An Internship Report

PANACE.AI

BACHELOR OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING

by

BOMMENA ASHOK(160120733314)

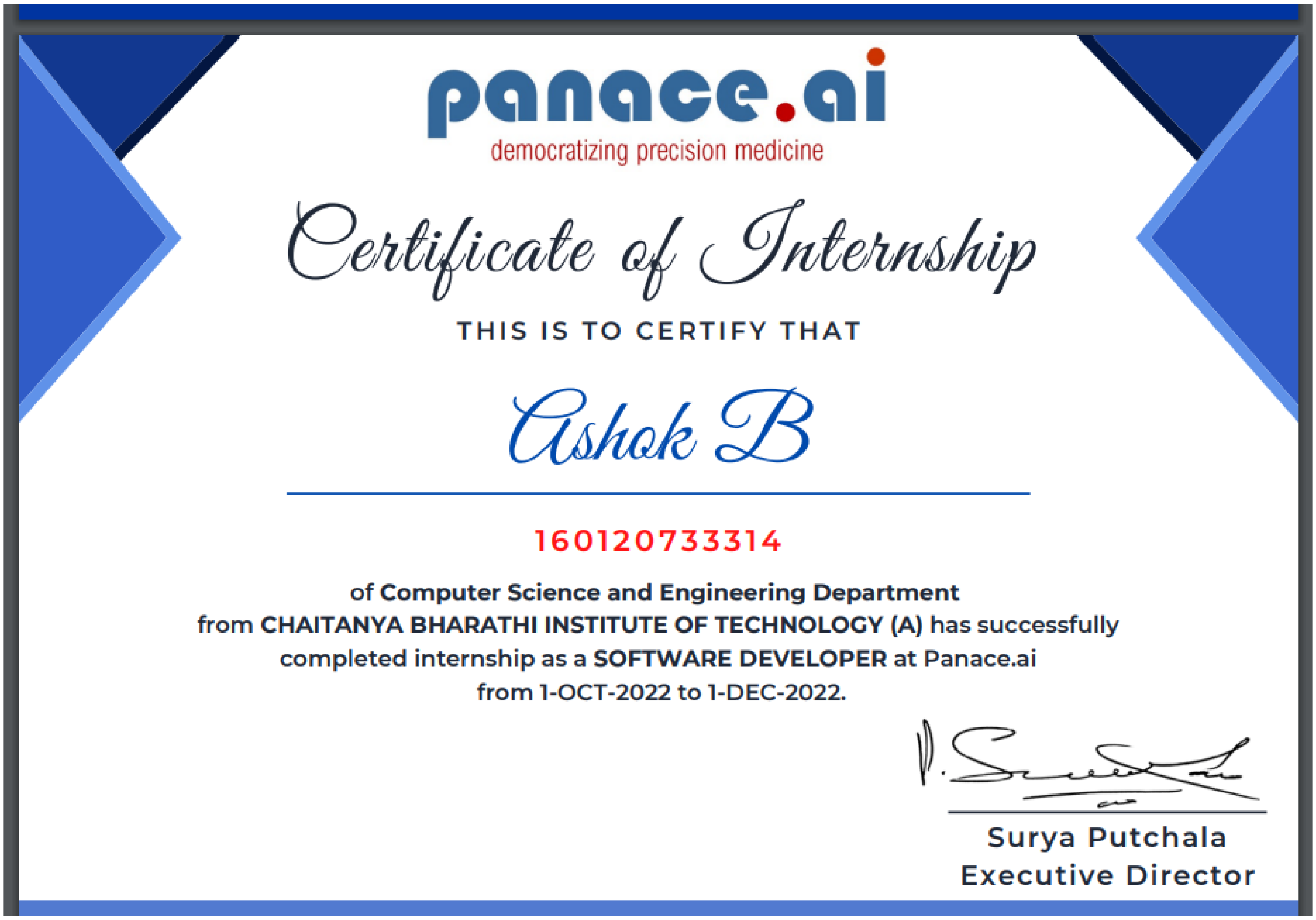
Department of Computer Science and Engineering,
Chaitanya Bharathi Institute of Technology (Autonomous),
(Affiliated to Osmania University, Hyderabad)Hyderabad,
TELANGANA (INDIA) –500 075
[2022-2023]

CERTIFICATE

This is to certify that the internship titled "PANACE.AI" is the work carried out by BOMMENA ASHOK (160120733314), a student of B.E.(CSE) ofChaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana(India) during the academic year 2022-2023.

Mentor Head, CSE Dept.

Place:
Date:



panace.ai

democratizing precision medicine

Certificate of Internship

THIS IS TO CERTIFY THAT

Ashok B

160120733314

of **Computer Science and Engineering Department**
from **CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY (A)** has successfully
completed internship as a **SOFTWARE DEVELOPER** at Panace.ai
from 1-OCT-2022 to 1-DEC-2022.

Surya Putchala
Executive Director

DECLARATION

I hereby declare that the internship entitled“PANACE.AI” is my original work carried out by me.

Name and Signature of the Student

Place

Date

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ABSTRACT

The project “Nutrition Recommender(Extracting of user food habits from groceries)” to ensure the better nutrition diet in our day-to-day life we come up with a nutrition recommendation system in which it displays the general consumption of the user's food habits and it helps to calculate the nutrition in-take by the user. With the help of the nutrition in-take data we can recommend a better nutrition diet for the user. We also have a user consumption profile where users can check their day to day nutrition diet status.

The project analyzes the food items in database and their main ingredients. When the ingredient that the user queried about is found, in the database of the food items present, they are sorted and filtered according to the nutritional value they contain. It displays user frequent intake food data and its nutritional values.

INTERNSHIP OBJECTIVES

1. Experience of applying existing engineering knowledge in similar or new situations

2. Ability to identify when new engineering knowledge is required, and apply it

3. Ability to integrate existing and new technical knowledge for industrial application

4. Ability to demonstrate the impact of the internship on their learning and professional development

5. Understanding of lifelong learning processes through critical reflection of internship experiences.

WEEKLY OVERVIEW

Week 1 : Understanding and Research of the problem statement.

Week 2 : Collecting the information and preparation of the datasets.

Week 3 : Data pre-processing and data visualization.

Week 4 : Working with the backend part.

Week 5 : Designing and building of algorithm.

Week 6 : Designing and website frontend.

Week 7 : Testing of the application.

Week 8 : Evaluation and modification of the application

ACKNOWLEDGEMENT

I am grateful to my respected supervisor Dr. T.Sridevi for her valuable guidance. Her encouragement has been a great support for me to complete this work. Her useful suggestions have been vital and all of his assistance has been sincerely acknowledged. I would also like to extend my appreciation to Mr. Rupesh Mishra for helping me through this project.

I would like to appreciate Dr. Vanitha , for giving me this opportunity to undertake this project. I thank him for his whole hearted support and enthusiasm. At the end, I would like to express my sincere thanks to all my friends and others who helped me directly or indirectly during this project work.

BOMMENA ASHOK

Roll no: 160120733**314**

1. Introduction

1.1. Problem Definition including the significance and objective

- Nutrition Recommender-Extraction of user food habits from groceries
  - To ensure the better nutrition diet in our day-to-day life we come up with a nutrition recommendation system in which it displays the general consumption of the user's food habits and it helps to calculate the nutrition in-take by the user. With the help of the nutrition in-take data we can recommend a better nutrition diet for the user. We also have a user consumption profile where users can check their day to day nutrition diet status.

1.2. Methodologies

- Data collection

  The list of food and their nutriotional value were collected using extracted from website www.kaggle.com. The data collected was mainly of the foods that contain milk or fish as the main ingredient. Since both are healthy foods, the other ingredients that are added to them during the food preperation period are the contributors that increase the values of other nutriotonal values like calories.

- Data Processing

  Pandas and Numpy modules have been used to read the dataset and perform operations such as conversion into DataFrames, Arrays for applying needed logic and other manipuations.

- Flask

  The pre-processed data has been stored in a .csv file.
  The frontend has been developed primarily using Bootstrap CSS, HTML and JS.
  The static files have been configured in flask to render as per requirement.
  Flask has also been configured to use the .csv file to provide appropriate recommendation based on the user‘s inputs.

2. Requirement Specification

2.1. Hardware requirement

- RAM: 4GB and above
- PROCESSOR: 64-bit
- Intel Core 2 Duo Q6867
- Intel Core i3-2340UE

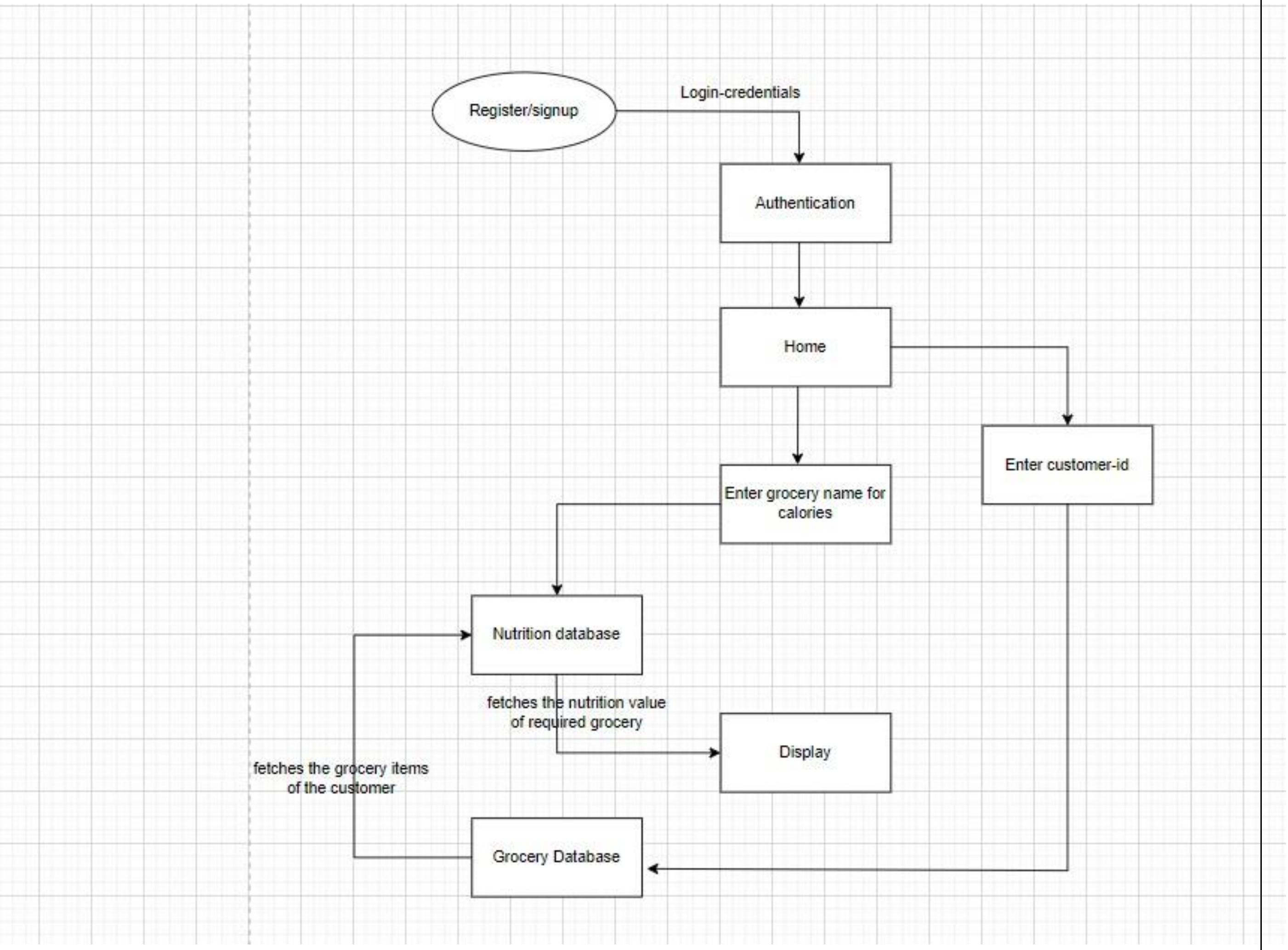
- HARDDISK: 2.5GB is minimum+1GB for caches

2.2. Software Requirements

- OS: windows or linux or any other operating System
- Language: html ,css ,java script, Mongo DB
- Visual Studio Code

3. Design of the Proposed System/Method/Algorithm

3.1. Block Diagram


Register/signup
Login-credentials
Authentication
Home
Enter customer-id
Enter grocery name for calories
Nutrition database
fetches the nutrition value of required grocery
Display
fetches the grocery items of the customer
Grocery Database

3.2. Module Description

1. Matplotlib:

   It is a powerful tool for executing a variety of tasks. It is able to create different types of visualization reports like line plots, scatter plots, histograms, bar charts, pie charts, box plots, and many more different plots.

2. PyMongo :

   It is a Python library that enables us to connect with MongoDB. Moreover, this is the most recommended way to work with MongoDB and Python. Also, we have chosen

Python to interact with MongoDB because it is one of the most commonly used and considerably powerful languages for data science

3. NumPy :

   It is a Python library used for working with arrays. It also has functions for working in domain of linear algebra, fourier transform, and matrices. NumPy was created in 2005 by Travis Oliphant. It is an open source project and you can use it freely.

4. Python Plotly:

   It is a library is an open-source library that can be used for data visualization and understanding data simply and easily. Plotly supports various types of plots like line charts, scatter plots, histograms, cox plots, etc.

5. **Chart JS**:

   It is the easy-to-use, high-level interface to **chart js**, which operates on a variety of types of data and produces easy-to-style figures. **Chart js** provides functions to visualize a variety of types of data.

6. Pandas:

   It is a predominantly used python data analysis library. It provides many functions and methods to expedite the data analysis process. What makes pandas so common is its functionality, flexibility, and simple syntax.

3.3. Theoretical Foundation/Algorithms

- At first to clean the data, we use pandas, numpy, matplotlib and some other python libraries.
- Pandas library has several functions for analyzing, cleaning, exploring and manipulating data.
- With help of matplotlib we can also represent graphical representation of user food habits and their corresponding nutrition values.
- To store the different food habits of various consumers along with their nutrition values we use MangoDB.
- MangoDB is a document database used to build highly available and scalable internet applications.
- With the help of MangoDB, whenever user enters the food item for its corresponding nutrition values it traverses through the database and fetches the corresponding results and gets displayed to the user.

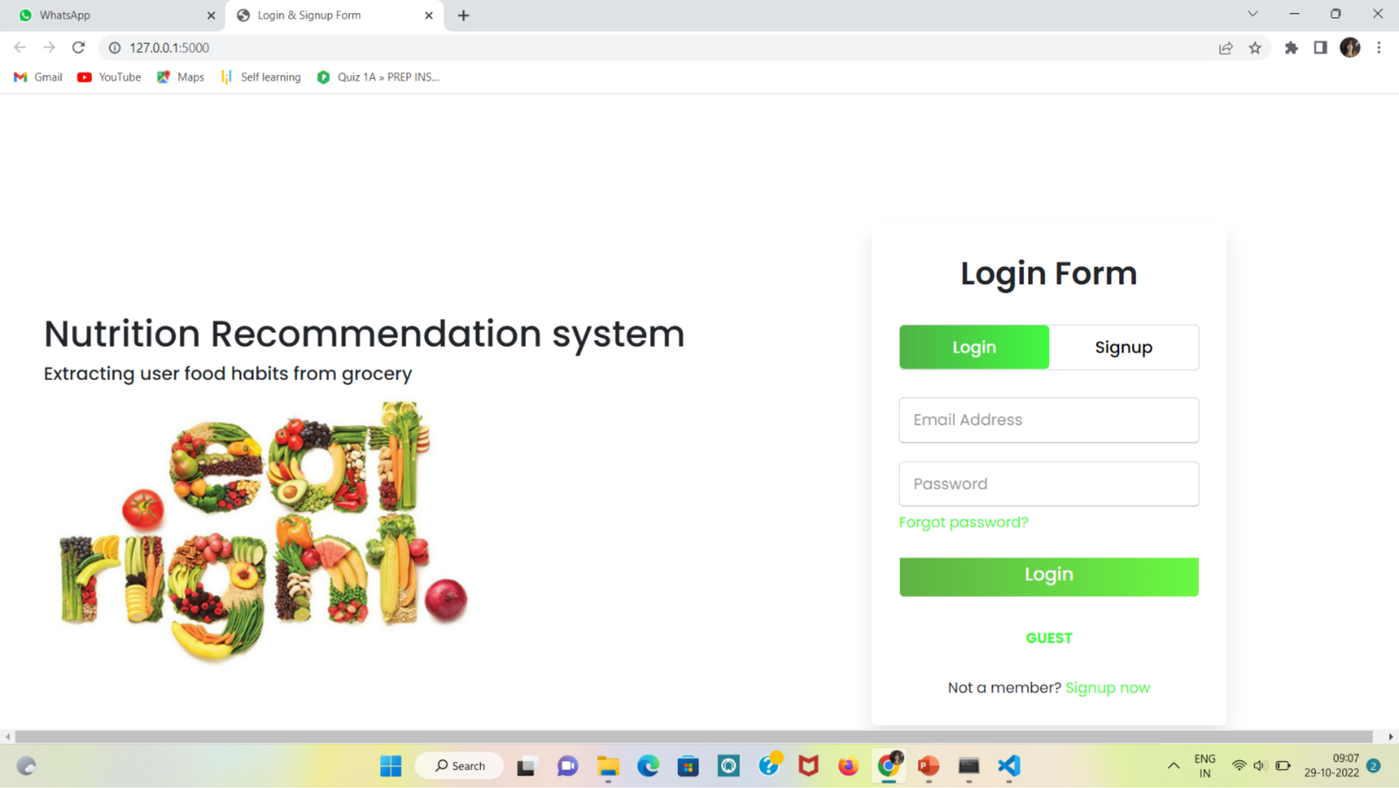
4. IMPLEMENTATION OF PROPOSED SYSTEM

4.1 Design and Test steps

For designing of nutrition recommendation system we used HTML, CSS and JavaScript.The application is based on Flask framework. It uses python programming language in back-end and JavaScript in front-end. MongoDB was used as database for the application and the algorithms were implemented in python.

4.1.1 Login Page:

Login page is designed by using HTML, CSS, JavaScript and Bootstrap classes. This page asks the user to enter login details if u have an existing account. User can also register/signup if he/she doesn’t have account.



Nutrition Recommendation system

Extracting user food habits from grocery

Login Form

Email Address

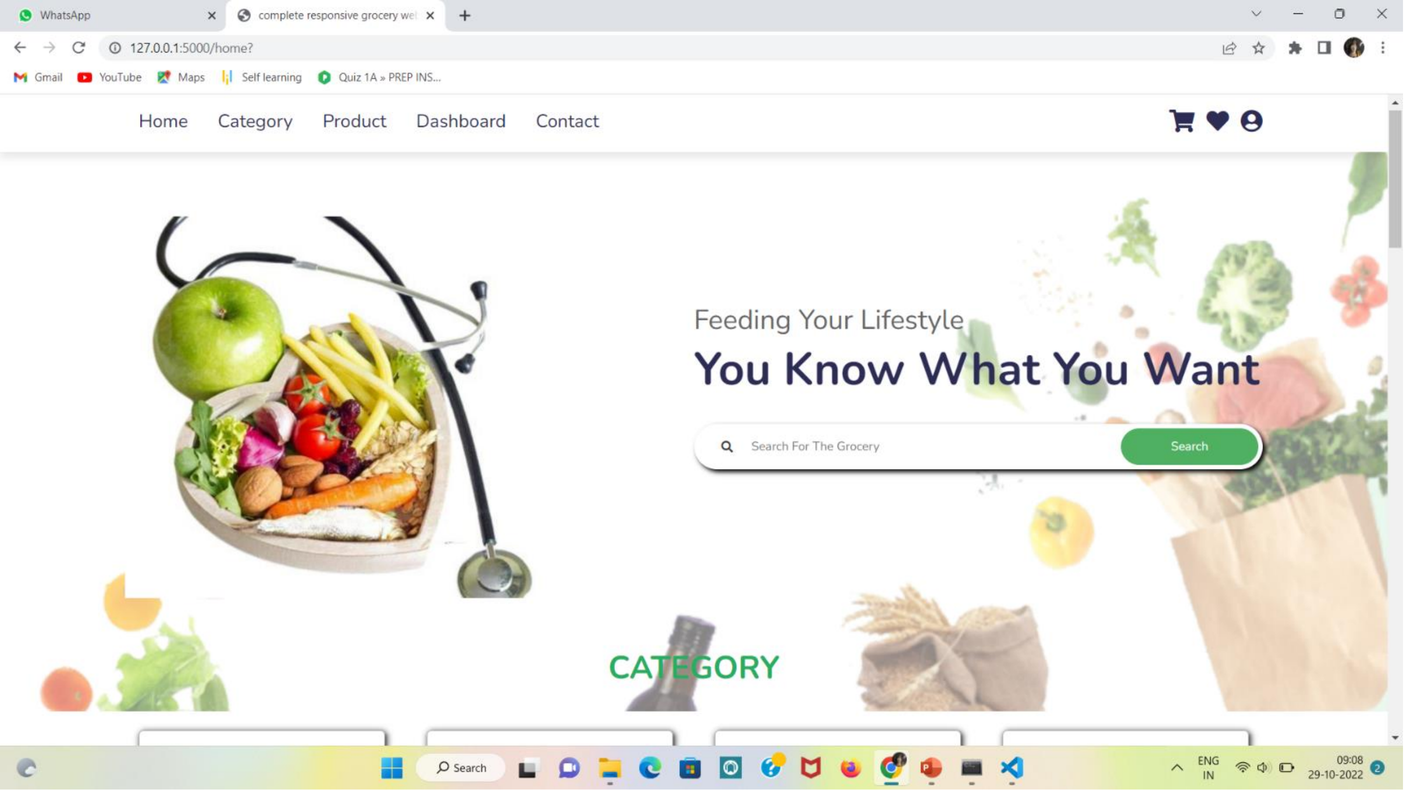
Password

Not a member? Signup now

Fig: Login page

4.1.2 Home Page

After successfully logged into our website user can able to see the home page where it is designed by using frontend tools like HTML, CSS, JavaScript and Bootstrap. In home page user can able see various functions like home, category, dashboard, contact. Apart from these u will able to find a search engine where user can enter desired grocery name in order to find nutrition values.



Feeding Your Lifestyle

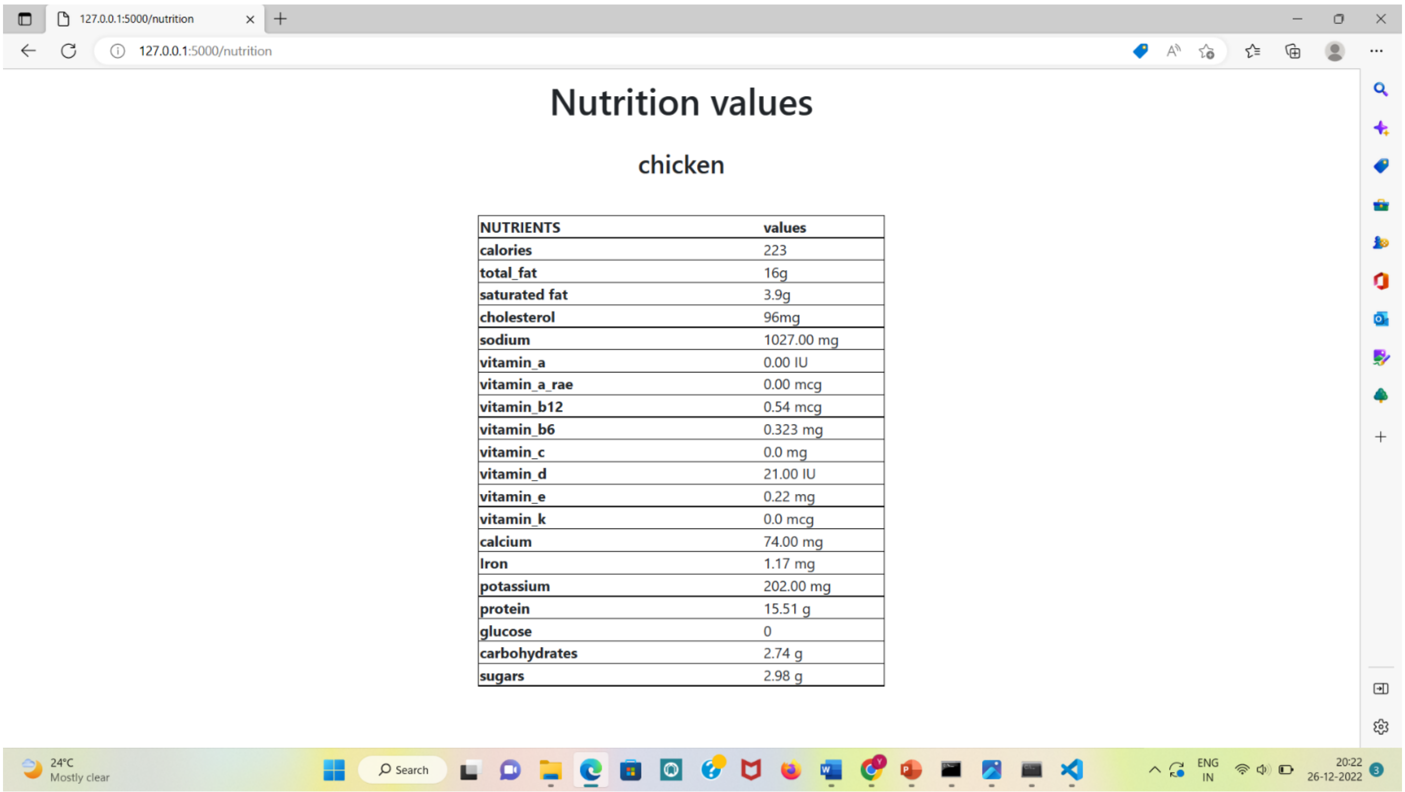
You Know What You Want

CATEGORY

Fig: home page

4.1.3 Nutrition Values

When user enters required grocery name and clicks on search button it displays the nutrition values of that grocery entered.



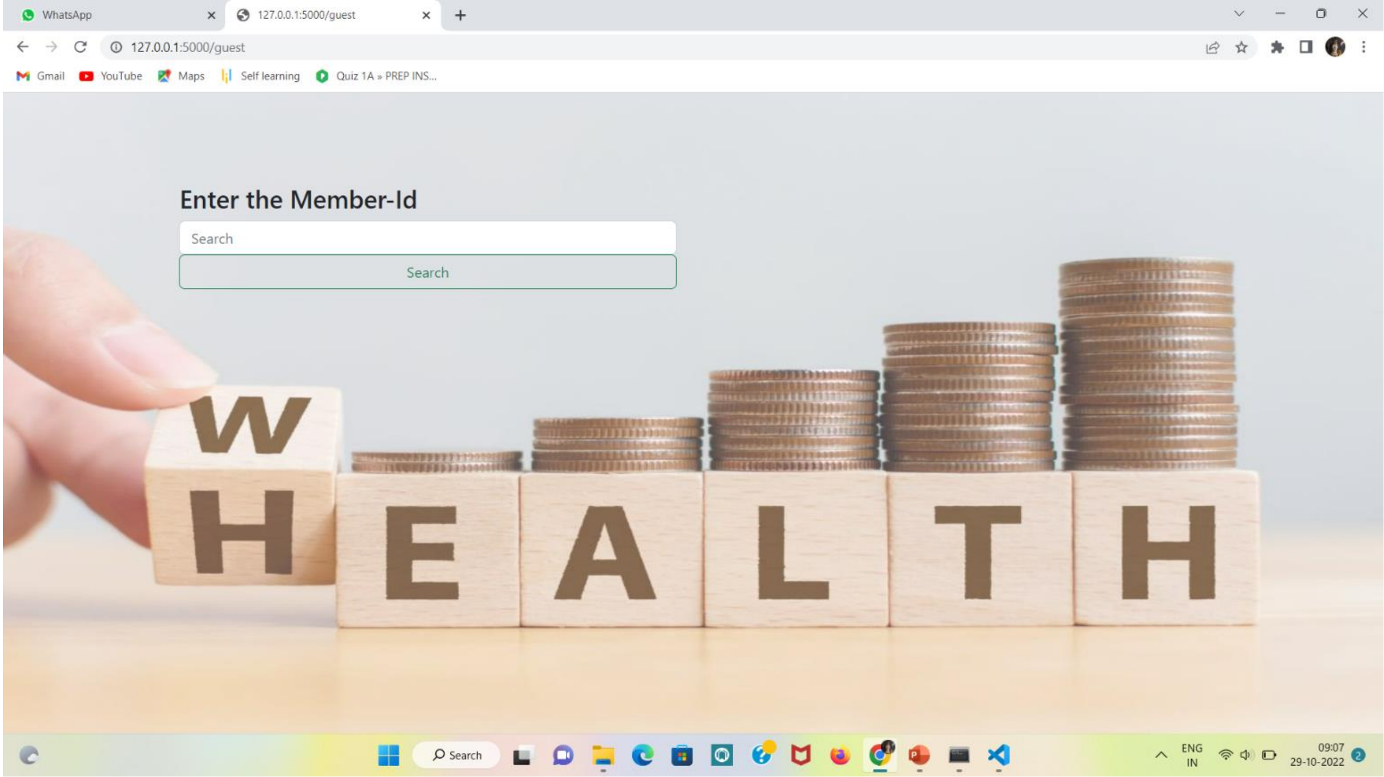
Nutrition values

chicken

NUTRIENTS	values
calories	223
total_fat	16g
saturated fat	3.9g
cholesterol	96mg
sodium	1027.00 mg
vitamin_a	0.00 IU
vitamin_a_rae	0.00 mcg
vitamin_b12	0.54 mcg
vitamin_b6	0.323 mg
vitamin_c	0.0 mg
vitamin_d	21.00 IU
vitamin_e	0.22 mg
vitamin_k	0.0 mcg
calcium	74.00 mg
Iron	1.17 mg
potassium	202.00 mg
protein	15.51 g
glucose	0
carbohydrates	2.74 g
sugars	2.98 g

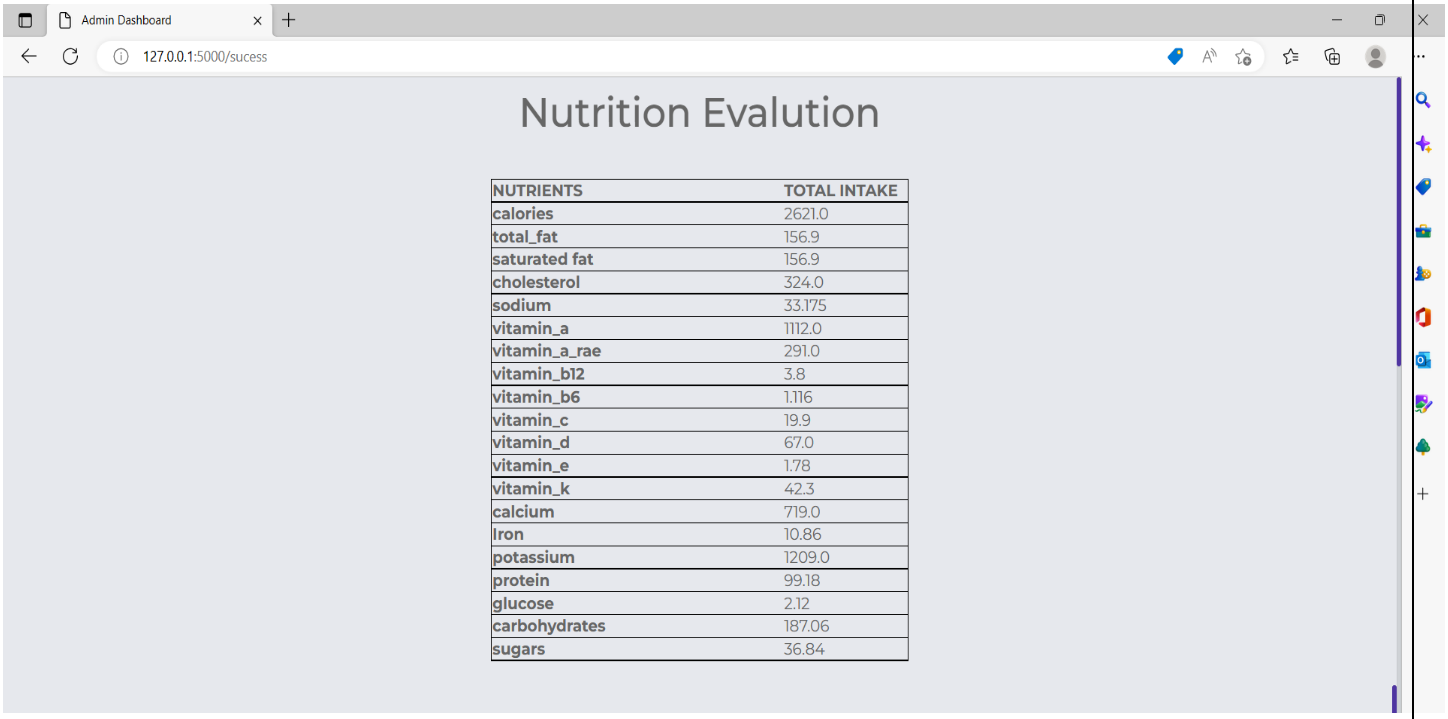
4.1.4 Dashboard

Dashboard displays the overall nutrition consumption of a user over particular period. In order to display the dashboard user needs to enter the unique Id allocated to them.



Enter the Member-Id

Fig: Dashboard



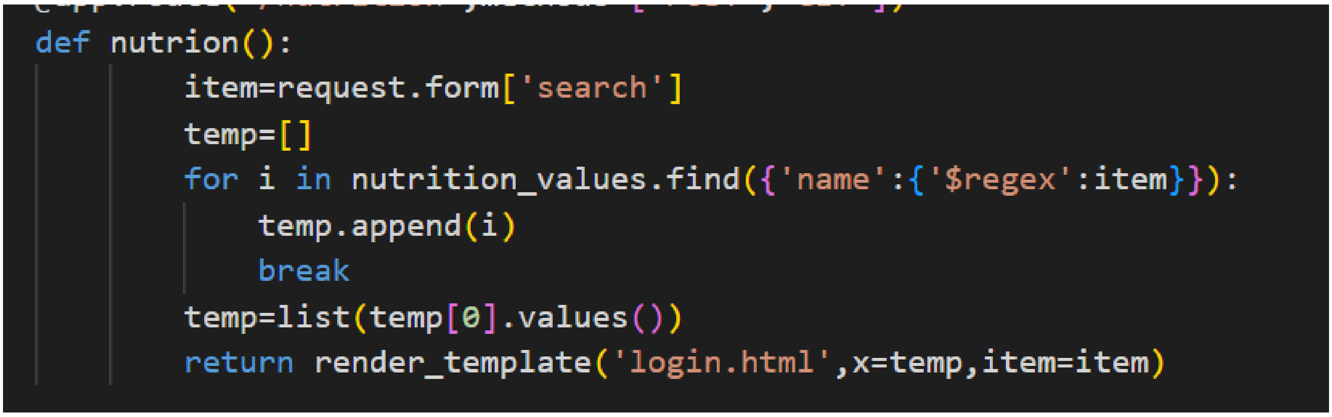
Nutrition Evalution

NUTRIENTS	TOTAL INTAKE
calories	2621.0
total_fat	156.9
saturated fat	156.9
cholesterol	324.0
sodium	33.175
vitamin_a	1112.0
vitamin_a_rae	291.0
vitamin_b12	3.8
vitamin_b6	1.116
vitamin_c	19.9
vitamin_d	67.0
vitamin_e	1.78
vitamin_k	42.3
calcium	719.0
Iron	10.86
potassium	1209.0
protein	99.18
glucose	2.12
carbohydrates	187.06
sugars	36.84

Fig: Nutrition values

4.2 Algorithms/ Pseudo code

4.2.1 code for fetching nutrition values of grocery



```
def nutrition():
        item=request.form['search']
        temp=[]
        for i in nutrition_values.find({'name':{'$regex':item}}):
            temp.append(i)
            break
        temp=list(temp[0].values())
        return render_template('login.html',x=temp,item=item)
```

4.2.2 code for dashboard of a user

```
def sucess():

  if request.method=='POST':
      id=request.form['search']
      id=int(id)
      temp=[]
      for t in groceries.find({'Member_number':id}):
          temp.append(t)
      for i in range(len(temp)):
          for records in nutrition_values.find({'name':{'$regex':temp[i]['Item']}}):
                 x=pd.Series(records)
                 df=pd.DataFrame(x)
                 break
          df=df.transpose()
          for col in df.columns:
               df[col]=df[col].astype('str')
          x=df.loc[0].values
          test=[]
          for k in range(3,len(x)):
              strr=''
              for j in x[k]:
                  if(j.isdigit()):
                      strr=strr+j
                  elif(j==' ' or j.isalpha()):
                      continue
                  else:
                     strr=strr+j
              test.append(strr)
          t=pd.Series(test,index=[ 'calories', 'total_fat(g)', 'saturated_fat (g)',
          'cholesterol', 'sodium (mg)', 'vitamin_a (IU)', 'vitamin_a_rae (mcg)', 'vitamin_b12 (mcg)',
          'vitamin_b6 (mg)', 'vitamin_c (mg)', 'vitamin_d (IU)', 'vitamin_e (mg)', 'vitamin_k (mcg)',
          'calcium (mg)', 'iron (mg)', 'potassium (mg)', 'protein (g)', 'glucose (g)',
          'carbohydrate (g)',
          'sugars (g)'])
          w=pd.DataFrame(t)
          if(i==0):
              dft=pd.DataFrame(w)
          else:
              dft=pd.concat([dft,w],axis=1)
  dft=dft.transpose()
  for x in dft.columns:
      dft[x]=dft[x].astype(float)
  lat=[]
  for x in dft.columns:
    lat.append(round(dft[x].sum(),3))
  cc=pd.Series(lat)
  cc=pd.DataFrame(cc)
  cc.index=dft.columns
  cc=cc.transpose()
  dd=cc.to_dict(orient='records')
  name=temp[0]['Item']
  labels=list(dft.columns)
  v=list(dd[0].values())
  v[4]=v[4]/1000



  return render_template('daigram.html',v=v,labels=labels)
```

4.3 Data set description

4.3.1 Nutrition data set

In this data set it contains the detailed nutrition values of a grocery. data set contains about 8,000+ rows and 15 columns. Nutrition values like vitamins, carbohydrates, fats, calories are present in this data set. By using this data set we find the nutrition values of grocery as per the user requirements.

4.3.2 Groceries dataset

In this data set it contains the groceries list of different persons over a particular period. It contains columns like member id, date, grocery name and 38,000+ records. By using this data set we evaluate the over all nutrition consumption of a user over a particular period .Member id is the unique id that each user have by using this id we extract list of groceries that a user consumed.

4.4 Testing Process

Test case 1:

Title: Enter a grocery

Test steps:

In search bar user enters a grocery name for which user wants to know the nutrition values.

Expected output:

A table which contains grocery name and its 15 nutrition values like vitamins, carbohydrates, fats, calories.

Test case 2:

Title: enter the member id

Test steps:

When user wants to know his over all consumption he enters his member id in search bar of dashboard.

Expected output:

Displays a table of

total intake of nutrition values of that particular user over a time period.

Conclusion:

- We have developed a project to ensure the better nutrition diet in our day-to-day life we come up with a nutrition recommendation system in which it displays the general consumption of the user's food habits and it helps to calculate the nutrition in-take by the user. With the help of the nutrition in-take data we can recommend a better nutrition diet for the user. We also have a user consumption profile where users can check their day to day nutrition diet status. We used new technologies like mongo db ,pandas.

Future Implements:

- Extracting food habits

  -Daily Consumption

  -Monthly Consumption

  -Food habits

  like veg, non veg, veg, tea, coffee,

  ice-cream, breakfast etc..

- Nutrition Recommender

  - Malnutrition, nutrition deficiency

- Grocery Basket
- Interface between doctor and patient
- Day wise analysis of patient
- Monitoring patient’s groceries
- State of health
- Healthy Warnings