NUTRITION ASSISTANT APPLICATION

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1. INTRODUCTION

Your access to knowledge supported by nutritional science and a range of resources that employ scientific evidence to promote health and prevent disease is one of the project's main objectives. This book was created to complement, improve, and enlarge the resources already available. This study aims to find mobile application deployment options for nutritional self-monitoring. Nutritional education is crucial for encouraging healthy eating practices since it guarantees that nutritional needs are met to prevent malnutrition.

2. PROJECT OVERVIEW

By identifying the supplied food image, this project attempts to create a web application that automatically calculates food qualities like ingredients and nutritional value. For precise food identification and to determine the nutritional value of the recognised item, our solution uses Clarifai's AI-Driven Food Detection Model.

3. 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.

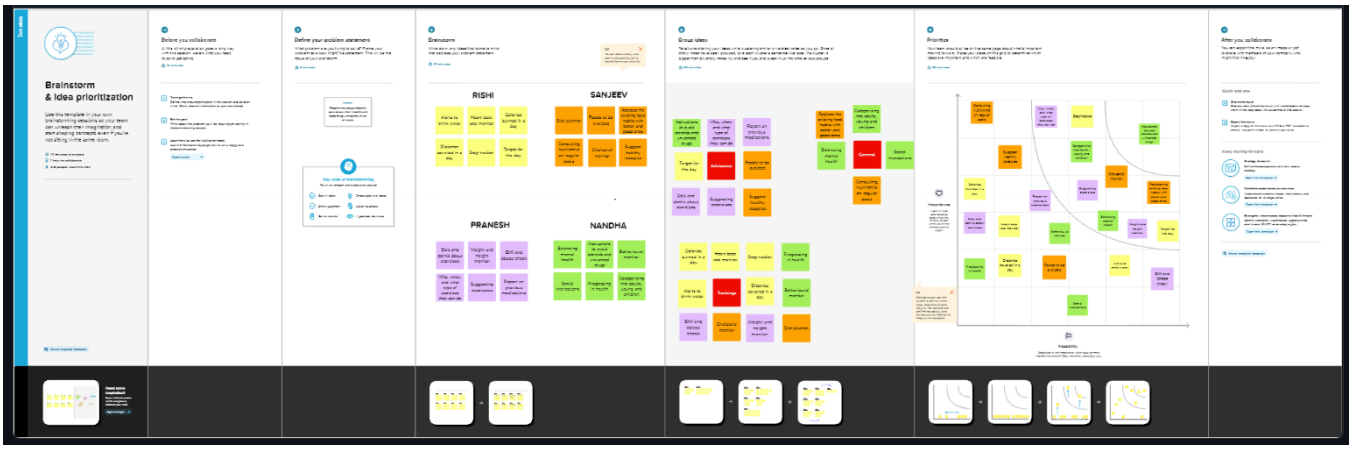
Nutrition is more than just obtaining nutrients and calories from food. It’s more than just eating the healthy stuff. It’s more than just following the most recent fad diet. Nutrition, the food we eat and the way we eat it, is an integral part of life. Nutrition is an experience. It evokes memories, 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 to lead a healthy life.

4. IDEATION PHASE

4.1 EMPATHY MAP

4.2 BRAINSTORMING



4.3 LITERATURE SURVEY

DOMAIN: CLOUD ASSISTANT DEVELOPMENT

TOPIC : NUTRITION ASSISTANT APPLICATION

A review and research were done on a nutrition-based app from the Play Store that was created specifically for infants under the age of five.[1] Based on the functions that are offered by the program, various categories are divided. All other essential baby nutrition needs are taken care of.

The current approach to educating people about calorie control and calorie density involves didactic techniques including booklets, handouts, and slide presentations during consultations with registered dietitian nutritionists.[2] Immersive virtual reality devices, which have recently been developed and made more widely available, have been suggested as a creative and effective way to deliver nutrition instruction.

Professionals in clinical nutrition have created their own terminology as a naturally expanding field based on their geographic location, professional experience, medical expertise, and clinical nutrition specialty.[3] This strategy was chosen to ensure that clear information was provided by classifying clinical nutrition into 53 different types and four primary structures.

The scientific community is paying more and more attention to nutrition in sports.[4] In recent years, nutrition applied to sports has had a great response from technicians and science, justifying the use of food supplements more and more, especially when elite athletes or professionals are involved. With the help of this system, athletes can maintain their nutrition at higher rates.

Up until now, mindfulness, stress-reduction methods, and emotional support have received a lot of attention in discussions about health care worker wellness.[5] This model improves physician well-being on an individual and community health basis by describing the connection between physician nutrition and physician well-being as well as the challenges that healthcare professionals face when it comes to nutrition.

There is a need for continuous and targeted support to maintain the accuracy of research in order to increase the impact of nutrition educators' and researchers work. The conversion of scientific nutrition-related data into practicable strategies at the individual, family, community, and policy levels depends on nutrition education and behavior research. With the help of these tactics, ongoing national initiatives to address new and developing nutrition research could ensure the importance of nutrition education and behavior.[6]

A nutrition-information app's research looked at how users' attitudes about healthy eating change over time and whether they become more knowledgeable about it.[7] The advice is that consumer behavior scientists, marketing researchers, nutritionists, and app developers collaborate in the creation of the apps. This helps to improve the effectiveness of nutrition-information apps.

Numerous recommendations for natural remedies and different kinds of supplements with thaumaturgical capabilities in preventing and/or combating the coronavirus infection have been made during the COVID-19 pandemic via websites and social media.[8] This indicates and helps to overcome situations like in severe pandemic.

Studies on eating and diet habits involving different segments have been conducted. Study has been conducted to examine the relationship between perceived stress, emotional eating, and nutritional habits in healthcare workers during the pandemic.[9] This system has implemented an ideology to improve peoples health by improving the nutrition and providing suggestion during pandemic days.

People with chronic illness required extra care to preserve their health, particularly with regard to their nutritional systems.[10] These people receive extra attention from this model, which supports them by offering nutrition care. The assistance they offered through these mobile health apps are potential delivery methods for therapies and health information to patients with chronic health issues.

References

[1]RachanaSrivastavaPh.D.aSaviteshKushwahaM.PhillaPoonamKhannaPh.D.aMadhuGuptaM.D., Ph.D.aBhavneetBhartiM.D.bRachitaJainM.Sc.a ‘Comprehensive overview of smartphone applications delivering child nutrition information’ in on September 2021.

[2]G.EdwardsPhD,RDN1PejmanSajjadiPhD2AlexFatemiMS2EricaN.KriegerBS2AlexanderKlipp elPhD3Travis D.MastersonPhD1’ The Immersive Virtual Alimentation and Nutrition Application: An Interactive Digital Dietitian’ in journal of nutrition education and behavior on may 2022

[3]LuziaValentiniaDorotheeVolkertbTatjanaSchützcJohannOckengadMatthiasPirlicheWilfredDru mlf ‘Suggestions for terminology in clinical nutrition’ in e-spen journal at April 2014

[4]RobertoCannataroabcNatasciaStrafaceaErikaCioneac ‘Nutritional supplements in combat sports: What we know and what we do’ in Human Nutrition & Metabolism On September 2022

[5]Alan RobertBielskyMDaCarolyn BergerFoleyMDb ‘Nutritional Wellness for the Busy Health Care Provider: Small Everyday Wins’ in Anesthesiology Clinics On Jun 2022

[6]Laura L.BellowsPhD, MPH, RDN1Noereem Z.MenaPhD, RDN2Melissa M.ReznarPhD, MPH3Christopher A. ‘Strengthening Nutrition Education and Behavior Research for

Academicians and Practitioners’ in Journal of Nutrition Education and Behavior On January 2022

[7]AntonellaSamoggiaBettinaRiedel ‘Assessment of nutrition-focused mobile apps' influence on consumers' healthy food behaviour and nutrition knowledge’ in Food Research International On February 2020

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[9]Assist. Prof. M.D. Gözde BacıkYaman1Prof. Dr. ÇiçekHocaoğlu2 ‘Examination of eating and nutritional habits in healthcare workers in the covid 19 pandemic’ in Nutrition On September 2022

[10]SarahDaisyKosa123JillianMonize1MitchellD'Souza1ArundhatiJoshi1KaylyssaPhilip1 Samiha

Reza ‘Nutritional Mobile Applications for CKD Patients: Systematic Review’ in Kidney International Reports On March 2019

4.4 PROBLEM STATEMENTS

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. People need to control their daily calorie intake by eating healthier foods, which is the most basic method to avoid obesity. However, although food packaging comes with nutrition (and calorie) labels, it's still not very convenient for people to refer to App-based nutrient dashboard systems which can analyze real-time images of a meal and analyze it for nutritional content which can be very handy and improves the dietary habits, and therefore, helps in maintaining a healthy lifestyle.

The main objective of this project is to building a web App that automatically estimates food attributes such as ingredients and nutritional value by classifying the input image of food.

PROBLEM STATEMENTS:

1. Who are all affected by this issue?

- People from all age group who are all careless about their health due to their busy schedule and high calorie diet.
- This leads to an unhealthy lifestyle because of their eating habits.
- Thus leads to many health issues like obesity, heart attack, diabetics and rise in cholesterol level.

2. What are the boundaries of the problem?

- Based on the information collected from the user, if the user is diagnosed with diabetes/Heart attack/obesity then the application provides information about diet.
- The application sets some boundaries on the user's food habits to maintain their diet and improve their condition.
- The boundaries are set on the age group of people like elder persons who have some problems with digestion so they will be provided with that information.

3. What is the issue?

- Peoples are struggling to find if the packed food is good for their health or not having conflict with themselves.
- They don't know about the ingredients used in that dish and calories present in them.
- To help them to slove this problem they can take a clear picture of the food and know what are nutritions are present in that food or search for the food recipes which are suitable for them.

4. When does the issue occur?

- When people want to try western culture food habits which are not suitable for our country.

- This issue will occur when people eat unhealthy food like packed or fast food because they are busy with their work and they are not giving importance to their health and food habits.
- Some peoples like food lovers who want to taste different dishes without knowing its effect, this leads to obesity and other health problems.

5. Where does the issue occur?

- Mostly this issue is occurs in developed and developing countries.
- Packed or fast food is convenient and time saving for the people who work in the IT industry.
- Slowly the intake of this food will cause to increase in insulin and cholesterol level which causes diabetes and heart attack.

6. Why is it important that we fix the problem?

- This application is used to control the serious health issues before it becomes fatal.
- It helps users to improve their health and switch to a healthy lifestyle.
- For knowing what are all the ingredients present in the food and their calories present in the food they are consuming is suitable for their body condition.
- It reduces the risk of heart disease, stroke, obesity and any other health problems.
- By maintaining the balanced diet people can also boost their mood and gain more energy.

5. REQUIREMNT ANALYSIS

Functional Requirements:

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIN
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User Details	Can collect user details for future evaluation
FR-4	Tracking System	Based on user data, reports can be downloaded or can be viewed.

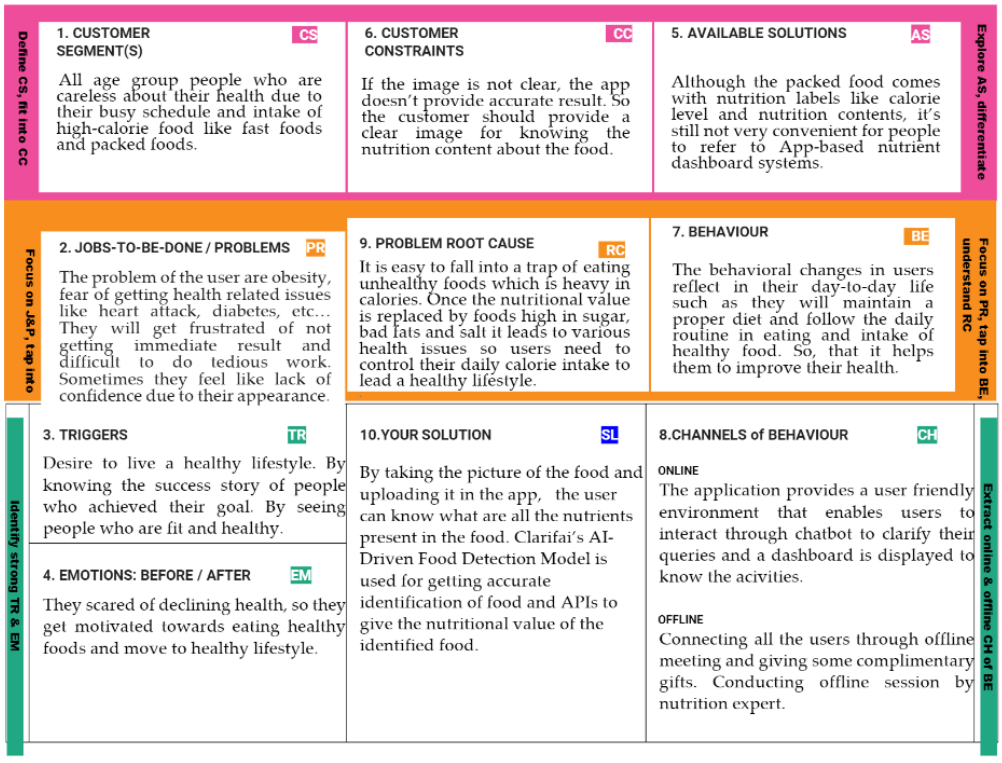
Non-functional Requirements:

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Good UI and UX will be implemented to incorporate many users to use it as user-friendly.
NFR-2	**Security**	Since we will be using IBM related data storage, secured data transitions will be done.
NFR-3	**Reliability**	Necessary features will be added on demand.
NFR-4	**Performance**	Performance will be good since we will transfer data asynchronously.
NFR-5	**Availability**	Based on user's needs requirements will be available for all.
NFR-6	**Scalability**	IBM storage and servers can react according to usage and can withstand multiple requests.

6. PROJECT DESIGNS

6.1 PROBLEM SOLUTION FIT

Project Title: NUTRITION ASSISTANT APPLICATION **Project Design Phase-I - Solution Fit Template** **Team ID:** PNT2022TMID04430



6.2 PROPOSED SOLUTION

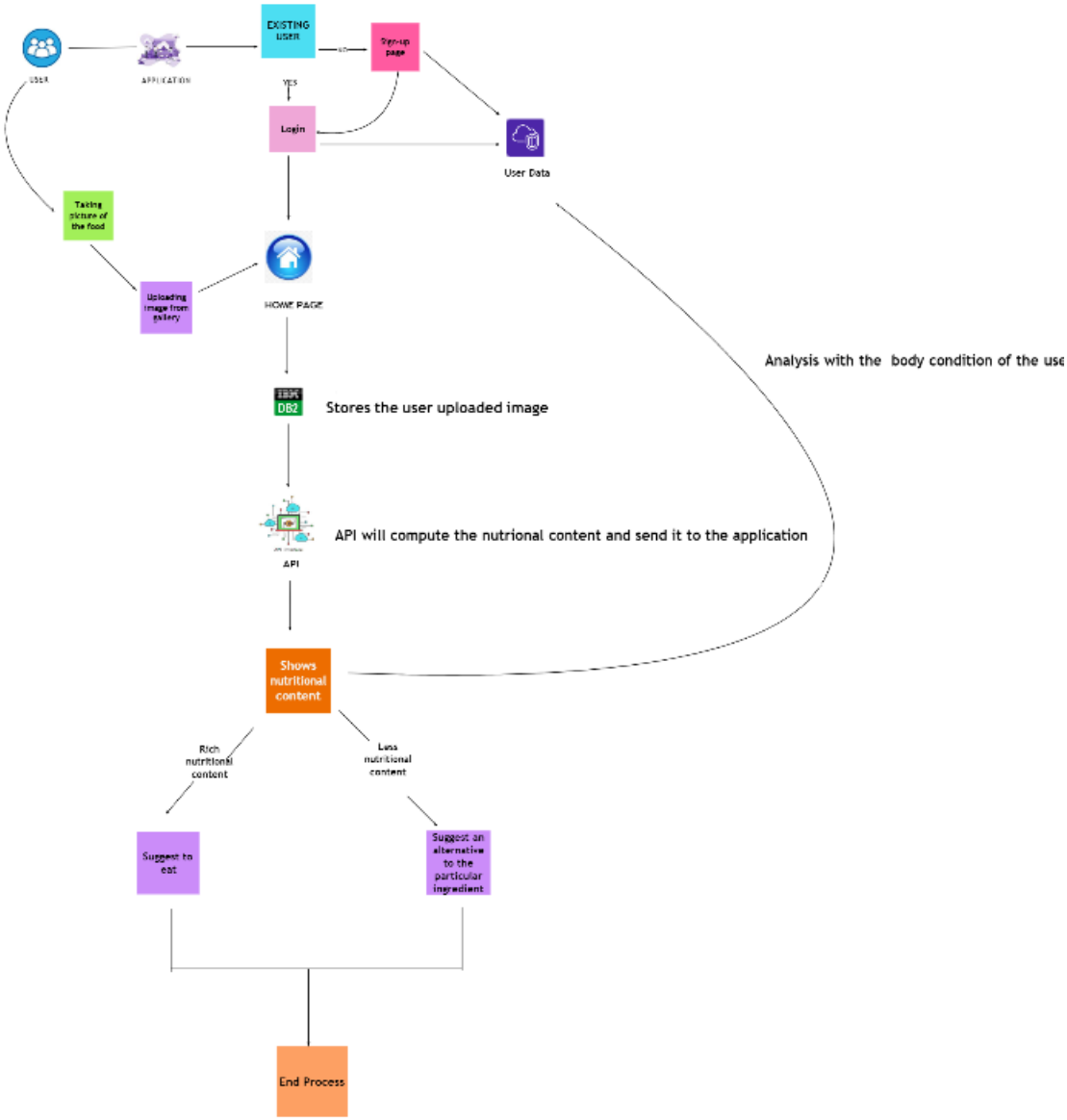
The project's goal is to create an application that By giving information about the ingredients and nutritional value of the food people are consuming, it enables people to live healthy lives. By doing this, people can prevent different health problems like diabetes, heart disease, and obesity. Based on the information gathered from the user, monitoring and tracking of goals and diet plans will be made available to them. The project team must fill out the following information in the template for the suggested solution.

S.No:	Parameter	Description
1.	Problem Statement (Problem to be Solved)	✞ Now a days peoples are not eating healthy foods with respect to their health condition. If it happens continuously means, it will lead to obesity and any other health problems. ✞ To avoid that the system will detect and recognize the food and evaluating the nutrient values present in the food.
2.	Idea / Solution Description	✞ To store the food and details of the nutrients present in it. ✞ Then scan the real time food and retrieve the corresponding food's nutrient values.
3.	Novelty / Uniqueness	✞ Clustering the peoples based on their BMI value.
4.	Social Impact / Customer Satisfaction	✞ The application which gives awareness among the people about the obesity and various health problems.
5.	Business Model (Revenue Model)	✞ In market, this application gives a benefit across the people by health wise and economical wise.
6.	Scalability of the Solution	✞ The application which creates an impact among the healthy lifestyle.

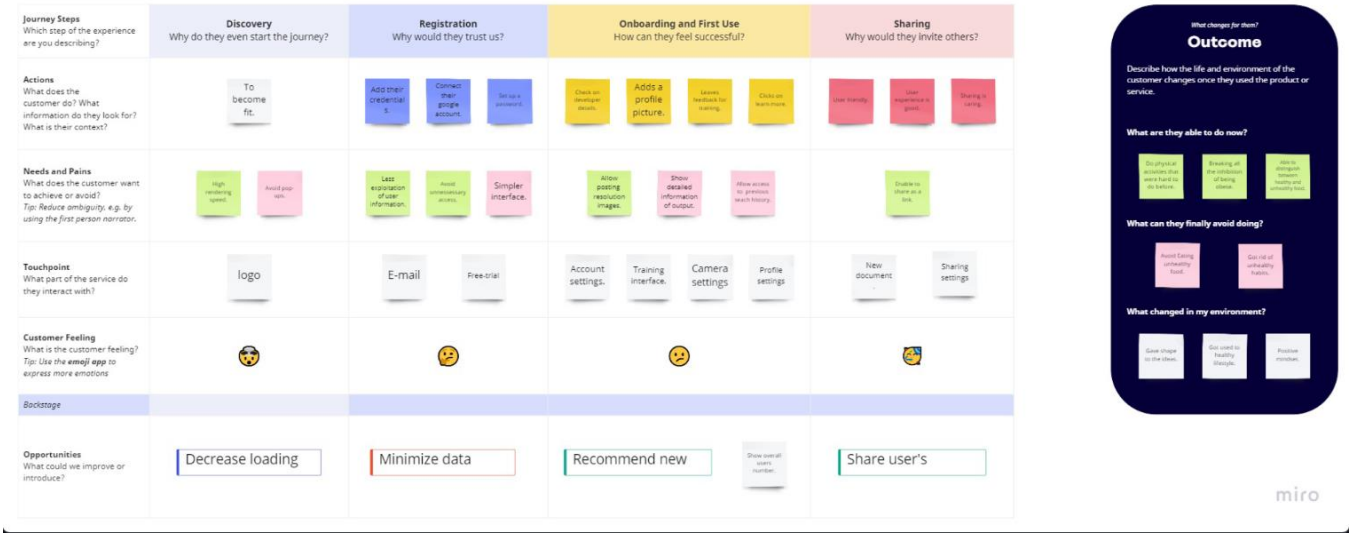
6.3 SOLUTION ARCHITECTURE

Obesity rates are rising alarmingly quickly as a result of people's lack of knowledge about appropriate eating practises, which reflects the hazards to their health. The simplest way to prevent obesity is for people to limit their daily calorie consumption by eating healthier meals. Despite the fact that food packaging includes nutrition (and calorie) labels, it's still not very convenient for people to use app-based nutrient dashboard systems, which can analyse real-time images of a meal and analyse it for nutritional content. These systems are very useful and can help people improve their eating habits, which in turn helps them maintain a healthy lifestyle.

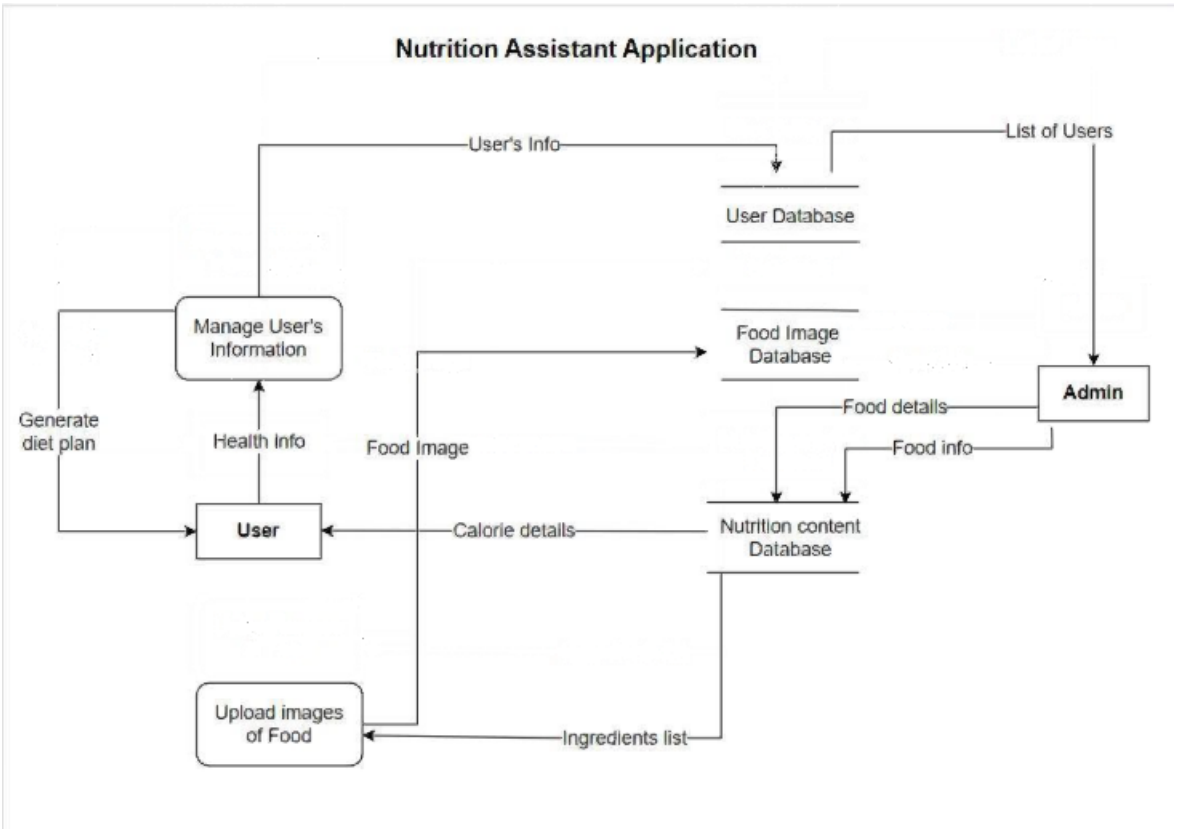
SOLUTION ARCHITECTURE FOR NUTRITIONAL ASSISTANT APPLICATION



6.4 CUSTOMER JOURNEY



6.5 DATA FLOW DIAGRAM



6.6 SOLUTION REQUIRMENTS

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 wants 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.

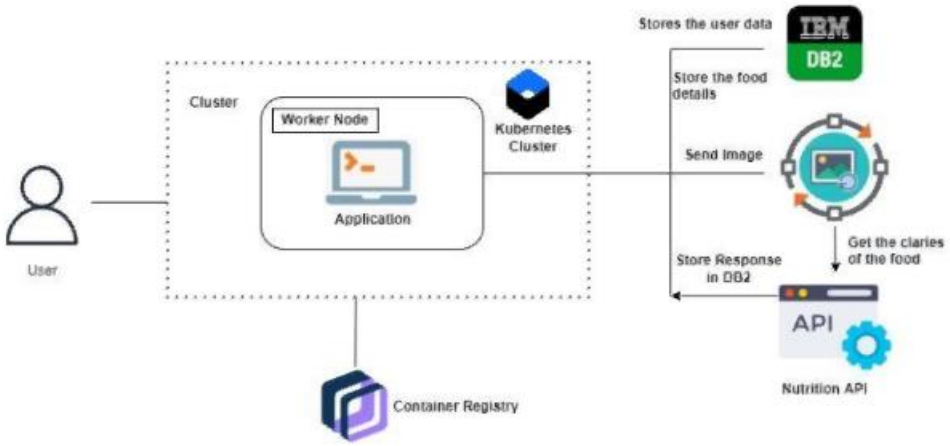
It evokes memories, helps us celebrate good times, and is there for us in times of grief. I believe the purpose of nutrition is to nourish the body and soul.

The Nutrition Assistant Application helps the users to eat nutritional rich food which yield to lead 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.

6.7 TECHNOLOGY ARCHITECTURE



Guidelines:

1. Include all the processes (As an application logic / Technology Block
2. Provide infrastructural demarcation (Local / Cloud
3. Indicate external interfaces (third party API's etc.)
4. Indicate Data Storage components / services
5. Indicate interface to machine learning models (if applicable

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js
2.	Application Logic-1	Logic for a process in the application	Python
3.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant
4.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
5.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local, Cloud Foundry, Kubernetes

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Python flask
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	SHA-256, Encryptions, IAM Controls
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	IBM cloud, IBM database
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	IBM cloud
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN’s) etc.	IBM cloud

6.8 USER STORIES

- As a user, I can register for the application by entering my email, password, and Confirming my password
- As a user, I will receive confirmation email once I have registered for the application
- As a user, I can log into the application by entering email & password
- As a user, I can fill the details.
- As a user, I will search the food items.
- As a user, I can scan the food an get the nutrition details and recipe for related scanned food.

7. PROJECT PLANNING AND SCHEDULING

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	Pranesh V R Nandhakumar R G Rishi B Sanjeev S
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Pranesh V R Nandhakumar R G Rishi B Sanjeev S
Sprint-1	Login	USN-3	As a user, I can log into the application by entering email & password	1	High	Pranesh V R Nandhakumar R G Rishi B Sanjeev S
Sprint-2	User data	USN-4	As a user , I can fill the Details.	2	High	Pranesh V R Nandhakumar R G Rishi B Sanjeev S
Sprint-3	Notification	USN-5	As a user, I will search the food items.	2	Medium	Pranesh V R Nandhakumar R G Rishi B

						Sanjeev S
Sprint-4	Display the nutrition details	USN-6	As a user, I can scan the food an get the nutrition details and recipe for related scanned	1	High	Pranesh V R Nandhakumar R G

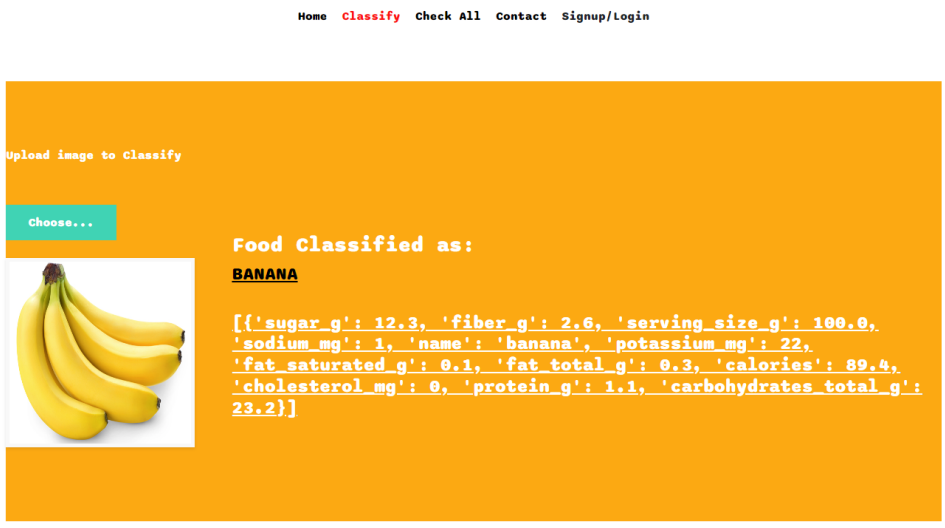
7.1 Sprint Delivery Schedule

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	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

8. CODING & SOLUTIONING

8.1 FEATURE 1

The user can upload any food image Nutrients present in the uploaded image will be displayed



9. TESTING

9.1 TEST CASES

Our code was tested on various food to check whether it gives the correct output To satisfy the customer's expectations we tested it fully.

9.2 USER ACCEPTANCE TESTING

Our project was tested by an end user to verify that it's working correctly.

10. RESULT

10.1 PERFORMANCE METRICS

The proposed procedure was implemented and tested set of images. The training database consists of various images of food items. Once a food is recognized the equivalent Nutrition in shown on the screen.

11. ADVANTAGES:

- It provides a maintained strategy of healthy eating habits.
- It delivers information on the nutritional value of foods and how balanced and healthy eating habits are important for us.
- It limits the amount of unnecessary food such as fat that people consume a lot.

12. CONCLUSION

In conclusion, many people have become aware of their health. Moreover, they are also informed how to live a healthy lifestyle. Most of the research related to these

themes aims to identify changes in healthy lifestyle behavior with web applications that are considered effective in dietary self-monitoring.

13. DESCRIPTION:

Nutrition assistants help dieticians with providing proper nutrition at healthcare facilities. They determine patients' nutritional needs, assess risk factors, and plan meals and menus. They also ensure proper sterilization of plates and utensils.

14. APPENDIX

Source Code:

```
from flask import Flask,render_template,request, redirect

import os
import numpy as np
from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image
import requests
import ibm_db, ibm_db_dbi
import pandas as pd
from flask_mail import Mail, Message
from sendgrid import SendGridAPIClient
from sendgrid.helpers.mail import Mail

app = Flask(__name__,template_folder="templates")
model=load_model('nutrition.h5')
print("Loaded model from disk")

#ibm DB2 connection
connection = ibm_db.connect('DATABASE=bludb;'
                    'HOSTNAME=8e359033-a1c9-4643-82ef-
8ac06f5107eb.bs2io90l08kqb1od8lcg.databases.appdomain.cloud;'
                    'PORT=30120;'
                    'PROTOCOL=TCPIP;'
                    'SECURITY=SSL;'
                    'SSLServerCertificate=DigiCertGlobalRootCA.crt;'
                    'UID=zsy87446;'
                    'PWD=CoV6JEBhlIYZGUfq;', '', ''
)

print("Connection with ibm db2 is successful.")

# sendgrid_api_key = 'SG.GI1duQzZTN-
YP7Fb1TgrGQ.W62v8fADyHvbQFpLBu664cGvjofml_51ViZH_47pG_s'
```

```
# sender_email_address = 'vrpranesha1@gmail.com'
# #Sendgrid requirements
# app.config['SECRET_KEY'] = 'top-secret!'
# app.config['MAIL_SERVER'] = 'smtp.sendgrid.net'
# app.config['MAIL_PORT'] = 587
# app.config['MAIL_USE_TLS'] = True
# app.config['MAIL_USERNAME'] = 'apikey'
# app.config['MAIL_PASSWORD'] = sendgrid_api_key
# app.config['MAIL_DEFAULT_SENDER'] = sender_email_address
# mail = Mail(app)


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

@app.route('/image1',methods=['GET','POST'])
def image1():
    return render_template("image.html")

#login
@app.route('/login', methods=['GET', 'POST'])
def login():
    count = 0
    if request.method == 'POST':
        username = request.form['username']
        password = request.form['password']
        sql = "SELECT USERNAME FROM userdata WHERE USERNAME = '"+username+"' AND
USERPASS = '"+password+"'"
        stmt = ibm_db.exec_immediate(connection, sql)
        while ibm_db.fetch_row(stmt) != False:
          print(ibm_db.result(stmt, 0))
          count = count + 1
        if count == 0:
            return render_template('login.html')
        else:
            return render_template('index.html')


        return render_template('index.html')
        # else:
        #     return render_template("login.html")
    return render_template("login.html")
```

```
# Classification and Nutrition Suggestion
@app.route('/predict',methods=['GET', 'POST'])
def launch():
    if request.method=='POST':
        f=request.files['file']
        basepath=os.path.dirname('__file__')
        filepath=os.path.join(basepath,"uploads",f.filename)
        f.save(filepath)

        img=image.load_img(filepath,target_size=(64,64))
        x=image.img_to_array(img)
        x=np.expand_dims(x,axis=0)

        pred=np.argmax(model.predict(x), axis=1)
        print("prediction",pred)
        index=['APPLES','BANANA','ORANGE','PINEAPPLE','WATERMELON']
        result=str(index[pred[0]])

        x=result
        print(x)
        result=nutrition(result)
        # print(result)
        return render_template("0.html",showcase=(result),showcase1=(x))


@app.route('/checkall',methods=['GET','POST'])
def checkall():
    all = ['mango', 'apple', 'pineapple', 'guava', 'grapes', 'dosa', 'idly', 'rice',
'poori', 'tomato', 'carrot']
    data = []
    try:
        for each in all:
            d = nutrition(each)
            data.append(d)
    except:
        pass
    return render_template('checkall.html', data=data)

@app.route('/contact', methods=['GET', 'POST'])
def contact():
    if request.method == 'POST':
        from_email = request.form['fromemail']
        to_email = request.form['toemail']
        subject = request.form['subject']
```

```
        message = Mail(
            from_email=from_email,
            to_emails=to_email,
            subject=subject,
            html_content='<strong>and easy to do anywhere, even with Python</strong>')
        try:
            sg = SendGridAPIClient('SG.GI1duQzZTN-
YP7Fb1TgrGQ.W62v8fADyHvbQFpLBu664cGvjofml_51ViZH_47pG_s')
            response = sg.send(message)
            print(response.status_code)
            print(response.body)
            print(response.headers)
        except Exception as e:
            return render_template('success.html', message = e)
        status = 'Mail sended to ' + to_email+ ' and status is : ' +
str(response.status_code)
        return render_template('success.html',message = status)
    return render_template('contact.html')

# Nutrition API
def nutrition(index):


    url = "https://calorieninjas.p.rapidapi.com/v1/nutrition"

    querystring = {"query":index}

    headers = {
        'x-rapidapi-key': "5d797ab107mshe668f26bd044e64p1ffd34jsnf47bfa9a8ee4",
        'x-rapidapi-host': "calorieninjas.p.rapidapi.com"
        }

    response = requests.request("GET", url, headers=headers, params=querystring)

    # print(response.text)
    return response.json()['items']

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

if __name__ == "__main__":
   # running the app
    app.run(debug=True)
# using SendGrid's Python Library
```

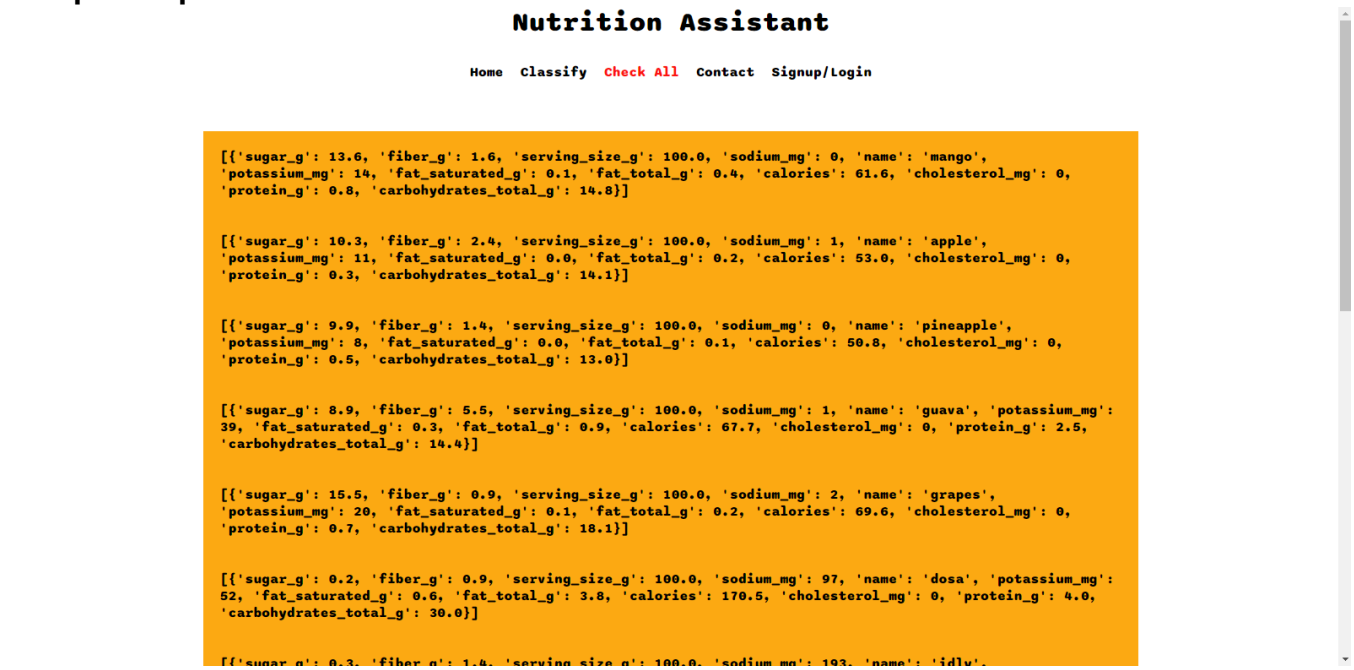
Image prediction source code:

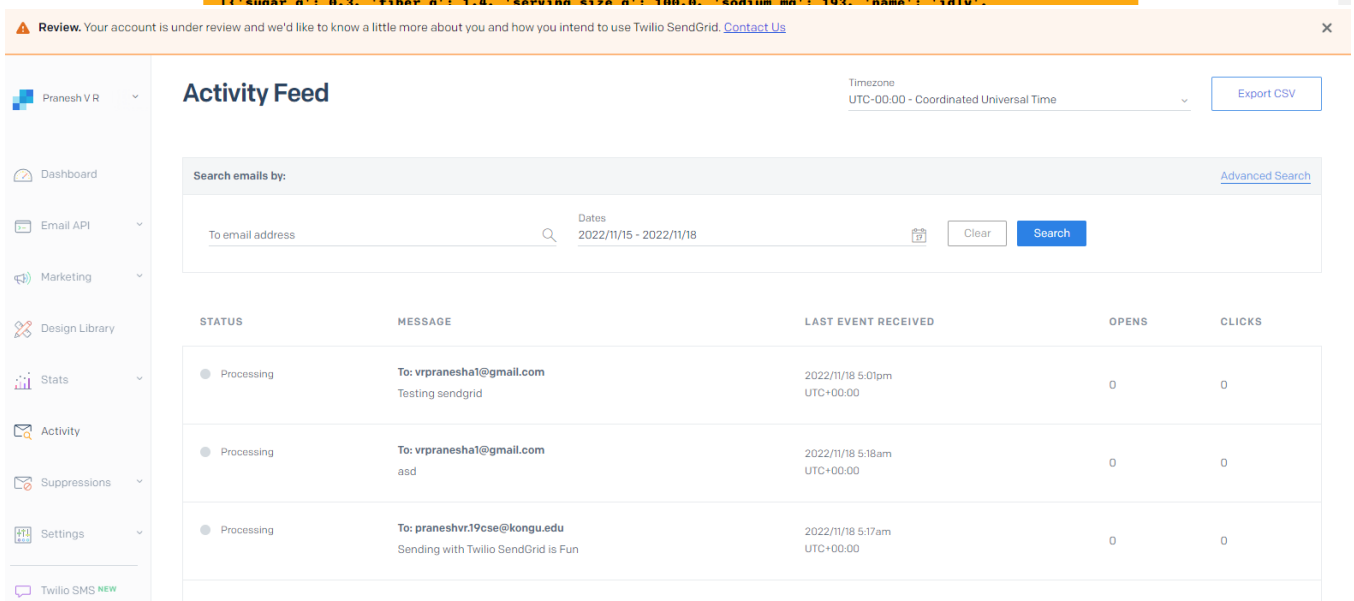
```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="UTF-8" />
    <meta http-equiv="X-UA-Compatible" content="IE=edge" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <link rel="preconnect" href="https://fonts.googleapis.com" />
    <link rel="preconnect" href="https://fonts.gstatic.com" crossorigin />
    <link
      href="https://cdn.bootcss.com/bootstrap/4.0.0/css/bootstrap.min.css"
      rel="stylesheet"
    />
    <script src="https://cdn.bootcss.com/popper.js/1.12.9/umd/popper.min.js"></script>
    <script src="https://cdn.bootcss.com/jquery/3.3.1/jquery.min.js"></script>
    <script src="https://cdn.bootcss.com/bootstrap/4.0.0/js/bootstrap.min.js"></script>
    <link
      href="{{ url_for('static', filename='css/main.css') }}"
      rel="stylesheet"
    />
    <link
      href="https://fonts.googleapis.com/css2?family=Sono:wght@800&display=swap"
      rel="stylesheet"
    />
    <title>Predict</title>
 </head>
  <body>
    <div class="Container">
      <div class="Wrapper">
        <div class="header">
          <h1>Nutrition Assistant</h1>
        </div>
        <div class="nav">
          <ul>
            <li><a href="{{ url_for('home')}}"> Home</a></li>
            <li class="active"><a href="" class="active">Classify</a></li>
            <li><a href="{{ url_for('checkall')}}">Check All</a></li>
            <li>Signup/Login</li>
          </ul>
        </div>
        <div class="Wrapper2">
          <div class="left" id="content">{% block content %}{% endblock %}</div>

        </div>
      </div>
```

```
    </div>
    <!-- asdas -->
  </body>
  <footer>
    <script
      src="{{ url_for('static', filename='js/main.js') }}"
      type="text/javascript"
    ></script>
  </footer>
</html>
```

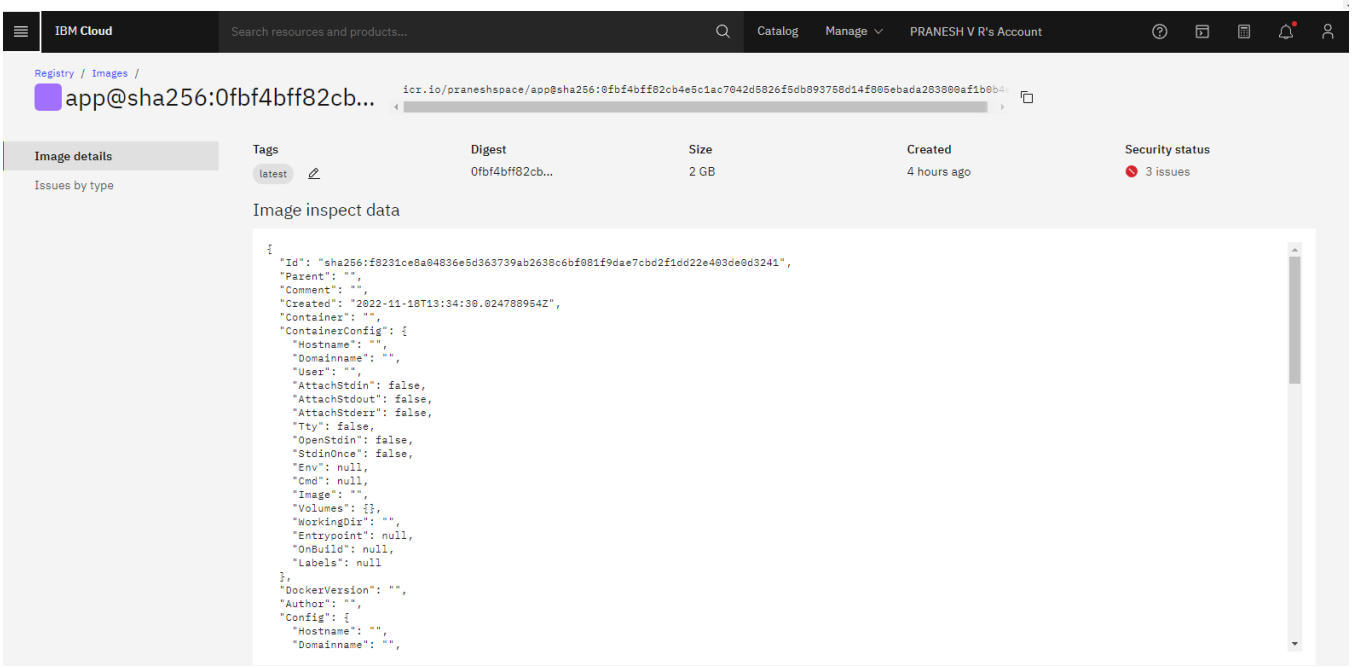
Sample output:





Nutrition Assistant

Response code :
Mail sended to vrpranesha1@gmail.com and status is : 202



IBM Db2 on Cloud

Load Data | Load History | **Tables** | Views | Indexes | Aliases | MQTs | Sequences | Application objects

ZSY87446.USERDATA

Back

Export to CSV

USERNAME	USERPASS
pranesh	12345

Home **Classify** **Check All** **Contact** **Signup/Login**

Upload image to Classify

Choose...

Food Classified as:

BANANA

[{'sugar_g': 12.3, 'fiber_g': 2.6, 'serving_size_g': 100.0, 'sodium_mg': 1, 'name': 'banana', 'potassium_mg': 22, 'fat_saturated_g': 0.1, 'fat_total_g': 0.3, 'calories': 89.4, 'cholesterol_mg': 0, 'protein_g': 1.1, 'carbohydrates_total_g': 23.2}]

Contact

Home Classify Check All Contact Signup/Login

From Email

praneshvr.19cse@kongu

To Email

vrpranesha1@gmail.com

Subject

Testing sendgrid

submit

Nutrition Assistant

Home Classify Check All Contact Signup/Login

Emphasizes fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products. Includes a variety of protein foods such as seafood, lean meats and poultry, eggs, legumes (beans and peas), soy products, nuts, and seeds.

Checkout