Software Design Document

BHAVIK BHATT (1814007) PIYUSH CHAVDA (1814010)
BHARAT CHOITHANI(1814011) MUSKAAN NANDU (1814020)

October 2021

1 Introduction

Daily nutrition and food, particularly for those suffering from small or serious ailments, is one of the most important aspects for a good life. According to numerous researches, improper and inadequate daily dietary intake are the primary causes of a variety of health problems and illnesses. In light of the above facts, it is important to maintain a well-balanced diet. However, due to the vast variety of food items, it is difficult for the average individual to keep track of personal food requirements. Therefore, a systematic diet recommendation system is required to recommend the appropriate food considering the user preferences.

1.1 Design Overview

FitNoQuit is a web app which provides users with satisfactory, personalized, customized and enjoyable workout and diet routines. Users just need to input his/her food and activity choices and will get an appropriate plan. This web app also contains a big blog community where users can share their thoughts, give feedbacks, ask questions and answer to other user queries.

1.2 Requirements Traceability Matrix

Component / Requirements	Authentication	Updating Profile	Diet Recommendation	Workout Recommendation	Blogs
User Name	X	X	X	X	X
Password	X				
Database Connectivity	X	X	X	X	X
User choice of foods			X		
User medical conditions			X		
User choice of physical activities				X	
Blog/post details					X

Requirement Traceability Matrix

2 System Architectural Design

2.1 Chosen System Architecture

The system is defined using an Entity Relationship diagram and a data flow diagram. The data flow diagram is attached at the end of the document.
The different entities of this system are as follows:

1. User - The user entity has different attributes like username, age, height, weight, gender, email id, food preferences, health condition, weight goal, derived attribute like BMI and primary key User ID.

2. Diet Plan - It has different attributes like Diet Plan ID which is the primary key and a composite attribute the recommended Diet Meals which is further divided into Breakfast, Lunch, Snacks and Dinner.

3. Workout Plan - It has different attributes like Workout Plan ID which is the primary key and a composite attribute Workout plan which is further divided into three different options which the users can choose.

4. Blogs - The users can read different blogs ehich has the primary key Blog ID and other attributes like date of publication and number of likes.

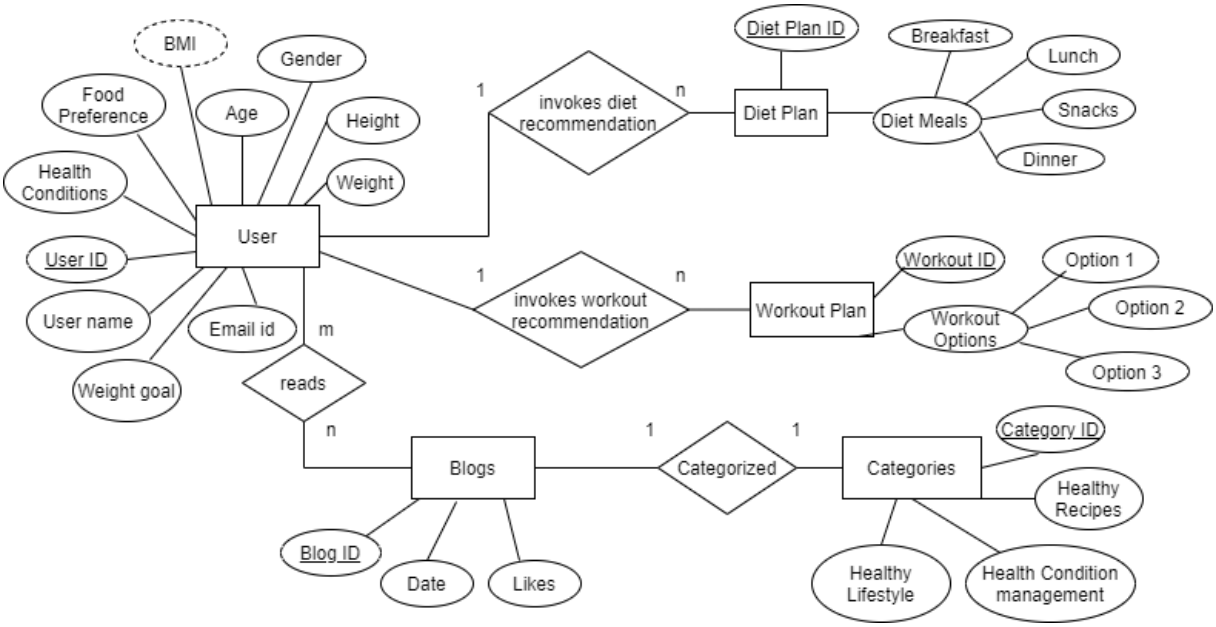
5. Categories - The blogs are further divided into categories like healthy lifestyle, health condition management, healthy recipes, etc. Each category is identified by a primary key labelled Category ID.

2.2 Discussion of Alternative Design

An Alternative Design element that can be used to model the system can be an Component diagram where different components would be the Authentication, Recommendation of Diet, Recommendation of Workout and Blog Suggestions.

2.3 System Interface Description

The system will be able to run on Windows, Linux and Mac OS Platforms. The system will run on a web server using different graphics and an interface which makes it easy for the user to execute various functionalities of the web app.



ER Diagram

3 Detailed Description of Components

3.1 Authentication

Responsibility - Bhavik Bhatt
Constraints - User must sign up or sign in to the system to be able to access the profile and obtain workout and diet recommendations.
Composition - The user must provide details like user name or Email ID and sign in with their password.
Interactions - Client server interaction using the web browser of user
Resources - Database and Validation.

3.2 Recommendation of Diet

Responsibility - Bhavik Bhatt
Constraints - User needs to be registered and signed in
Composition - Enter personal details like height, weight, age, end goal and food preferences.
Interactions - Client server interaction using the web browser of user
Resources - Database, Authentication and Machine Learning model.

3.3 Recommendation of Workout

Responsibility - Muskaan Nandu
Constraints - Only an authorised person can access the profile and obtain workout routine.

Composition - Enter personal details like height, weight, age, end goal and food preferences.
Interactions - Client server interaction using the web browser of user.
Resources - Database, Authentication and Machine Learning model.

3.4 Blog Suggestions

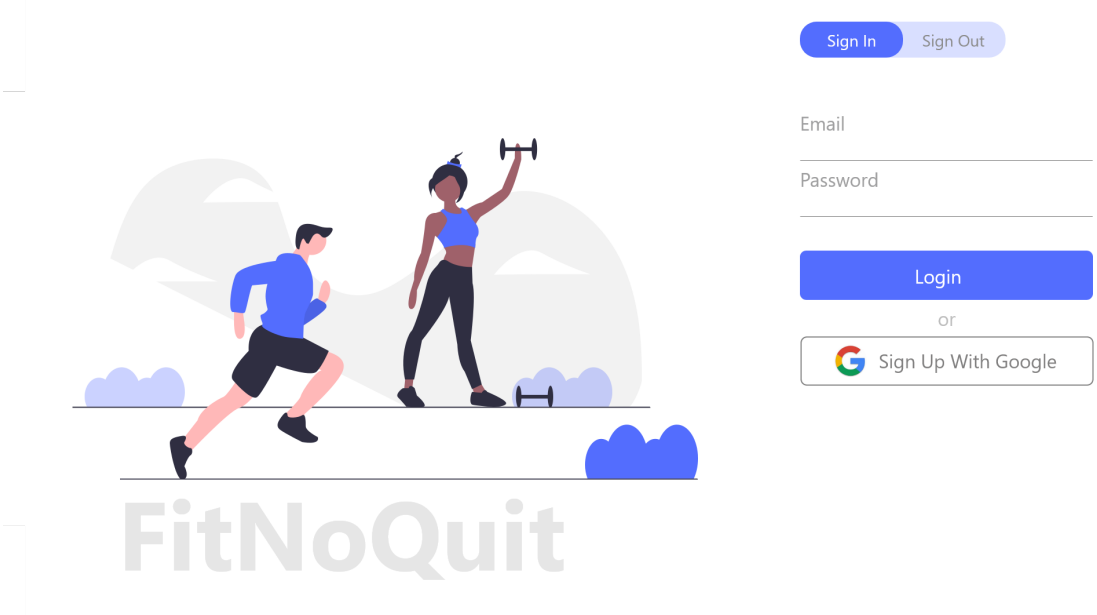
Responsibility - Bhavik Bhatt
Constraints - The registered user must select a category from the available categories of blogs.
Composition - Enter category of interest for blog browsing.
Interactions - Client server interaction using the web browser of user
Resources - Database, Authentication.

4 User Interface Design

4.1 Description of the User Interface

4.1.1 UI Screen for Login Page

4.1.1.1 Screen Images



UI Screen for Login Page

4.1.1.2 Objects and Actions
The Different Objects on this screen are a descriptive image for fitness followed by two text fields which take the user's email and password as input. On clicking Login the user credentials are verified and a valid user is taken to his/her account. If the user is not a

registered user he/she must click on the Sign Up button which takes the user to Sign Up page. The user can also sign in using google if he has registered using google.

4.1.2 UI Screen for Sign Up page

4.1.2.1 Screen Images

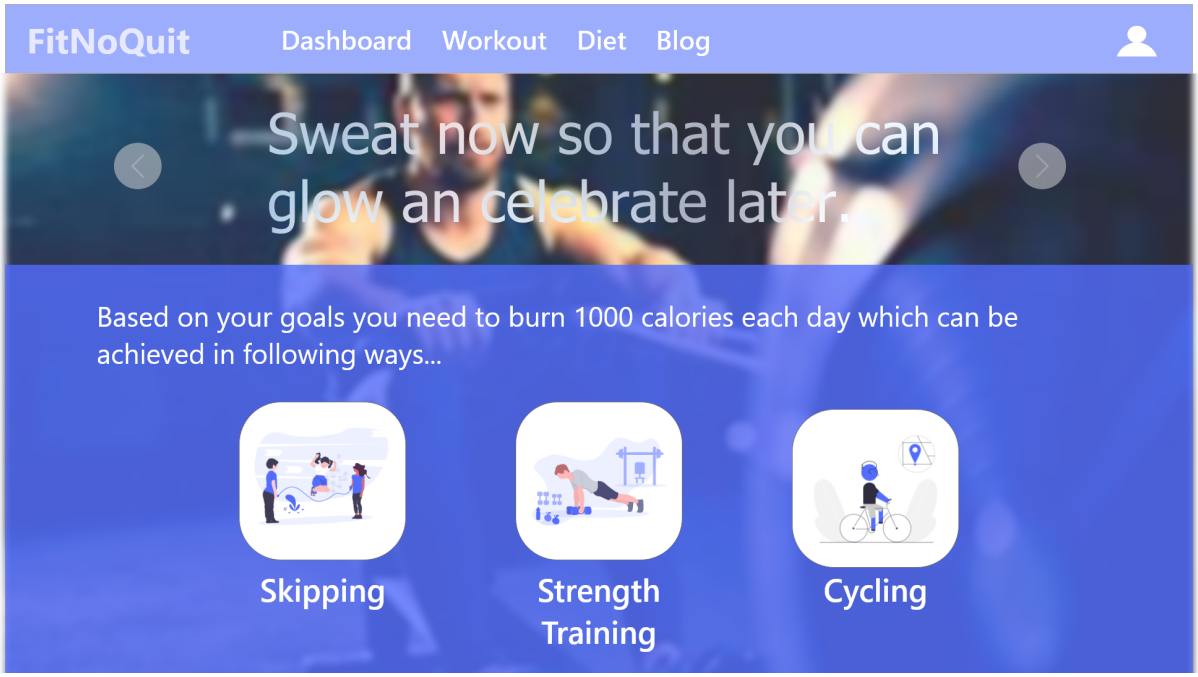
UI Screen for Sign Up screen

4.1.2.2 Objects and Actions

The Different Objects on this screen are a descriptive image for fitness along with five text fields which take the user's name, age, gender, email and password as input. On clicking "Create New Account" the user credentials are validated and a valid user account is registered. The user can also sign up using google account.

4.1.3 UI Screen for Workout Recommendation

4.1.3.1 Screen Images



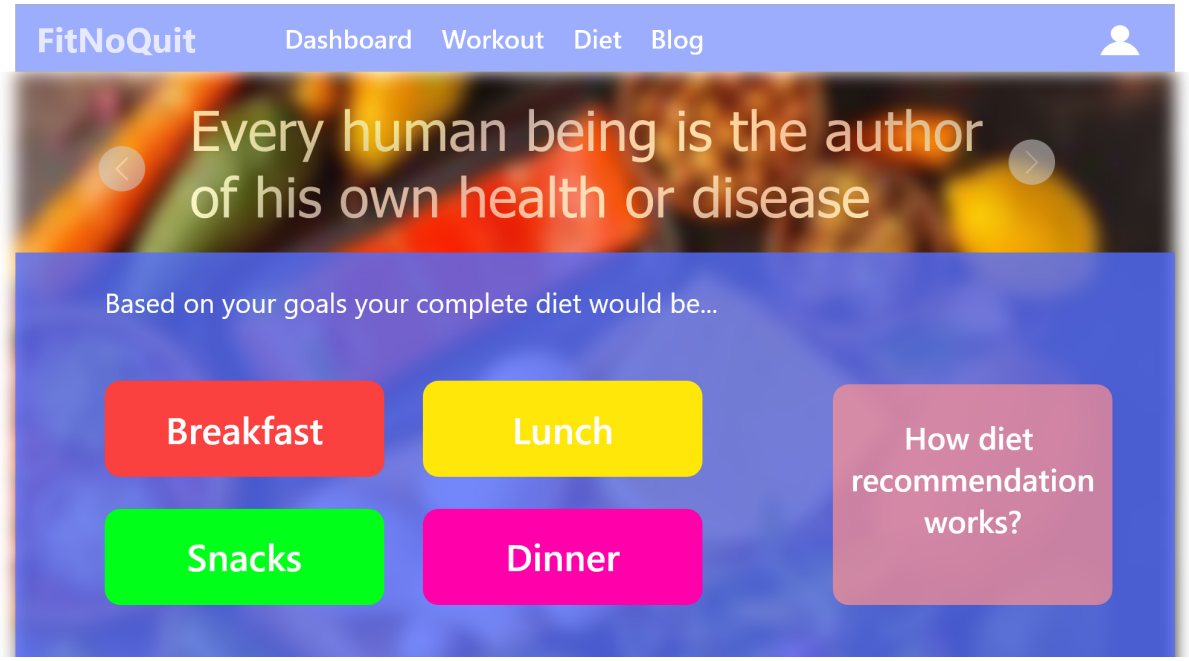
UI Screen for Workout Recommendation Page

4.1.3.2 Objects and Actions

The Different Objects on this screen are a descriptive image for fitness along with different workout options from which the user can select the one that he prefers.

4.1.4 UI Screen for Diet Recommendation

4.1.4.1 Screen Images



UI Screen for Diet Recommendation

4.1.4.2 Objects and Actions

The Different Objects on this screen are a descriptive image for healthy food along with different meals of the day from which the user can select the one that he wants to view the diet plan for.

4.1.5 UI Screen for Blog Suggestions

4.1.5.1 Screen Images

UI Screen for Blog Suggestions

4.1.5.2 Objects and Actions

The screen consists of different categories of blogs from which the user can click on a blog topic and browse through the information consisted in that blog.

5 System Architecture

USE CASE 1	**Sign up**
Description	The system creates a new account for a customer via the Sign-up form/page
Used by	New users
Pre-Conditions	We know user personal details.
Successful End Condition	User creates a new account.
Failed End Condition	User is not able to create a new account.
Actors	Users, Database
Trigger	User wants to use the web app.
Normal Flow	ACTIONS 1. The user selects signup Button from the Navigation Bar 2. The user fills the signup form with all the necessary details like email and password 3. The user submits the form. 4. User information is validated in the system. 5. If the information is valid, then the user is registered in the system. The user is then redirected to the login page.
Alternative Flow	1. Sign up with Google
Extensions	BRANCHING ACTIONS 1. User files invalid details like password and confirm password fields don't match, digits in name, invalid email id, etc. 1. 1. User is not able to sign up.
Priority	High
Frequency of Use	High

Usecase 1

USE CASE 2	**Login**
Description	The system logs into an existing account.
Used by	Registered users
Pre-Conditions	We know user personal details.
Successful End Condition	User logs into his/her account.
Failed End Condition	User is not able to log into his/her account.
Actors	Users, Database
Trigger	User attempts to sign in
Normal Flow	ACTIONS 1. The user selects login Button from the Navigation Bar 2. The user fills the login form with all the necessary details like email and password. 3. The user submits the form. 4. User information is validated in the system. 5. If the information is valid, then the user is logged into the system. The user is then redirected to the homepage.
Alternative Flow	1. Sign in with Google
Extensions	BRANCHING ACTIONS 1. User files invalid details like wrong credentials, invalid email id, etc. 1.1. User is not able to login.
Priority	High
Frequency of Use	High

Usecase 2

USE CASE 3	**Update Profile**
Description	The system updates the user details in the system
Used by	Users
Pre-Conditions	The user should exist in the system and should be logged in
Successful End Condition	User is able to change his/her personal details.
Failed End Condition	User is notable to change his/her personal details.
Actors	Users, Database
Trigger	User wants to change his/her personal details.
Normal Flow	ACTIONS 1. The user logs in to the system. 2. The user selects edit account details from Navigation bar. 3. All details except the email of the user is editable. 4. The user makes the desired changes. 5. The new form is submitted to the system for validation. 6. The system validates the user information. If the information is valid the user details are updated.
Alternative Flow	-
Extensions	BRANCHING ACTIONS 1. User files invalid details like invalid name, wrong image, etc. 1.1. User is not able to update his/her profile.
Priority	High
Frequency of Use	High

Usecase 3

USE CASE 4	**Diet Recommendation**
Description	User fills in his/her choices of food and gets a customized diet plan.
Used by	Users
Pre-Conditions	We know user personal details and food choices.
Successful End Condition	User gets a satisfactory diet plan.
Failed End Condition	User gets a unsatisfactory diet plan.
Actors	Users, Diet Recommendation Model, Database
Trigger	User confirms submission for a healthy and sustainable diet routine.
Normal Flow	ACTIONS 1. User fills in his/her choice of food items and medical conditions (if any). 2. System uses the diet recommendation model to recommend a diet plan. 3. User can make changes in the plan. 4. User finalizes the plan.
Alternative Flow	-
Extensions	BRANCHING ACTIONS 1. User does not like the diet plan. 1.1 User discards the diet plan.
Priority	High
Frequency of Use	High

Usecase 4

USE CASE 5	**Workout Recommendation**
Description	User fills in his/her choices of physical activities and gets a customized workout plan.
Used by	Users
Pre-Conditions	We know user personal details and physical activity choices.
Successful End Condition	User gets a satisfactory workout plan.
Failed End Condition	User gets a unsatisfactory workout plan.
Actors	Users, Workout Recommendation Model, Database
Trigger	User confirms submission for an effective workout routine.
Normal Flow	ACTIONS 1. User fills in his/her choice of physical activities and time span. 2. System uses the workout recommendation model to recommend a workout plan. 3. User can make changes in the plan. 4. User finalizes the plan.
Alternative Flow	-
Extensions	BRANCHING ACTIONS 1. User does not like the workout plan. 1.1 User discards the workout plan.
Priority	High
Frequency of Use	High

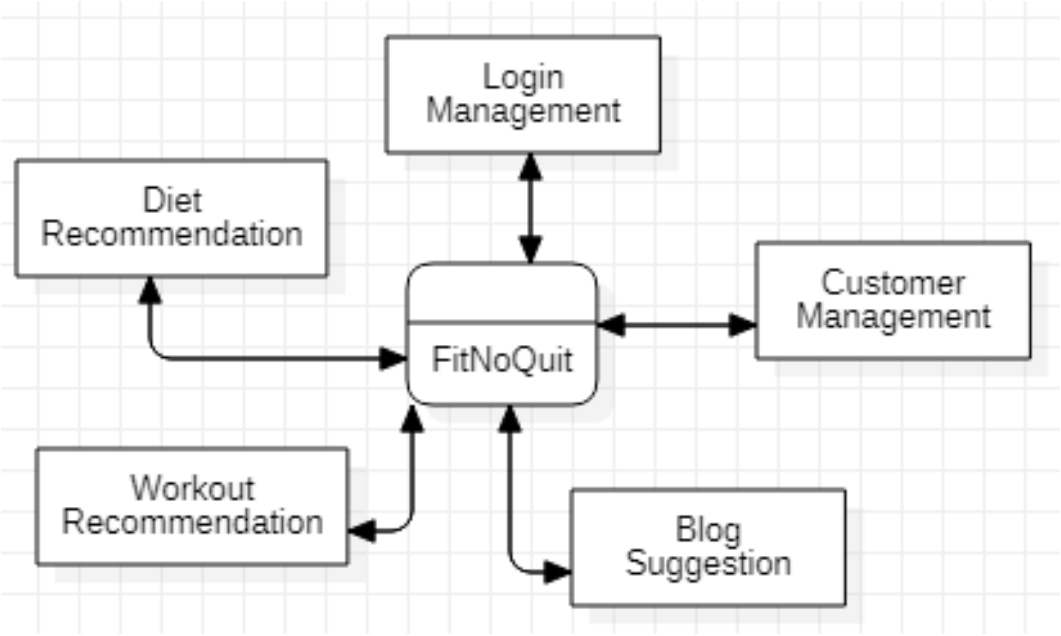
Usecase 5

USE CASE 6	**Blog Community**
Description	User interacts with other users, upload posts and gets recommended other users' posts.
Used by	Users
Pre-Conditions	We know user personal and post details.
Successful End Condition	User is successfully able to interact in the community and post in it.
Failed End Condition	User is not able to interact in the community and post in it.
Actors	User, other users, database
Trigger	User wants to browse through blogs and read about trending topics.
Normal Flow	ACTIONS 1. User enters the blog page. 2. User selects the category he/she is interested in 3. User enters the home page where blogs are displayed. 4. User gets recommended with similar posts.
Alternative Flow	-
Extensions	BRANCHING ACTIONS 1. User likes multiple blog categories based on interest 1.1 User does not get blogs suggested based on interest
Priority	High
Frequency of Use	High

Usecase 6

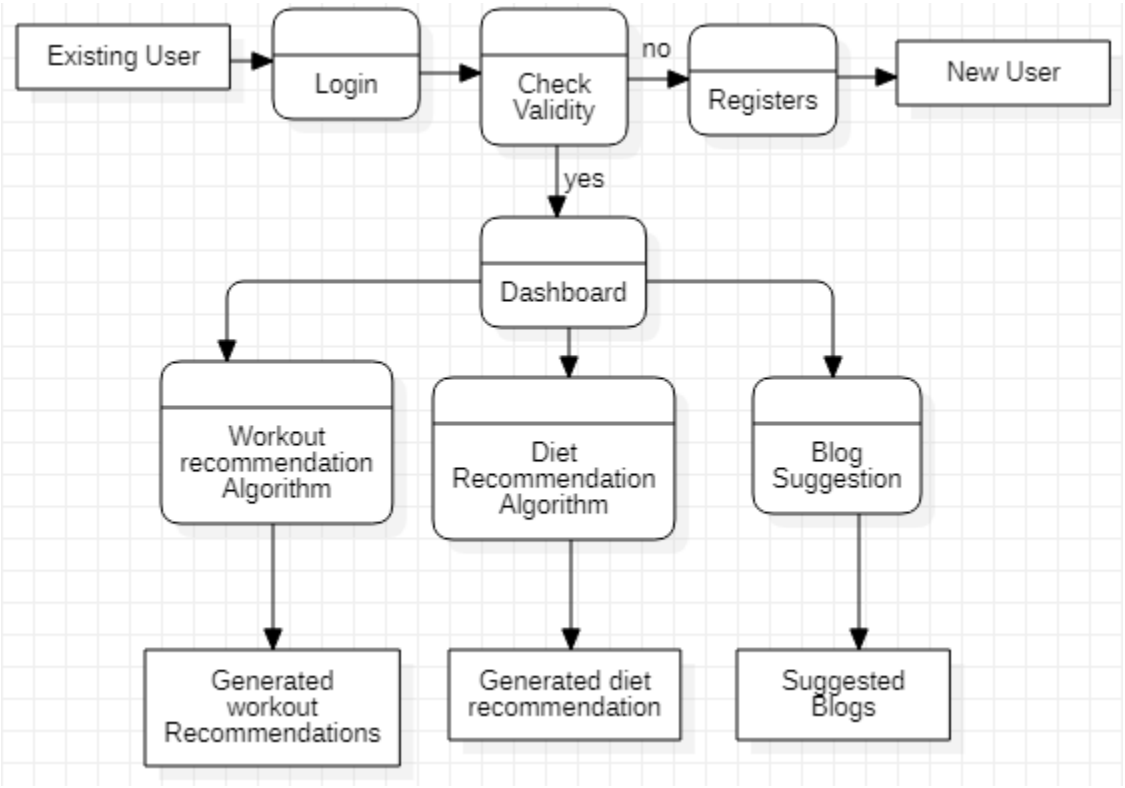
6 Data flow Specifications

6.1 Context Flow Diagram



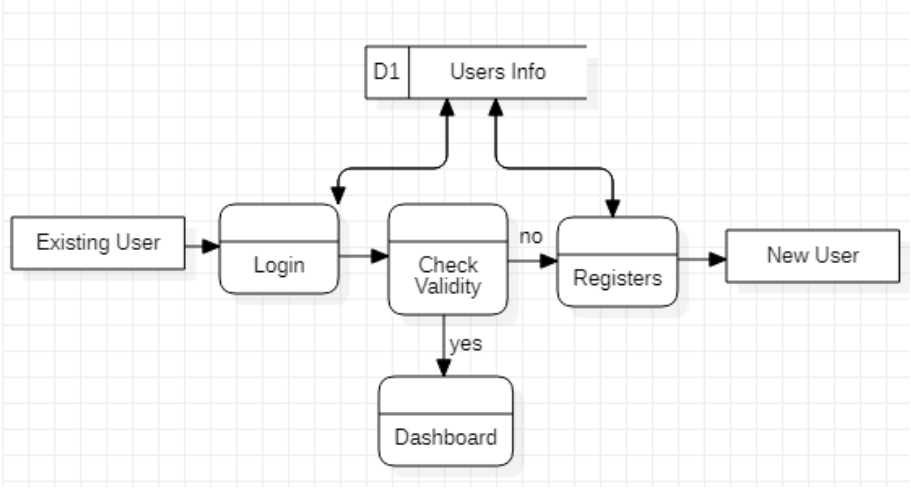
Context Flow Diagram for FitNoQuit

6.2 Data Flow Diagram Level 0

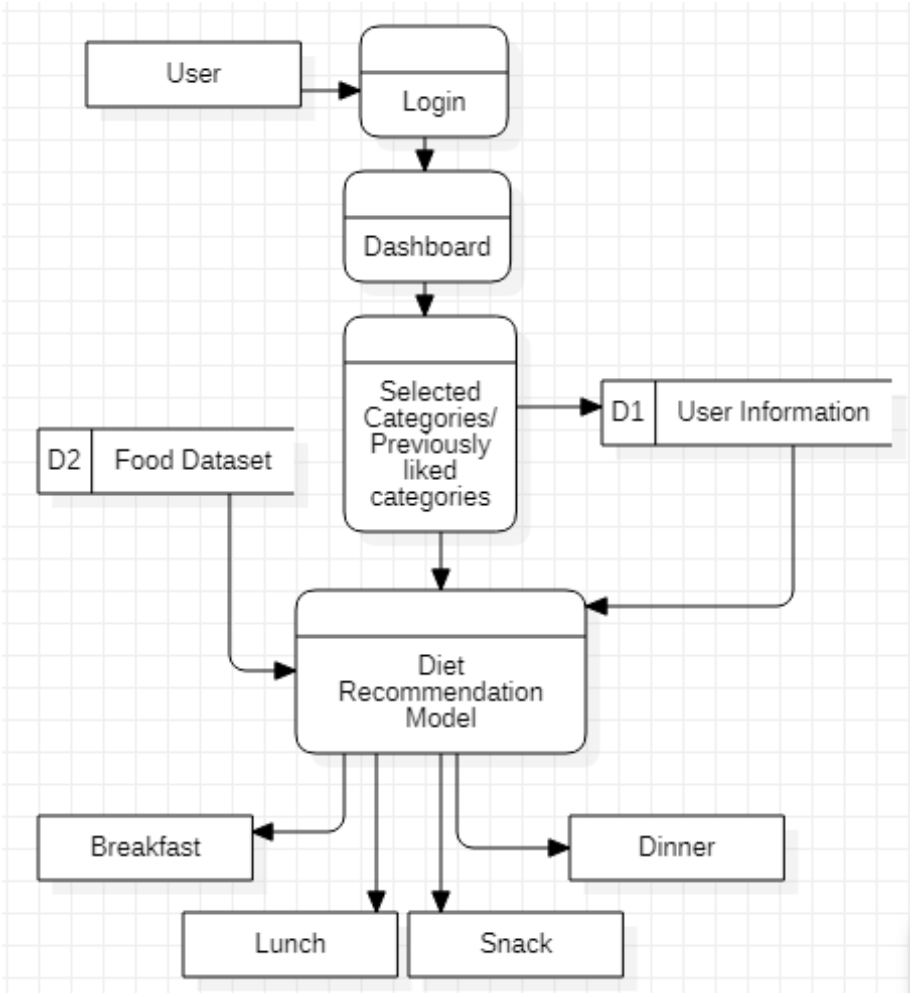


Level-0 diagram for FitNoQuit

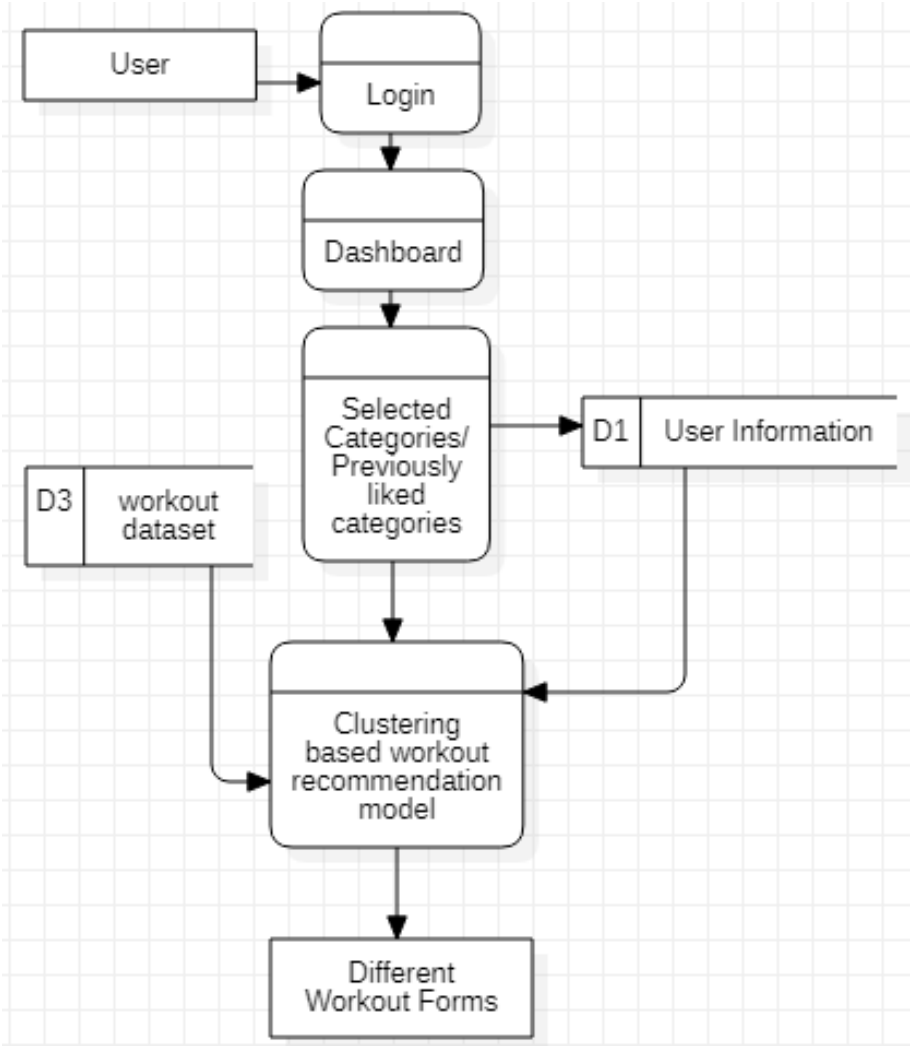
6.3 Data Flow Diagram Level 1



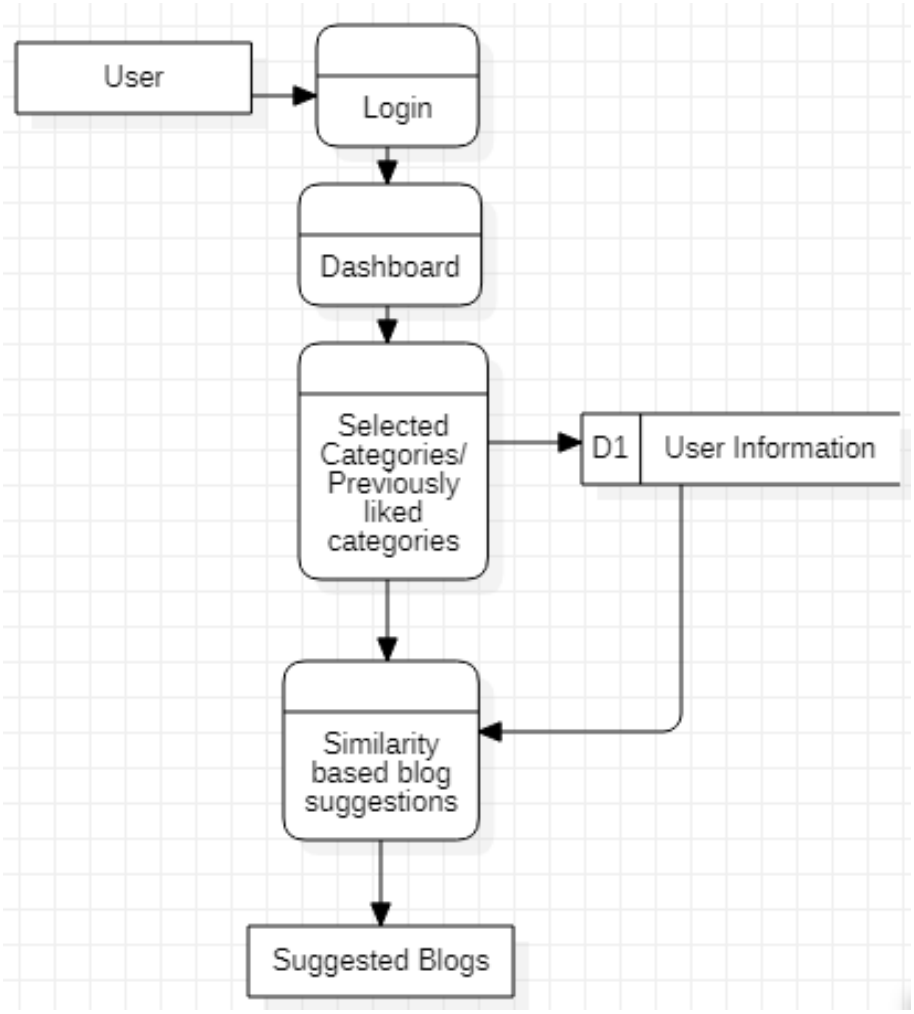
Login Process (Level-1 diagram for FitNoQuit)



Diet recommendation (Level-1 diagram for FitNoQuit)



Workout Recommendation (Level-1 diagram for FitNoQuit)



Blog Suggestion (Level-1 diagram for FitNoQuit)