionate about improving the health of children through technology from an intuitive user experience with a modern interface.

1.2. Motivations and Challenges

DIGITAL RECORDS

There are a lot of applications which helps people to improve their diet by providing them a proper diet plan. But there aren't many applications specifically for food deficiency in kids. That's why, we are going to introduce this app.

USER-FRIENDLY INTERFACE

It will be a difficult task to provide such an interface which would be easy to use for mothers and kids.

1.3. Goals and Objectives

- The major goal of our system is to help mothers to reduce food deficiency in their children.
- Our Secondary goal is to make it user-friendly so even the kids would be able to interact with it easily.

1.4. Literature Review/Existing Solutions

There are many other applications available on the internet for the diet plan of kids and for different type of exercises to improve their health. But there isn't any application available in the market which can guide mothers that how to apply that diet plan in the daily routine of their kids, and motivate them using a visual content to take essential nutrient and healthy food.

1.5. Gap Analysis

Now we discuss the gap between modern environment and our software system. Mothers didn't focus on fruits instead they are focusing on fast foods and fries, lays etc. So, there's a big gap between the digital environment and the mother's real-life environment. For covering this gap, we are designing our application that mentioned earlier in the document.

1.6. Proposed Solution

We are going to introduce a mobile application to fill this gap that we discussed above by providing a very user-friendly interface which would include both textual and visual content in the form of video animations. As we said that it will be a very user-friendly interface so it would be easy for mothers to interact and scroll through the content and the part of video animations would be very beneficial for children as kids tends to like visual content.

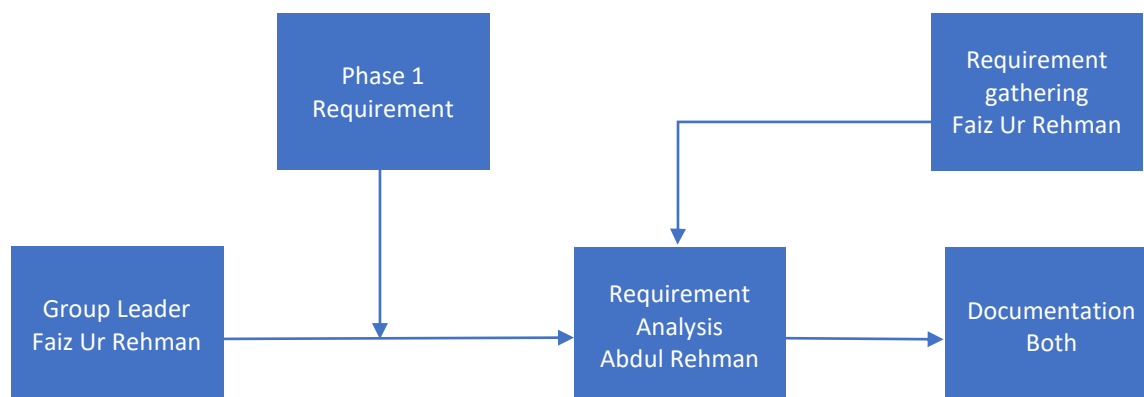
1.7. Project Plan

As given below we have divided our work in stage that are given below.

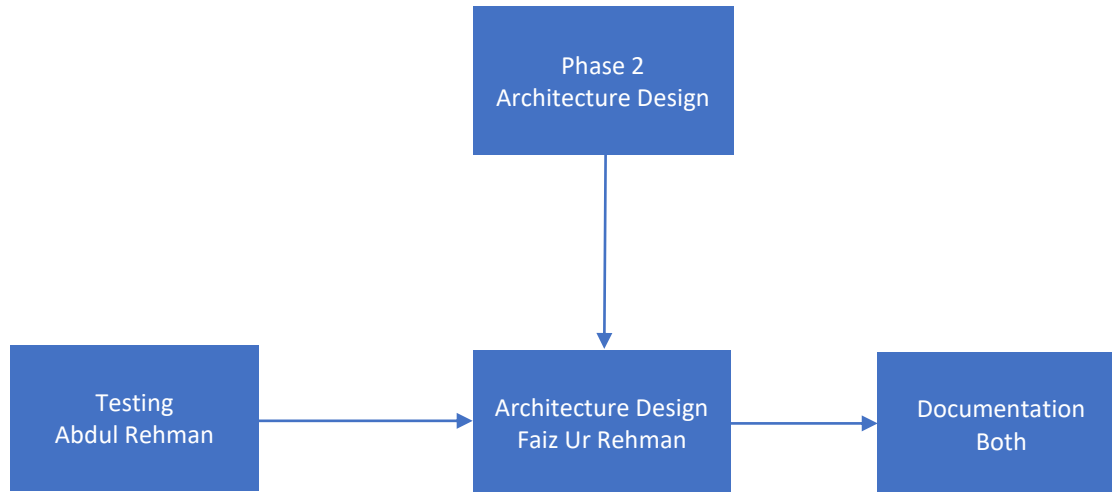
1.7.1. Work Breakdown Structure

Work breakdown structure (or WBS) is a hierarchical table structure that outlines your project and breaks it down into smaller, more manageable portions. Where you can allocates task by making deliverable, and can even go further to divide individual tasks.

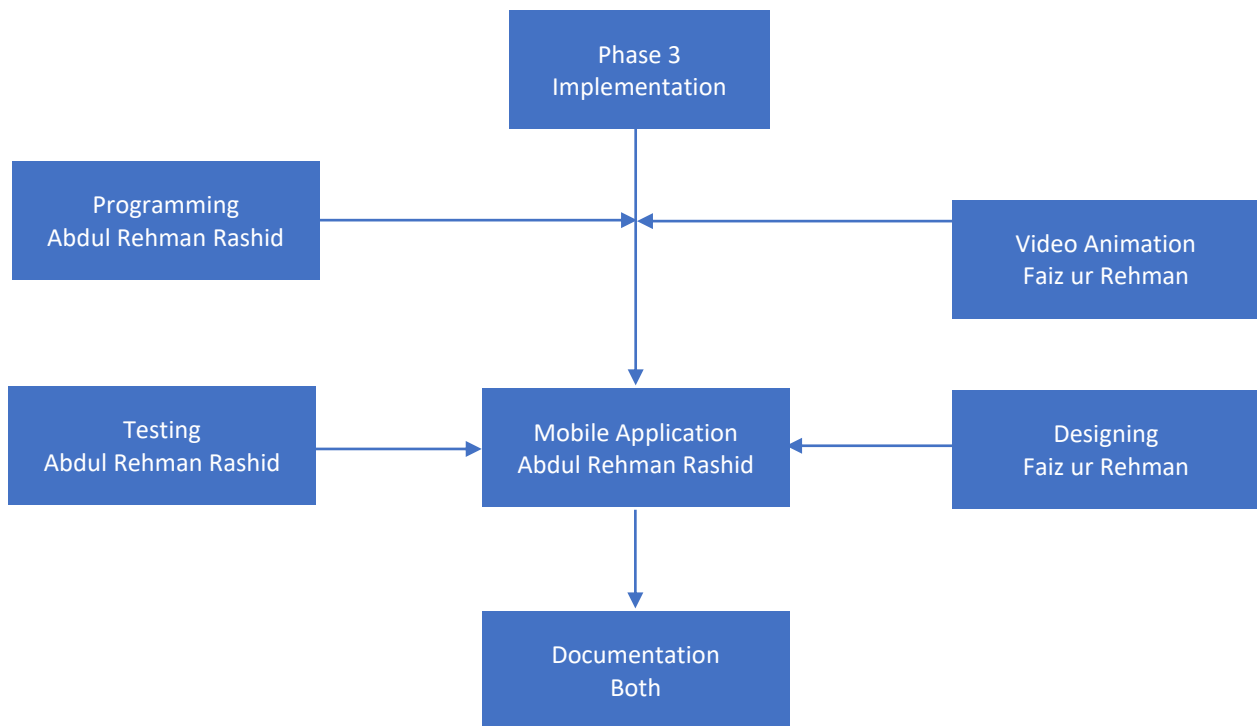
Phase 1:



Phase 2:



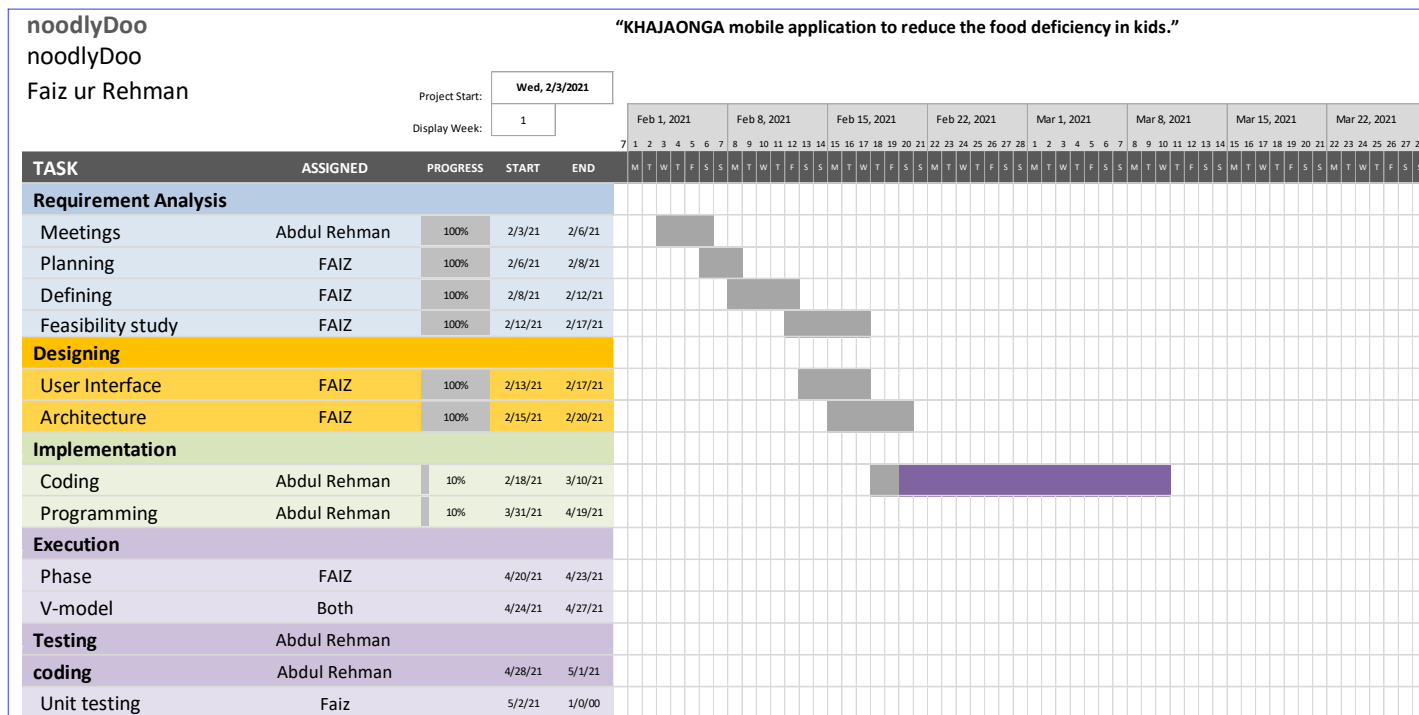
Phase 3:



1.7.2. Roles & Responsibility Matrix

WBS #	WBS Deliverable	Activity #	Activity to Complete the Deliverable	Duration (# of Days)	Responsible Team Member(s) & Role(s)
1	Requirement	1	90 days	5	Faiz/Abdul Rehman
2	Designing	3	20 days	4	Faiz
3	Implementation	2	40 day	3	Faiz/Abdul Rehman
4	Execution	4	20day	2	Faiz/Abdul Rehman
5	Testing	5	7 day	2	Faiz/Abdul Rehman

1.7.1. Gantt Chart



1.8. Report Outline

We are using an agile model, because we are using android development.

Chapter 2

Software Requirement Specifications

Chapter 2: Software Requirement Specifications

2.1. Introduction

2.1.1 Purpose

The main objective of this document is to report the external and internal behavior of the application. In this document, every sort of requirement will be concluded. It illuminates the functional and non-functional requirements, design requirements and also delivers the other detail which will clear the whole idea about the project.

2.1.2 Document Conventions

Document contains headings and paragraphs.

First Heading: is bold, Font is Calibri and Size is 16.

Second Heading: is bold, Font is Calibri and Size is 14.

Paragraph: Font is Calibri, Size is 12 and line spacing is 1.5.

DB: Database

ERD: Entity Relationship Diagram

SRS: Software Requirement Specification

API's: Application programming interface

2.1.3 Intended Audience and Reading Suggestions

In the first section purpose of the document is well-defined where every reader can easily understand the main purpose of this document. In the second section, we defined the product scope where administrators can get the idea of the application. In the overall description operator and user can clear the whole idea of the application. Developers can recognize the requirements of the application. Designers can understand the design requirements in the user interface requirement sections. The tester can prepare test cases for testing the features of the application. User can validate their functional requirements.

2.1.4 Project Scope

Make healthy foods fun, for example by animated cartoon videos with interesting and real life stories.

This project is very useful for parents that will provide the services to their devices through the mobile application. In this application all the benefits of fruits are in written form and also an encouraging video for their children.

2.1.5 References

- <https://www.healthline.com/nutrition/best-meal-planning-apps>
- <https://www.mealime.com/?correlationId=eedea795-91df-4488-9021-e747b241ff33>
- <https://www.youtube.com/c/HDsheet>
- <https://www.vyond.com/>

2.2 Overall Description

2.2.1 Product Perspective

This product belongs to both Parents and kids. There are many kinds of software products in this field like AUSTRALIN GOOD FOOD GUIDE, BABY FRIT PUZZLE etc. They are Game base or written contents base applications. Our Application is a large system that includes both written content and animated videos content.

2.2.2 Product Functions

The following list and description of the main feature and functionality of online mobile application is user can read and download benefits of food which they like the most to eat in pdf form into their mobile devices and user can watch visual content also.

Select Food Type

User can select food category like fruits, vegetables etc. According to their requirement.

Add operator Category

Admin can add or delete workers categories dynamically and that categories show in worker's application.

User Report

User can report or give review regarding video etc.

Send Request

All users show to admin.

Profile view and customization

Update and modify operator detail and can profile customization.

2.2.3 User Classes and Characteristics

We defined different user classes in the below table. Some parents are not highly qualified and don't have knowledge for interacting with this kind of mobile application. The operator should know how to communicate on the internet.

Classes	Functionality Privilege	Technical/Non-Technical
Application Owner	Reports Generation	Technical or Non-Technical
Mobile operator	Request shifting, View Schedules	Technical or Non-Technical

2.2.4 Operating Environment

Our client is currently using Mobiles with 4GB RAM, 8 GB Rom and Google Chrome Application is also installed in the system where our application will run.

2.2.5 Design and Implementation Constraints

- Manage the location data may be it will create memory storage limitation trouble for us.
- The user interface should be very simple which can be understandable for a full non-technical person.
- We have to deal with Room Database.
- MVC approach should be followed in programming which will help for efficient memory management.
- Data should be encrypted when it comes from the user to the databases.
- The customer should be verified with its email.

2.2.6 User Documentation

An online help will be available when using the system. This online help will guide the user, how they can interact with the application, through each aspect of the application.

2.3 External Interface Requirements

2.3.1 User Interfaces

The UI is used to make the user's interaction as simple, intuitive, and efficient as possible.

An effective UI draws on interface elements that users have become familiar with because they maximize task completion, efficiency, and satisfaction.

2.3.2 Software Interfaces

Software Used	Description
Operating System	We have chosen Android Operating System for the best support and its friendliness.
Database	For storing database we choose Room Database .
Language	Kotlin Co-routines
Tools	Android Studio, Adobe illustrator, Vyond

2.4 System Features

Functional Requirement 1

Identifier	FR-001
Title	System Registration
Requirement	System must be Register the Admin
Rational	To make login with system
Restriction and risk	Valid inputs
Dependencies	NULL
Priority	High

Functional Requirement 2

Identifier	FR-002
Title	System Login
Requirement	System must be login the operator
Rational	To interact with system
Restriction and risk	Valid user name and password

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Dependencies	FR-001
Priority	High

Functional Requirement 3

Identifier	FR-003
Title	Add Categories
Requirement	System must be Add new Categories
Rational	To Add new categories
Restriction and risk	Valid inputs
Dependencies	FR-002
Priority	High

Functional Requirement 4

Identifier	FR-004
Title	Update categories
Requirement	System must be Update categories record
Rational	To Update categories Record
Restriction and risk	Valid inputs
Dependencies	FR-003
Priority	High

Functional Requirement 5

Identifier	FR-005
Title	Search by food categories
Requirement	System must be Search with category name
Rational	To Search categories
Restriction and risk	Valid inputs
Dependencies	FR-003
Priority	High

Functional Requirement 6

Identifier	FR-006
Title	Delete categories
Requirement	System must be Delete categories
Rational	To Update Delete Record
Restriction and risk	Valid inputs
Dependencies	FR-003
Priority	High

Functional Requirement 7

Identifier	FR-007
Title	Operators Record
Requirement	System must Record operators data
Rational	To record the operators data

Restriction and risk	Valid inputs
Dependencies	FR-003
Priority	High

Functional Requirement 8

Identifier	FR-008
Title	Add operators
Requirement	System must be Add operators
Rational	To Add new operators
Restriction and risk	Valid inputs.
Dependencies	FR-002
Priority	High

Functional Requirement 9

Identifier	FR-009
Title	Update operators
Requirement	System must be Update operator Record
Rational	To Update operator Record
Restriction and risk	Valid inputs
Dependencies	FR-007
Priority	High

Functional Requirement 10

Identifier	FR-010
Title	Delete operators
Requirement	System must be Delete operator Record
Rational	To Delete operator Record
Restriction and risk	Valid inputs
Dependencies	FR-007
Priority	High

Functional Requirement 11

Identifier	FR-011
Title	Search operator
Requirement	System must be Search Operator Record
Rational	To Search Operator Record
Restriction and risk	Valid inputs
Dependencies	FR-007
Priority	High

Functional Requirement 12

Identifier	FR-012
Title	Generate Report
Requirement	System must be Generate Report

Rational	To Generate Report
Restriction and risk	Valid inputs.
Dependencies	FR-007
Priority	High

Functional Requirement 13

Identifier	FR-013
Title	View operator report
Requirement	System must be generate operator report
Rational	To generate operator report
Restriction and risk	Valid inputs.
Dependencies	FR-011
Priority	High

2.4.1 System Feature 1

<Don't really say "System Feature 1." State the feature name in just a few words.>

2.4.1.1 Description and Priority

All operator must:

2.4.1.2 Stimulus/Response Sequences

- **Login**

Operator or admin must login with their specific email and password to access their account.

Priority 8

Step#	Action	Software Reaction
1.	Enter email and password	Account logged in

REQ-1: Email must be entered in correct format

- **Forgot Password**

Users have the optional feature of forgetting password in case of loss.

Priority: 5

Stimulus/Response Sequences

Step#	Action	Software Reaction
	1. Enter Email	Reset password link send to your Email

- **Functional Requirements**

Alternate Scenarios: If it doesn't match
If the email is invalid then the "Email does not exist" message is displayed.

REQ-1: User must enter the Email to whom he has created the account.

- **Search Categories**

Users have the feature to search Categories

Priority: 5

- **Stimulus/Response Sequences**

Step#	Action	Software Reaction
	1. Enter name	Show categories list

- **Functional Requirements**

Alternate Scenarios: If invalid name
If the name is invalid then “no results to show” message is displayed.

Other Nonfunctional Requirements

2.4.2 Performance Requirements

Performance requirements depend on response time, workload and scalability.

Response Time:

0.1 second is required to load the pages and perform the processes. If we implement this response time it will be effective feedback from the operator. 1 second to 10 seconds is the extreme delay that will produce satisfying feedback but if it will cross 10 seconds the operator will think to do another task or become hyper.

Our Application performs the video animations as well so the system should have a good response time on opening videos.

2.4.3 Safety Requirements

If there is extensive damage to a wide portion of the database due to catastrophic failure, such as a disk crash, the recovery method restores a past copy of the database that was backed up to archival storage (typically USB) and reconstructs a more current state by reapplying or redoing the operations of committed donations from the backed-up log, up to the time of failure.

2.4.4 Security Requirements

Data should be encrypted when it transfers to the network layer. User Accounts information should be secret. Every kind of data should be secret and cannot reveal because in case of revealed data legal acts can charge against the company by law.

We need a database for storing our application data. So, for security reasons, we must choose database partners carefully.

2.4.5 Software Quality Attributes

All system features should be usable and user friendly. System features should execute efficiently and effectively. System UI should be user understandable and guide the user to perform the user-related tasks.

2.4.6 Business Rules

- **Operators:** An operator will be able to select a food of which he wants to find the video or content for. Operator will have an account on application for interact with admin.
- **Admin:** the admin can respond feedback from the user. Admin should also have an account on application for interact with operator.

Chapter 3

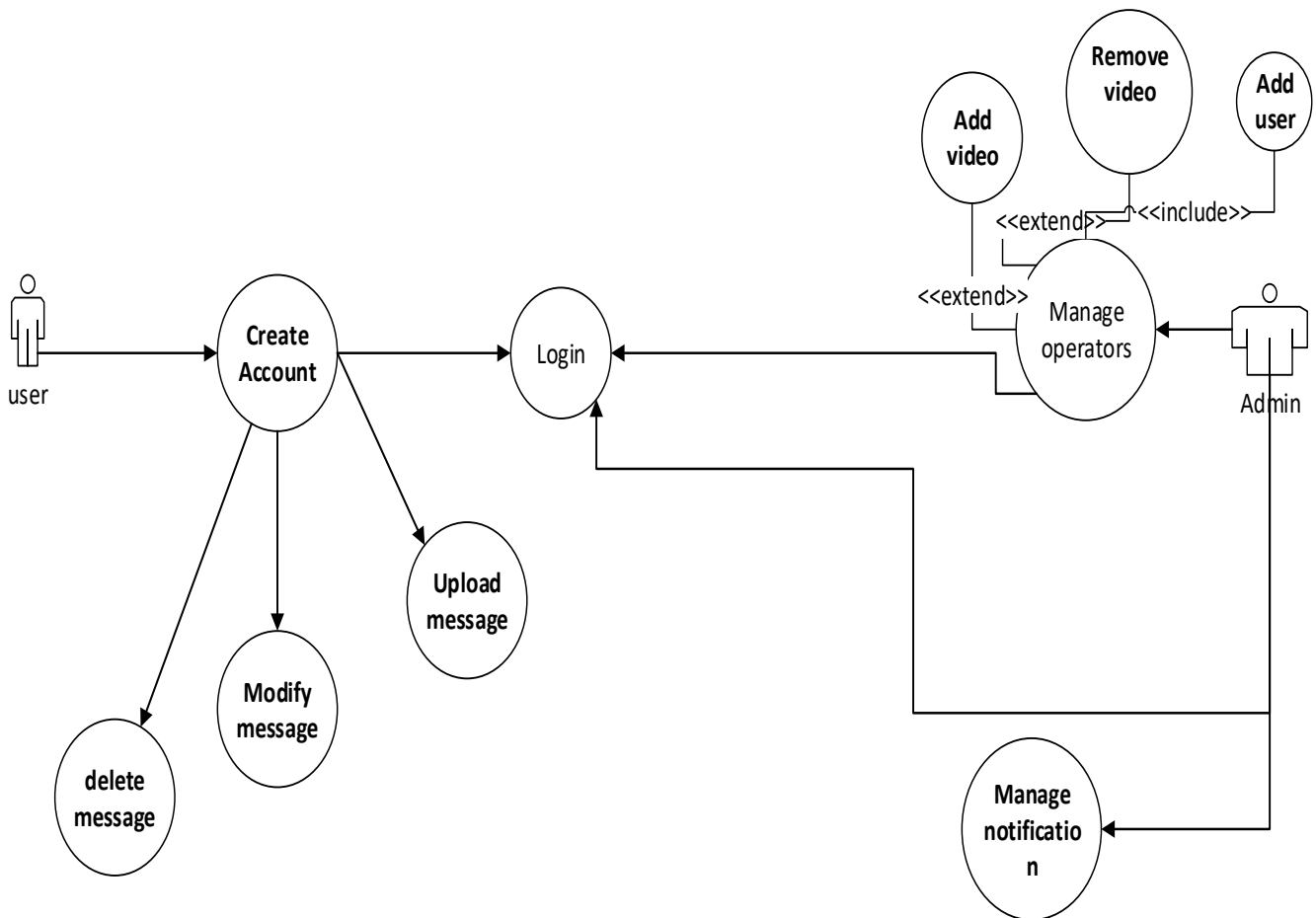
Use Case Analysis

Chapter 3: System Analysis

Use case identifies as the requirements of a system as well as the working in term of diagrams:

3.1. Use Case Model

Fully Dressed Use Case Model



3.2. Use Case Descriptions

Fully Dressed Use Cases

LOGIN

Use case name:	Login
Use case ID:	001
Description:	Operators and the admin log in the system by providing their operators name and password.
Actors:	Operators, Admin
Precondition:	System is Idle, showing welcome message and a login interface
Main flow:	<p>The Use Case starts when a operators or admin selects operators selects login.</p> <p>The operators or admin enters the login operators name and password.</p> <p>The operators or admin is logged in the system.</p>
Post conditions:	The operators or admin is logged in the system

CREATE ACCOUNT

Use case name:	Create account
Use case ID:	002
Actors:	Operators
Description:	Operators will be able to create an account by proving required information including operators name, email address, password and IMEI of the tracker.

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Precondition:	A valid IMEI of the Tracker must be provided by the operators
Main Flow:	<p>This use case is required when a new request of creating a new account is received.</p> <p>The operators starts this use case by clicking on create account on the menu.</p> <p>The operators provides a valid IMEI of a Tracker.</p> <p>The operators fills the required fields of the creation form of the desired account.</p>
Post conditions:	Three tabs will be displayed. The operators will have the choice to view current location, set ALERTs or display itinerary to current location.

MANAGE OPERATORS

Use case name:	Manage operators
Use case ID:	008
Actors:	Admin
Description:	The Admin will be able to delete or modify the information
	Of the operators already added in the system.
Preconditions:	A request must be made to edit or delete the operators.
	<p>This use case is required when a new request of editing or deleting a operators is received.</p> <p>The admin starts this use case by selecting then clicking on Edit or Delete link on the operators list.</p> <p>The agent confirms the action.</p>
Post conditions:	The profile of the recently edited operators will be changed

MANAGE NOTIFICATIONS

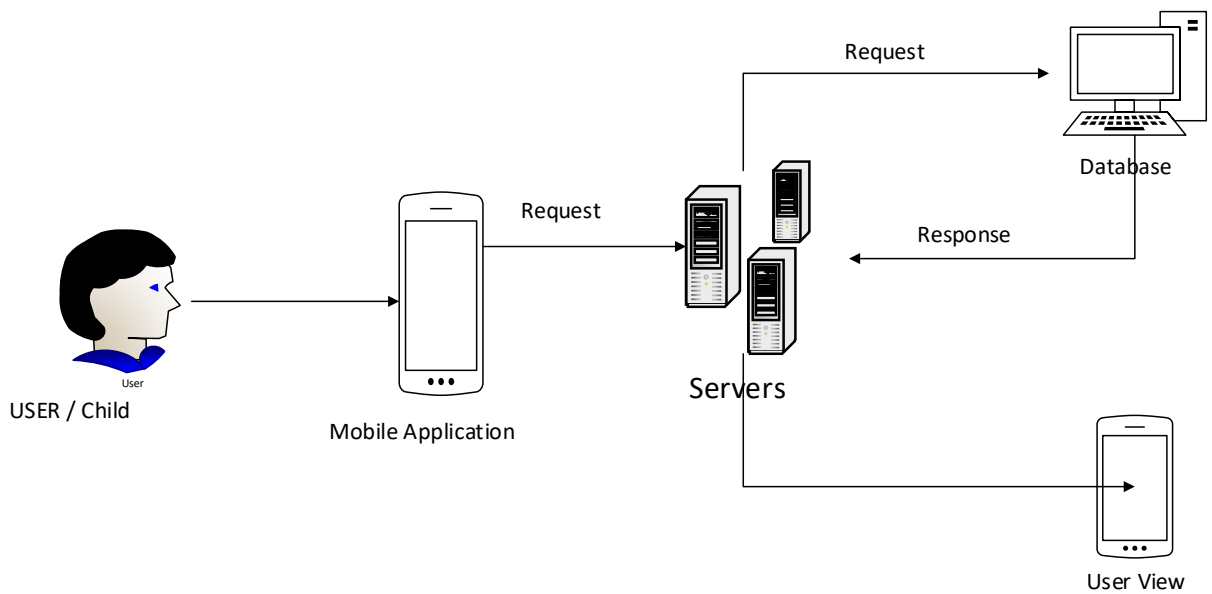
Use case name:	Manage NOTIFICATIONS
Use case ID:	012
Actors:	Admin
Description:	The Admin will be able to manage NOTIFICATIONS
Preconditions:	A request must be made to manage push notification
Main Flow:	This use case is required when a new request of managing push
	notifications is received
	The admin starts this use case by selecting manage push
	Notifications
	The admin confirms the action
Post conditions:	A menu to view or s NOTIFICATIONS is displayed

Chapter 4

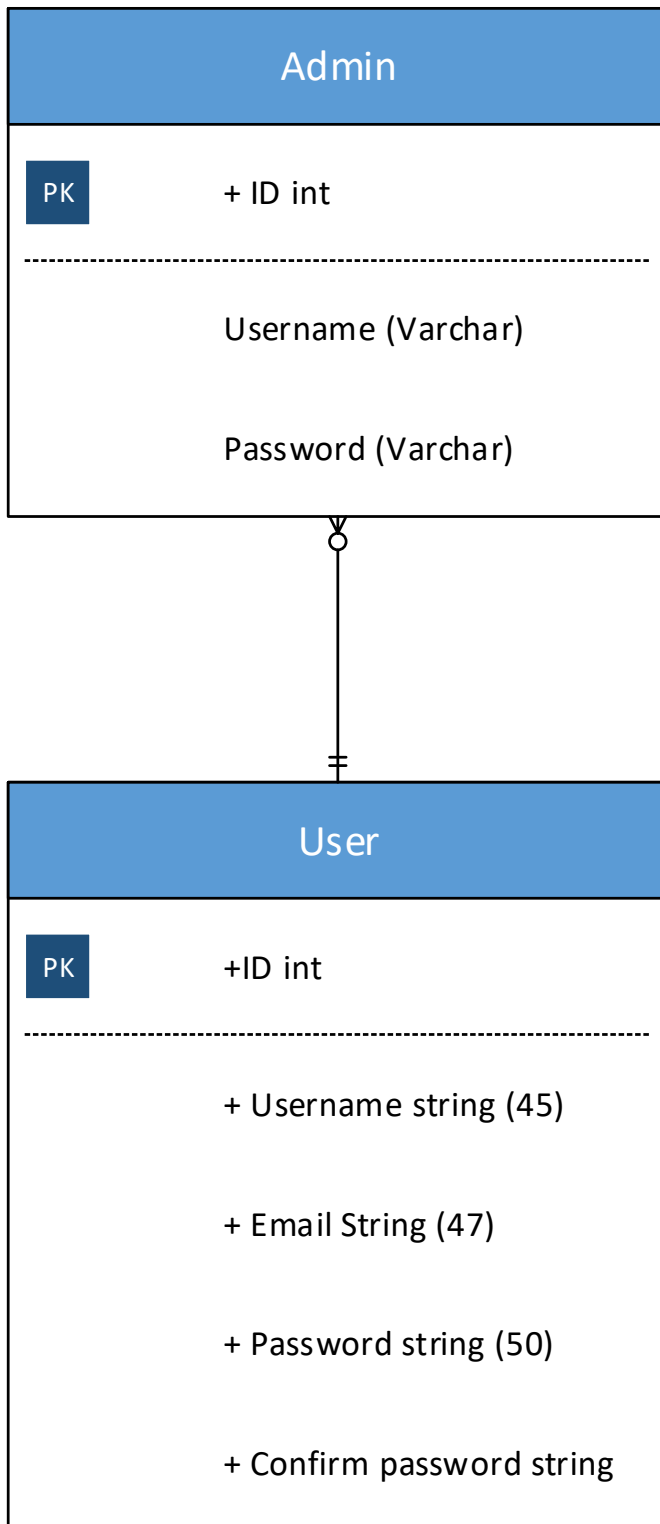
System Design

Chapter 4: System Design

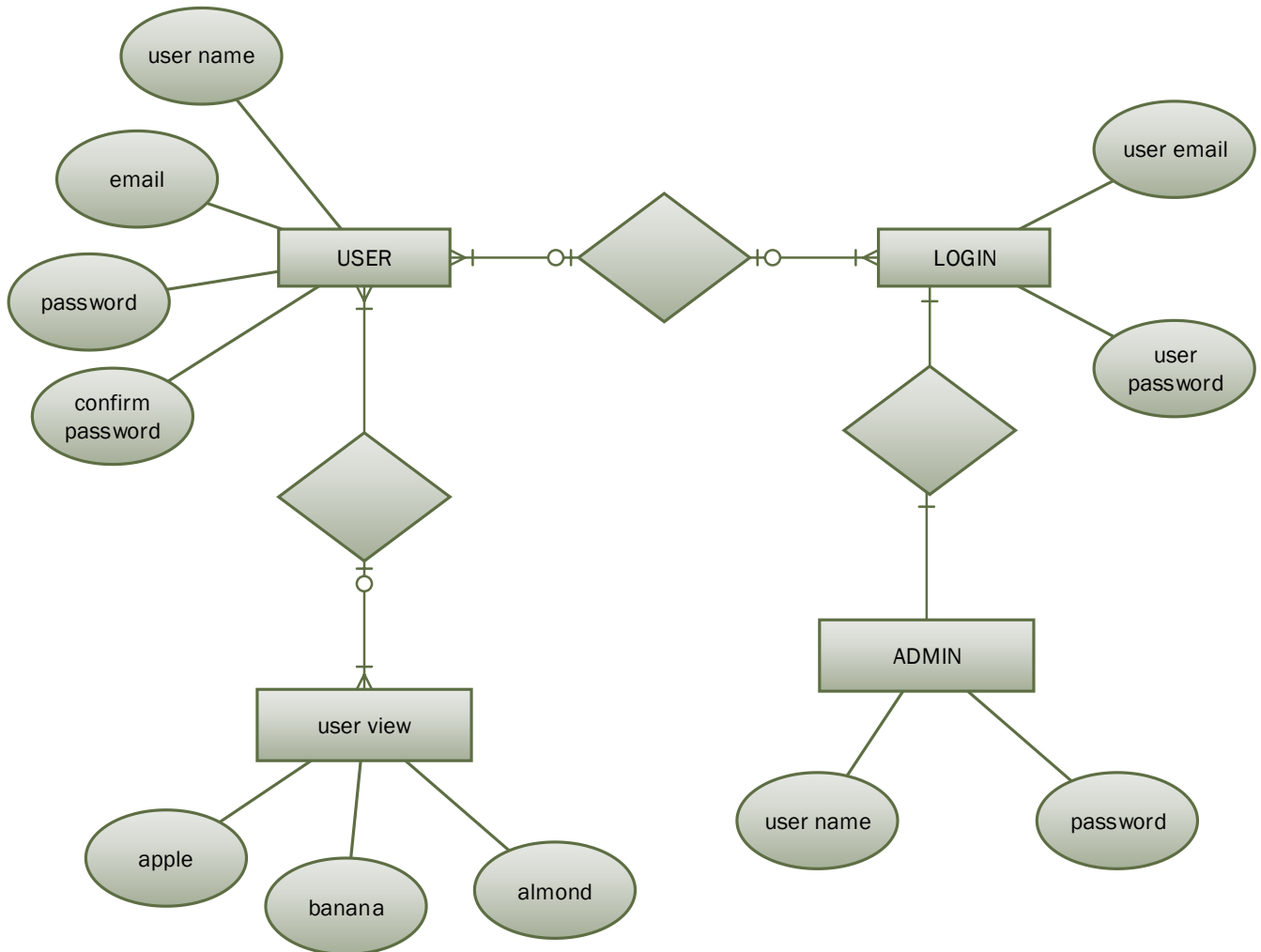
4.1. Architecture Diagram



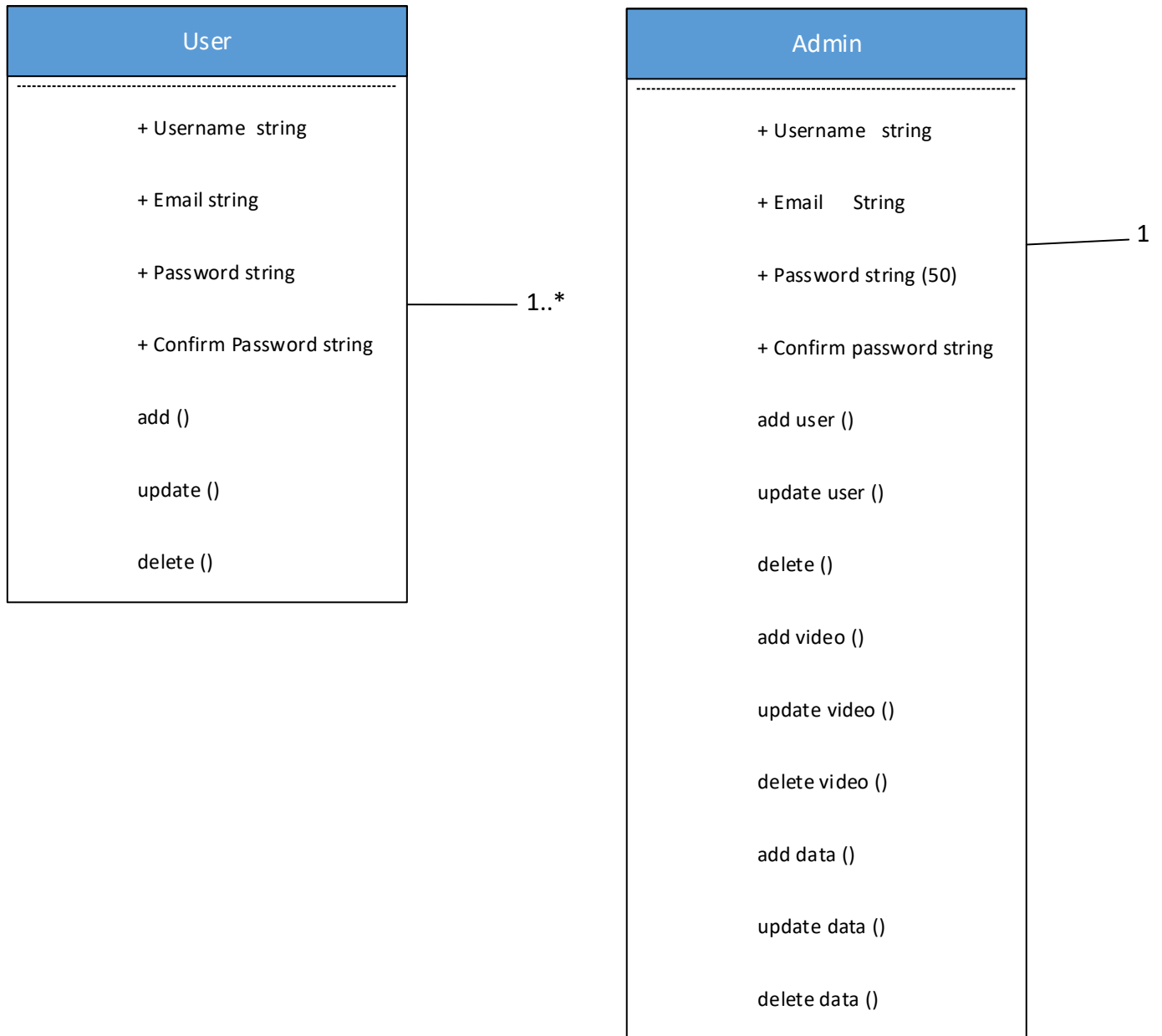
4.2. Domain Model



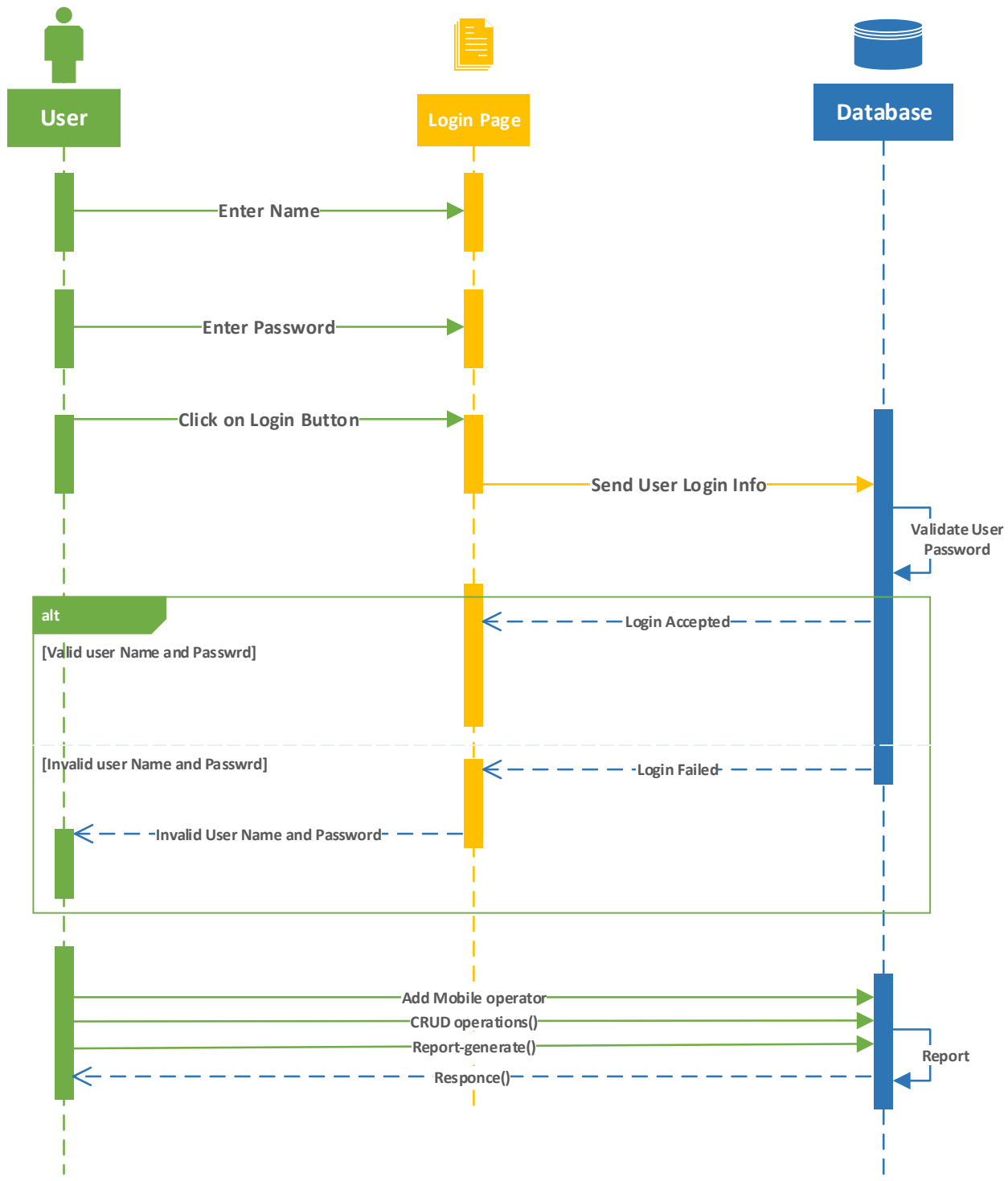
4.3. Entity Relationship Diagram with data dictionary



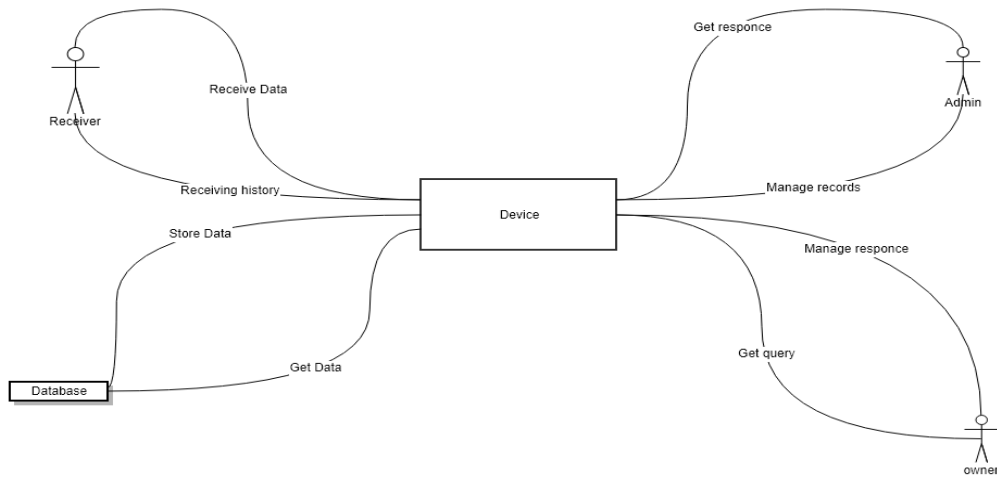
4.4. Class Diagram



4.5. Sequence / Collaboration Diagram

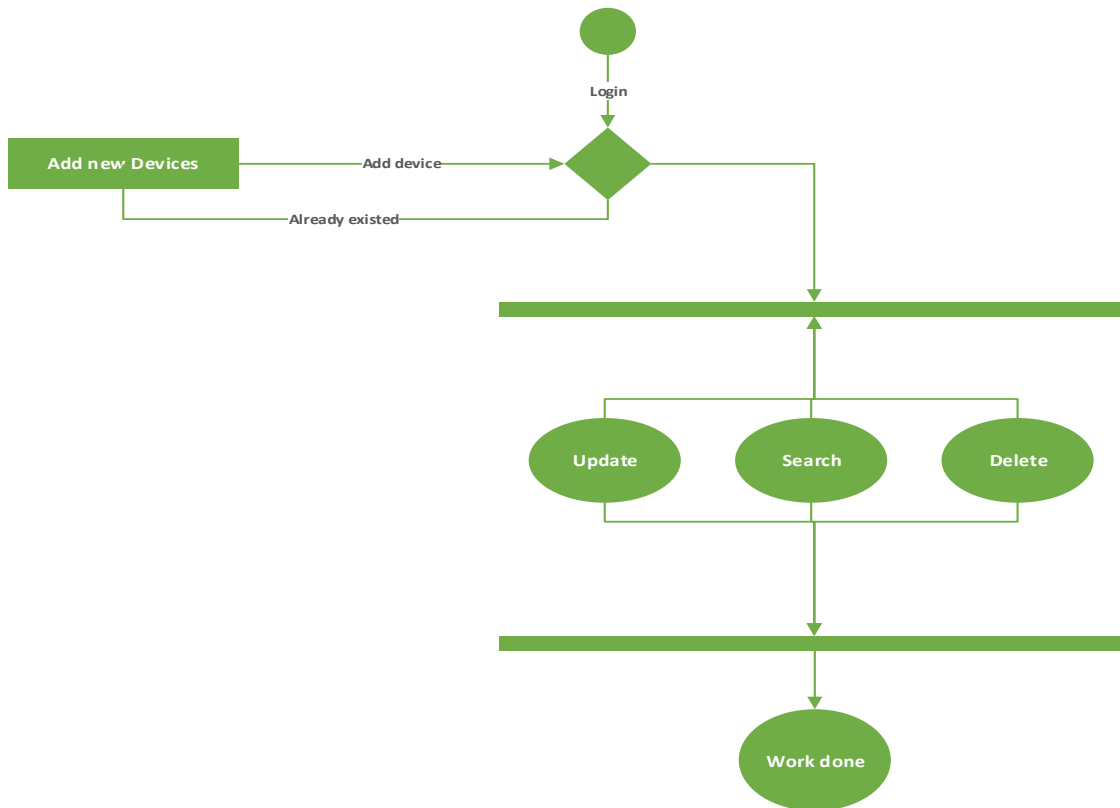


4.6. Operation contracts

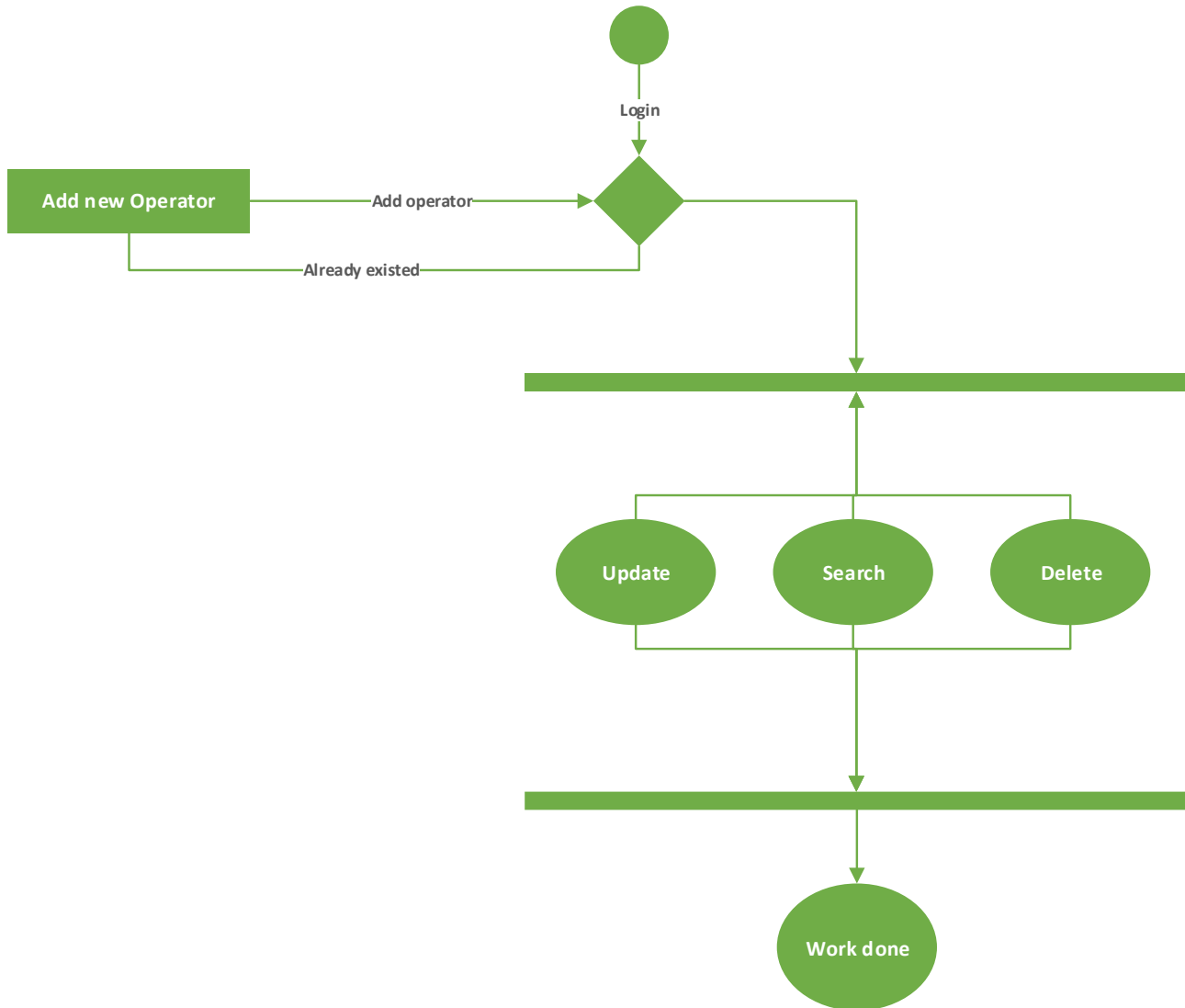


4.7. Activity Diagram

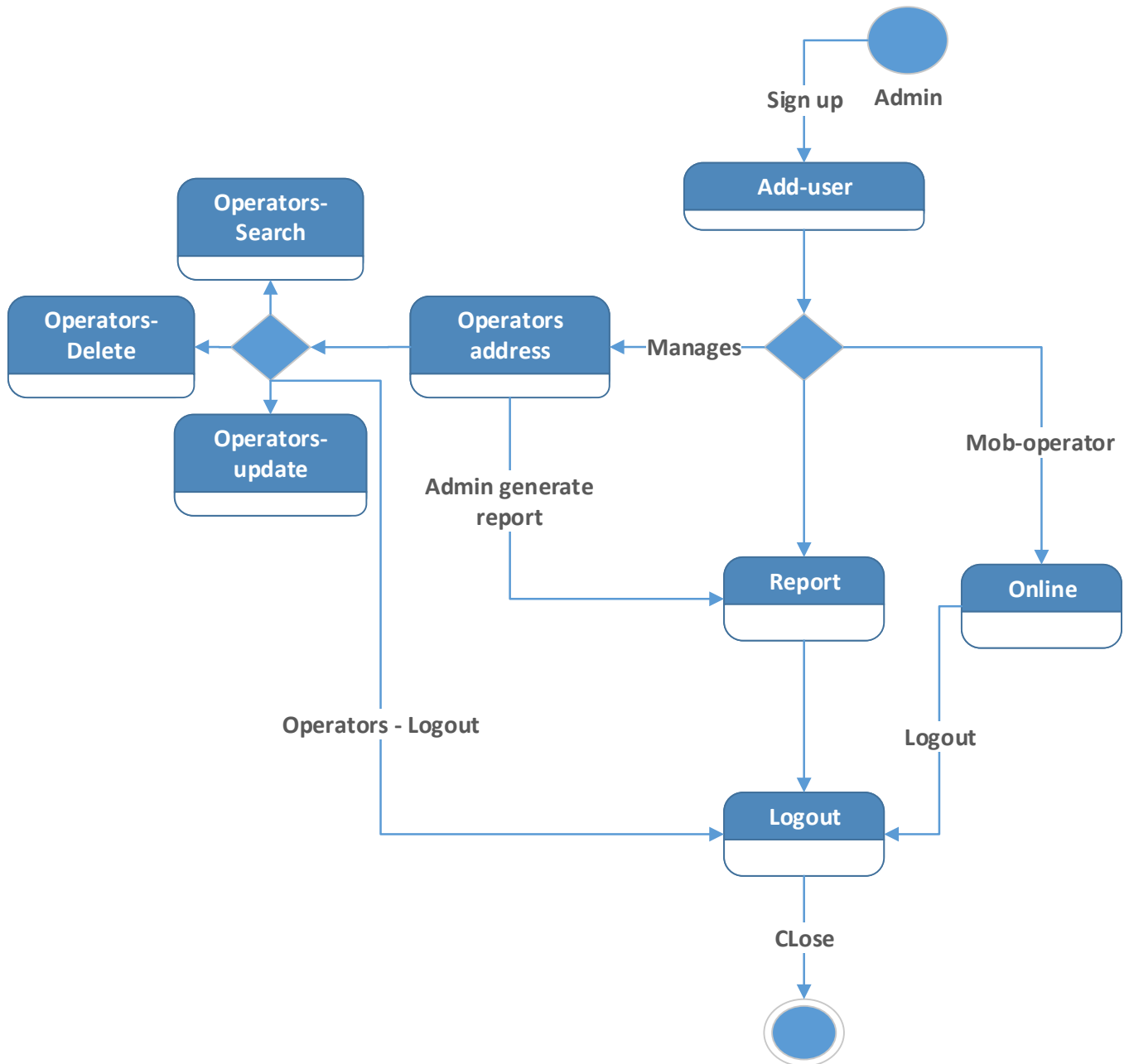
Add devices:



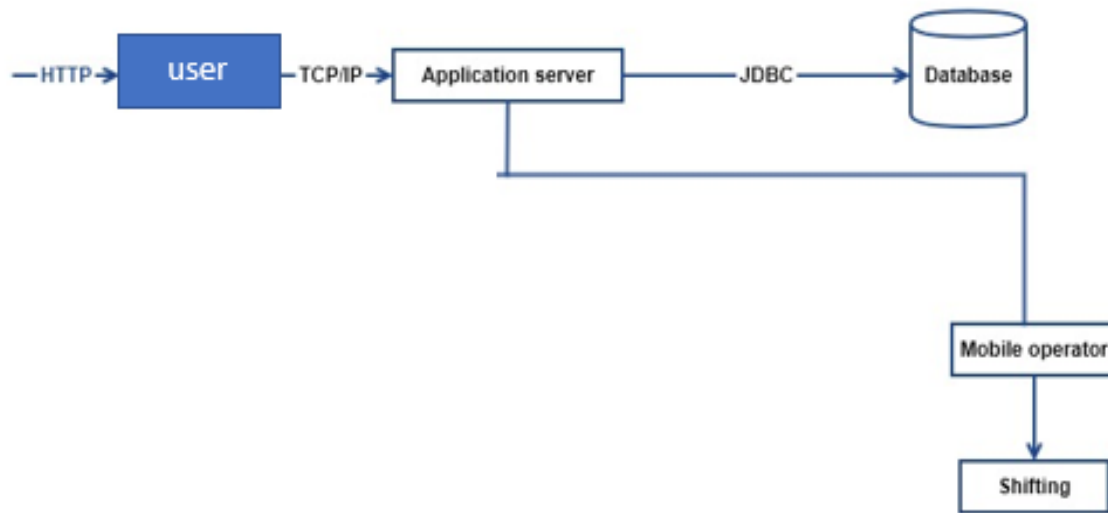
Add operator:



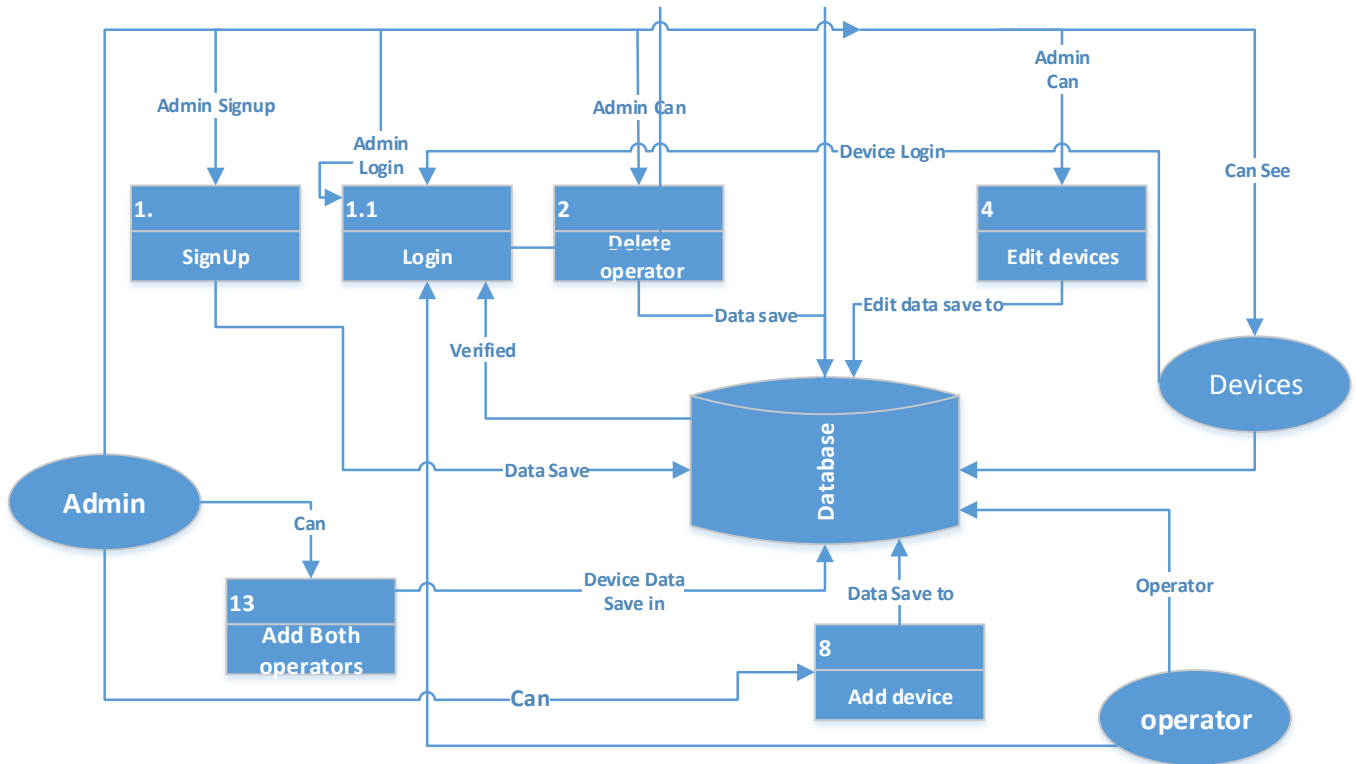
4.8. State Transition Diagram



4.9. Deployment Diagram



4.10. Data Flow diagram [only if structured approach is used - Level 0 and 1]



Chapter 5

Implementation

Chapter 5: Implementation

5.1. Important Flow Control/Pseudo codes

Operators is compulsory to sign up and login account to access the system. In firstly operator search/scroll the food categories and select her desired category. Operator can read the textual content about that particular category or can play a video animation.

Admin can add food categories and video animations. Admin can respond to an operator's feedback.

Admin can remove the operator.

5.2. Components, Libraries, Web Services and stubs

- **Components:** Kotlin, Activity, Fragment, Navigation graph (Safe args), Recycler View, Web View
- **Libraries:** Kotlin Co-routines, Room Database

5.3. Deployment Environment

- **IDE:** Android 10 or above, Web Browser
- **Operating system:** Android OS
- **Database:** Room

5.4. Tools and Techniques

Development Tools

Mobile Application	Android studio and Room
Software Designing Tool	Microsoft Visio, Adobe Illustrator, Vyond
Documentation Tools	MS Word

Techniques

Programming Techniques:

Mobile Application Techniques

Kotlin, Xml, Room

Testing Techniques

We will use V model which will cover all these testing technique.

Unit Testing, Integration Testing, System Testing, and Alpha & Beta

Acceptance Testing.

5.5. Best Practices / Coding Standards

- Consistent Naming Scheme.
- Dry Principle
- Avoid Deep Nesting
- Limit Line length
- Files and Folder Organizations
- Capitalize SQL Special Words.
- Object Oriented Approach.
- Code Refactoring

5.6. Version Control

Version Management also called Version Control or Revision Control, is a means to effectively track and control changes to a collection of related entities.

Version Control Table Template:

Title	Project Document			
Description	Software Requirements and Specifications			
Created By	Abdul Rehman Rashid			
Date Created	Jan 1, 2022			
Maintained By	Faiz ur Rehman			
Version Number	Modified By	Modifications Made	Date Modified	Status
1.0	Abdul Rehman Rashid	Update System Features	25 Dec 2021	Completed
2.0	Faiz ur Rehman	ER-Diagram, Sequence Diagrams, DFD, Testing & Evolution, Future Enchantment & Conclusion.	29 Dec 2021	Completed

Chapter 6

Testing and Evaluation

Chapter 6: Testing and Evaluation

As the project is on bit massive scale, we have a tendency to invariably want testing to create it prospering. If every element work properly all told respect and provides desired output for all reasonably inputs then project is claimed to achieve success. So, the conclusion is-to create the project prospering, it must be tested. The testing done here was System Testing checking whether the admin requirements were satisfied. The code for the new system has been written completely using Kotlin as the coding language and Android Studio as the interface for front-end designing. The new system has been tested well with the help of the users and all the applications have been verified from every nook and corner of the user.

Although some applications were found to be incorrect these applications are corrected being enforced. The flow of the forms has been found to be a great deal in accordance with the particular flow of information.

6.1. Use Case Testing

Use case testing is a technique that helps us identify test cases that exercise the whole system on a transaction by transaction basis from start to finish. Use cases are a sequence of steps that describe the interactions between the actor and the system. Use cases are defined in terms of the actor, not the system, describing what the actor does and what the actor sees rather than what inputs the system expects and what the system's outputs.

Use Case for ADMIN'S Login:

Main Success scenario A:Actor S:System	Step	Description
	1	A:Insert Admin name & Password
	2	S:Validate Admin name & Password

	3	S:Allow access to Account
	2A	Admin name not valid S:Display message admin name not valid and enter it again
Extensions	2B	Password not valid S:Display message admin name not valid and enter it again

Table 13: Admin login test case

Use Case for SEND request:

	Step	Description
Main Success scenario A:Actor S:System	1	S:Show category
	2	A:Select category and send request
Extensions	2A	Request response S: operator not found then send request again

Table 14: Send request test case

Use Case for Get request:

	Step	Description
Main Success scenario A:Actor S:System	1	S:Show request
	2	A:Response request
	3	S:Show notification to user
Extensions	2A	Request response S: operator not accept or ignore request try again

Table 14: Receive request test case

6.2. Equivalence partitioning

At least two circumstances are identical on the off chance that they produce basically a similar conduct. In the event that one circumstance works accurately, we can essentially expect the other(s) are right as well. (We don't need to test them everything.) It very well may be utilized at any dimension of programming for testing and is ideally a decent system to utilize first. Equivalent Class Partitioning is a black box technique (code is not visible to tester) which can be applied to all levels of testing like unit, integration, system, etc. In this technique, we divide the set of test condition into a partition that can be considered the same.

Equivalence partitioning is a testing technique where input values set into classes for testing.

Testing of Email Address:

Valid	Invalid	Invalid
User@gmail.com	usergmail.com	user.com

Table 17: Email Equivalence test case

Valid Class: Must follow the proper pattern

6.3. Boundary value analysis

Boundary value analysis is a test case design technique to test boundary value between partitions (both valid boundary partition and invalid boundary partition). A boundary value is an input or output value on the border of an equivalence partition, includes minimum and maximum values at inside and outside boundaries. Normally Boundary value analysis is part of stress and negative testing. The Behavior at the edge of each equivalence partition is more likely to be incorrect than the behavior within the partition, so boundaries are an area where testing is likely to yield defects.

Testing on Password Text field:

Name should be in between **8-12 characters**.

Valid	Invalid	Invalid
user@123	user@	user@123456789

Table 18: Boundary value password test

Minimum boundary value is 8

Maximum boundary value is 12

Valid text length is 8,9,10, 7, and 11

Invalid text length is 7, 13

Test case 1: Text length of 7 (min-1) = Invalid

Test case 2: Text length of exactly 8 (min) = Valid

Test case 3: Text length of 9 (min+1) = Valid

Test case 4: Text length of 14 (max-1) = Valid

Test case 5: Text length of exactly 15 (max) = Valid

Test case 6: Text length of 16 (max+1) = Invalid

6.3. Data flow testing

Data flow testing is the form of white box testing and structural type testing, which generally keeps check at the points, where the data values are being received by the variables, and at the points, when it is called for use.

The basic idea behind this form of testing, is to reveal the coding errors and mistakes, which may result in to improper implementation and usage of the data variables or data values in the programming code i.e. data anomalies, such as

- All the data variables, present in the programming code have been initialized or not
- Data variables which are put into use, have been, priority initialized or not
- If the initialized data variables, has been used, at least once, in the programming code

6.4. Unit testing

Unit testing focuses verification efforts on the smallest unit of the software design, the module. This is also known as “Module Testing”. The modules are tested separately. This testing carried out during programming stage itself. In this testing each module is found to be working satisfactorily as regards to the expected output from the module.

- I have clearly check the flow is correct between inside and outside the module.
- Verify the check statements
- Check the extreme boundaries values of output
- Loops are correct or not

6.5. Integration testing

Data can be grossed across an interface; one module can have adverse efforts on another. Integration testing is systematic testing for construction the program structure while at the same time conducting tests to uncover errors associated with in the interface. The objective is to take unit tested modules and build a program structure. All the modules are combined and tested as a whole. Here correction is difficult because the isolation of cause is complicate by the vast expense of the entire program. Thus, in the integration testing stop, all the errors uncovered are corrected for the text testing steps.

6.6. Performance testing

Features and Functionality supported by a software system is not the only concern. A software application's performance like its response time, reliability, resource usage and scalability do matter. The goal of Performance Testing is not to find bugs but to eliminate performance bottlenecks.

The focus of Performance Testing is checking a software programs

- Speed - Determines whether the application responds quickly
- Scalability - Determines maximum admin load the software application can handle.
- Stability - Determines if the application is stable under varying loads

Performance Test Cases

- Verify response time is not more than 4 seconds when 1000 users access the Application Simultaneously.
- Verify response time of the Application under Load is within an acceptable range when the network connectivity is slow.
- Check the maximum number of users that the application can handle before it crashes.
- Check database execution time when 500 records are read/written simultaneously.
- Check CPU and memory usage of the application and the database server under peak load Conditions.
- Verify response time of the application under low, normal, moderate and heavy load Conditions.

6.7. Stress Testing

Stress Testing is defined as a type of Software Testing that verified the stability & reliability of the system. This test mainly determines the system on its robustness and error handling under extremely heavy load conditions. The goal of stress testing is to analyze the behavior of the system after a failure. This test mainly determines the system on its robustness and error handling under extremely heavy load conditions.

Stress testing is also extremely valuable for the following reasons:

- To check whether the system works under abnormal conditions.
- Displaying appropriate error message when the system is under stress.
- System failure under extreme conditions could result in enormous revenue loss
- It is better to be prepared for extreme conditions by executing Stress Testing

Application Stress Testing:

This testing concentrates on finding defects related to data locking and blocking, network issues and performance bottlenecks in an application.

Systemic Stress Testing:

This is integrated stress testing which can be tested across multiple systems running on the same server. It is used to find defects where one application data blocks another application.

Exploratory Stress Testing:

This is one of the types of stress testing which is used to test the system with unusual parameters or conditions that are unlikely to occur in a real scenario. It is used to find defects in unexpected scenarios like

1. A large number of users logged at the same time
2. If Database has gone offline when it is accessed from a website,
3. When a large volume of data is inserted to the database simultaneously

Test Cases

Admin Login/Registration: To begin with login, admin need to register by filling up basic registration details. There are multiple fields in registration page and every field has to fill by user. Admin cannot use character in the login id field.

Login: - Admin login id and password are kept compulsory fields, and if the admin id or Password doesn't match then it will show an error message?

VALIDATION CRITERIA:

1. In each form, no field which is not null able should be left blank.
2. All numeric fields should be checked for non-numeric values. Similarly, text fields like names. Should not contain any numeric characters.
3. All primary keys should be automatically generated to prevent the admin from entering any existing key.
4. Use of error handling for each Save, Edit, delete and other important operations.
5. Whenever the admin Tabs out or Enter from a text box, the data should be validated and if it is Invalid, focus should again be sent to the text box

Chapter 7

Summary, Conclusion and Future Enhancements

Chapter 7: Summary, Conclusion & Future Enhancements

7.1. Project Summary

This project we are designing a mobile application for kids and especially for those mothers who don't know

- How to feed and
- What to feed their kids

The application is about the **guidance of food and nutrients**. Helping mothers **to reduce the food deficiency in their kids**. Healthy eating is essential for your child's good health, growth and development. Healthy eating in childhood means they will have less chance of developing chronic diseases. According to a research, kid's personality is 80%, the character they are impressed by and the remaining 20% is their upbringing by their parents. We are passionate about **improving the health** of kids through technology from an intuitive user experience with a modern interface.

Make healthy foods fun, for example by **animated cartoon videos with interesting and real life stories**. Encourage your children to eat food which they don't want to eat. Naturally kids learn more by watching than being instructed by their parents

7.2. Achievements and Improvements

There are a lot of applications which helps people to improve their diet by providing them a proper diet plan. But there aren't many applications specifically for food deficiency in kids. That's why, we are going to introduce this app.

Achievements:

Make healthy foods fun, for example by animated cartoon videos with interesting and real life stories. This project is very useful for parents that will provide the services to their devices through the mobile application. In this application all the benefits of fruits are in written form and also a convincing video for their children.

Improvements:

1) Authentic Content

We are using one of the best and authentic content. The content is all about kids eating. And it's related to their daily routine food. All content is checked first by our best diet planners and then uploaded.

2) Kids diet plan

We are providing one of the best diet plan for your child. This diet plan is according to your kid's capability and interest.

3) Cartooned characters

We are introducing some amazing and catchy cartooned food characters. All kids will feel wonderful and enjoy after seeing them.

4) YouTube streaming

We are using an amazing concept of video streaming. All the videos and animations are uploaded in our YouTube channel.

5) Video Animation

Make healthy foods fun, for example by animated cartoon videos with interesting and real life stories.

6) Easy to use

The very important and very best thing about this application is that everyone can use. All they need only an android phone with normal internet.

7) User Friendly

The application will be giving a very user-friendly approach for all user.

8) Efficient and reliable

Maintaining the all secured and database on the server which will be accessible according the user requirement without any maintenance cost.

7.3. Critical Review

This document is for the Parents and Nutritionist of Pakistan. This document is very useful for all the persons associated with this project. The UML diagrams in the document are drawn by following the book "Applying The UML And Patterns ".Moreover some patterns of diagrams are picked by studying the content on the website like the "Visual paradigm" and "Star UML". The document start describing from the scope of the project and ends at testing phase. The foundation and deployment of the project is described. Last but not the least this document is a complete guide for the stockholders of this project.

7.4. Lessons Learnt


Our team has learned that Time Management decide the success and failure of the project so it is necessary to do the tasks on the schedule time otherwise it will create burden and may led the project towards failure. So we've put a lot of time into building infrastructure on Android & Web Services. The whole process was a huge learning process for us. We learned a lot about our time.

When we started the Final Year Project we only had the deadline in mind. Perhaps a schedule would have made it easier to divide our time to the different aspects of the process. Furthermore, in the beginning it was hard to realize the overall size of the work. We have done our best at keeping own views and opinions apart and not letting them affect the final outcome.


7.5. Future Enhancements/Recommendations

A Large numbers of Enhancements are required in this project. This project must use High security so that data should be flow in between the concerned people. Moreover


- Increase work platform.
- It is our goal to provide a convenient service to people who use for their purpose.
- Add some more service according to people need.
- Application can successfully integrate with online payment.
- Database security.
- More Categories includes in Project.
- Improves Validations and authorizations.
- Improves bugs & crashes.
- Improves UI design and updates



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Project Supervisor: "Mr. Fawad Nasim"



KHAJAONGA

FYP-BCSM-S21-021

Faiz Ur Rehman
BCSM-F14-187


Abdul Rehman Rashid
BCSM-S15-064

KHAJAONGA - Mobile Application

- The application is about the **guidance of food and nutrients**
- Helping mothers to **reduce the food deficiency** in their kids.
- Make healthy foods fun, e.g. By **animated cartoon videos** with interesting and real life stories.
- **Watch and Grow**

PROJECT SCREENSHOTS















Features

- ▶ Video animation 
- ▶ Cartoonised characters 
- ▶ YouTube streaming
- ▶ Interesting real life stories
- ▶ Fun & enjoy
- ▶ Worthwhile

Tools & Techniques

- Android studio
- Adobe Illustrator
- Vyond
- MS Office, Visio, Power Point 
- Kotlin coroutines
- Room 
- Activity, Fragment, Navigation graph, Recycler View, Web View

DEPARTMENT OF COMPUTER SCIENCE

Reference and Bibliography

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