Project Report

1. INTRODUCTION

1.1 Project Overview

- Inventory management is the activity of controlling the continuous flow of inventory in any organization, which is into either production, trading, sales, or services.
- In spite of the reality that the rise of inventory management is inexact, it would be safe to say that shopkeepers and merchants were some of the initials to explore into these fields. Yet the interest in this managerial field is still great in the phase of optimizing. Low inventory usually results in the stock outs and maintaining excess inventory results in additional holding costs.
- Inventory management is an essential and much required activity that every organization would like to consider various purposes in order to maintain the customer's good will and to make comparatively high profits.
- The goal of each inventory planner is to achieve optimum inventory controlling plan. In this paper, an attempt is made to cover most of the techniques and models developed in order to achieve the most accurate, effective, and efficient.

1.2 Purpose

- A Super-Market Inventory management or inventory control is a very useful technique for managing the stocks and sales records of a Super-market which is our selected domain of implementation for the software. The super-market stores and sales various products which includes packed foodstuffs and drinks, milk products, glossary, decorative items, cosmetics and many other products of day to day use.
- It also stores some costly items like wrist watches, small electronic goods, artificial jewelry etc. Also there are some household goods like washing powders, cleaning equipments, gaskets etc. Managing all these products, sufficient stocks, sales records, also analyzing sales and reordering from time to time is a difficult job. To do it more effectively and correctly a better inventory control or stock management is required.
- This is provided by our software ensuring an efficient inventory control and rigorous sales analysis facility. Our software helps to manage the daily sales records and assist in billing process as well. It also includes reordering level and reordering quantity and gives appropriate alerts, thus maintaining a safe stock.
- The software also provides authorized users to perform sales analysis of various products. By providing this facility, our software will prove to be extremely useful to adjust the purchase and sales strategies leading to an increase in profit.

2. LITERATURE SURVEY

2.1 Existing problem

- Lack of Inventory Visibility
- If you're unable to locate or identify stocks in your inventory, shipping products on time becomes very difficult, and this can dent your business reputation.
- Inefficient Inventory Management Process or Software
- Tracking Obsolete Material
- Identifying Incorrectly Located Materials
- Keeping up with Overstock.
- Managing Inventory Waste & Defects
- Lack of Centralized Inventory Hub

2.2 References

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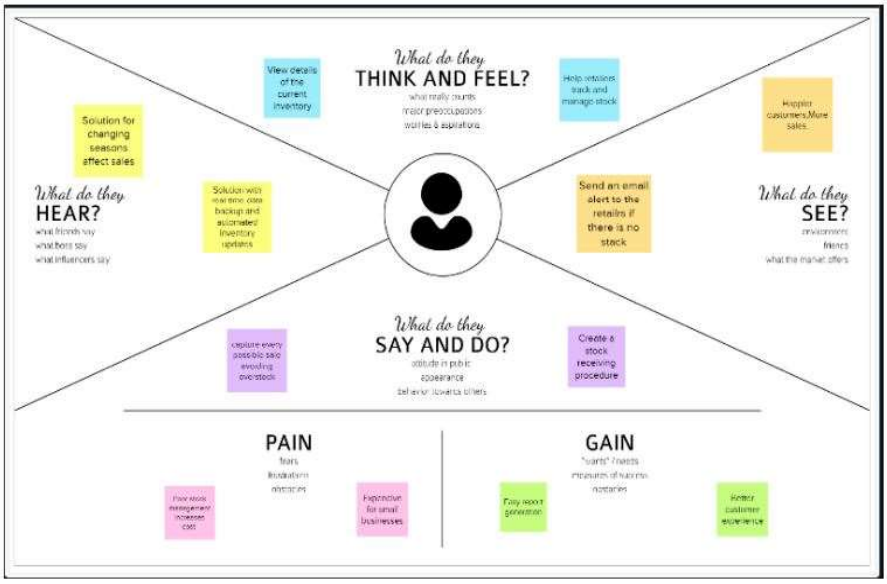
  1176- 1190.

2.3 Problem Statement Definition

- The problem faced by the retailers is that they do not have any system to record and keep their inventory data. It is difficult for the owner to record the inventory data quickly and safely because they only keep it in the logbook and not properly organized.
- Retail inventory management is the process of ensuring retailers meet customer demand without running out of stock or carrying excess supply. The objective of the project is to create an application that help retailers to track and manage stocks which results in lower costs and a better understanding of sales pattern.
- By creating an application, retailers can log in to it and can update inventory details, also users will be able to add new stock by submitting essential details related to the stock. Retailers can also view details of the current inventory. The System will automatically send an email alert to the retailers if there is no stock found in their accounts. So that they can order new stock.

3. IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas



3.2 Ideation & Brainstorming

ECONOMICAL FEASIBILITY:

- Economic analysis is the most frequently used method for evaluating the effectiveness of the candidate system. More commonly known as cost/benefit analysis, the procedure is to be determining the benefits and savings that are expected from a candidate and compare them with costs. If benefits outweigh costs, then the decision is made to design and implement the system.
- A systems financial benefit must exceed the cost of developing that system. i.e. a new system being developed should be a good investment for the organization. Economic feasibility considers the following
    i. The cost to conduct a full system investigation
    ii. The cost of hardware and software for the class of application.
    iii. The benefits in the form of reduced cost or fewer costly errors.
    iv. The cost if nothing changes (i.e. The proposed system is not developed)

TECHNICAL FEASIBILITY:

- Technical feasibility centers around the existing computer system (Hardware and Software etc) and to what extend it support the proposed addition. For example, if the current computer is operating at 80 percent capacity - an arbitrary ceiling - then running another application could overload the system or require additional Hardware. This involves financial considerations to accommodate technical enhancements.
- If the budgets is a serious constraint then the project is judged not feasible. In this project, all the necessary cautions have been taken care to make it technically feasible.
- Using a key the display of text/object is very fast. Also, the tools, operating system and programming language used in this localization process is compatible with the existing one.

BEHAVIORAL FEASIBILITY:

- People are inherently resistant to change, and computers have been known to facilitate change. An estimate should be made of how strong a reaction the user staff is likely to have toward the development of a computerized system.
- Therefore it is understandable that the introduction of a candidate system requires special efforts to educate and train the staff. The software that is being developed is user friendly and easy to learn. In this way, the developed software is truly efficient and can work on any circumstances tradition locales.

- Behavioral study strives on ensuring that the equilibrium of the organization and status quo in the organization are nor disturbed and changes are readily accepted by the users.

3.3 Proposed Solution

- Purchasing: This can mean buying raw materials to turn into products, or buying products to sell on with no assembly required
- Production: Making your finished product from its constituent parts. Not every company will get involved in manufacturing — wholesalers, for instance, might skip this step entirely
- Holding stock: Storing your raw materials before they're manufactured (if required), and your finished goods before they're sold
- Sales: Getting your stock into customers' hands, and taking payment
- Reporting: Businesses need to know how much it is selling, and how much money it makes on each sale
- Novelty / Uniqueness:
    - Forecast customer demands and plan the supply of stocks
    - Prevent loss of revenue, having the right stock in the store
    - Optimize stocks and fulfil the customer orders without fail
    - Empower sales force to increase sales with 100% stocks
    - Reduce the time, efforts and cost involved in stock audits
    - Eliminate manual errors amidst fluctuating stock levels

3.4 Problem Solution fit

- Customer Segment: (CS)
  Segmenting customers based on who they are -
  The process of understanding who customers are typically focuses on demographics. This will include factors such as:
  Age
  Geography
  Urbanisation – are they city or rural?
  Income
  Relationship status
  Family
  Job type

- Jobs-to-be-done / Problems
    - Monitors and maintains current inventory levels; processes purchasing orders as required;
    - tracks orders and investigates problems.

- Records purchases, maintains database, performs physical count of inventory, and
- reconciles actual stock count to computer-generated reports.
- Receives, unpacks, and delivers goods; re-stocks items as necessary; labels shelves.
- Processes and/or approves invoices for payment.
- Processes and documents returns as required following established procedures.

- Triggers
  - Comprehensiveness and deployment:
    - A comprehensive view entails a variety of inventory aspects including current product levels, status of current product orders and the trends related to different product offerings.
  - User-friendly features
    - An easy user interface allows a larger number of employees to use the system with a greater degree of success.
  - Durability of the system
    - System maintenance also factors into an inventory system's durability.
    - The number of IT professionals required to properly maintain an inventory system increases a company's payroll and can affect profits if the system fails routinely

- Emotions: Before / After
- Before:
  - Bureaucracy
  - Impersonal touch
  - loss to devaluation
- After:
  - It helps to maintain the right amount of stocks
  - It leads to a more organized warehouse
  - It saves time and money
  - Improves efficiency and productivity

- Available Solution:
  - Expanding product range
  - Growing a product line and newly set up warehouses demand effective management of
    inventory stocks.
  - Warehouse space management

- Managing inventory spaces to accommodate new inventory stocks can be a daunting task.
- Manual billing and documents
- Manually keeping a track of all the inventory management reports, purchase orders, and
  invoices will be a difficult task

- Customer Constraints:
  - Lack of a centralized inventory hub
    - Imagine switching multiple tabs for customer order details and tracking real-time data. This leads to inventory managers getting frustrated and slow delivery of results.
  - Inconsistent Tracking:
    - Using manual inventory tracking procedures across different software and spreadsheets is timeconsuming, redundant and vulnerable to errors.
  - Supply Chain Complexity:
    - Global supply chains shift daily, placing a burden on your inventory planning and management operations. The manufacturers and wholesale distributors that dictate when, where and how your inventory ships require flexibility and offer unpredictable lead times.

- Behaviour:
  - Behavioral inventory-management research is not inherently at odds with more traditional prescriptive research methodologies. Rather, we believe that the two approaches are complementary and that the development of a stream of behavioral research is a natural component of the evolution of the field.
  - The role that behavioral economics has played in the field of economics provides an insightful perspective (see Thaler and Ganser 2015). Initially it received significant resistance, but over time it improved the field's impact and validity.

- Channels of Behaviour:
  - Establish and document protocols
  - Connecting and integrating different systems is a top challenge for 3PLs, and 34% of companies don't have the software integrations they need.
  - Head to the cloud

- Problems Root Cause:
  Root cause analysis has been carried out to examine the probable causes in a more detailed manner. With the RCA analysis, the reasons for the Inventory have been considered in a more detailed fashion. Several reasons that were identified from the survey data collection

were drilled down further to get to the roots of the problem. After getting to the reasons for the probable causes, certain corrective actions have been suggested, and recommendations were provided to improve the same.

- Solution:
  The supplier provides products to the retailer and is subject to random disruptions. The retailer
  sells products to customersand adopts a continuous-review inventory policy. Partial backordering
  is allowed, which means that when a stockoutoccurs, customers can choose to backorder products
  or not. In addition, customers are segmented into two classes. Oneclass has high priority to receive backorders, and the other class has low priority. Unit backorder cost per unit time and unitlost-sale cost from high-priority customers are larger than those from low-priority customers.

4. REQUIREMENT ANALYSIS

4.1 Functional requirement

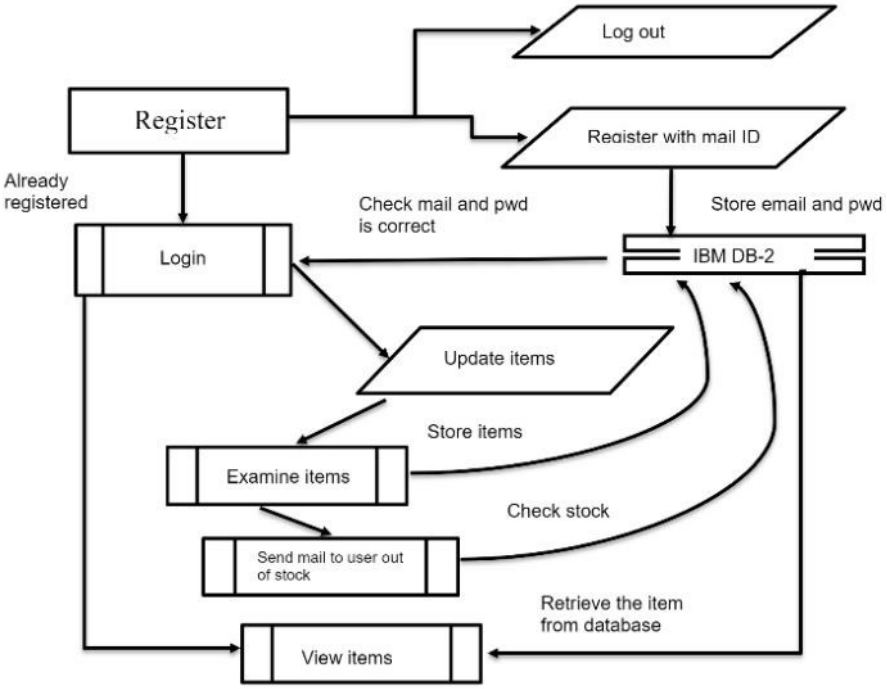
FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through User Form Registration through Gmail/ Phone Number Registration through Facebook
FR-2	User Confirmation	Confirmation via Email, Phone Number
FR-3	Adding,updating,deleting theproducts	Add or update or delete products using the optionsgiven in dashboard
FR-4	High demand products	User can view the high demand products by using the previous sales details
FR-5	Barcode scanning	User can check or update products by scanning theBarcode
FR-6	Invoice generation	User can generate invoice by their email for future reference

4.2 Non-Functional requirements

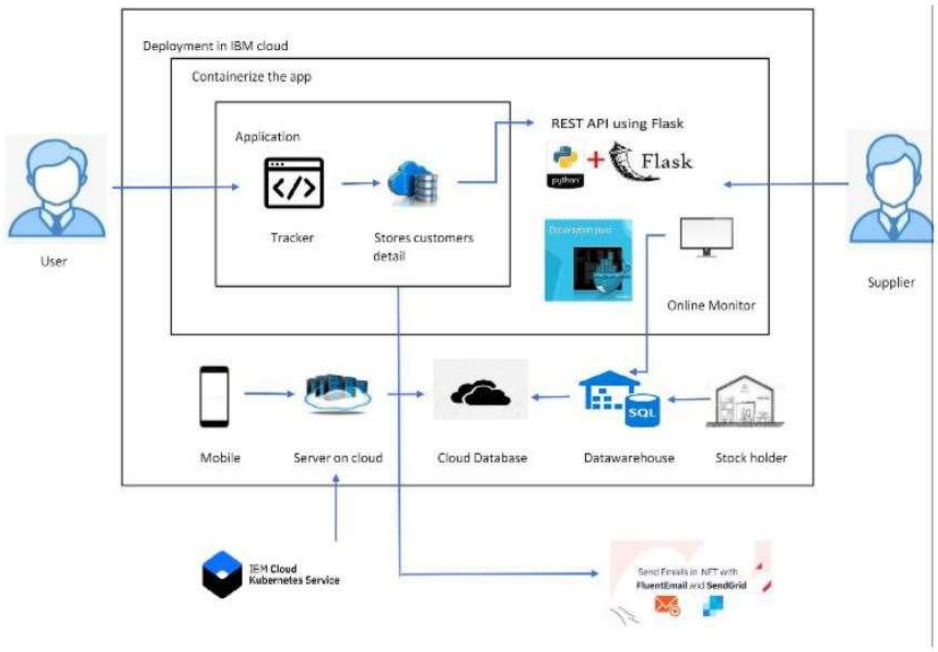
FR No.	Non-Functional Requirement	Description
NFR-1	Usability	Stocks are managed and tracked easily
NFR-2	Security	Two step verification
NFR-3	Reliability	Huge number of stock products can be easilycalculated
NFR-4	Performance	The website's loading time should be less than 5 seconds
NFR-5	Availability	All kind of retailers and wholesale business mancan use .
NFR-6	Scalability	Starting from retailer shop owners to department store owners can use our product

5. PROJECT DESIGN

5.1 Data Flow Diagrams



5.2 Solution & Technical Architecture



5.3 User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Retailer(Web user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I will be redirected to login page	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail	I can verify the OTP number	Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password	I can access my account / dashboard	High	Sprint-1
	Dashboard	USN-6	As a user,I can update stock in & out count details	Updation can be made through barcode scanning	High	Sprint -2
	Dashboard	USN-7	As a user,I can check the low stock details through alert message	Alert message can be received by registered mail	High	Sprint -1

		USN-8	As a user,I can check the total product details	I can view the value of total	Medium	Sprint -2

6. PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority
Sprint-1	Registration/Sign Up	USN-1	As a user, I can register for the application byentering my email, password, user name.	13	High
Sprint-1	Login	USN-4	As a user, I can log into the applicationby entering email & password	13	High
Sprint-2	Dashboard	USN-5	As a user, I can log in into the application andview the dashboard for Inventory information	8	Medium
Sprint-2	Notification	USN-6	As a user, I can get notifications after registering their Inventory	13	High
Sprint-3	Database	USN-7	Admin can access, view, modify, update all detailsof the Inventory	20	High
Sprint-4	Software testing anddeployment	USN-8	As user want to access the application without anydrawbacks , we need to test the software	13	High

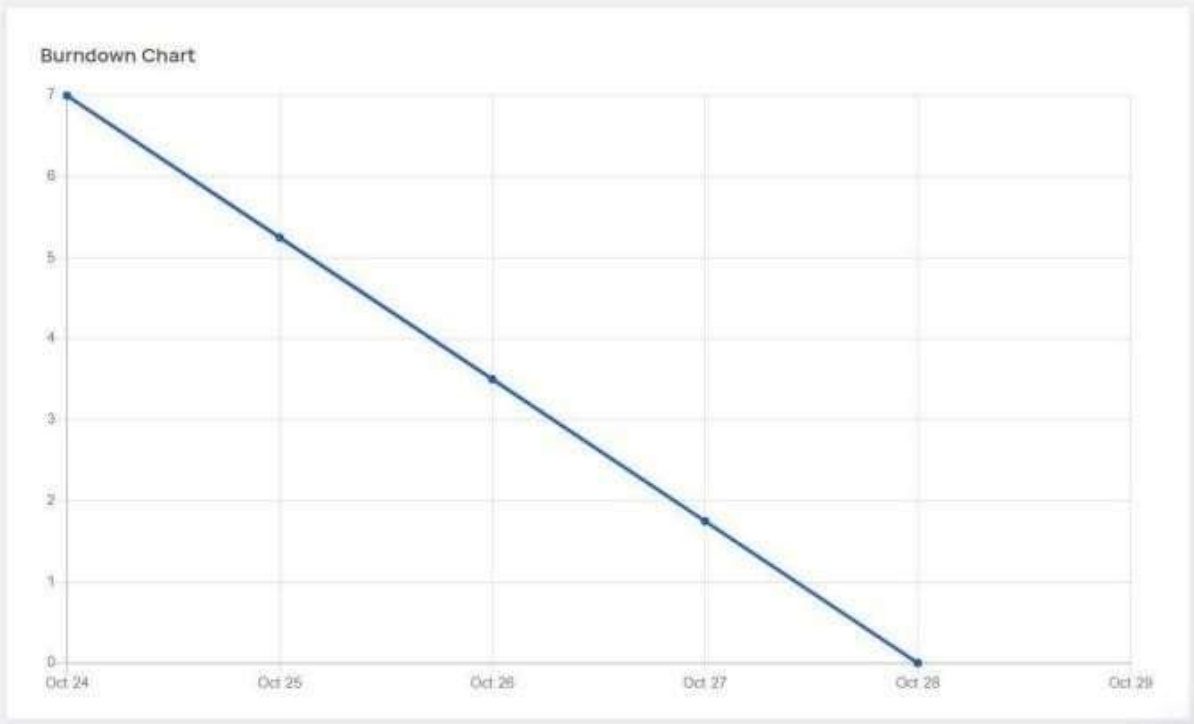
			before release.		

6.2 Sprint Delivery Schedule

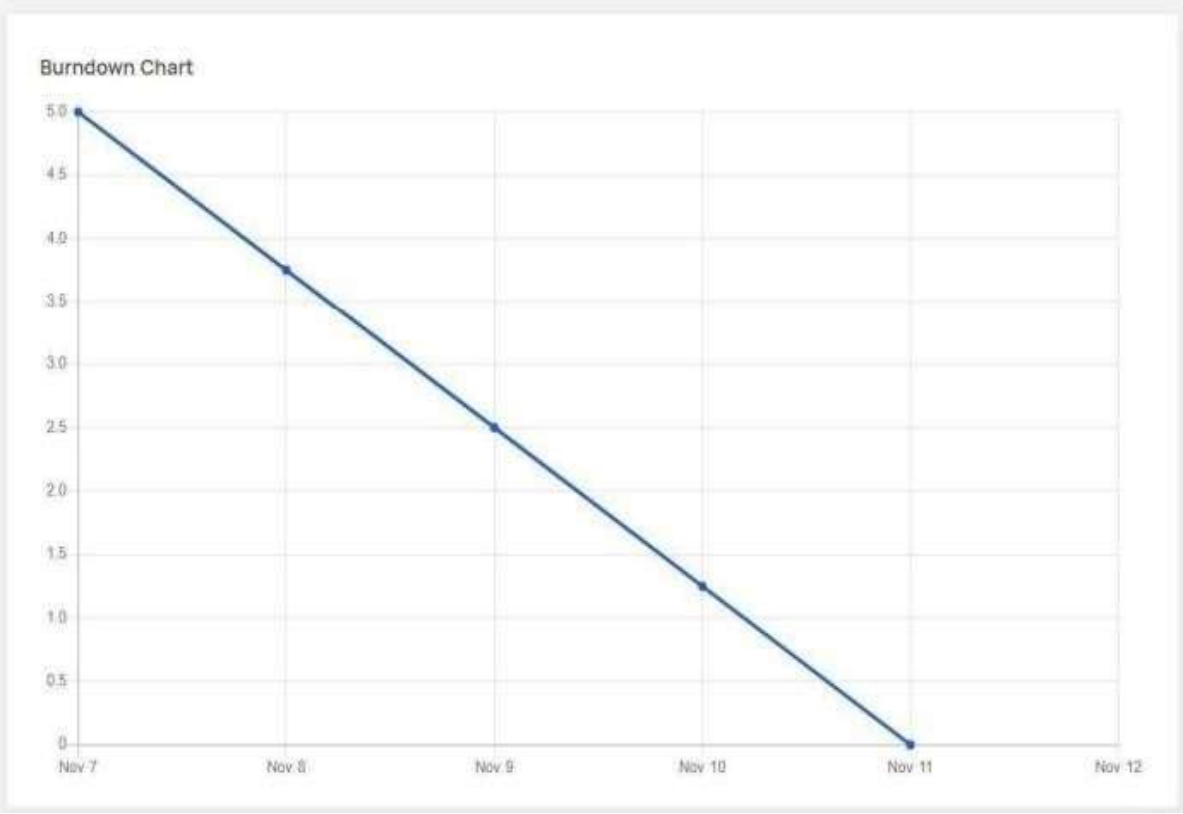
Sprint	Total story points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

6.3 Reports from JIRA

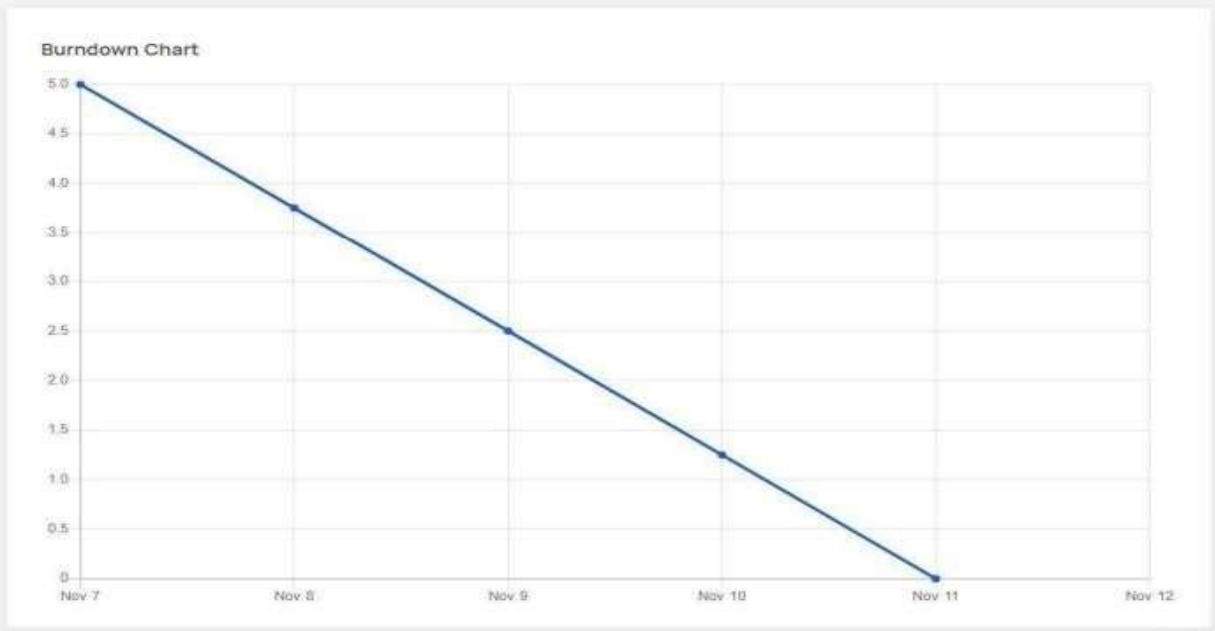
Sprint - I



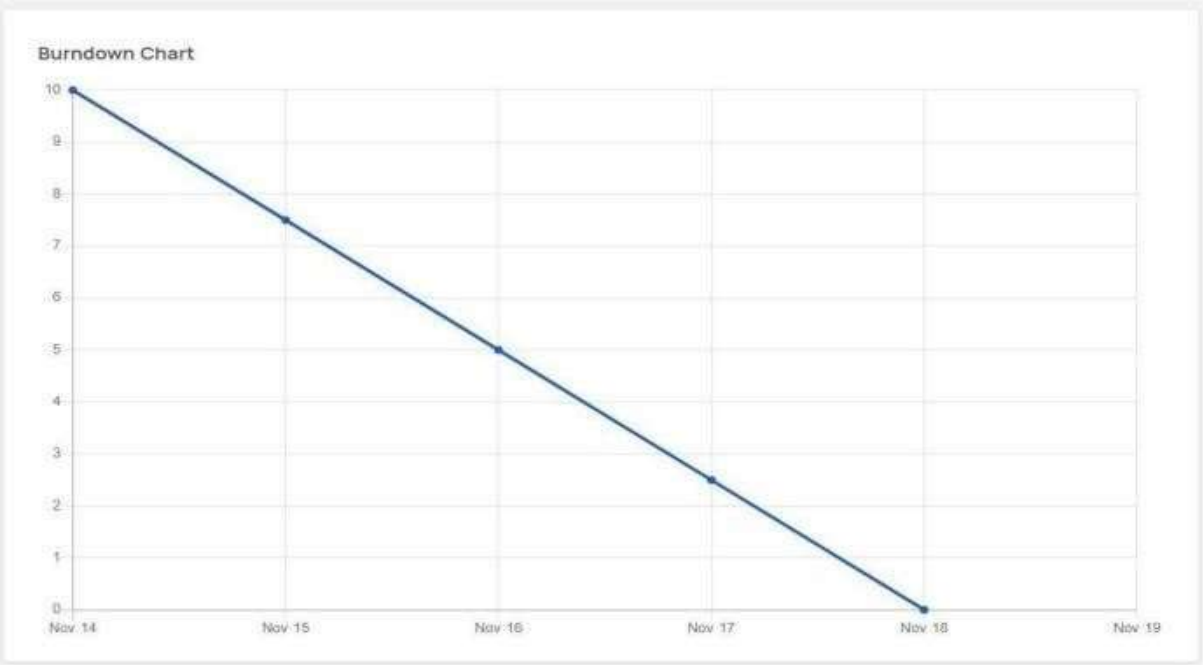
Sprint – II



Sprint – III

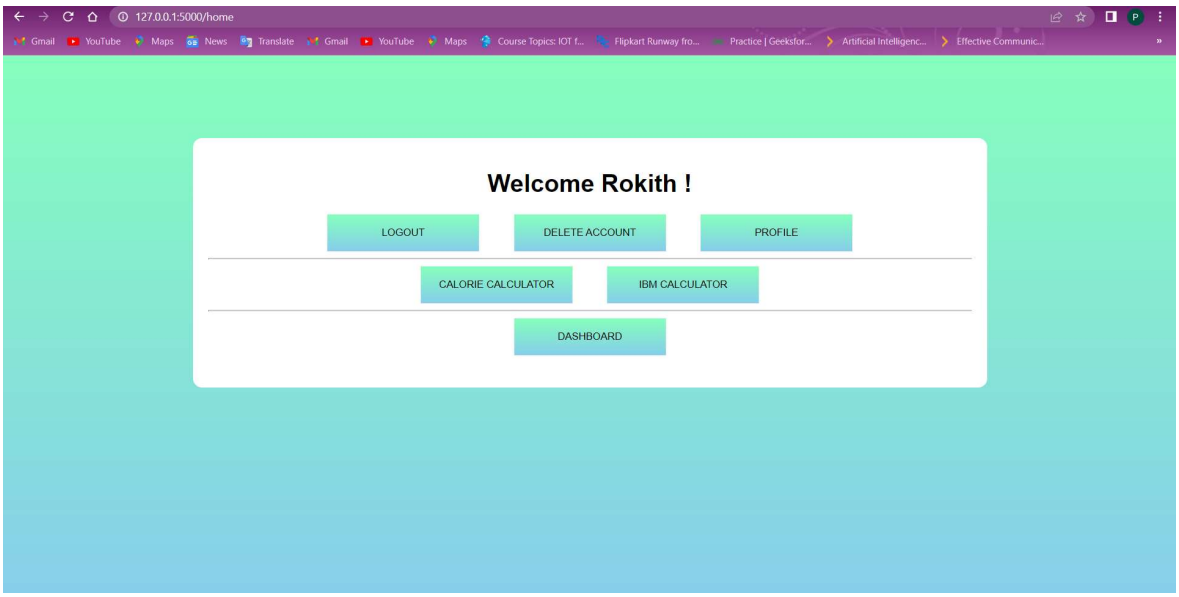


Sprint – IV



7. CODING & SOLUTIONING (Explain the features added in the project along with code)

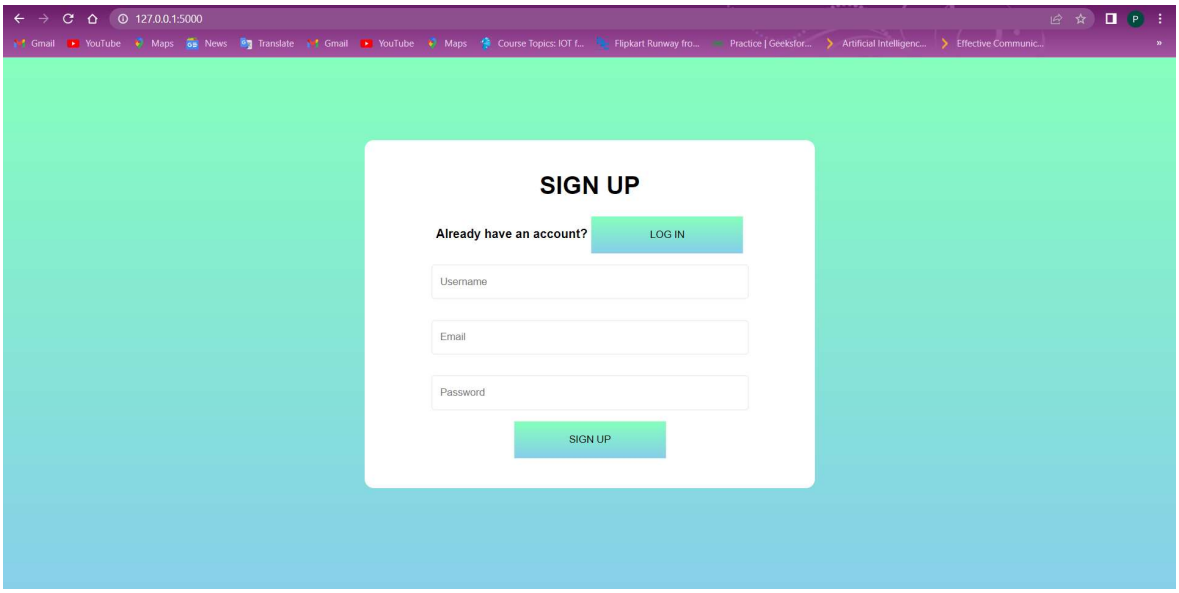
7.1 Feature 1

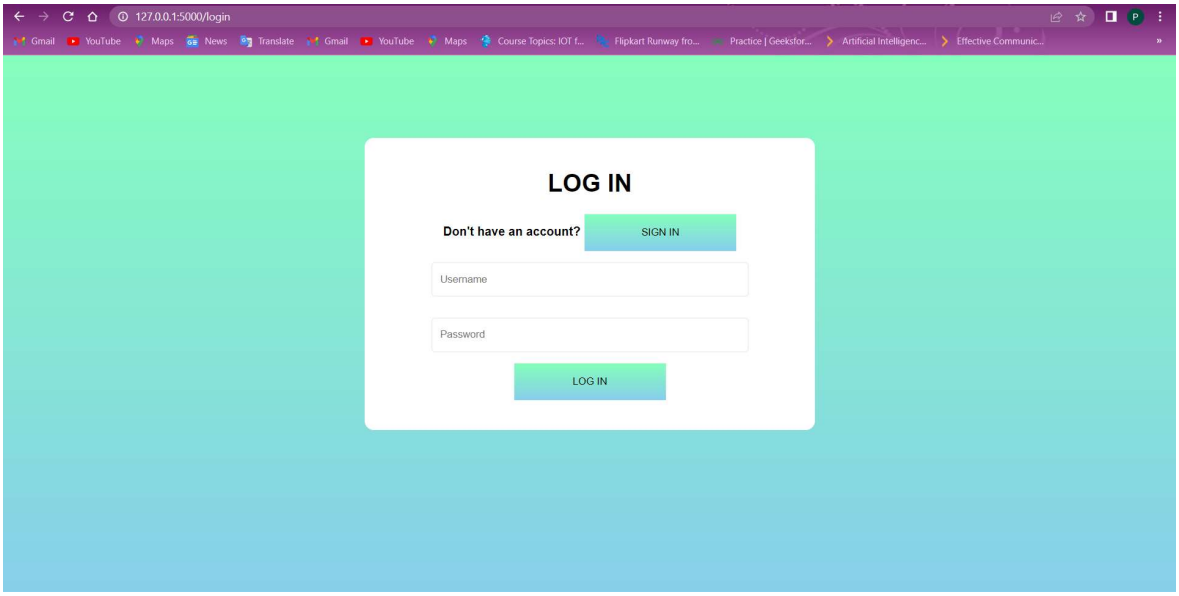


7.2 Feature 2

8. RESULTS

8.1 Performance Metrics

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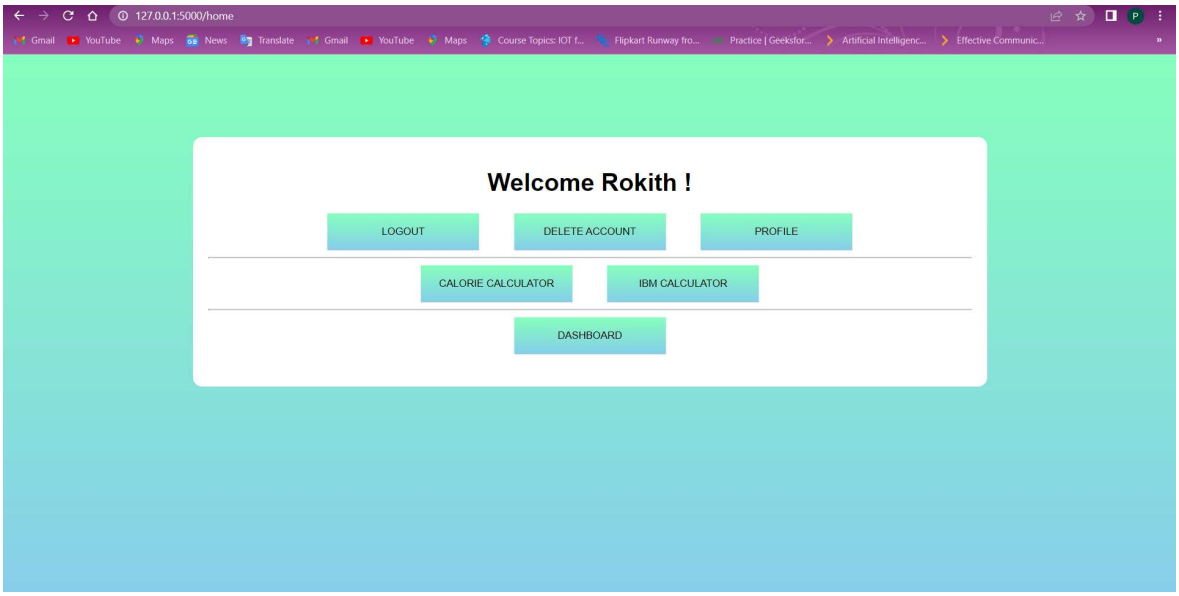
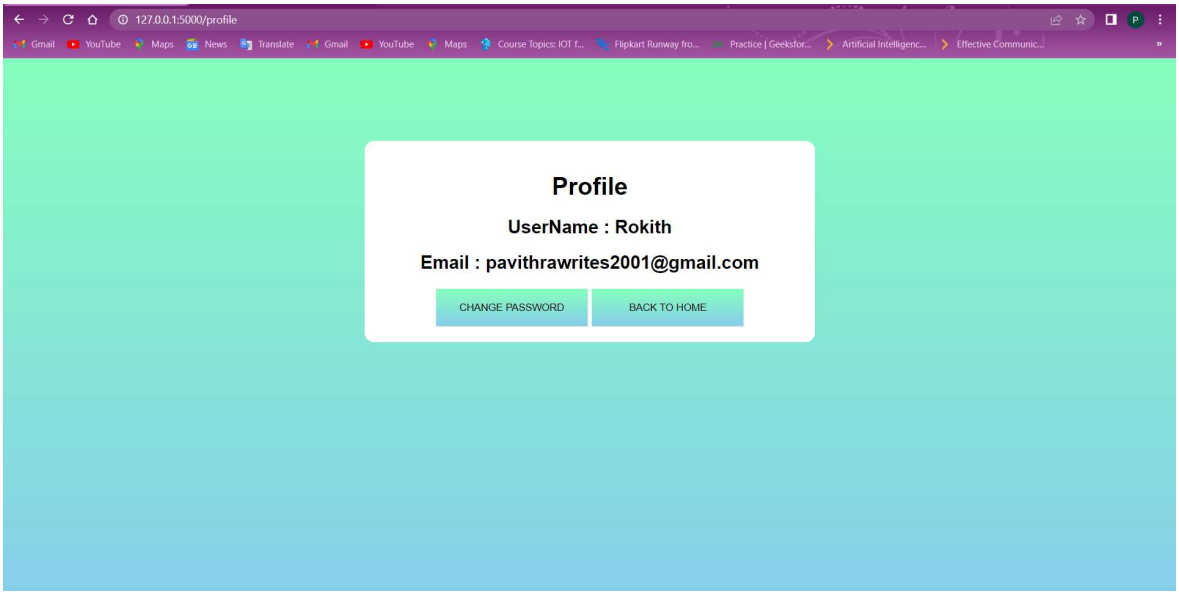
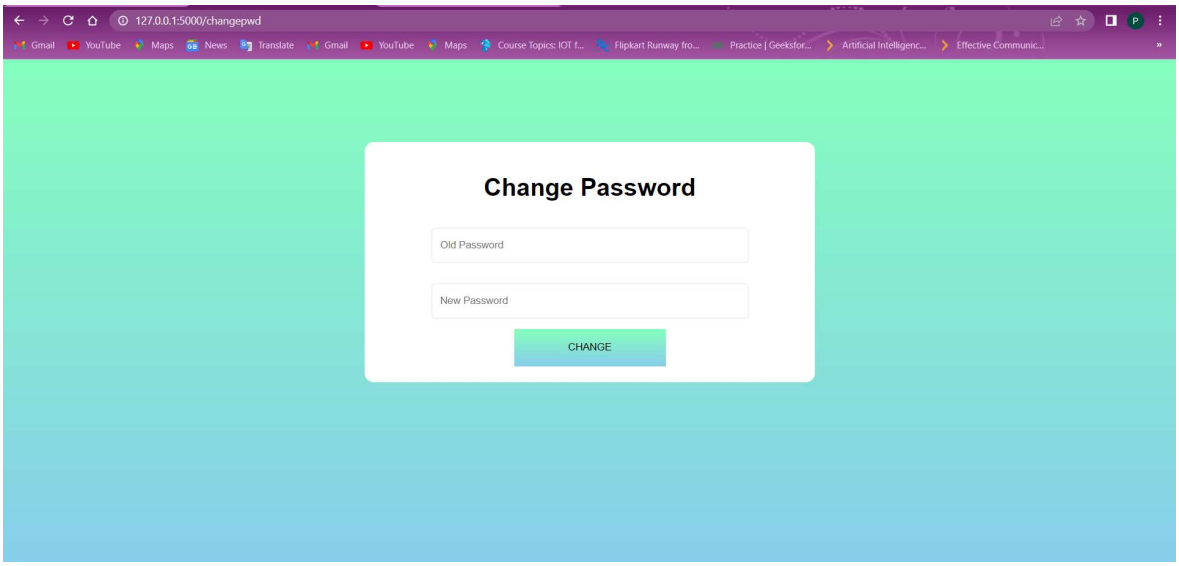
LOG IN
Don't have an account?
SIGN IN
Username
Password
LOG IN


127.0.0.1:5000/home
Welcome Rokith !
LOGOUT
DELETE ACCOUNT
PROFILE
CALORIE CALCULATOR
IBM CALCULATOR
DASHBOARD


127.0.0.1:5000/profile
Profile
UserName : Rokith
Email : pavithrawrites2001@gmail.com
CHANGE PASSWORD
BACK TO HOME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Change Password
Old Password
New Password
CHANGE


Calorie Calculator
Calculate calories in different food items!
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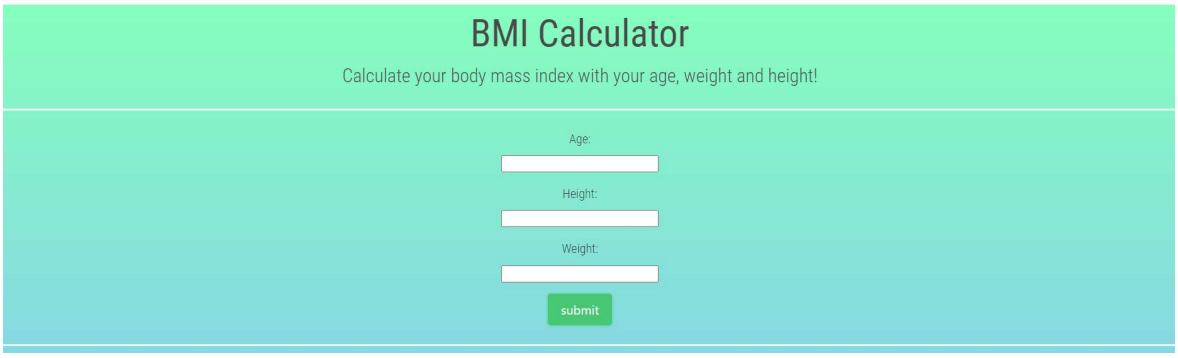
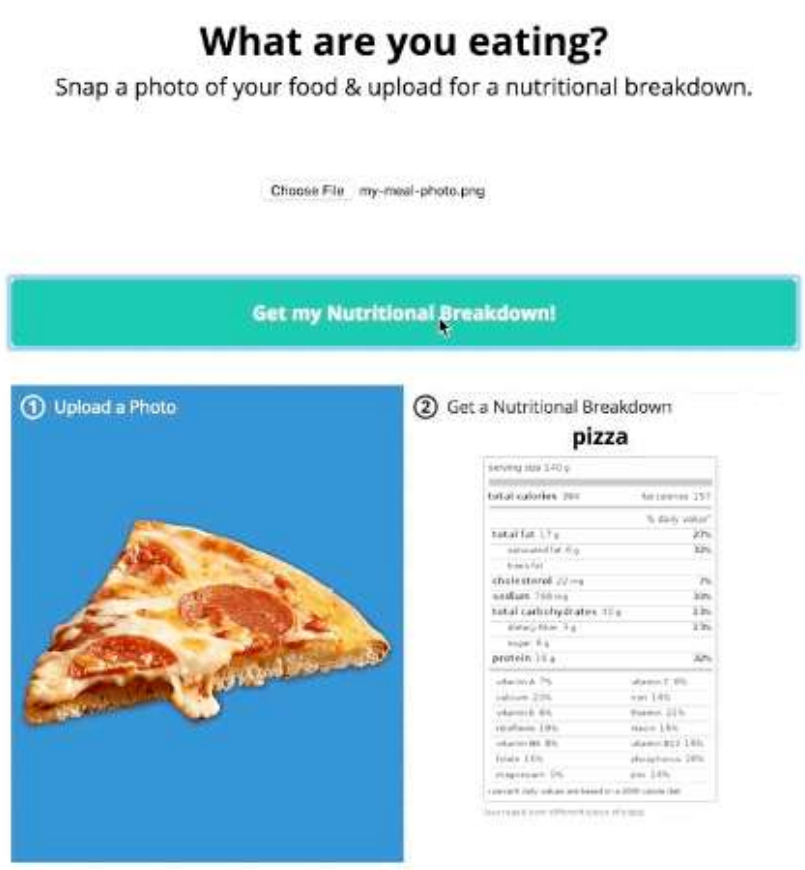
pizza
Quantity
1
submit
Calories: 0
Calories: 1211





9. 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.

DISADVANTAGES

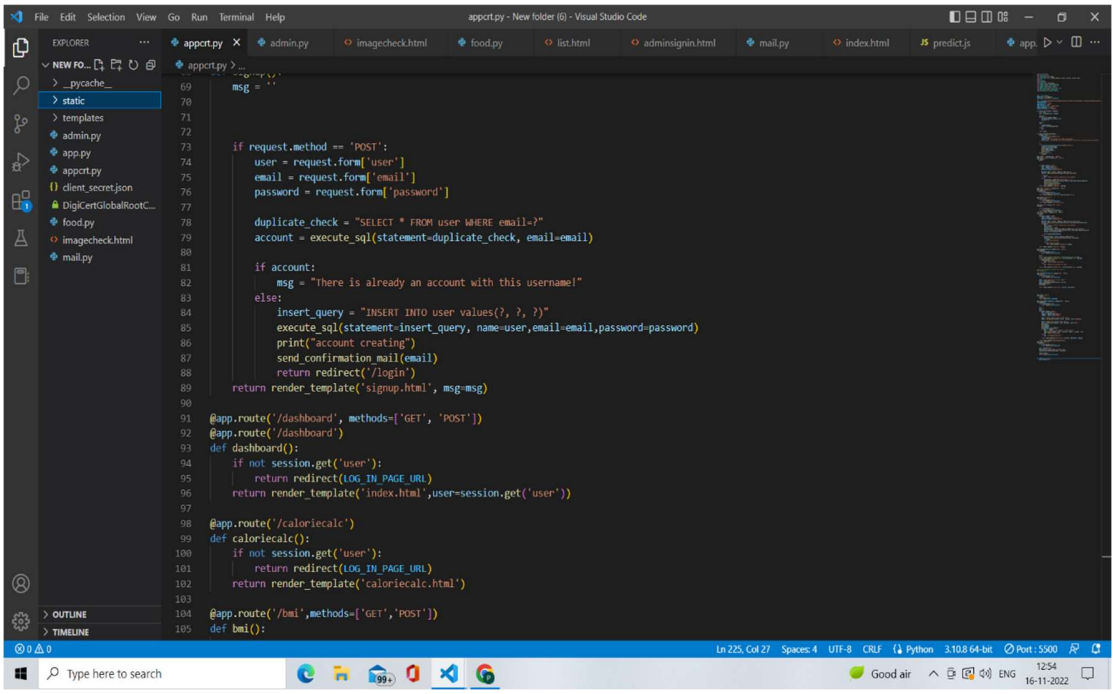
- Sometimes it makes a level of disbalance in the balanced diet of an individual.
- It can improve the level of nutrition among individuals but delivers an inappropriate means of nutritional labeling.
- Sometimes, it is considered one of the major factors of weight gain.

10. CONCLUSION

Even in this later technological generation, in spite of having a lot of sources and learning platforms the right nutrition value of food and food related products have not been identified properly. This might be a serious issue for the future, this project would thus help the users identify the right amount of nutrition for intake. This would lead a healthy society which would definitely be the pebble for development of every single individual and the society itself.

APPENDIX

Source Code



GitHub & Project Demo Link

https://github.com/IBM-EPBL/IBM-Project-24711-1659947743.git