

NUTRITION ASSISTANT APPLICATION
PROJECT REPORT

Submitted by

Team Id : PNT2022TMID39356

Mr.S.DURAIMURUGAN

Reg.No.422719104009

MR.R.HARIHARAN

Reg.No.422719104013

Mr.I.NIHAL

Reg.No.422719104020

Mr.T.THAMIZHARASAN

Reg.No.422719104036

in partial fulfilment for the award of the degree
of

BACHELOR OF ENGINEERING
in
COMPUTER SCIENCE AND ENGINEERING



V.R.S. COLLEGE OF ENGINEERING AND TECHNOLOGY
ARASUR – 607107, VILUPPURAM DISTRICT

ANNA UNIVERSITY: CHENNAI 600 025

APRIL 2022

TABLE OF CONTENT

CHAPTER NO	TITLE	PAGE NO
1	INTRODUCTION	
	1.1 Project Overview	
	1.2 Purpose	
2	LITERATURE SURVEY	
	2.1 Existing problem	
	2.2 References	
	2.3 Problem Statement Definition	
3	IDEATION & PROPOSED SOLUTION	
	3.1 Empathy Map Canvas	
	3.2 Ideation & Brainstorming	
	3.3 Proposed Solution	
	3.4 Problem Solution fit	
4	REQUIREMENT ANALYSIS	
	4.1 Functional requirement	
	4.2 Non-Functional requirements	
5	PROJECT DESIGN	
	5.1 Data Flow Diagrams	
	5.2 Solution & Technical Architecture	
	5.3 User Stories	
6	PROJECT PLANNING & SCHEDULING	
	6.1 Sprint Planning & Estimation	
	6.2 Sprint Delivery Schedule	
	6.3 Reports from JIRA	
7	CODING & SOLUTIONING	
	7.1 Feature 1	
	7.2 Feature 2	
	7.3 Database Schema (if Applicable)	
8	TESTING	
	8.1 Test Cases	
	8.2 User Acceptance Testing	
9	RESULTS	
	9.1 Performance Metrics	
10	ADVANTAGES & DISADVANTAGES	
11	CONCLUSION	
12	FUTURE SCOPE	
13	APPENDIX	
	13.1 Source Code	
	13.2 GitHub & Project Demo Link	

Introduction

Project overview

Good health can be achieved by maintaining good behaviors such as a good night sleep enough exercise and good nutrition. However, the competitive environment nowadays prevents such good behaviors. Thus, this work aims to develop an application on mobile devices that is able to (1) record the daily sleeping, exercise and nutrition information, (2) analyze the collected information in order to provide a notification or an alarm, and (3) present the analyzed results in a simple and easy to understand format. The proposed application can collect data from other application and from the users. A set of simple data analysis methods is performed on the collected data in order to provide a personal health advice based on the user pre-defined preferences.

Better health can be achieved by maintaining a simple lifestyle such as a good night sleep, enough exercises and good nutrition. People spend one third of their lives sleeping however most people do not understand the importance of sleep. Moreover, the lack of sleep can affect a person's memory and emotion. The exercise habit and nutrition can also lead to good health. Daily working life can be affected by lack of sleep such as drowsiness and long-term health problems [1,2]. Many researches have shown that not enough sleep or exercise can lead to many health problems such as GERD [3], Alzheimer's disease [4], hearth disease [5], sleep apnea [6] and insomnia [7].

In the competitive work environment, nowadays, it is not easy for many people to manage good sleeping and exercise habits. With busy work and personal life schedules, many people indulge themselves in a bad sleeping habit such as sleeping very late or waking up very late especially in young adults and teenagers. A good night sleep can also be affected by the person's exercise habits and nutrition consumption. The sleep, nutrition and exercise have more complicated relationship

than many people have realized [8]. Enough exercise helps people sleep better and good nutrition also lead to better mood and better health. Thus, a that can automatically record personal information, produce a warning, and give personal advices to its owner in order to maintain good sleeping, exercise and nutrition habits is needed.

Today smart phone technology is a good candidate for this project because of its low cost, portability and capability which is similar or close to a personal computer. Moreover, a phone has become a typical device in daily activity. In addition, a current smart phone includes a lot of sensors such as an accelerometer, a microphone and a light sensor. These features make a smart phone suitable for collecting personal data in this work. Android is a Linux-based operating designed for touch screen mobile devices.

Purpose

Wellness and healthy lifestyles have become mainstream. Interest in fitness applications and revenue from them grow as fast as the number of people striving to be fit.

The spoonacular Nutrition, Recipe, and Food API allow you to access over 365,000 recipes and 86,000 food products. Our food ontology and semantic recipe search engine make it possible to search for recipes using natural language queries, such as "gluten-free brownies without sugar" or "low-fat vegan cupcakes." You can automatically calculate the nutritional information for any recipe, analyze recipe costs, visualize ingredient lists, find recipes for what's in your fridge, find recipes based on special diets, nutritional requirements, or favorite ingredients, classify recipes into types and cuisines, convert ingredient amounts, or even compute an

entire meal plan. With our powerful API, you can create many kinds of food and especially nutrition apps.

Literature survey

TITLE: Effects and challenges of using a nutrition assistance system: results of a long term mixed-method study

Hanna Hauptmann¹ · Nadja Leipold · Mira Madenach · Monika Wintergerst · Martin Lurz · Georg Groh · Markus Böhm · Kurt Gedrich · Helmut Krcmar

Received: 19 June 2020 / Accepted in revised form: 26 May 2021

© The Author(s) 2021

Healthy nutrition contributes to preventing non-communicable and diet-related diseases. Recommender systems, as an integral part of Health technologies, address this task by supporting users with healthy food recommendations. However, knowledge about the effects of the long-term provision of health-aware recommendations in real-life situations is limited. This study investigates the impact of a mobile, personalized recommender system named Nutrilize. Our system offers automated personalized visual feedback and recommendations based on individual dietary behaviour, phenotype, and preferences. By using quantitative and qualitative measures of 34 participants during a study of 2–3 months, we provide a deeper understanding of how our nutrition application affects the users' physique, nutrition behaviour, system interactions and system perception. Our results show that Nutrilize positively affects nutritional behaviour measured by the optimal intake of each nutrient.

The analysis of different application features shows that reflective visual feedback has a more substantial impact on healthy behaviour than the recommender. We further identify system limitations influencing this result, such as a lack of diversity, mistrust in healthiness and personalization, real-life contexts, and personal user characteristics with a qualitative analysis of semi-structured in-depth

interviews. Finally, we discuss general knowledge acquired on the design of personalized mobile nutrition recommendations by identifying important factors, such as the users' acceptance of the recommender's taste, health, and personalization.

The research in recommender systems has been recently interested in food recommender systems addressing, among others, nutritional health with different approaches (Trattner and Elsweiler 2018). These systems have the potential to help users navigate the growing amount of multimedia food content (Min et al. 2019a) while fostering healthy eating patterns. Conventional recommender systems learn the users' preferences and try to cater to them, which might enforce recommendations for unhealthy food as well (Elsweiler and Harvey 2015; Schäfer et al. 2017b). Thus, health-aware recommender systems need to also incorporate different parameters related to taste and health into their systems (Elsweiler et al. 2015a, 2016; Ge et al. 2015a). The use of nutrition assistance systems is promising since previous studies have shown that persuasive technologies can help people to eat healthier (Orji and Moffatt 2016). Existing national and international dietary guidelines constitute important informational sources for nutrition (Painter et al. 2002) but are often based on guidelines for a whole population instead of dealing with individual requirements.

Yet, efforts towards personalised nutrition recommendations have been made by Zeevi et al. (2015) and within the Food4Me study (Celis-Morales et al. 2015). Zeevi et al. (2015) incorporated different individual aspects into their algorithm based on machine-learning techniques like dietary behaviour, anthropometrics, blood biomarkers and the gut microbiome. Based on this, they could successfully predict the post-prandial glucose response (PPGR) that varies greatly between different individuals for the same meal. Celis-Morales et al. (2015) examined in their 6-month study the effectiveness of personalized nutrition advice, which was based on dietary, phenotypic and genotypic information. Their results showed higher effectiveness in changing nutrition habits through personalised dietary advice than conventional dietary advice.

Evaluations of recommender systems often focused on measuring algorithmic accuracy, which is insufficient in explaining user experience (Knijnenburg et al. 2012). Further, studies on recommendations and mobile applications frequently cover short-term usage, i.e. think-aloud lab studies of multiple hours or surveys comparing recommender algorithms on a quantitative level. Especially in the context of health recommender systems, it is important to not only evaluate recommendation accuracy. Since healthy recommendations might contrast user preferences, it is crucial to evaluate user satisfaction and changes in behaviour and health over a longer period of time, i.e. multiple weeks, (Schäfer et al. 2017b). Traditional nutrition interventions require months to show lasting effects on nutritional behaviour and physique. Therefore, we evaluate our proposed system, Nutrilize, based on a 2–3 months study using a mixed-methods evaluation of the system effects and the user experience.

It is our goal to show how long-term usage of a nutrition assistance system influences the users'

- (a) physique,
- (b) nutrition behaviour,
- (c) system interaction and
- (d) system perception.

Furthermore, we want to gain insights into the reasons for observations appearing in long-term but not in short-term usage by analyzing semi-structured in depth interviews.

The Nutrition Care Process

1. Nutrition Diagnosis

- Identify & label problem
- Determine cause/contributing risk factors
- Cluster signs & symptoms/defining characteristics

- Document

2.Nutrition_Intervention

- Plan nutrition intervention
- Formulate goals & determine a plan of action • Implement nutrition intervention
- Care is delivered & actions are carried out
- Document

3. Nutrition Monitoring & Evaluation

- Monitor progress
- Measure outcome indicators
- Evaluate outcomes
- Document

4. Nutrition Assessment & Re-assessment

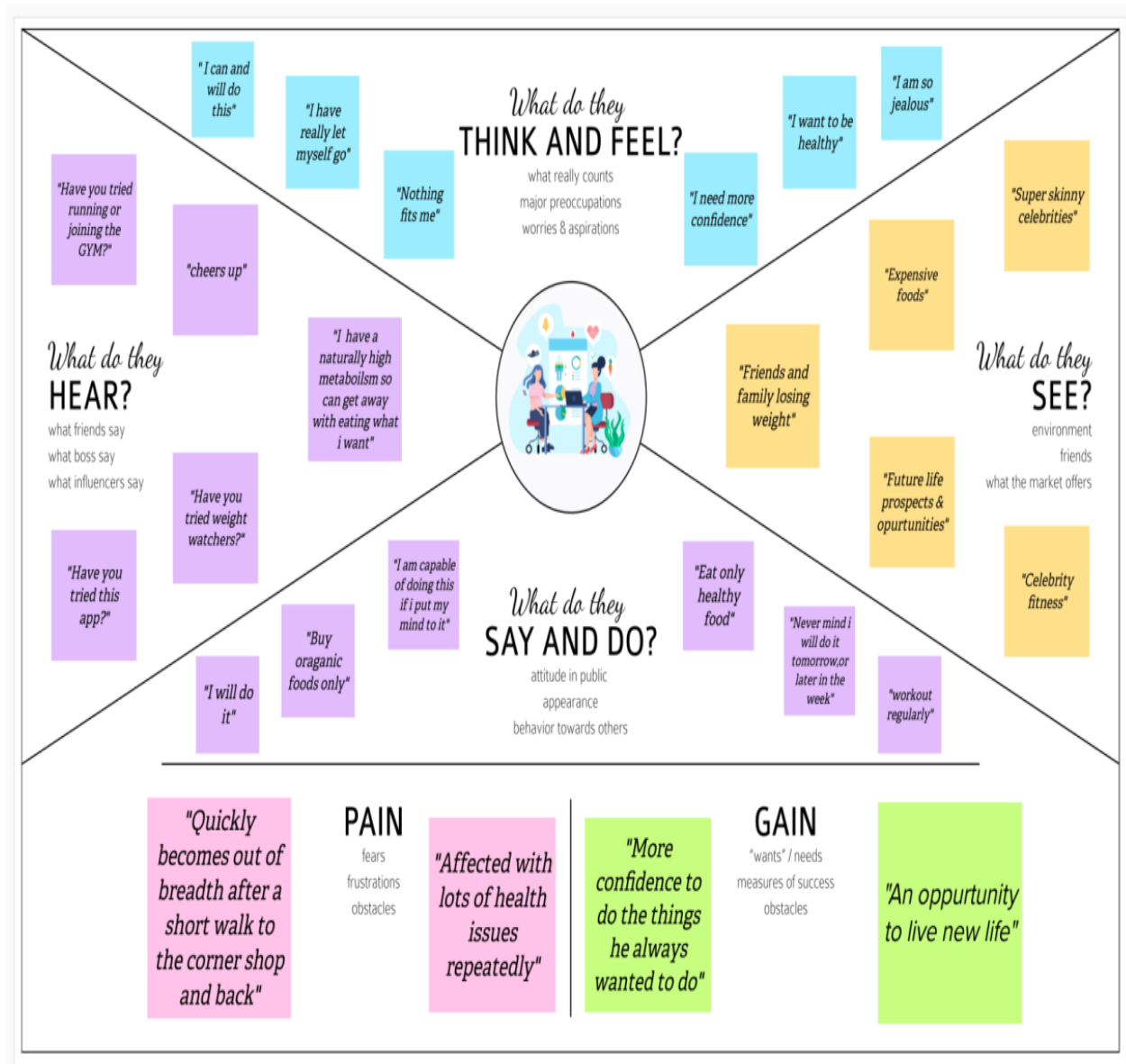
- Monitor progress
- Measure outcome indicators
- Evaluate outcomes

Problem statement solution

Problem statement (ps)	I am	I'm trying to	but	Because	Which makes me feel
PS-I	Nutritional assistant	To determine nutritional needs	Issues in eating proper healthy food	People do not get proper guidelines to intake of food	Being Over weight
PS-II	Nutritional assistant	To assess risk factor	Problem in getting proper nutrition	People do not have proper education about nutrition's important	Anxiety and depression

Ideation and proposed solution


Empathy map canva



Ideation and brainstorming

Step-1: Team Gathering, Collaboration and Select the Problem Statement

Template



Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

- 🕒 10 minutes to prepare
- 🕒 1 hour to collaborate
- 👥 2-8 people recommended

[Share template feedback](#)

➔

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

🕒 10 minutes

A

Team gathering

Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

B

Set the goal

Think about the problem you'll be focusing on solving in the brainstorming session.

C

Learn how to use the facilitation tools

Use the Facilitation Superpowers to run a happy and productive session.

[Open article](#) ➔

1

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

🕒 5 minutes

PROBLEM

Due to the ignorance of healthy food habits, obesity rates are increasing at an alarming speed, and this is reflective of the risks to people's health.

Key rules of brainstorming

To run an smooth and productive session

➔ Stay in topic.	💡 Encourage wild ideas.
⏸️ Defer judgment.	👂 Listen to others.
🗣️ Go for volume.	👁️ If possible, be visual.

Step-2: Brainstorm, Idea Listing and Grouping

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

DURAIMURUGAN S
422719104009

You can categorize diet and nutrition plan based on their features and functionalities

It provides a complete report based on the information provided by nutritionist

Push notifications can help share essential diet and nutrition tips

Send reminders or information about their fitness goal

It assists the users to monitor their dietary intake, can be for either on an hourly/daily/weekly or monthly basis

Provides personalized meal plan

HARRIHARAN R
422719104013

Motivating and encouraging them through notifications

It can help you understand your eating habits and patterns

It also helps to identify the foods good and not so good to eat on a regular basis

Offers valuable insights on diets and nutrition

It defines the scope of community nutrition

The food content details are given by quantity based

NIHAL I
422719104020

It explain the role of diet for patients and behaviors for optimal health

For nutrition assistant also can deliver the experience of nutrition, how the user can healthy development and aging

Gives eating patterns that works with your biological needs and goals

The correct quantity of ingredients in your food is given

Only needed healthy ingredients are visible in food content chart

Dietary guidelines is provided

THANJITHARAN T
422719104036

Experiences sharing, documented food practices and shared learning to inform programming

Integration of food life way and how veg is available

It will reduce the nutrition related problems by meeting nutrition contentment food and following the nutrition provided by nutrition standard distribution

Nutritional knowledge and perceptions of healthy eating education is provided

Food planning to share after getting suggestions from nutritionist

Proper guidelines and details about nutrition given

TIP

You can select a sticky note and hit the pencil (switch to sketch) icon to start drawing

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. In the last 10 minutes, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

20 minutes

TIP

Add a customizable tag to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mind.

Nutrition assistant enable more opportunities to help people to understand their daily eating habits

Nutrition assistant application

It exploring nutrition patterns and maintain a healthy diet

It is a vital part of analytical thinking that provides information about the chemical composition, processing, quality control and consumption of food

For example, the main aim of the project is to develop a model which is used for identifying the food categories from the user and capture the food then the image will be shared the model extract the image and detect the nutrition based on the food the protein, carbohydrate, fat, calories, etc...

Step-3: Idea Prioritization

4

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

🕒 20 minutes



Proposed solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	To solve Issues in eating and getting proper healthy food
2.	Idea / Solution description	To determine nutritional needs and assess risk factors by nutritional assistant
3.	Novelty / Uniqueness	The advice given by nutrition assistants is customized based on a patient's unique characteristics
4.	Social Impact / Customer Satisfaction	It can help you feel better physically and emotionally and make you more likely to seek and enjoy social Activities
5.	Business Model (Revenue Model)	<p>Key proposition : we want to solve improper intake food, we solve it by educate people by nutrition assistant web app</p> <p>user segments : lots of obese and malnourished people need us right now.</p> <p>User relationship : people need to use nutrition assistant web application provided by us to get solution and contact with us</p>

Problem solution fit

Problem-Solution fit canvas 2.0

Purpose / Vision

Define CS, fit into CC	1. CUSTOMER SEGMENT(S) CS According to the survey, 26 percent of those aged 18 to 29 years regularly use apps to track their diet and nutrition.	6. CUSTOMER CONSTRAINTS CC A user sets a goal, which is their current weight and the target in the app to scan food for calories or food and nutrition apps. The user then inputs information about their activities and the food they eat. The simple nutrition app then calculates the calories they've consumed and burnt.	5. AVAILABLE SOLUTIONS AS With our Food Recognition model, you can now automatically recognize more than a thousand different foods in images and video, all the way down to the ingredient level. Which helps us to maintain proper health	Explore AS, differentiate
	2. JOBS-TO-BE-DONE / PROBLEMS J&P Effective in changing eating behavior and diet-related health risk factors. However, while they may curb growing overweight and obesity rates, widespread adoption is yet to be achieved. Hence, profound knowledge regarding factors motivating and hindering (long term) nutrition app use is crucial for developing design guidelines aimed at supporting uptake and prolonged use of nutrition apps	9. PROBLEM ROOT CAUSE RC Now a days lots of people are obese and affected by lots of health issues because of improper intake of food, so we developed this web application to give nutrition education to them.	7. BEHAVIOUR BE App technologies allows patients to more easily monitor their caloric intake and dietary patterns to aid in weight and disease management	
Identify strong TR & EM	3. TRIGGERS TR seeing their neighbours fitness, celebrities fitness trigger them to achieve fitness. The fitness achieved by maintaining diet and proper intake of food, so our app is useful to get nutrition education.	10. YOUR SOLUTION SL In our nutrition assistant application, people can get proper nutrition education to achieve fitness by getting knowledge about what kind of food to eat regularly in daily life. They can upload food images to get food contents.	8. CHANNELS of BEHAVIOUR CH 8.1 ONLINE Customer upload the image of food to get nutrition content in that food	Extract online & offline CH of BE
	4. EMOTIONS: BEFORE / AFTER EM When they facing the health problem they totally lose their confidence, hope and feel frustrated, anxiety, inferiority complex etc. This nutrition assistant application gives them a bright new healthy future		8.2 OFFLINE After getting food details they have decided to eat or not and follow the diet plan given by us	



Problem-Solution fit canvas is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 license
Created by Daria Nepriakhina / Amaltama.com

Requirment analysis

Functional requirement

Project description:

This project is aimed at developing a desktop-based application named Nutrition Assistant Application for estimates food attributes such as ingredients and nutritional value by classifying the input images of food. The Nutrition Assistant Application refers to the system and processes to help the user to analyse the intake of food with the involvement of a Technology system. This system can be used to store the details of the user's health, calculating the BMI, Classifying the food image to know the nutritional value, update the status of their health condition based on the information provided, and generate health reports weekly or monthly based. This project is categorizing individual health condition of the user. The Nutrition Assistant Application is important to control their daily calorie intake by eating healthier foods, which is the most basic method to avoid obesity. Without proper diet control, and this is reflective of the risks to people's health. A good Nutrition Assistant Application will alert the users when it is time to avoid. This project aims at building a web App that automatically estimates food attributes such as ingredients and nutritional value by classifying the input image of food.

Scope:

- **Maintains good health:** The application can help in guiding them on how to remain healthy and how to take good nutrition. The application will help them without personally going to the doctor. Promote better nutrition in the

community by educating about better diet and nutrition.

- ❑ **Functional limitation:** The user to be specific can't access the web or admin module, whereas the administrator has all the rights to modify and manage the contents such as news, tips, etc
- ❑ **Improve Usability:** In the part of user's just the internet connection is enough in order to access the news, updates and other contents provided by the admin regarding their health condition.
- ❑ **Health conscious:** This will provide convenience to persons/users who want to learn about nutrition and other related health topics by just using the Nutrition Assistant Application

Purpose

The users continue to demand to know the nutritional value that is in their food. The users learn about the effect of different foods on human health. Evidently, the ultimate aim of this application is to provide the ways in which one can lead a healthy life by maintaining his/her diet. The user can access the nutritional information by taking a photo of the food, uploading a photo from the gallery, or by entering manually.

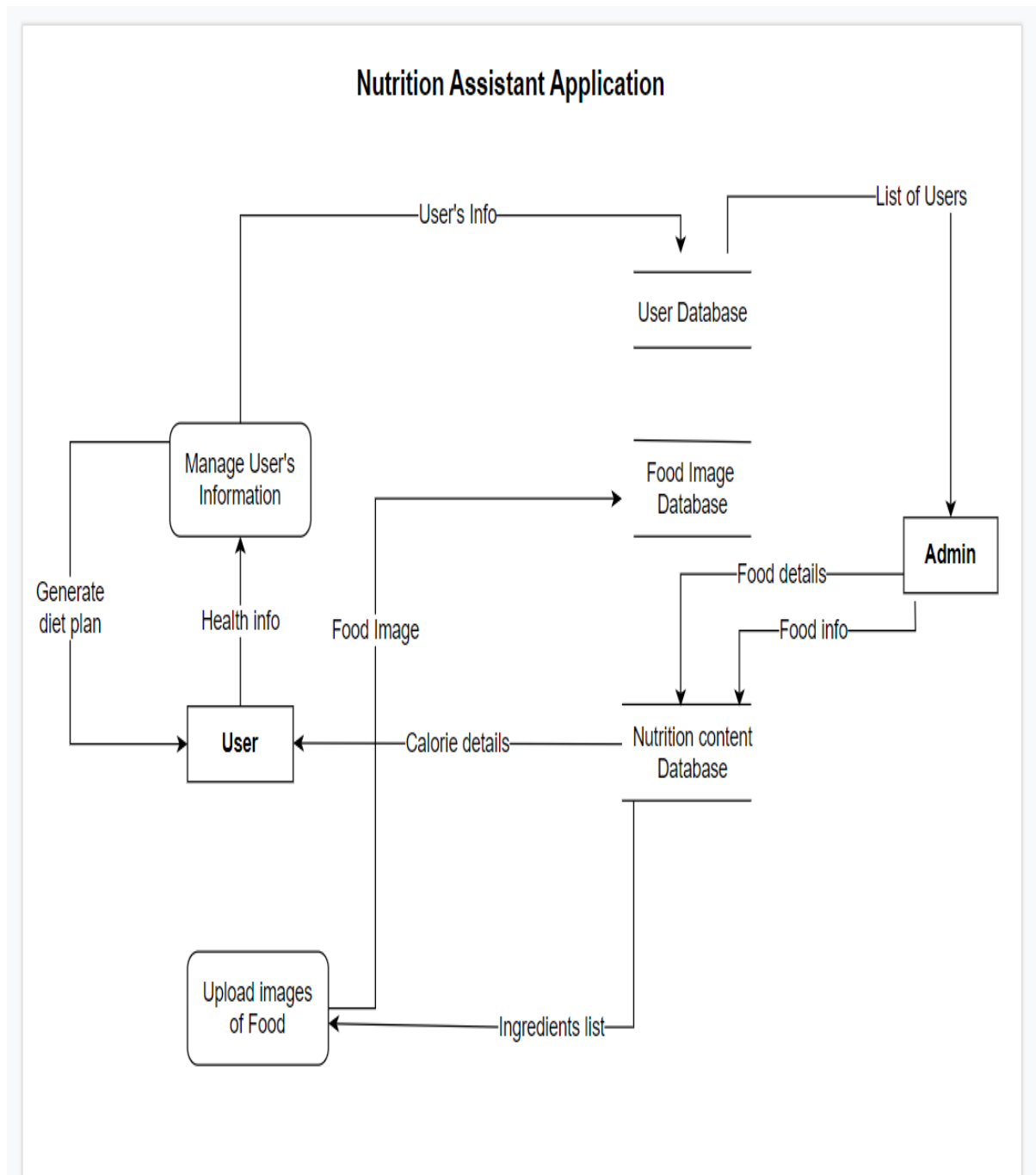
Nutrition is more than just obtaining nutrients and calories from food. It's more than just eating the healthy stuff. It's more than just following the most recent fad diet. Nutrition, the food we eat and the way we eat it, is an integral part of life. Nutrition is an experience. It evokes memories, helps us celebrate good times, and is there for us in times of grief. I believe the purpose of nutrition is to nourish the body and soul.

The Nutrition Assistant Application helps the users to eat nutritional rich food which yield tolead a healthy life.

IDENTIFIER	REQUIREMENTS
1. Add health information	This application will allow to add health related information of the user.
2. Delete health information	This application will allow to delete the unwanted details about their health.
3. Categories of nutritional food	The categories of food.
4. View of Dashboard	Application will allow user to view the dashboard containing nutrition details.
5. Mail Notification	This application will allow to send mail notification to user when there are any issues regarding their health
6. Tracking System	The health can be tracked with this application.
7. Graph analysis	This application will demonstrate health condition by means of nutritional content
8. Identifying the high calorie food	The high calorie ingredients will be shown via this application.
9. Identifying the low calorie food	The high calorie ingredients will be shown via this application.
10. Passcode	This application has the option to set a passcode to keep their medical reports safe.
12. Add multiple accounts	This application has the option of creating multiple accounts for the users.
13. Selection of health report duration	This application has the ability to select the duration for displaying the health report as weekly or monthly.
14. Update account	This application will allow the user to update their profile.
15. Add account	This application will allow the user to add their profile.
16. Delete account	This application will allow the user to delete their profile.
17. PDF report	This application will generate the pdf report of medical analysis.
18. Pupation of nutritional trends	This application will allow constant review of nutritional trends and pupation.

Project design

Dataflow diagram



Solution & technical architecture

Technical Architecture

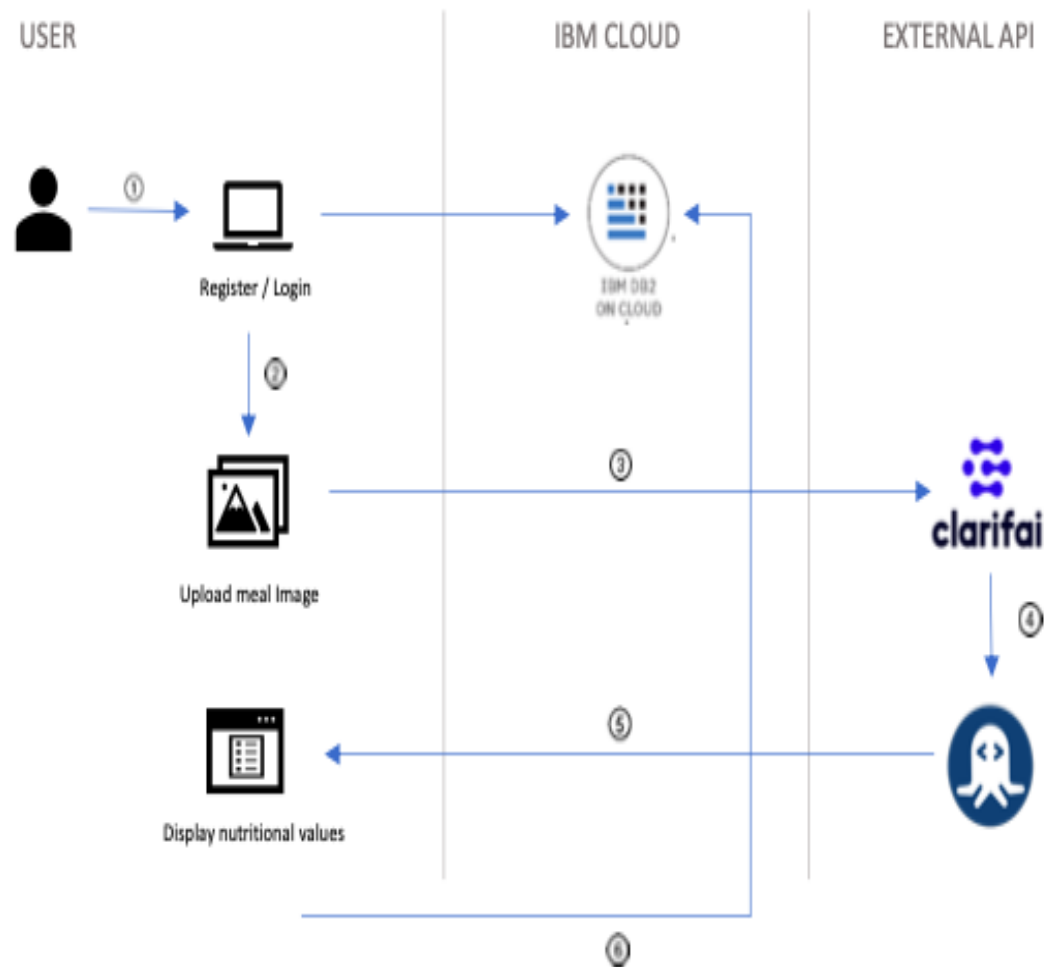


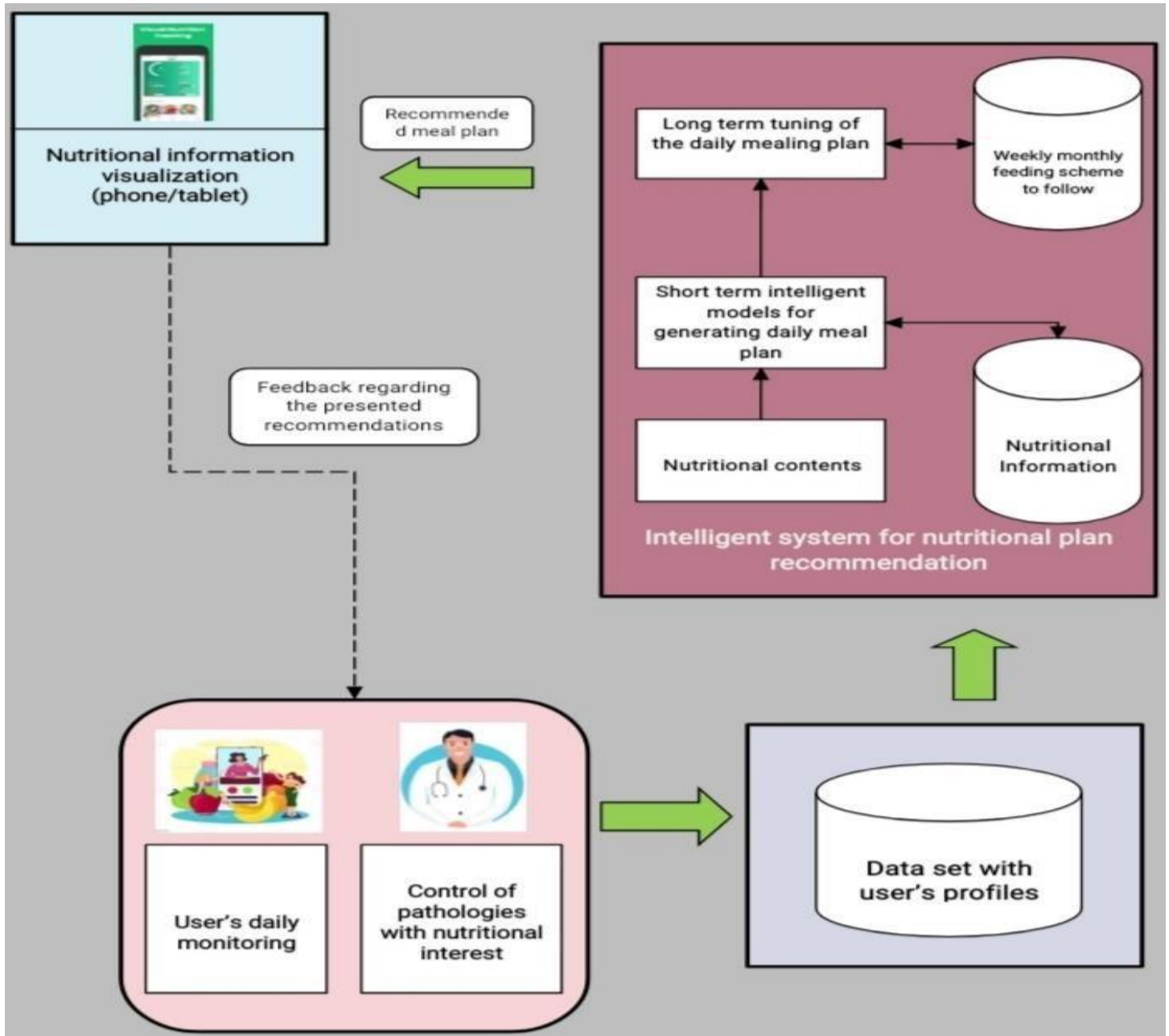
Table-1 : Components & Technologies:

S. No	Component	Description	Technology
1.	User Interface	User interacts with applicationWeb UI	HTML, CSS, JavaScript
2.	Application Logic-1	Connection with Database and external API's	Python Flask
3.	Application Logic-2	Integration of chatbot with application	IBM Watson Assistant
4.	Database	Data Type, Configurations etc.	MySQL
5.	Cloud Database	Database Service on Cloud – used to store user details for registration and login, and track diet history	IBM DB2
6.	External API-1	This API is used to find the name of the food, forwhich the image has been uploaded	Clarifai AI-Driven API
7.	External API-2	This API is used to find the recipe and Nutritionalvalue present inside the food	Nutrition API (Rapid API)
8.	Infrastructure	Application Deployment to provide good performanceand scalability	Kubernetes

Table-2: Application Characteristics:

S. No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Flask is used for connecting database andexternal API's.	Python flask
2.	Security Implementations	Security is provided for accessing the database.	SSH
3.	Scalable Architecture	Presentation tier: User Interface to login and upload meal image Application tier: Nutrition API, Clarifai API Database tier: IBM cloud DB2	HTML, CSS, JavaScript, Flask, Kubernetes, IBM DB2
4.	Availability	Clustering improves availability. This can be achieved with the help of Kubernetes cluster.	Kubernetes
5.	Performance	By using cache and adding master nodes we canimprove performance of the application	Kubernetes

Solution architecture



Project planning & scheduling

Sprint planning and estimation

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High	Duraimurugan S Hariharan R Nihal I Thamizharasan T
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Duraimurugan S Hariharan R Nihal I Thamizharasan T
Sprint-1	Login	USN-3	As a user, I can log into the application by entering email & password	1	High	Duraimurugan S Hariharan R Nihal I Thamizharasan T
Sprint-2	User details	USN-4	As a user , I can fill the Details.	2	High	Duraimurugan S Hariharan R Nihal I Thamizharasan T
Sprint-3	Push notification	USN-5	As a user, I will search the food items.	2	Medium	Duraimurugan S Hariharan R Nihal I Thamizharasan T
Sprint-4	Shown the nutrition details and Recipe for	USN-6	As a user, I can scan the food an get the nutrition details and recipe for related scanned	1	High	Duraimurugan S Hariharan R
Sprint-6	scanned food		food	2	Medium	Nihal I Thamizharasan t

Project Tracker, Velocity & Burndown Chart: (4 Marks)

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	2 Oct 2022 4	2 Oct 2022 9	20	2 Oct 2022 9
Sprint-2	20	6 Days	3 Oct 2022 1	0 Nov 2022 5	20	0 Nov 2022 5
Sprint-3	20	6 Days	0 Nov 2022 7	1 Nov 2022 2	20	1 Nov 2022 2
Sprint-4	20	6 Days	1 Nov 2022 4	1 Nov 2022 9	20	1 Nov 2022 9

Velocity:

Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

$$AV = \frac{\text{sprint duration}}{\text{velocity}} = \frac{20}{10} = 2$$

Average Velocity = Story Points per Day

Sprint Duration = Number of (Duration) days per Sprint

Velocity = Points per Sprint

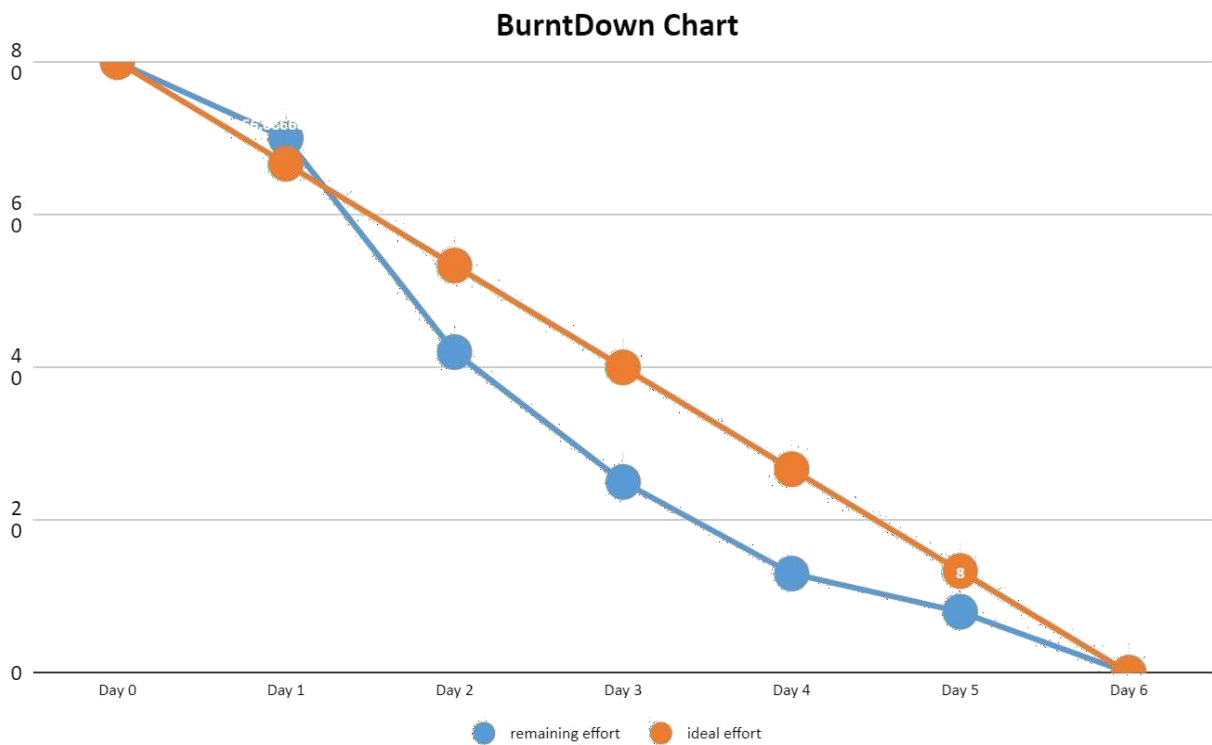
$$AV = \frac{20}{6} \approx 4$$

Therefore, the **AVERAGE VELOCITY IS 4 POINTS PER SPRINT**

Burndown Chart:

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.

	Initial Estimate	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	29-Oct
Sprint number	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Sprint-1	20	0	10	5	3	1	1
Sprint-2	20	2	10	4	1	1	2
Sprint-3	20	5	5	5	5	0	0
Sprint-4	20	3	3	3	3	3	5
remaining effort	80	70	42	25	13	8	0
ideal effort	80	<u>66.66666667</u>	<u>53.33333333</u>	<u>40</u>	<u>26.66666667</u>	<u>13.33333333</u>	<u>0</u>



Coding and solutioning

app.py

```
from flask import Flask,render_template,redirect,url_for,
request,session
import ibm_db
import credentials
from flask_mail import Mail, Message
```

```
app=Flask(__name__)
```

```
#Database connection
```

```
conn =
```

```
ibm_db.connect("DATABASE="+credentials.DB2_DATAB
ASE_NAME+";HOSTNAME="+credentials.DB2_HOST_N
AME+";PORT="+credentials.DB2_PORT+";SECURITY=SS
L;SSLServerCertificate=DigiCertGlobalRootCA.crt;UID="+c
redentials.DB2_UID+";PWD="+credentials.DB2_PWD+"",",',
')
```

```
# configuration of mail
```

```
app.config['MAIL_SERVER']='smtp.gmail.com'
```

```
app.config['MAIL_PORT'] = 465
```

```
app.config['MAIL_USERNAME'] =
```

```
'infonutrassi@gmail.com'
```

```
app.config['MAIL_PASSWORD'] = 'mgatvwljsrucdswm'
```

```
app.config['MAIL_USE_TLS'] = False
```

```
app.config['MAIL_USE_SSL'] = True
```

```
mail = Mail(app) # instantiate the mail class
```

```
@app.route('/send',methods=['GET','POST'])
```

```
def send():
```

```
    if request.method == "POST":
```

```
        email = request.form['email']
```

```
        msg = request.form['message']
```

```
        subject = request.form['subject']
```

```
        message=
```

```
Message(subject,recipients=["infonutrassi@gmail.com"])
```

```
        message.sender = email
```

```
        message.body = msg
```

```
        mail.send(message)
```

```
        success="Message sent"
```

```
        return render_template("result.html",success=success)
```

```
#routing
```

```
@app.route('/signin')
```

```
def signin():
```

```
    return render_template('signin.html')
```

```
@app.route('/contact')
```

```
def contact():
```

```
    return render_template('contact.html')
```

```
#Nutrition finding result page
```

```
@app.route('/upload')
```

```
def upload():
```

```
    return render_template('upload image.html')
```

```
@app.route('/signup')
```

```
def signup():
```

```

    return render_template('signup.html')

@app.route('/index')
def index():
    return render_template('index.html')

#logout
@app.route('/logout')
def logout():
    if 'email' in session:
        session.pop('email',None)
        return redirect('/')
    return redirect('/')

#Signup page
@app.route('/postSignUpData', methods=['GET', 'POST'])
def postSignUpData():
    msg=""
    if request.method == 'POST':
        name = request.form.get("name",False)
        email = request.form.get("email",False)
        password = request.form.get("password",False)
        username = request.form.get("username",False)

        sql = "SELECT * FROM user WHERE email=?"
        stmt = ibm_db.prepare(conn, sql)
        ibm_db.bind_param(stmt,1,email)
        ibm_db.execute(stmt)
        account = ibm_db.fetch_assoc(stmt)
        if account:
            return render_template('signup.html', msg="You are
already a member, please login using your details")

```

```

else:
    insert_sql = "INSERT INTO user VALUES (?, ?, ?, ?)"
    prep_stmt = ibm_db.prepare(conn, insert_sql)
    ibm_db.bind_param(prepare_stmt, 1, email)
    ibm_db.bind_param(prepare_stmt, 2, password)
    ibm_db.bind_param(prepare_stmt, 3, name)
    ibm_db.bind_param(prepare_stmt, 4, username)
    ibm_db.execute(prepare_stmt)
    msg="Registration successfull.."
    return render_template('signin.html',msg=msg)

```

#Signin Page

```

@app.route('/postSignInData', methods = ['POST', 'GET'])
def postSignInData():
    if request.method == 'POST':
        email = request.form['email']
        password = request.form['password']

        sql = "SELECT PASSWORD FROM user WHERE
email=?"
        stmt = ibm_db.prepare(conn, sql)
        ibm_db.bind_param(stmt, 1, email)
        ibm_db.execute(stmt)
        account = ibm_db.fetch_assoc(stmt)
        print(account)
        if account and account["PASSWORD"]==password:
            return render_template('index.html',email=email)
        else:
            msg="username or password is incorrect"
            return render_template('signin.html',msg=msg)

```

#Profile

```
@app.route('/profile')
def profile():
    sql = "SELECT * FROM user"
    stmt = ibm_db.exec_immediate(conn, sql)
    while ibm_db.fetch_row(stmt) != False:
        email= ibm_db.result(stmt, 0)
        name= ibm_db.result(stmt, 2)
        username= ibm_db.result(stmt, 3)
        return render_template("profile.html", name=name,
email=email, username=username)

if __name__=='__main__':
    app.run(host='0.0.0.0',port=8080,debug=True)
```

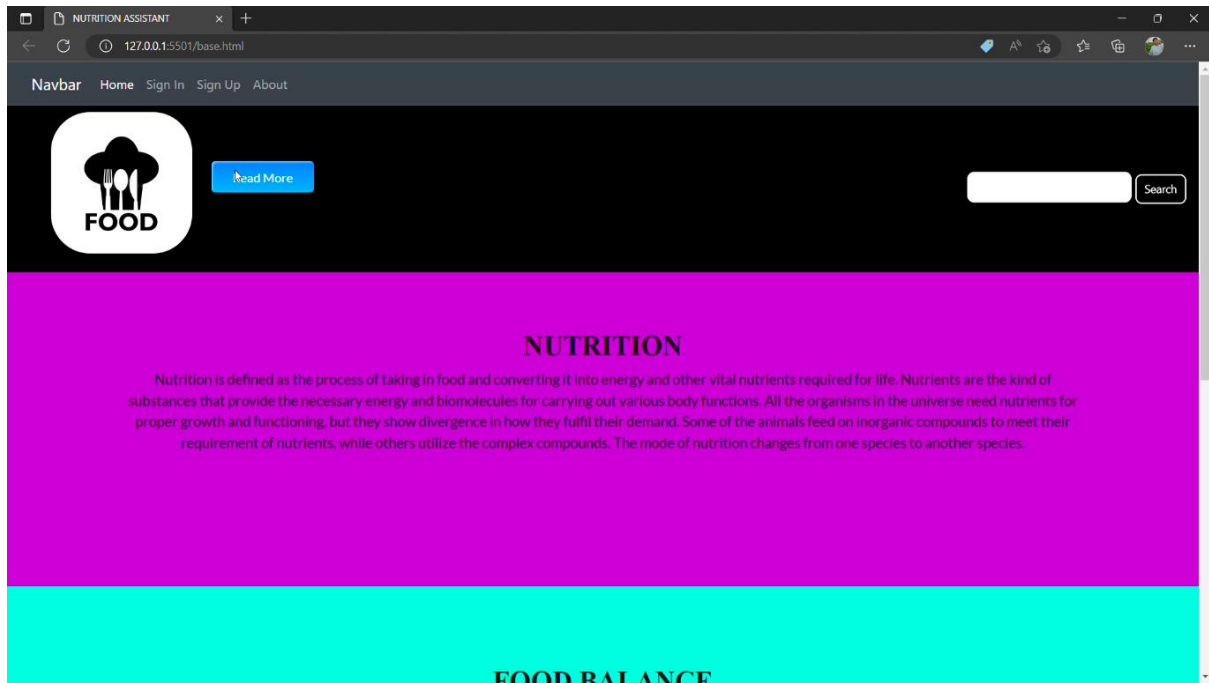
Credentials.py

```
COS_ENDPOINT="https://s3.jp-tok.cloud-object-  
storage.appdomain.cloud"  
COS_API_KEY_ID="v7JvGIH7V0f3UZL6FvgPU0zs-  
rgpZKAvj2W3DoClvRRA"  
COS_INSTANCE_CRN="crn:v1:bluemix:public:cloud-  
object-  
storage:global:a/3d4040a37c90488084c76adf29cf1ad7:d1356  
827-f772-4c07-b31e-68e17dfcb914::"
```

```
DB2_DATABASE_NAME="bludb "  
DB2_HOST_NAME="824dfd4d-99de-440d-9991-  
629c01b3832d.bs2io90l08kqb1od8lcg.databases.appdomain.c  
loud"  
DB2_PORT="30119"  
DB2_UID="zyh74291"  
DB2_PWD="zAF3WthDCswTE4gC"
```


Testings

Home page



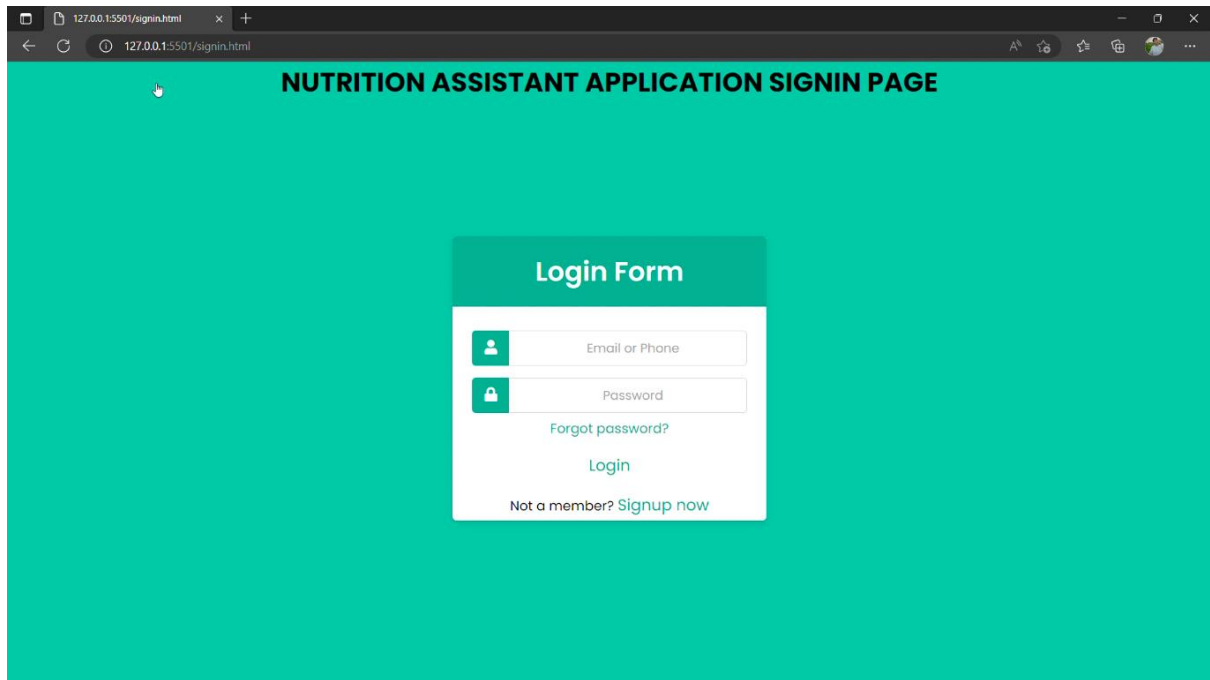
Registration page

The screenshot shows a web browser window with the address bar displaying '127.0.0.1:5501/signup.html'. The page has a blue and purple gradient background. In the center, there is a white registration form titled 'Registration'. The form contains the following fields and options:

- Full Name**: A text input field with the placeholder 'Enter your name'.
- Username**: A text input field with the placeholder 'Enter your username'.
- Email**: A text input field with the placeholder 'Enter your email'.
- Phone Number**: A text input field with the placeholder 'Enter your number'.
- Password**: A text input field with the placeholder 'Enter your password'.
- Confirm Password**: A text input field with the placeholder 'Confirm your password'.
- Gender**: Three radio button options: 'Male', 'Female', and 'Prefer not to say'.

At the bottom of the form, there is a blue 'Register' button.

Login page



The screenshot shows a web browser window with a single tab titled "127.0.0.1:5501/signin.html". The address bar also displays "127.0.0.1:5501/signin.html". The page has a teal background and a title "NUTRITION ASSISTANT APPLICATION SIGNIN PAGE" at the top. In the center, there is a white "Login Form" box. The form contains two input fields: "Email or Phone" with a user icon and "Password" with a lock icon. Below the password field is a link "Forgot password?". A "Login" button is positioned below the links. At the bottom of the form, it says "Not a member? [Signup now](#)".

NUTRITION ASSISTANT APPLICATION SIGNIN PAGE

Login Form

[Forgot password?](#)

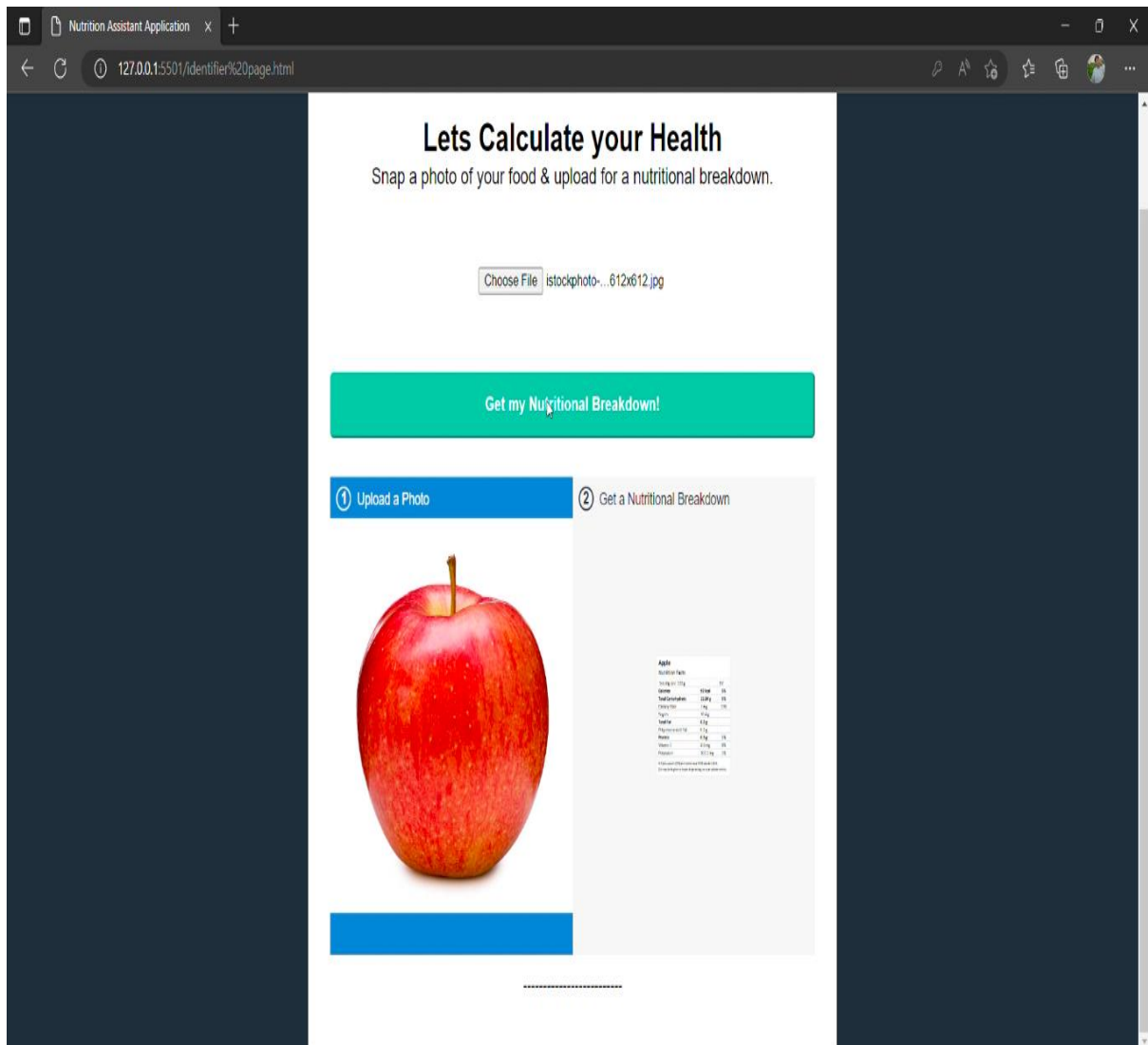
[Login](#)

Not a member? [Signup now](#)

Results

Performance Metrics

Model performance tesings



Advantages and Disadvantages

Advantages:

- Early detection of health problems.
- Easy to know about the nutrition values.
- User friendly and gives accurate suggestions.

Disadvantages:

- Requires training the system with a large dataset.
- Works only on the pretrained Images.
- Users may not have time to upload the image before eating.
- The image uploaded should be clear to get accurate results.

Conclusion

Hence a system that takes in images as user input, analyzes those and identifies the Nutritional content , and gives all the ingredients present in the image with its nutritional content.

Future scope

The system must be trained with numerous images of food and suggest some healthy recipes for the same . Help users to connect with other users and share their feedback .