NUTRITION ASSISTANT APPLICATION

Project Report

Submitted by

TEAM ID:PNT2022TMID40681

VINOTHINI V	610919104102
KIRUTHIGA A	610919104039
VINITHA T	610919104100
VALLARASI K	610919104095

TABLE OF CONTENT

INTRODUCTION

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.

1.1 PROJECT OVERVIEW

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. Our method employs **Clarifai's AI-Driven Food Detection Model** for accurate food identification and Food API's to give the nutritional value of the identified food.

1.2 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.

LITERATURE SURVEY

2.1 EXISTING 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. People need to control their daily calorie intake by eating healthier foods, which is the most basic method to avoid obesity.

2.2 REFERENCES

https://ieeexplore.ieee.org/document/4782671

https://ieeexplore.ieee.org/document/8118575

2.3 PROBLEM STATEMENT DEFINITION

App- based nutrient dashboard systems which can analyze real-timeimages 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.

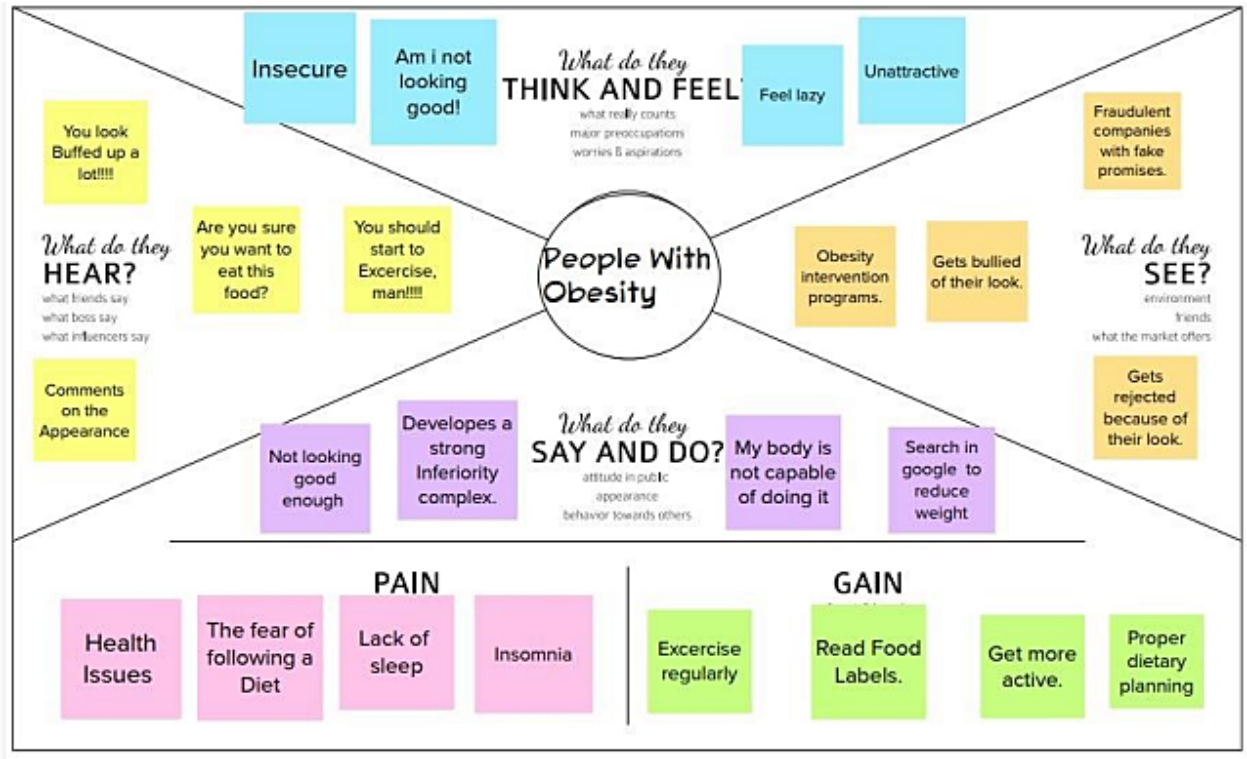
TITLE AND AUTHOR(S)	YEAR	TECHNIQUE	FINDINGS	PROS ANDCONS
Enhancing Cloud and healthy Food Nutrition Information SystemsPractice- Paul, PK and Aithal,PS and Bhuimali, A	2017	Cloud Computing,Mobile Computing	Among the common mass food information systems are not yet popularized as a domain and thusthere are huge potentialities to work on this.	P: Regarding manpower development there are a lot of things are pending and possible to work with. Hence cloud will do an attentionon skill and manpower development for sophisticated development of food informationsystems.
Mobile cloud basedsystem recognizing nutrition and freshness of food image- Kumbhar, Dipteeand Patil, Sarita	2017	Cloud Computing, Image Segmentation	Mobile cloud computing (MCC) has been introduced to be a potential paradigm for mobile health services to overcome the interoperability issues over distinctive information formats. Inthis, we propose a mobile cloud-based food calorie measurement framework.	P: Multiple Platform Support. Cost-Efficient C: Connectivity and Performance Issues

Predicting calorific value for mixed food using image processing- Kohila, R and Meenakumari, R	2017	Cloud Computing, Image Segmentation	The objective of this paper is to predict and to fix diet control for various diseases by measuring thecalorific value to help the patientsand nutritionists. The image captured through a mobile phone/tablet camera will provide information concerning the calorierate of the food.	P: Increased security Reduced cost C: Limited control . Lacks Support

Use of artificial intelligence in precision nutrition and fitness- de Moraes Lopes, Maria Helena Baena and Ferreira, DantonDiego and Ferreira, Ana Claudia Barbosa Honorio and da Silva, Giuliano Roberto and Caetano, Aletha Silva and Braz	2020	Artificial Intelligence, Nutritional surveillance	Among the available computational tools, artificial intelligence (AI) has gained moreand more attention recently, sinceit is able to learn and model linearand nonlinear relationships between variables by constructingan input-output mapping such thathidden and extremely useful information for decision-making is revealed and interpret.	P: A large amountof data is collectedby these technologies C:AI is not yet widely used in theareas of nutrition and fitness

IDEATION & PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS



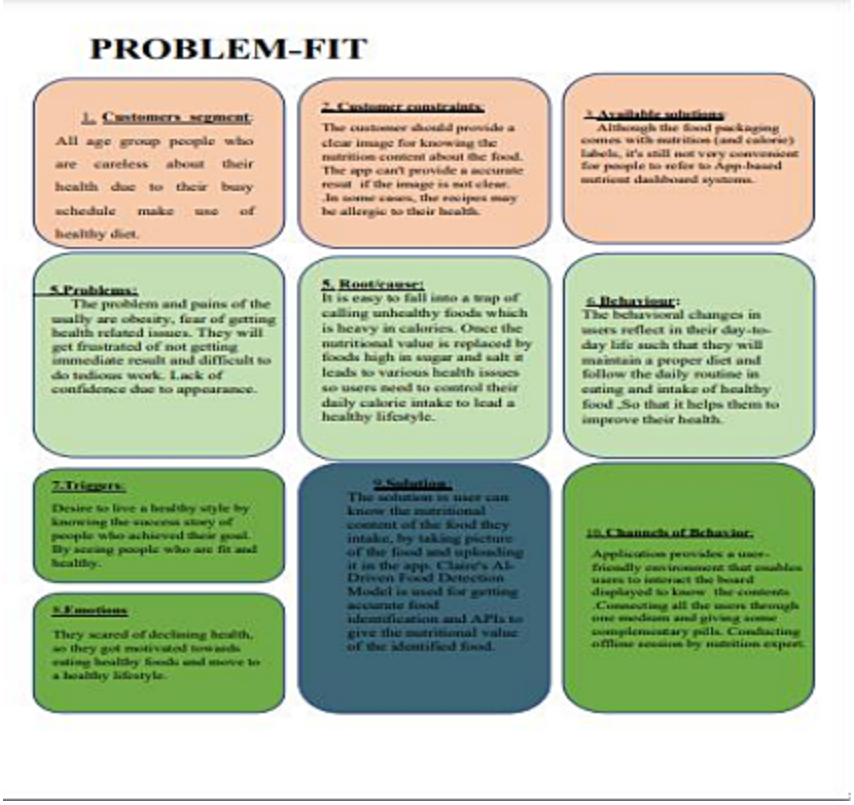
3.2 IDEATION & BRAINSTORMING

3.3 PROPOSED SOLUTION

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Rate of Obesity are increasing at an high speed,due to the ignorance of the proper Nutrition foods, and this leads to risks in 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,some food packaging has an added nutrition and calorie values,but it's not very comfortable to refer.
2.	Idea / Solution description	People can easily track the Nutrition and calories by scanning an real-time images of a food and examine it's nutritional content which will improves the dietary habits.Smartnutrition and foods can prevent diseases. This app will provide proper nutrition,helps in maintaining a healthy lifestyle and also recommended diet plans for users.
3.	Novelty / Uniqueness	This solution has the uniqueness that we can realize real time images of meal and can easily analyze its nutritional content. Aweb app that can automatically estimates food attributes such as ingredients and nutrition value by classifying the input image.
4.	Social Impact / Customer Satisfaction	The Obesity rate will get reduced and people can able to lead a healthy life. It helps achieveand maintain a healthy weight.
5.	Business Model (Revenue Model)	Social media is the best way to develop this application. This application will increase the confidence among the people. It is great to use, amazing convenience and also have subscription once user hit certain services.

6.	Scalability of the Solution	People can access from anywhere at anytime to track the calories and nutrition value that will improve a healthy eating pattern. This App will improves the dictary habits and helps in maintaining a healthy weight and healthy lifestyle.

3.4 PROBLEM SOLUTION FIT



REQUIRMENT ANALYSIS

4.1 FUNCTIONAL REQUIRMENT

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. Identifying the high calorie food	The high calorie ingredients will be shown via this application.
6. Identifying the low calorie food	The high calorie ingredients will be shown via this application.

4.2 NON-FUNCTIONAL REQUIRMENTS

1.Usability

2.Security

3.Reliability

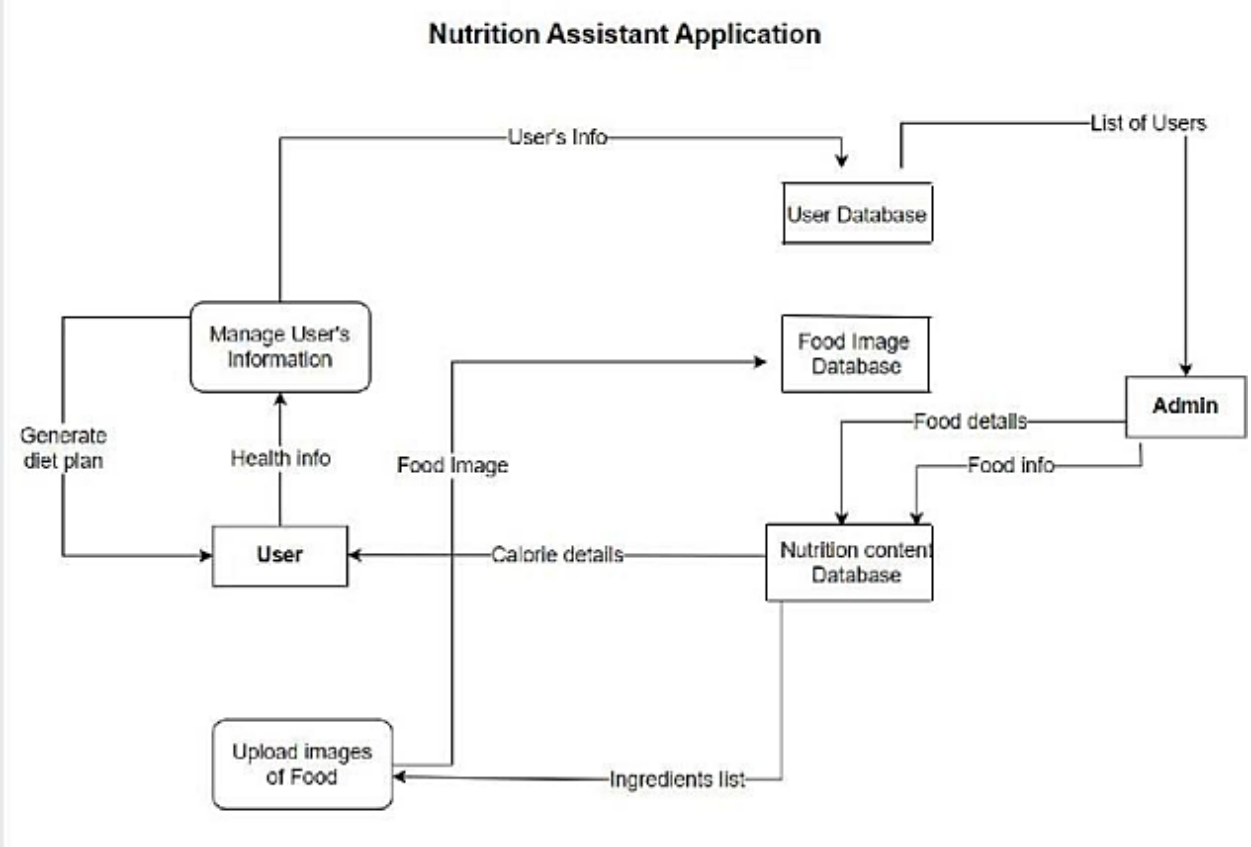
4.Performance

5.Availability

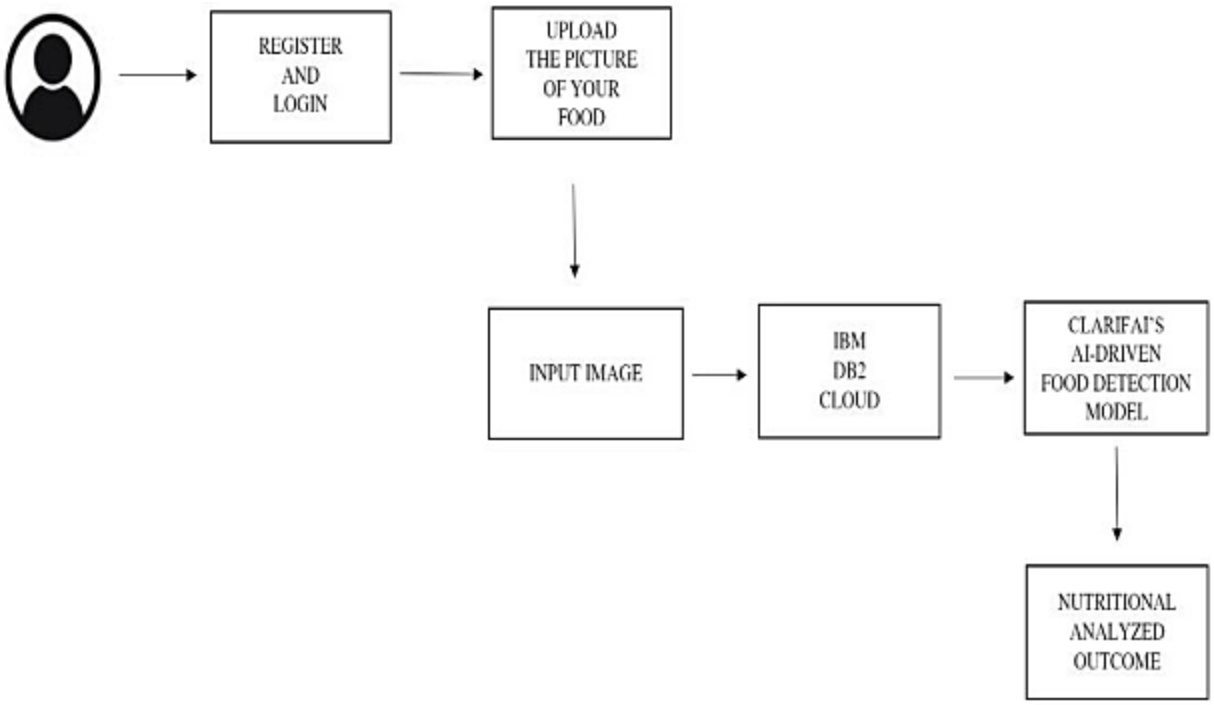
6. Scalability

PROJECT DESIGN

5.1 DATA FLOW DIAGRAMS



5.2 SOLUTION & TECHNICAL ARCHITECTURE



5.3 USER STORIES

1.As a user, I can register for the application by entering my email, password,and Confirm my password

2.As a user, I will receive confirmation email once I haveregistered forthe application

3.As a user, I can log into the application by entering email & password

4.As a user, I can fill the details.

5.As a user, I can register for the application by entering my email,password,and Confirm my password

6.As a user, I will receive confirmation email once I haveregistered forthe application

7.As a user, I can log into the application by entering email & password

8.As a user, I can fill the details.

9.As a user,I will search the food items.

10.As a user, I can scan the food an get the nutrition details and recipe for relatedscanned food.

PROJECT PLANNING & SCHEDULING

6.1 SPRINT PLANNING & ESTIMATION

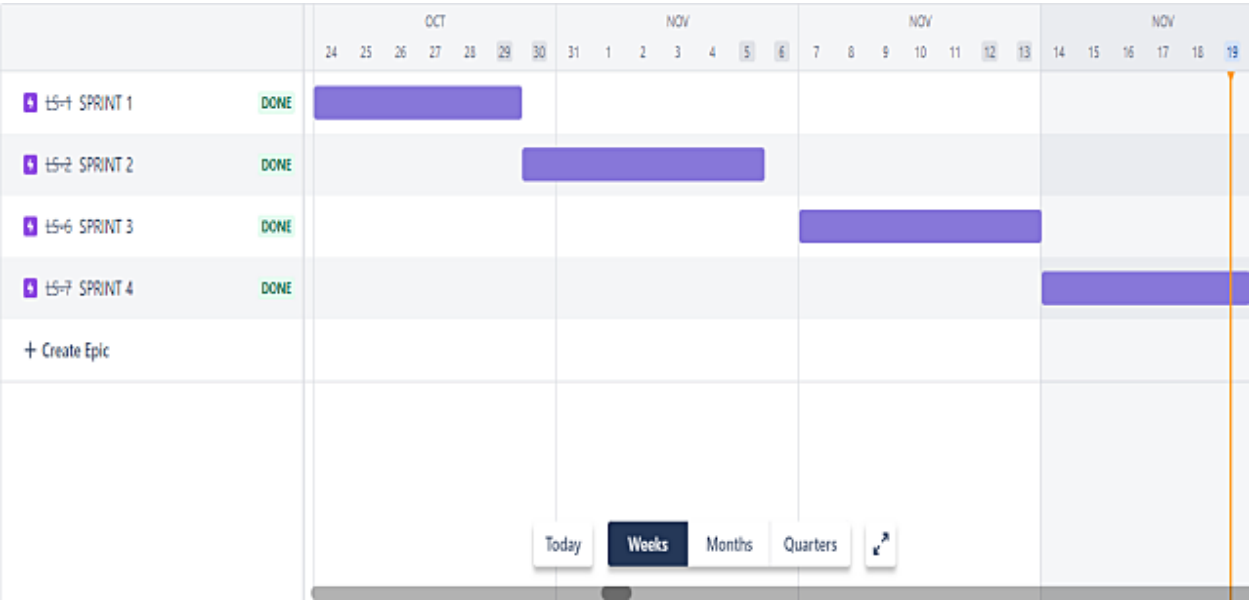
SPRINT	FUNCTINAL REQUIREMENT	USER STORY NUMBER	User Story / Task	STORY POINTS	PRIORITY	TEAM MEMBERS
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my Anusha K password.	***2***	High	Karthikeyan VAnusha K Ashish K Lokeshwari S
Sprint-1		USN-2	As a user, I will receive confirmation email once have registered for the application	***1***	High	Karthikeyan VAnusha K Ashish K Lokeshwari S
Sprint-1	Login	USN-3	As a user, I can log into the application by entering email & password	***1***	High	Karthikeyan VAnusha K Ashish K Lokeshwari S
Sprint-2	User details	USN-4	As a user , I can fill the Details.	***2***	High	Karthikeyan VAnusha K Ashish K Lokeshwari S
Sprint-3	Push notification	USN-5	As a user, I will search the food items.	***2***	Medium	Karthikeyan VAnusha K Ashish K Lokeshwari S

Sprint-4	Shown the nutrition details and recipe for scanned food	USN-6	As a user, I can scan the food an get the details and Recipe for nutrition details and recipe for related scanned food.	***1***	High	Karthikeyan VAnusha K Ashish K Lokeshwari S

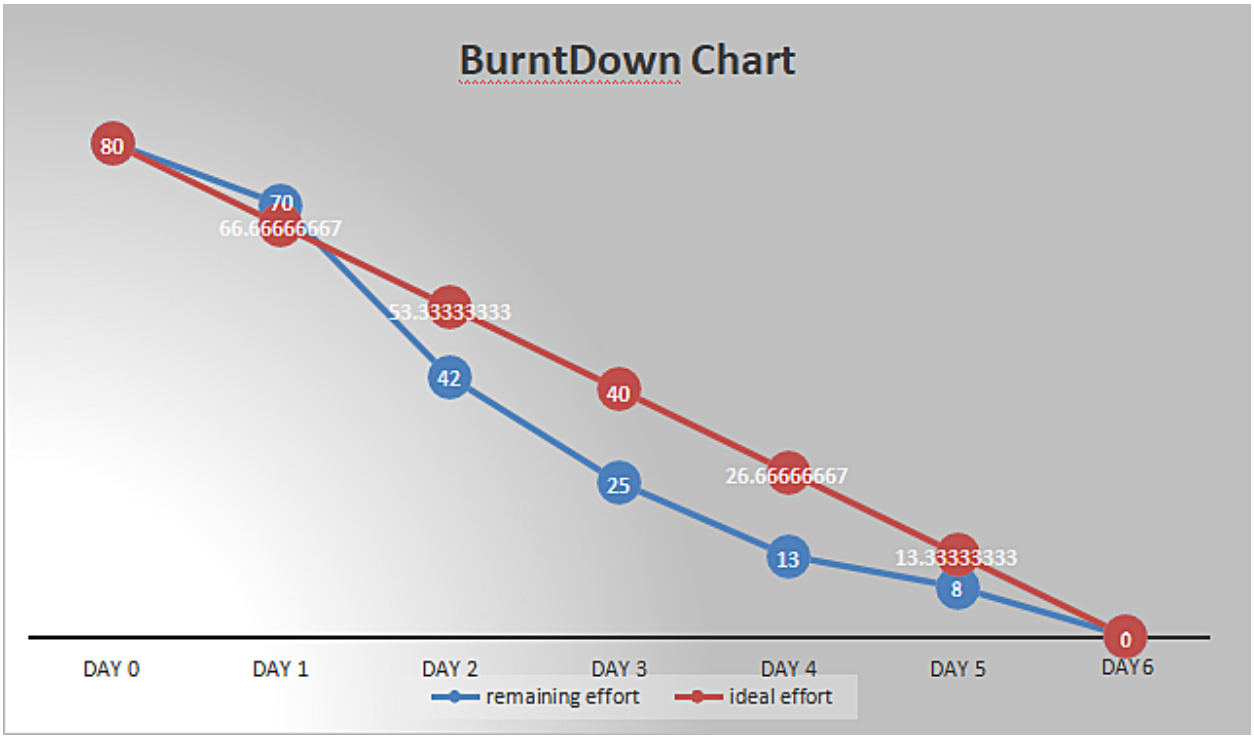
6.2 SPRINT DELIVERY SCHEDULE

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	12 Nov 2022
Sprint-1	20	6 Days	31 Oct 2022	05 Nov 2022	20	*05 Nov 2022*
Sprint-1	20	6 Days	07 Nov 2022	12 Nov 2022	20	*12 Nov 2022*
Sprint-1	20	6 Days	07 Nov 2022	12 Nov 2022	20	*19 ov 2022*

6.3 JIRA REPORT



BURNT DOWN CHART



CODING & SOLUTIONING

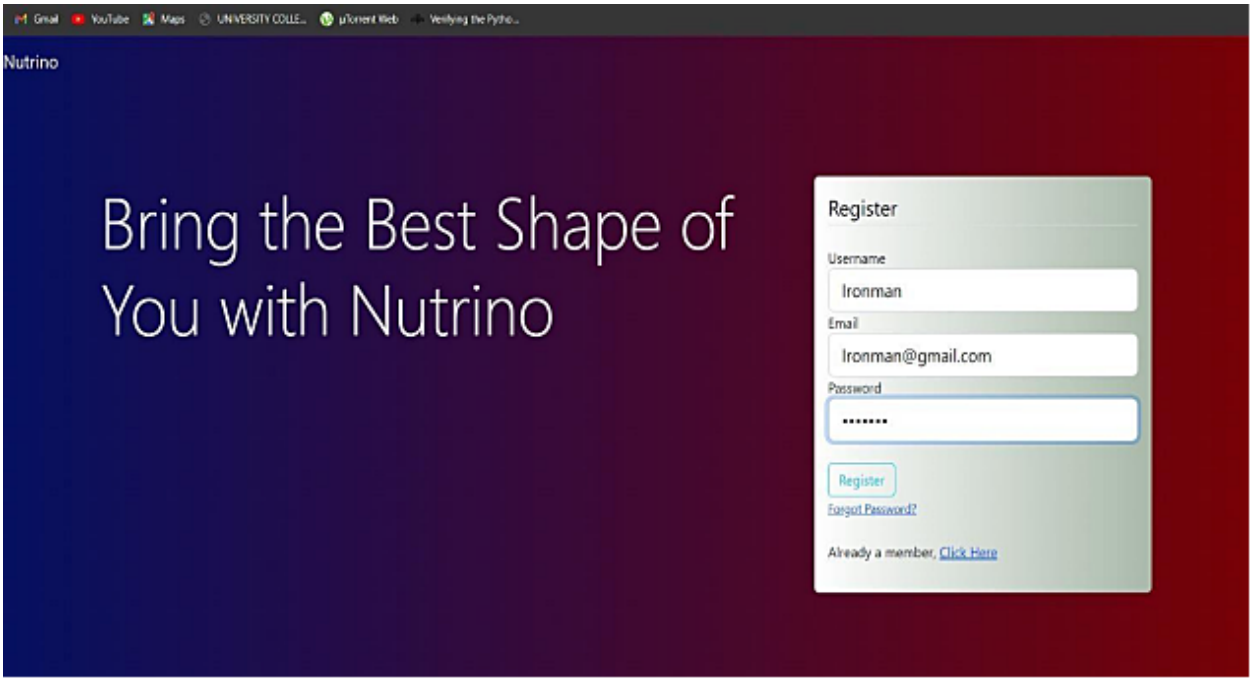
7.1 FEATURE 1

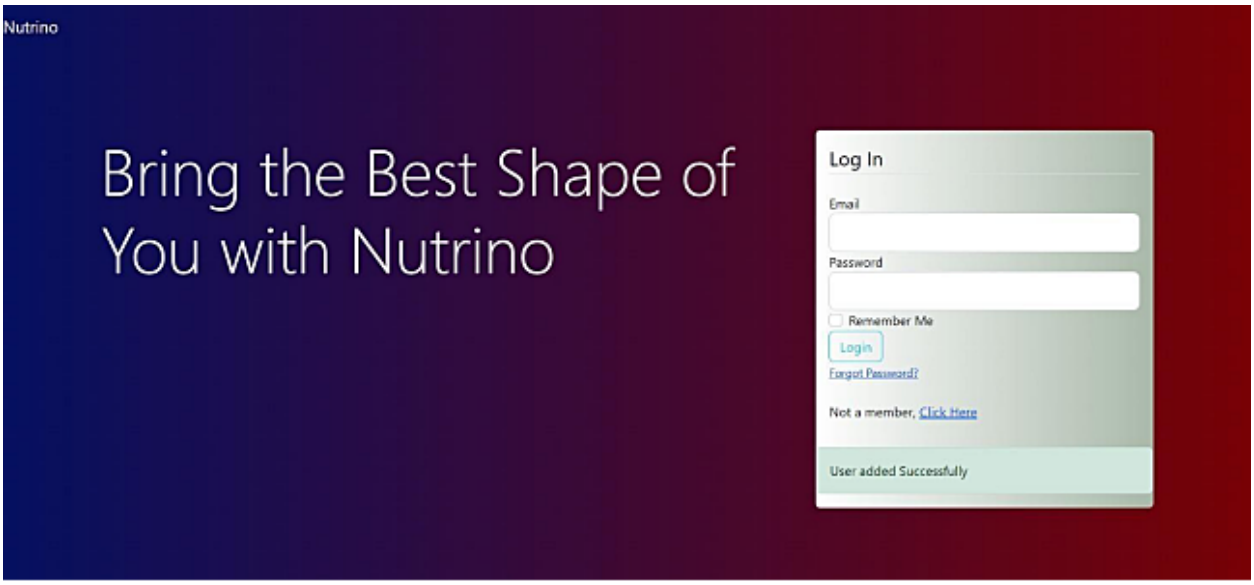
i. Enter the credentials to register and login to our Nutrino

ii. Already a user , use the login directly.

iii. Wrong login credentials will be notified.

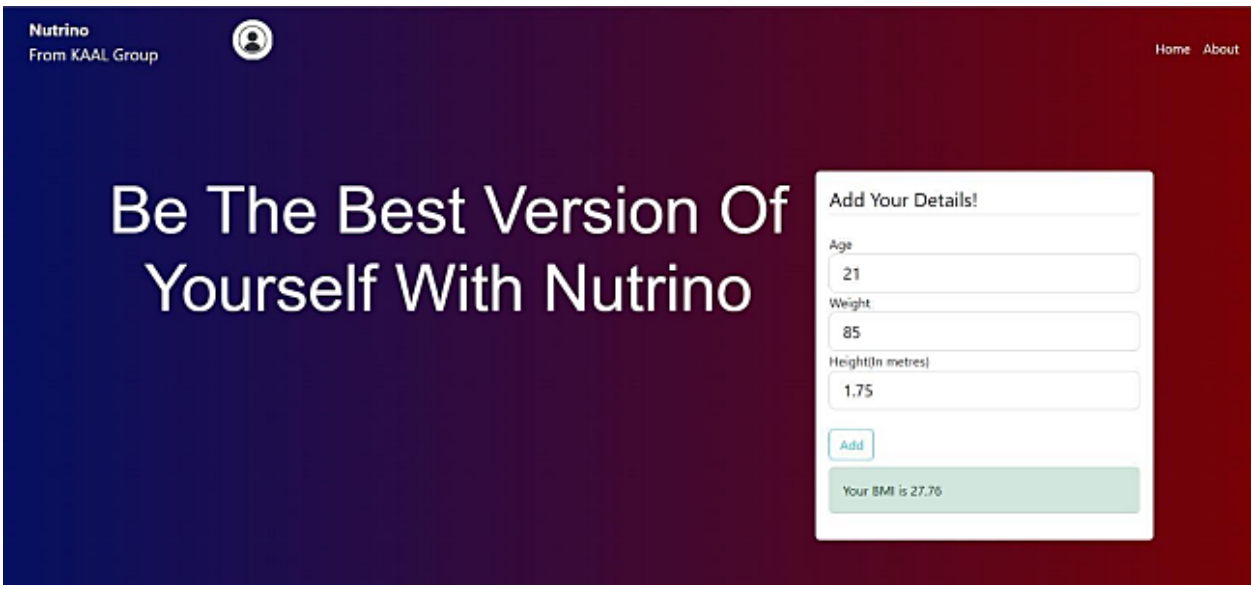
iv. On correct username and password , user is directed toprofile page .

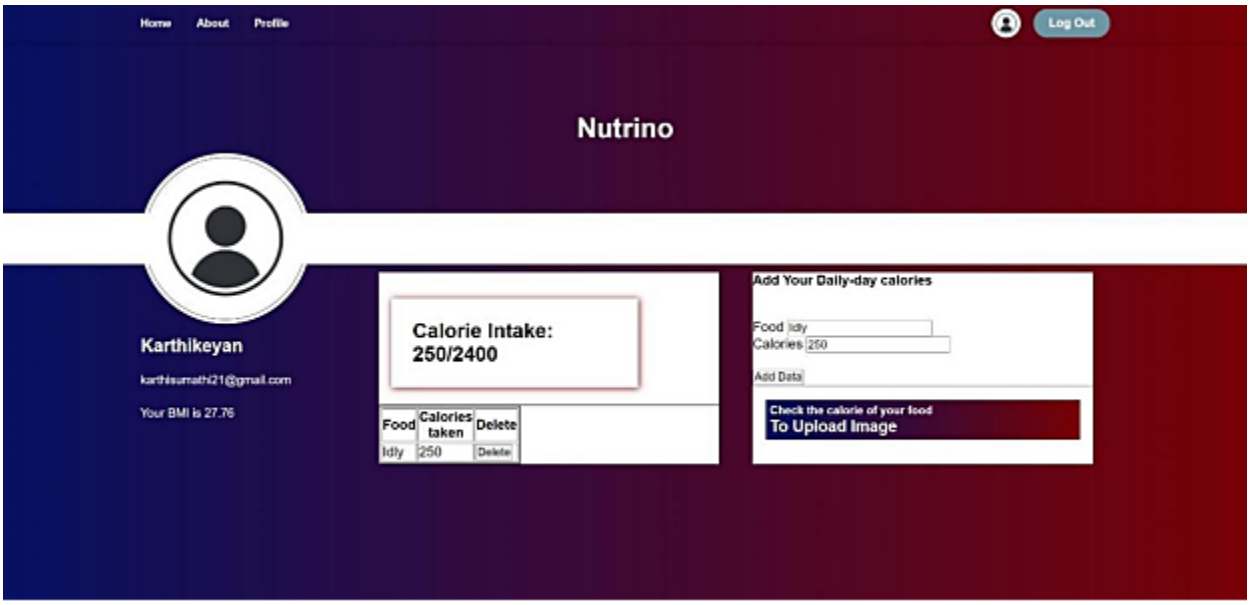




7.2 FEATURE 2

1. User is taken to the profile page , and the user's detailsare collected.
2. The BMI for the user's information is provided.
3. The dashboard with the user's daily intake of calorie is displayed.





TESTING

8.1 TEST CASES

1.Our code was tested on different food to check whether itgives the correct ouput .

2.The code is tested in every aspect to fulfill the customer's requirements

8.2 USER ACCEPANCE TESTING

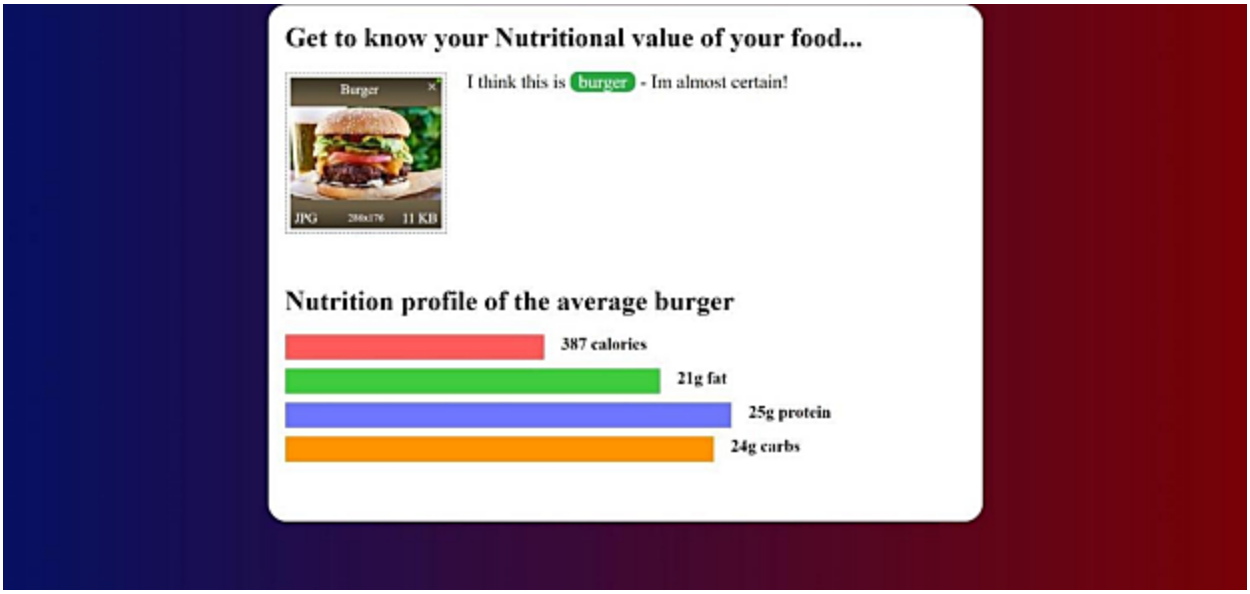
Our project is tested by an user to verify the working of the application

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	TC for Automation(Y/N)	BUG ID	Executed By
LoginPage_TC_001	Functional	Home Page	Verify user is able to see the Login/Signup popup when user clicked on My account button	Need to open the website and should have an basic knowledge about that website	1.Enter URL and click go 2.Click on My Account dropdown button 3.Verify login/Singup popup displayed or not	Executed local host	Login/Signup popup should display	Working as expected	Pass		Yes		karthikeyan r
LoginPage_TC_002	UI	Home Page	Verify the UI elements in Login/ Signup popup	Need to register your self with basic details such as email address	1.Enter URL and click go 2.Click on My Account dropdown button 3.Verify login/Singup popup with below UI elements a.email text box b.password text box c.Login button d.New customer? Create account link e.Last password? Recovery password link	Executed local host	Application should show below UI elements: a.email text box b.password text box c.Login button with orange colour d.New customer? Create account link e.Last password? Recovery password link	Not Working as expected	Fail	Steps are not clear to follow	NO	BUG-1	Ashish k
LoginPage_TC_003	Functional	Home page	Verify user is able to log into application with Valid credentials	in order to check for the valid credentials in login page. The user must sign in to the account	1.Enter URL(https://shopenzer.com/) and click go 2.Click on My Account dropdown button 3.Enter Valid username/email in Email text box 4.Enter valid password in password text box 5.Click on login button	Username: karthis@gmail.com password: karthi123	User should navigate to user account homepage	Working as expected	pass		yes		Anusha k
LoginPage_TC_004	Functional	Login page	Verify user is able to log into application with Invalid credentials	verify the login details with signin details.	1.Enter URL(https://shopenzer.com/) and click go 2.Click on My Account dropdown button 3.Enter Invalid username/email in Email text box 4.Enter valid password in password text box 5.Click on login button	Username: anusha@gmail.com password: anu8123	Application should show 'Incorrect email or password' validation message.	working as expected	pass		Yes		Lokeshwari S
LoginPage_TC_004	Functional	Login page	Verify user is able to log into application with Invalid credentials		1.Enter URL(https://shopenzer.com/) and click go 2.Click on My Account dropdown button 3.Enter Valid username/email in Email text box 4.Enter invalid password in password text box 5.Click on login button	Username: karthi@gmail.com password: Tail716	Application should show 'Incorrect email or password' validation message.!!@!!!!	Working as expected	pass		Yes		Ashish k
LoginPage_TC_005	Functional	Login page	Verify user is able to log into application with Invalid credentials		1.Enter URL(https://shopenzer.com/) and click go 2.Click on My Account dropdown button 3.Enter Invalid username/email in Email text box 4.Enter invalid password in password text box 5.Click on login button	Username: lokeshwari password: Lok@2001	Application should show 'Incorrect email or password' validation message.	Working as expected	pass		Yes		Anusha k

RESULTS

9.1 PERFORMANCE METRICS

The proposed procedure was implemented and testedon a set of different food images. The database consists of various images offood items . Once a food is recognized the equivalent nutritional values displayed on the screen.



ADVANTAGES

1. User is now able to track his daily calorie intake

2. He/she can now take effective measures to maintain a healthybodyweight

3. It delivers the information on the nutritional value for food and how itshould be maintained for your daily basis.

CONCLUSION

In our conclusion , many people now-a-days are not aware of their healthcondition and taking this conditions in hands and to save their time and money , and to lead the healthy life style , the change in food routine should be maintained . The goal of user either to increase or decrease bodyweight through regular calorie-intake tracking with simple yet efficient application is achieved. The users following their respective calories is highly enough to get them FIT.

FUTURE SCOPE

In future we'll be adding extra features that will engage our users a lotmore . The interaction with the users will be a lot more easier . And extra dietary plans will be added for the user's

APPENDIX

13.1 SOURCE CODE

```python
from flask import Flask
from flask_sqlalchemy import SQLAlchemy
from flask_login import LoginManager
from flask_wtf import FlaskForm
from flask_bcrypt import Bcrypt
from wtforms import StringField, PasswordField, SubmitField, BooleanField
from wtforms.validators import DataRequired, Length, Email, EqualTo, ValidationError
from datetime import datetime
from flask_migrate import Migrate
from flask_login import UserMixin
from flask import render_template, url_for, flash, redirect, request,session
from flask_login import login_user, current_user, logout_user, login_required
from api import image


app = Flask(__name__)
app.config['SECRET_KEY'] = '5791628bb0b13ce0c676dfde280ba245'
# app.config['SQLALCHEMY_DATABASE_URI'] = 'sqlite:///site.db'
app.config['SQLALCHEMY_DATABASE_URI'] = 'mysql+pymysql://root:ashish210901@127.0.0.1/users'
#app.config['SQLALCHEMY_DATABASE_URI'] = 'ibm_db_sa://rfs19780:D2Ky156OxjrASE8s@2f3279a5-73d1-4859-88f0-a6c3e6b4b907.c3n41cmd0nqnrk39u98g.databases.appdomain.cloud:3

db = SQLAlchemy(app)
bcrypt=Bcrypt(app)
migrate=Migrate(app,db)
login_manager = LoginManager(app)
login_manager.login_view = 'login'
login_manager.login_message_category = 'info'



@login_manager.user_loader
def load_user(user_id):
    return User.query.get(int(user_id))
```

```python
class User(db.Model, UserMixin):
    id = db.Column(db.Integer, primary_key=True)
    username = db.Column(db.String(20), unique=True, nullable=False)
    email = db.Column(db.String(120), unique=True, nullable=False)
    image_file = db.Column(db.String(20), default='default.jpg')
    password = db.Column(db.String(60), nullable=False)
    details= db.relationship('detail',backref='admin',lazy=True)

    def __repr__(self):
        return f"User('{self.username}', '{self.email}', '{self.image_file}')"

class detail(db.Model, UserMixin):
    id=db.Column(db.Integer,primary_key=True)
    weight=db.Column(db.Integer,nullable=False)
    height=db.Column(db.Float,nullable=False)
    bmi=db.Column(db.Float,nullable=False)
    user_id=db.Column(db.Integer, db.ForeignKey('user.id'),nullable=False)

    def __repr__(self):
        return f"details('{self.weight}', '{self.height}','{self.bmi}')"

class RegistrationForm(FlaskForm):
    username = StringField('Username',
                           validators=[DataRequired(), Length(min=2, max=20)])
    email = StringField('Email',
                        validators=[DataRequired(), Email()])
    password = PasswordField('Password', validators=[DataRequired()])
    submit = SubmitField('Register')

    def validate_username(self, username):
        user = User.query.filter_by(username=username.data).first()
        if user:
            raise ValidationError('That username is taken. Please choose a different one.')
```

```
    def validate_email(self, email):
        user = User.query.filter_by(email=email.data).first()
        if user:
            raise ValidationError('That email is taken. Please choose a different one.')


class LoginForm(FlaskForm):
    email = StringField('Email',
                        validators=[DataRequired(), Email()])
    password = PasswordField('Password', validators=[DataRequired()])
    remember = BooleanField('Remember Me')
    submit = SubmitField('Login')

class ProfileForm(FlaskForm):
    age = StringField('Age',
                          validators=[DataRequired()])
    weight = StringField('Weight',
                        validators=[DataRequired()])
    height = StringField('Height',
                        validators=[DataRequired()])
    remember = BooleanField('Remember Me')
    submit = SubmitField('Add')



@app.route("/")
@app.route("/login", methods=['GET', 'POST'])
def login():
    if current_user.is_authenticated:
        return redirect(url_for('dashboard'))
    form = LoginForm()
    if form.validate_on_submit():
        user=User.query.filter_by(email=form.email.data).first()
        if user and bcrypt.check_password_hash(user.password,form.password.data):
```

```
    def validate_email(self, email):
        user = User.query.filter_by(email=email.data).first()
        if user:
            raise ValidationError('That email is taken. Please choose a different one.')


class LoginForm(FlaskForm):
    email = StringField('Email',
                        validators=[DataRequired(), Email()])
    password = PasswordField('Password', validators=[DataRequired()])
    remember = BooleanField('Remember Me')
    submit = SubmitField('Login')

class ProfileForm(FlaskForm):
    age = StringField('Age',
                          validators=[DataRequired()])
    weight = StringField('Weight',
                        validators=[DataRequired()])
    height = StringField('Height',
                        validators=[DataRequired()])
    remember = BooleanField('Remember Me')
    submit = SubmitField('Add')



@app.route("/")
@app.route("/login", methods=['GET', 'POST'])
def login():
    if current_user.is_authenticated:
        return redirect(url_for('dashboard'))
    form = LoginForm()
    if form.validate_on_submit():
        user=User.query.filter_by(email=form.email.data).first()
        if user and bcrypt.check_password_hash(user.password,form.password.data):
```

```
@app.route("/profile",methods=['GET', 'POST'])
def profile():
    form=ProfileForm()
    if form.validate_on_submit():
        weight=form.weight.data
        height=form.height.data
        x=float(weight)
        y=float(height)
        bmi=x/(y**2)
        bmi=round(bmi,2)
        details=detail(weight=weight, height=height, user_id=current_user.id,bmi=bmi)
        db.session.add(details)
        db.session.commit()
        login_user(details,remember=form.remember.data)
        flash("Your BMI is "+str(bmi))
    return render_template('profile.html',form = form)

if __name__=='__main__':
    app.run(debug=True)
```

13.2 GITHUB & PROJECT DEMO LINK

Github Link

https://github.com/IBM-EPBL/IBM-Project-52683-1661079098

Project Demo Link

https://drive.google.com/drive/folders/1WCp- g7eyq6e6EyriJjbS1y37b9UlqxTU