
## Course ID: CPS5995

# Project - CookBook

## Software Design Document (SDD)
## Version 2.0

**Prepared by: Dharmay Prajapati**
**Reviewed by: Jose Serra**
**Instructor: Dr. Jing-Chiou Liou**

**Date:18-Feb-2023**

# Table of Contents

## 1. Introduction

This software design document is meant to provide a low-level description of the CookBook Network, providing insight into the structure and design of the intended system. This document provides the narrative and graphical representation of the software design including System Architecture, use-case diagrams, and other supporting requirement information.

### 1.1 Purpose

The purpose of this software design documentation is to provide the initial sketch of the intended software that leads to starting of the development of the software. Since this project is carried on using Agile methodology (which will be explained in the upcoming section), changes may occur during the development stage as per the consumer feedback and System Engineer's decision based on management objectives.

### 1.2 Scope

This Software Design Document is for a base-level system that will work as a proof of concept for the use of building a system that provides a base level of functionality. This Software Design is focused on the base-level system and critical parts of the system which can be improved later.

The following are the details provided in this document.

- System Architecture
- Context Diagram
- Use-case Diagrams
- Representation of functional modules
- Database schema Diagram

### 1.3 Goals and Objectives

This project is meant to provide an independent CookBook which has its own database and access control that facilitates Engaging users in cooking at home behaviors through a web application that will gather information from local food markets, and user input of at-home cooking inventory to deliver recipe recommendations, and retail resources for purchasing ingredients to cook meals.

To create an online cooking social platform that promotes growth/interest/engagement of culinary skills/needs within the average American by providing quick access to information, a friendly-approachable environment, and an optimal UX.

Cookbook Network's target audience is those seeking to reduce disposable income on processed food with high sodium, trans fat, and other unhealthy nutrients. Also, our target is to reduce the percentage from 28% to 0% who do not know how to cook. This system will help to increase customer saving by 10% and aim to reduce food waste by 20%.

### 1.4 Acronyms and Abbreviations

- SDD - Software Design Document
- CBN - CookBook Network
- UI - User Interface
- PHP - Personal Home Page, a server-side scripting language
- HTML - HyperText Markup Language, for web browser UI
- CSS - Cascading Style Sheets, for UI

## 2. System Design

### 2.1 System Architecture

Being a web application, this system follows a typical client-server model with three-tier architecture. Three-tier architecture is a well-established software application architecture that organizes applications into three logical and physical computing tiers: the presentation tier, or user interface; the application tier, where data is processed; and the data tier, where the data associated with the application is stored and managed.

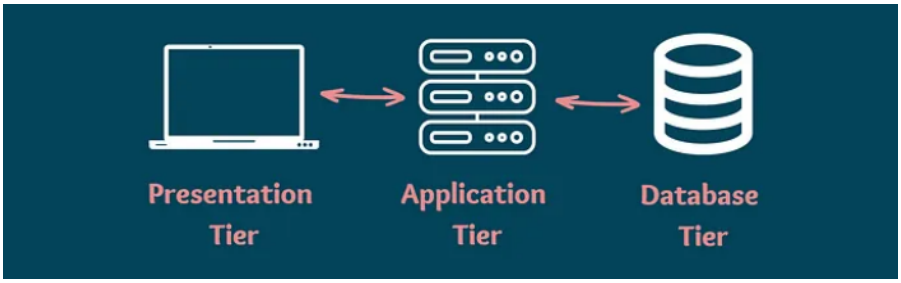


**Figure 1 Three-Tier Architecture**

• The Presentation tier - the part of the application which is visible to the user; it enables the input of requirements and the presentation of results. It is dependent on the platform (e.g. web applications, Windows applications, Android applications, etc.). It may therefore be different for different devices or platforms.

• The Application tier (also functional) - the middle layer of the model (middleware), assures the calculations and operations performed between input-output requirements and data. Also known as the application server.

• The Data tier (also database) - the lowest layer of the model, ensures all operations with data, i.e. database management system and basic database operations for functional storage, selection, aggregation, processing, integrity, and data audit.

### The architecture of CBN

### Technical details behind the layers

Presentation layer: HTML and CSS are used for coding. Any web browser can serve as a presentation layer. Eg. Google Chrome, Mozilla Firefox, Safari, Edge

Application layer: PHP is used for coding. The web Server is eve.kean.edu

Data tier: Mysql Database. Database Server is imc.kean.edu

This architectural model and languages are chosen to ensure better security of the software. For example, PHP is a server-side scripting language that hides the business logic/workflow to the presentation layer which presents only the content that the user is authorized to view. In addition, only the application layer can communicate with the database and retrieve the requested data to provide it to the presentation layer.

### 2.2 Context diagram:

This diagram represents the entities that interact with the

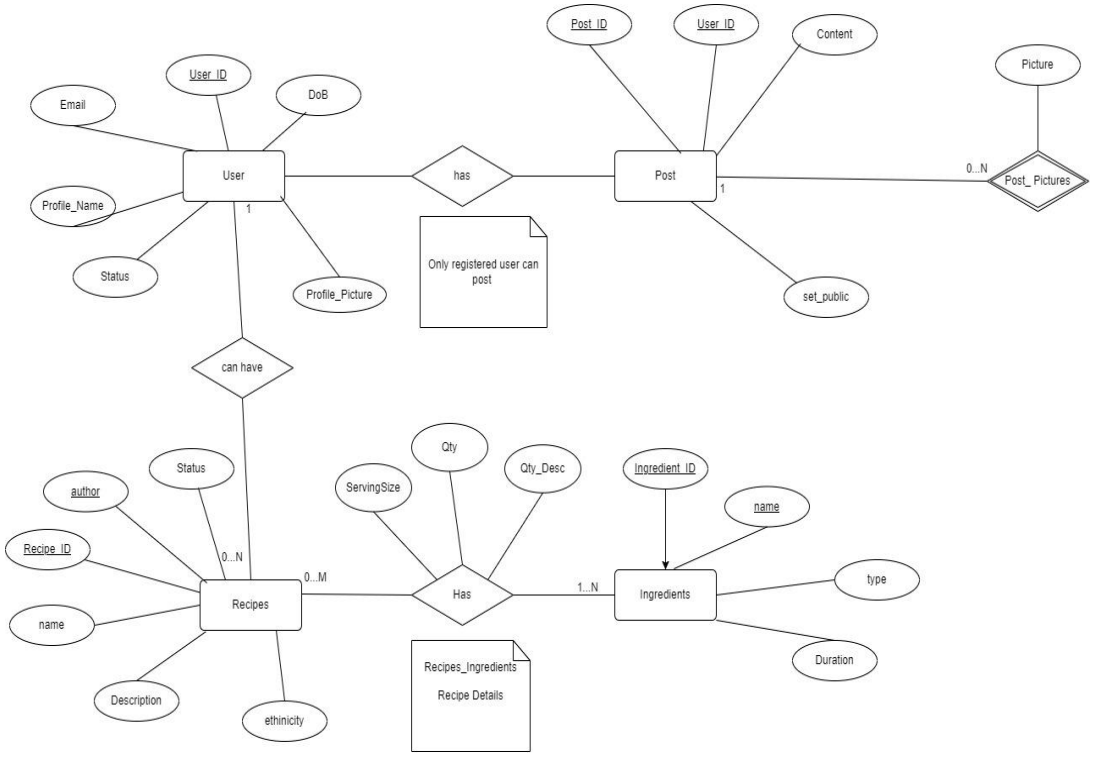

Post_ID
User_ID
Content
Picture
User_ID
Email
DoB
User
has
Post
0...N
Post_ Pictures
Profile_Name
1
1
Only registered user can post
Status
Profile_Picture
set_public
can have
Qty
Status
ServingSize
Qty_Desc
Ingredient_ID
author
name
Recipe_ID
0...N
0...M
Has
1...N
Ingredients
type
Recipes
name
Duration
Recipes_Ingredients
Recipe Details
Description
ethinicity

Figure 3 Context Diagram of CBN

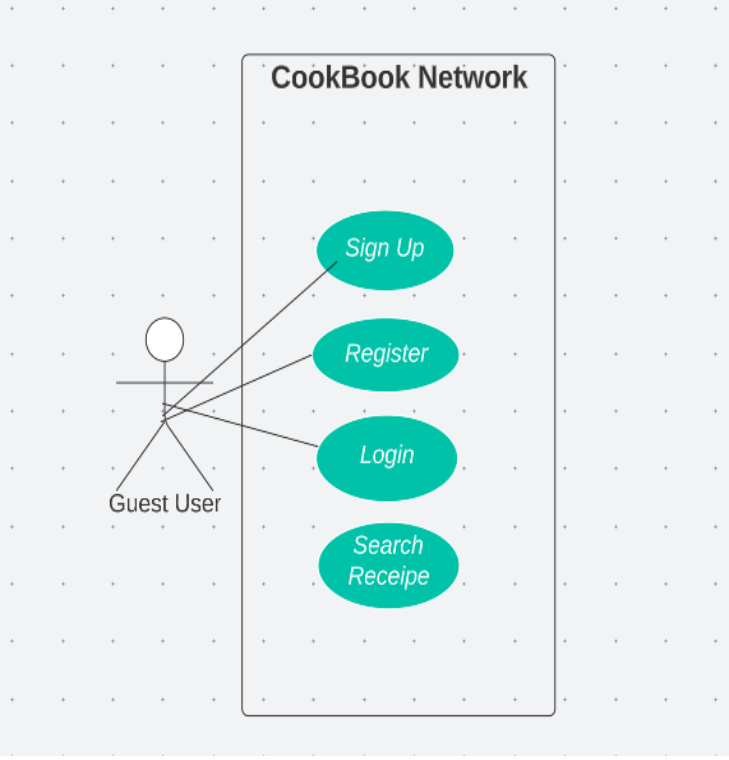
Admin: Admin can create and maintain the accounts of Test conductors. Also, there is only one admin account whose credentials will be shared with the system support people(via document), and therefore no user interface is provided to alter the credentials of this account which can be done only by the system support people via the back end.

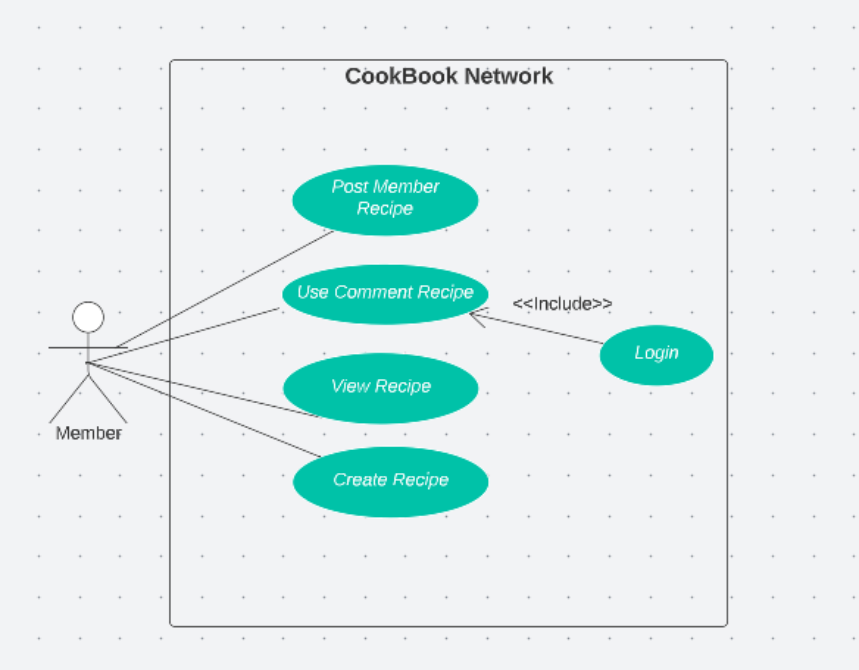
Test Conductor: The test conductor can create and maintain the accounts of Students. He can create and conduct the test for the respective students. He can view the respective test results. He can change his password.

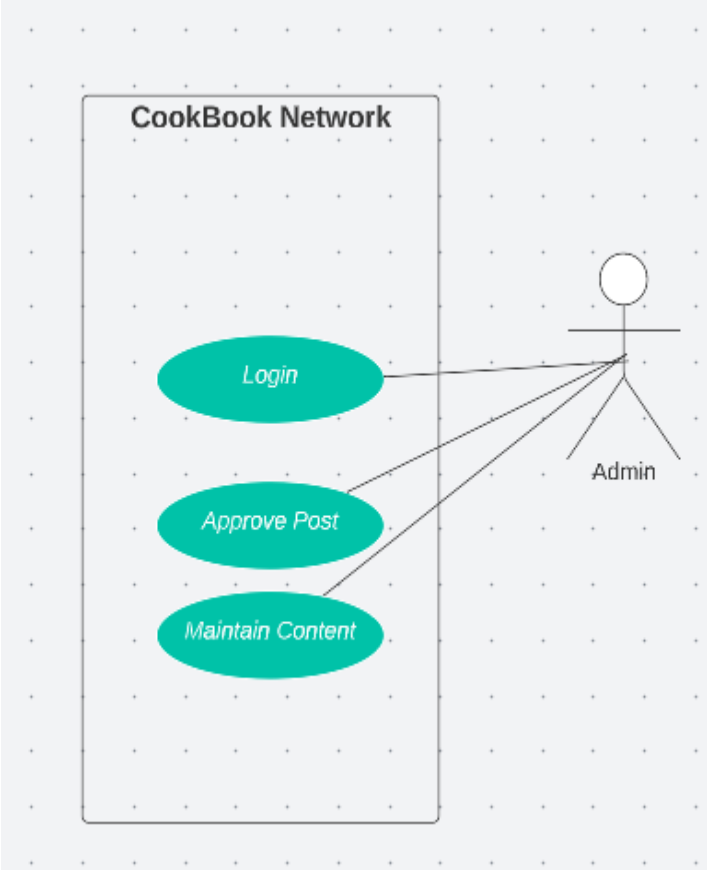
Student: The student can attend the designated test for him and view the result in case of automated evaluation. He can change his password.

### 2.3 Use case Diagram

A Use case Diagram is a pictorial representation of a user's interaction with the system. People who interact with the intended software system are called Actors and are represented by human symbols. Use cases are represented by an eclipse symbol and the software system is represented by a rectangle.




CookBook Network
Post Member Recipe
Use Comment Recipe
<<Include>>
Login
View Recipe
Create Recipe
Member


CookBook Network
Login
Approve Post
Maintain Content
Admin

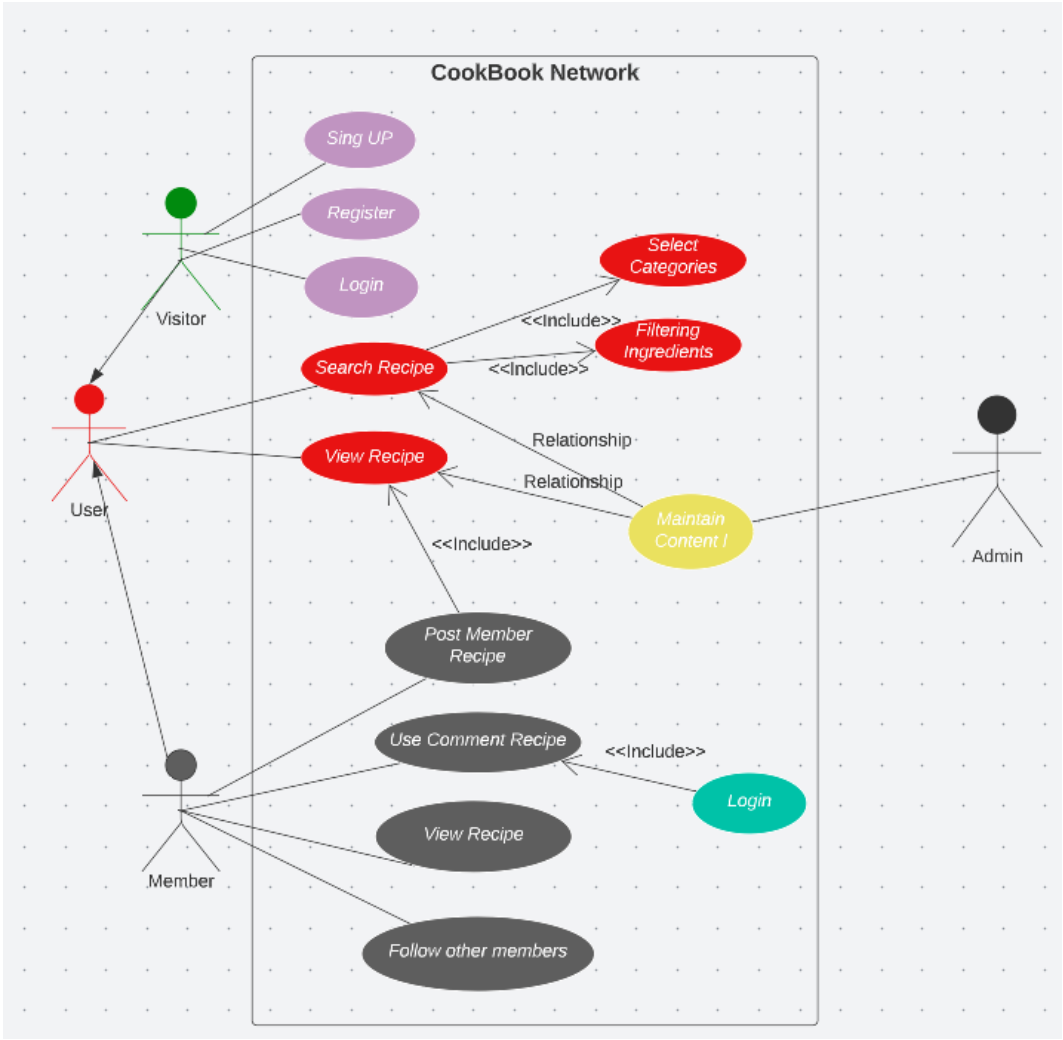

CookBook Network
Sing UP
Register
Login
Visitor
Select Categories
<<Include>>
Filtering Ingredients
Search Recipe
<<Include>>
Relationship
View Recipe
Relationship
Maintain Content /
Admin
User
<<Include>>
Post Member Recipe
Use Comment Recipe
<<Include>>
Login
View Recipe
Member
Follow other members

Figure 4 Use case Diagram for CBN User



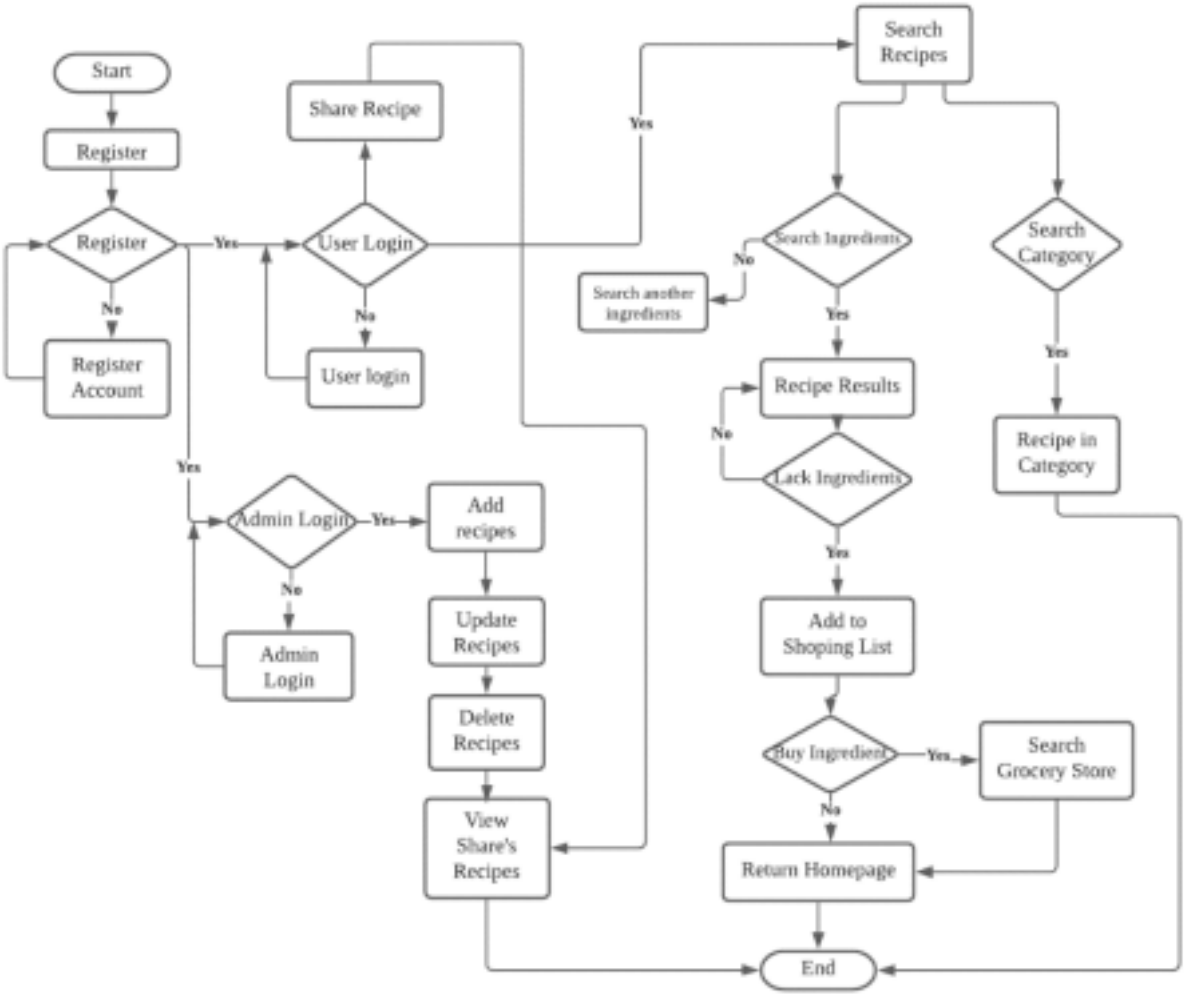



Figure 5 Data Flow Diagram for CBN

## 3. System Functional Model

### 3.1 Representation of functional Modules:

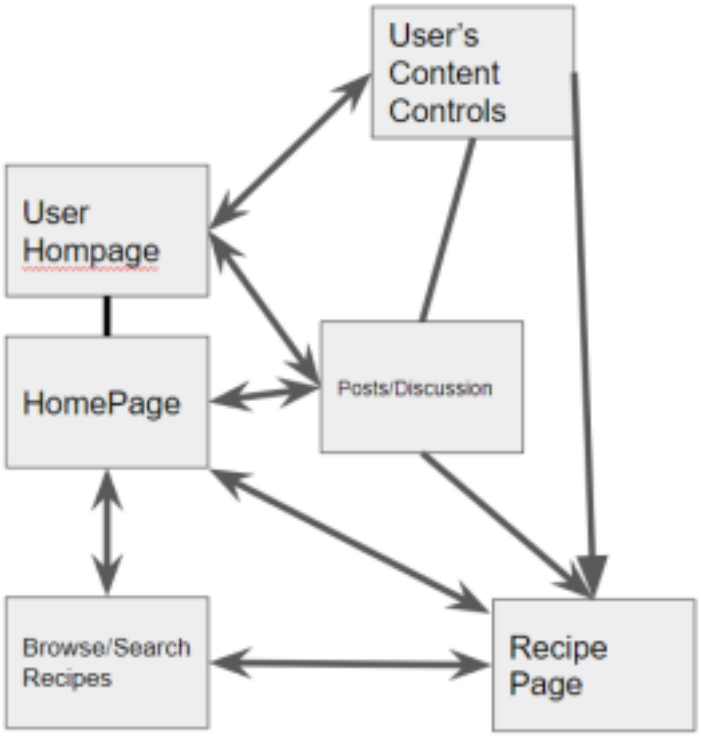



Figure 7 Representation of functional Modules of CookBook

### 3.2 Software Process Model

Agile methodology is followed to develop this software system as it is well-suited for this type of web application. In addition, this process model provides working software at any stage with room for improvement.

Agile methodology is also called the iterative/incremental approach where the main purpose of the intended system is identified and an initial sketch of software design is planned. Starting with the basic requirements development work will be started and after completion of every deliverable, the same is presented to get client feedback for any change requirement. This is preceded by the next level of requirements in further deliverables. Every deliverable is integrated with the previous deliverable and tested and hence providing a working software with added functionalities at every iteration.



Here is the illustration of this process model.

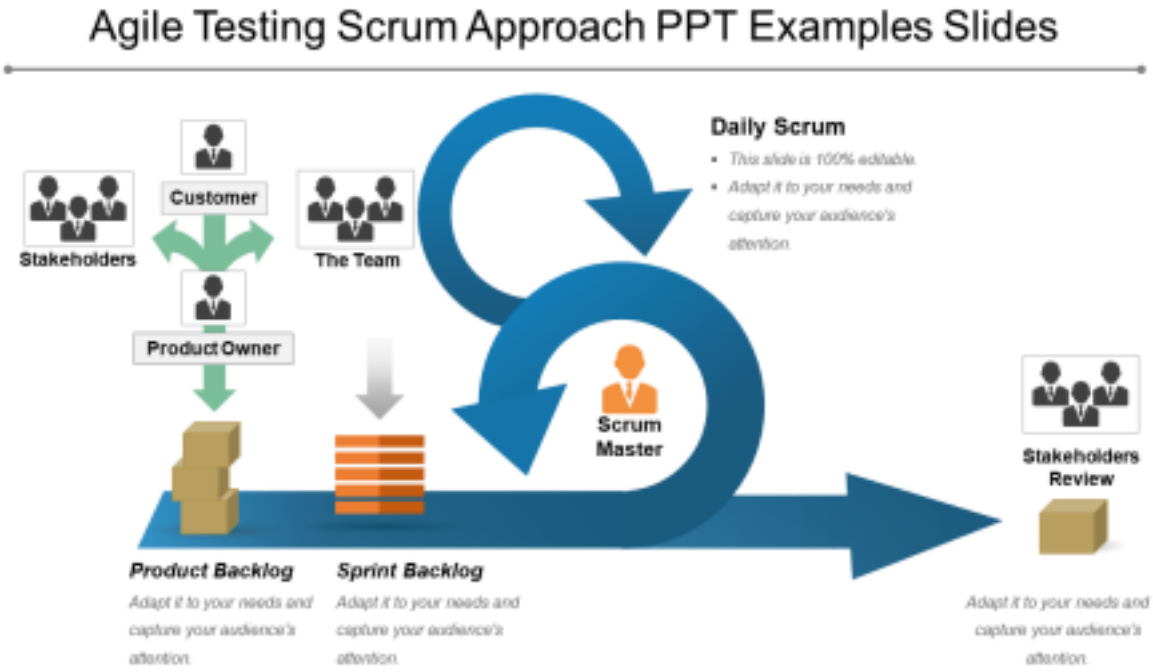



Figure 8 Agile - Software Process Model

This system is planned to be developed in three sprints/deliverables.

**Sprint 1**:

- Front-End Design of sign-up, login pages, and landing pages of the project.
- Test Case and Plan developed for the Front-End Design

**Sprint 2**:

- Back-End Design of user login pages
- Test Case and Plan developed for Back-End Design

**Sprint 3**:

- Summary report feature
- Final Test Case and Plan is developed for full project

## 4. Data Design

### 4.1 Database Schema Diagram:



A database schema defines its entities and the relationship among them. It contains a descriptive detail of the database, which can be depicted by means of schema diagrams.

Mysql Database is used in this system. All Database tables are structured to conform to the third normal form to ensure a better database structure.

The Database schema diagram represented here is based on the initial design of the software and therefore might be changed/updated in forth-coming iterations as per agile methodology.

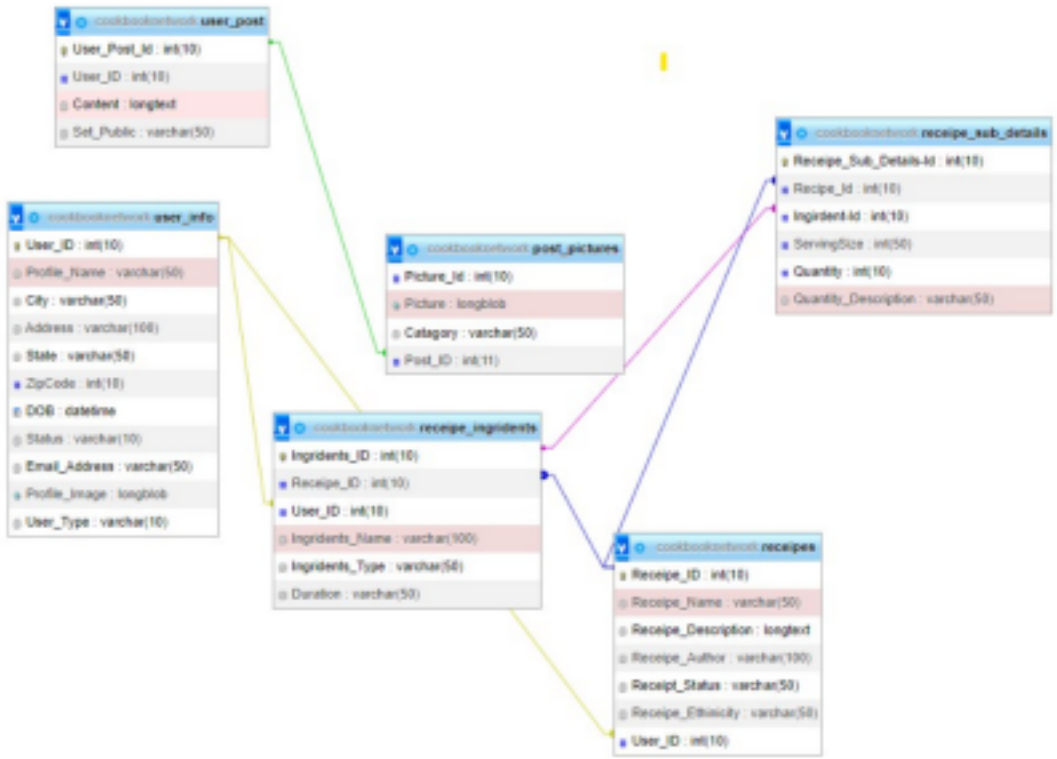



Figure 9 Database Schema Diagram of **CBN**

## 5. Design constraints, Restrictions, limitations

### 5.1 Design Constraints:

Being a short time project of 3 months, this System is designed in two weeks to facilitate the team with the basic sketch of the intended software system.



### 5.2 System Restrictions and Limitations

This software system is a web application and therefore needs internet service, the client system (for user interaction), web server (to deploy the software) and a database server (to store the application data).

- This System is meant for people with basic knowledge of computer usage.

## 6. Tools and References

### 6.1 Tools used to create Diagrams

- Online tool, https://creately.com/app/?tempID=gc7qvpsj1&login_type=demo# is used to create Use-case Diagrams
- Database schema Diagram is generated using Mysql workbench.
- General conceptual Diagrams like Agile process models are obtained from web resources.
- Lucid chart is used to create other project-specific pictorial representations.

### 6.2 Documentation Tools

Google Docs is used to create this documentation. ChatGPT is a tool that is used to facilitate the creation of functional pieces in the programming pieces.

### 6.3 Reference Materials

- MyFridgeFood
- Zomato Case Studies
- Bhoj Deal Success Stories
- Panda services
- Internal as well as Internet research