

IBM NALAIYATHIRAN

PROJECT REPORT

PERSONAL EXPENSE TRACKER APPLICATION

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1.INTRODUCTION:

Now a days spending money is quite common but without having the idea of expenditures makes an uncontrol of spending money on expenditures more than its enough and it leads to a financial problem of a family or a person. So to overcome this situation they can store their info in this application and can get their perfect analysis in the form of graph , so that they get the graphical representation and it is easier to edit and re-organize for later studying and also helps to be more cautious about their savings . Moreover ,it saves our time ,energy and confusion which may leads to clumsiness.

1.1 PROJECT OVERVIEW:

Keeping a daily record of their expenses by tracking improves the financial health of their budget. In this application they can have multiple accounts and can also use For multiple purposes ,like about travelling , studies ,groceries etc..

Payment tracking makes business forecasting easier. It prepare you for Tax Season. You may plan for both short-term and long-term expenses by using a budget to make sure you're not spending more than you're earning. It's a simple, practical solution for folks with all types of income and expenses to maintain order in their finances.

2.LITERATURE SURVEY:

Author: Prof Miriam Thomas , Lekshmi P,

Dr.Mahalekshmi T(2020)

- Budgeting systematically and Expense Tracking takes a crucial role in managing the expenses of business organizations.
- By using software for managing expense tracking will help to control unnecessary expenses.
- The project what we have developed is work more efficient than the other income and expense tracker.
- Modules are designed to be highly flexible so that any failure requirement can be easily added to the modules without facing many problems.

Author: Adepegba, O. A., Fayemiwo, M.A., Oduwale, O. A. & Onamade A.

A.(2019)

The use of this application will among other things help to monitor rate of spending, refresh information and give warning notifications among other things.

Ø The wide use of these android mobile phones and their ability to run software applications, make a lot of sense in making this application android based.

Ø Great advantages of the use of Information technology in the financial sector of our growing economy in such a way that enhances expenses monitoring and financial life in general.

2.1 EXISTING PROBLEM:

The expense tracker existing system does not offer the user portable device management level, is only used on desktop software, and is therefore impossible to update anywhere expenses are done and is unable to update the location of the expense details disrupting that the proposed system provides. The user's daily, weekly, and monthly spending must be maintained in Excel sheets and CSV files at the moment. The ability to conveniently keep track of one's everyday costs does not now have a fully comprehensive answer. To do this, one must maintain a journal in a diary or computer system, and all calculations must be made by the user, which might occasionally result in errors that cause losses. Due to imperfect data maintenance, the current system is not user friendly. The sole negative where the rest are absent from this endeavor is that there will be no reminder to stay a human on a specified date. This project won't have

any information because it doesn't remind people to do anything each month, which has some drawbacks. However, it can be used to calculate income and expenses, so we suggest a new project to solve this issue.

2.2 REFERENCE:

[1] D2D Expense Tracker Application Anjali Kumar, Utkarsh Ra, Aman Kumar 2021

[2] Daily Expense Tracker Mobile Application Nuura Najati Binti Mustafa 2021

[3] Daily Expense Tracker Shivam Mehra, Prabhat Parashar 2021 .

[4] “Monefy - Money Manager - Apps on Google Play.” [Online].

Available:<https://play.google.com/store/apps/details?id=com.monefy.app-lite>.

[5] “Money Lover: Budget Planner, Expense Tracker - Apps on

GooglePlay.”[Online]Available:<https://play.google.com/store/apps/details?id=com.bookmark.money> .

[6] “AndroMoney (Expense Track) - Apps on Google Play.” [Online]

2.3 PROBLEM STATEMENT:

In our daily life money is the most important portion and without it

we cannot last one day on earth but if we keep on track all financial

data then we can overcome this problem. Most of the people

cannot track their expenses and income one way they face the

money crisis and depression. This situation motivates us to make

an android app to track all financial activities. Using the Personal

Expense Tracker Application user can be tracking expenses day to

day and making life tension free. Proper savings can be done and we

can reduce the daily expenses and the application gives proper

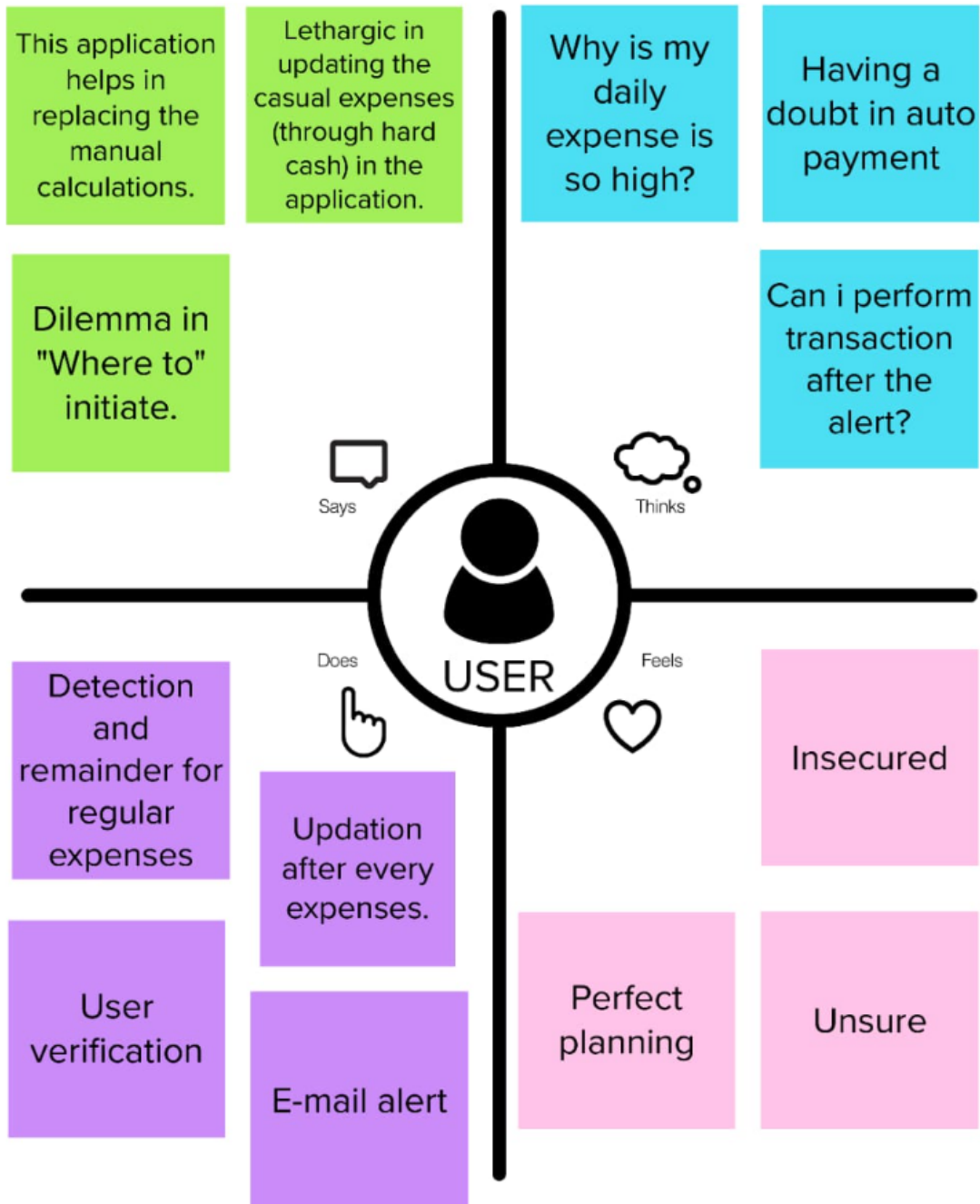
analysis of our expenditure and income. It reduces man power for

accounting and financing the money, human errors can be

eradicated.

3. IDEATION AND PROPOSED SOLUTION:

3.1 EMPATHY MAP CANVAS:



3.2 IDEATION AND BRAINSTORMING:

Template



Brainstorm & idea prioritization

Personal Expense Tracker

🕒 10 minutes to prepare
🕒 1 hour to collaborate
👤 2-6 people recommended

[Share template feedback](#)

1

Define your problem statement

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

🕒 5 minutes

Problem

How might we help the users plan their budget?

How might we help the user's family to track each other spending

How might we help the users to track different kind of expenses?

How might we crosscheck the amount entered is correct or the buget is calculated correct?

how might we manually enter the amount???



Need some inspiration?

See a framed version of this template to kickstart your work.

[Open example](#)

N.V.S MEGHANA

Can send message notification to the user

Can integrate with crypto hardware wallets

Recommendation of some Youtube channels in the dashboard about saving money.

Better UI and UX for users

Various themes in the app

Can integrate with UPI

L.BHUVANA SRI

security

offer tips to lower expenses

monitor transctions

allocate budget based on each location

POOJA.D

Easy Accessibility

Well Categorization of the Expenses

Integrate Any wallets like paytm,Amazon

Figure out ways to cut back on your spending

Reduced turnaround time and faster reimbursements

set budget for daily, weekly, monthly, and yearly

M.HARSHITHA

integrate multiple bank accounts

allow to enter manually

List the categories to categorize the spendings

One account for multiple users(especially when it comes to family)

Weekly/monthly reports(even comparision of different monthly spendings)

Customization of categories based on the user needs

Integration

Can
integrate
with UPI

integrate
multiple
bank
accounts

Can integrate
with crypto
hardware
wallets

Integrate
Any wallets
like Paytm,
Amazon

Experience

Better UI
and UX for
users

monitor
transactions

Various
themes in
the app

Easy
Accessibility

Reduced
turnaround time
and faster
reimbursements

Alerts

Can send
message
notification
to the user

Categorization

List the
categories to
categorize the
spendings

Customization
of categories
based on the
user needs

Well
Category
the
Expenses

allocate
budget
based on
each location

Awareness

offer tips to
lower
expenses

Recommendation
of some Youtube
channels in the
dashboard about
saving money.

Figure out
ways to cut
back on your
spending

allocate
budget
based on
each location

Customization

set budget
for daily,
weekly,
monthly, and
yearly

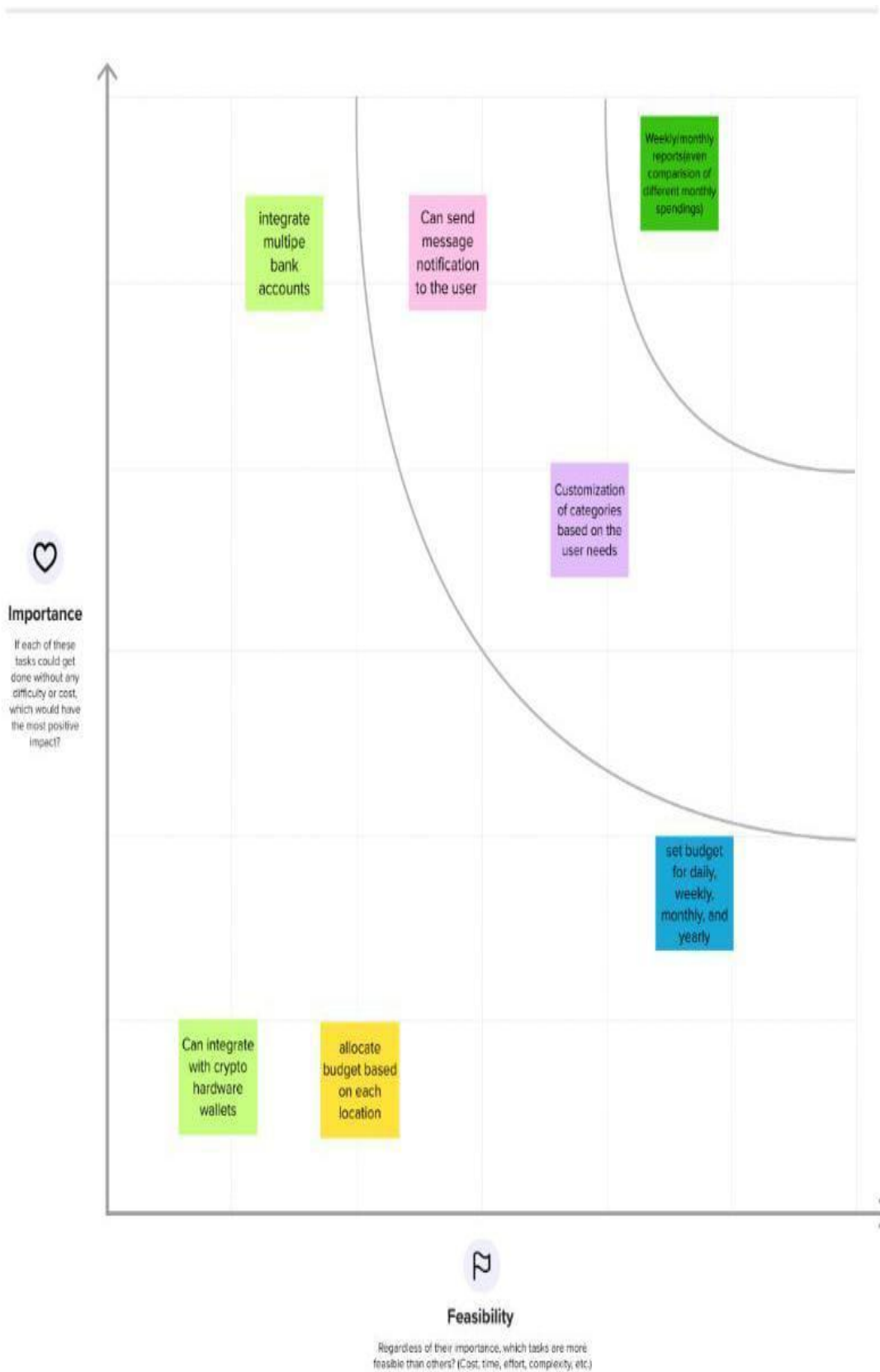
Insights/Reports

Weekly/monthly
reports(even
comparison of
different monthly
spendings)

Others

allow to
enter
manually

security



3.3 PROPOSED SYSTEM:

1.	Problem Statement (Problem to be solved)	Individuals finding difficulty in managing their expenses and unknowingly they were spending their whole budget.
2.	Idea / Solution description	This application make user know about their expenses by keeping track of them and make them alert by exceeding them.
3.	Novelty / Uniqueness	JOINT ACCOUNT: Group expenses like family couple or business can also be tracked. This make data better visualization.
4.	Social Impact / Customer Satisfaction	This application help people track expenses and alert themselves from extra spendings their easily manage their financial decisions on their spendings and savings.
5.	Business Model (Revenue Model)	SUBSCRIPTION: Depends on duration (per month/year) Depend on account chosen price varies
6	Scalability of the Solution	This application designed in such a way that any organization can use it for managing their own financial issues

3.4 PROBLEM SOLUTION FIT:

1. CUSTOMER SEGMENT(S) CS Individuals who want to track their expenses (Working professionals, Students, etc.)	6. CUSTOMER LIMITATIONS <small>EG. BUDGET, DEVICES</small> CL <ul style="list-style-type: none"> • Device with internet connection • Subscription payment 	5. AVAILABLE SOLUTIONS <small>PROS & CONS</small> AS <ul style="list-style-type: none"> • Goodbudget - free but manual entry of transactions • Mint - free & wrong categorization • Spendee - many kind of integration but paid
2. PROBLEMS / PAINS <small>+ ITS FREQUENCY</small> PR <ul style="list-style-type: none"> • People want to track their expenses everyday and • Some people also want to track it especially on some occasions 	9. PROBLEM ROOT / CAUSE RC <ul style="list-style-type: none"> • Its hard for the people to manage their financial expenses by keep tracking manually. • This makes them to exceed the actual budget that they made. 	7. BEHAVIOR <small>+ ITS INTENSITY</small> BE <ul style="list-style-type: none"> • People tend to avoid tracking the spendings and worry when they come to know about it. • People who try to do it manually will end up leaving some spendings.
3. TRIGGERS TO ACT TR <ul style="list-style-type: none"> • People are not aware about the existing solutions especially in India. • Providing a visualization about how they spend makes the people to decide easily. • Free for sometime and show the results. (retain & premium users) 	10. YOUR SOLUTION SL <ul style="list-style-type: none"> • Build an application to track their expenses seamlessly. • Allow users to access it for free and make them realize how useful to save money. 	8. CHANNELS of BEHAVIOR CH ONLINE <ul style="list-style-type: none"> • Social media advertisements (especially LinkedIn as the users are more of working professionals and students) • Lifestyle influencers would be a great choice OFFLINE <ul style="list-style-type: none"> • Word of mouth
4. EMOTIONS <small>BEFORE / AFTER</small> EM <ul style="list-style-type: none"> • People are worried when they exceed the actual budget and not for saving it. • People will be able to track their expenses and bad situations related to financial management. 		

4.REQUIREMENTS:

4.1 FUNCTIONAL REQUIREMENTS

FR	FUNCTIONAL REQUIREMENT	SUB REQUIREMENT(STORY/SUB TASK)
FR-1	USER REGISTRATION	REGISTRATION THROUGH FORM REGISTRATION THROUGH LINKEDIN REGISTRATION THROUGH GMAIL
FR-2	USER CONFIRMATION	CONFIRMATION VIA EMAIL CONFIRMATION VIA OTP
FR-3	USER LOGIN	Using Username and Password. Verifying through OTP or E-mail.

FR-4	USER BALANCE INITIALIZATION	Allows user to enter through App's UI
FR-5	ADD BILLS	Allow users to add bills through Apps's UI and store in Database.
FR-6	ADD AN EXPENSE	Get list of expenses for calculate
FR-7	UPDATE AN EXPENSE	Allow users to edit the expenses.
FR-8	DELETE AN EXPENSE	Allows users to delete if they don't want as well as in the database.
FR-9	TRACK AN EXPENSE	Can Track expenses to reduce expenditure
FR-10	ADD A PERIODIC EXPENSE	Allow to add periodic expenses
FR-11	ADD A DELAY EXPENSE	Allow to add delayed expenses
FR-12	MONTHLY EXPENDITURE LIMIT	Users can set a limit and act accordingly. So an alert will be sent if the amount exceeds the limit.
FR-13	GET PIE CHART	Can get a pie-chart about the overall expenses.

4.2 NON FUNCTIONAL REQUIREMENTS:

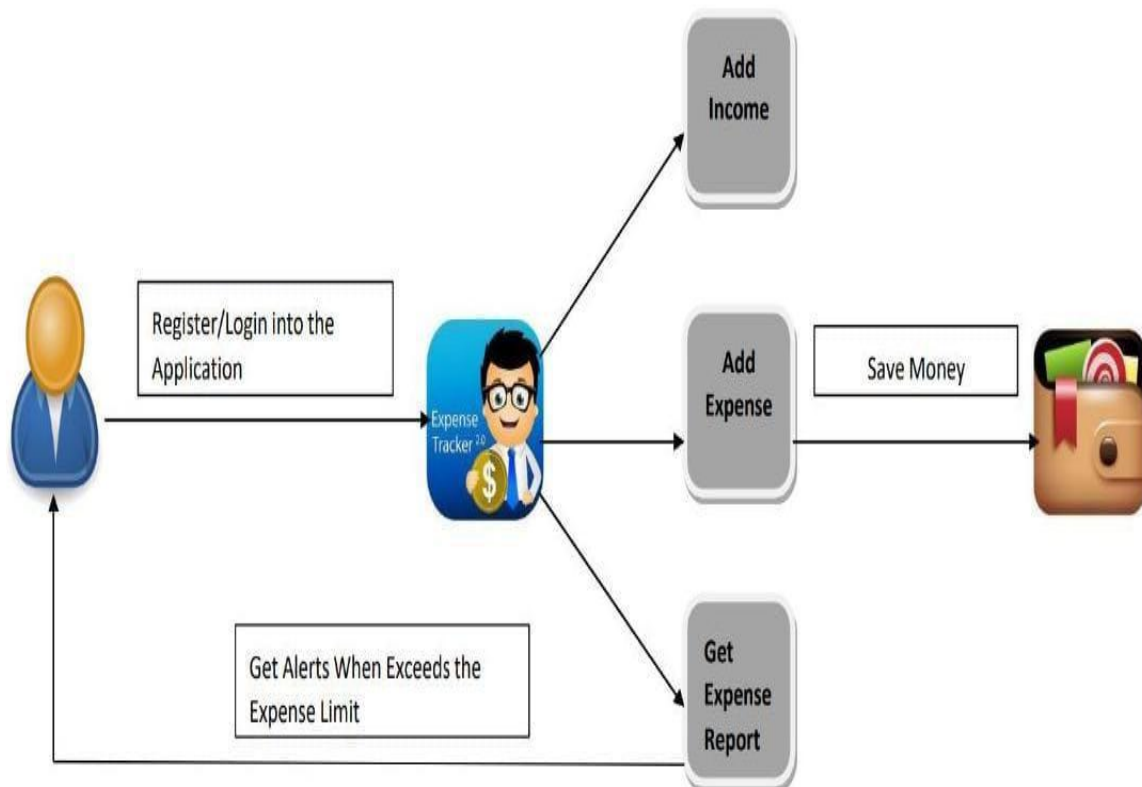
NRF NO	NON FUNCTIONAL REQUIREMENT	DESCRIPTION
NRF-1	USABILITY	Provides an eye catching UI that is easy to use and provides vibrant colored icons
NRF-2	SECURITY	Providing more security and providing and storing users data with two step authentication.

NRF-3	RELIABILITY	All transactions and actions are independent and follow the acid properties.
NRF-4	PERFORMANCE	Retrieval of information is fast and more security.
NRF-5	AVAILABILITY	Applications will be available for users 24/7,if provided internet access.
NRF-6	SCALABILITY	As this cloud based application,CPU time is on demand.

5 .PRODUCT DESIGN:

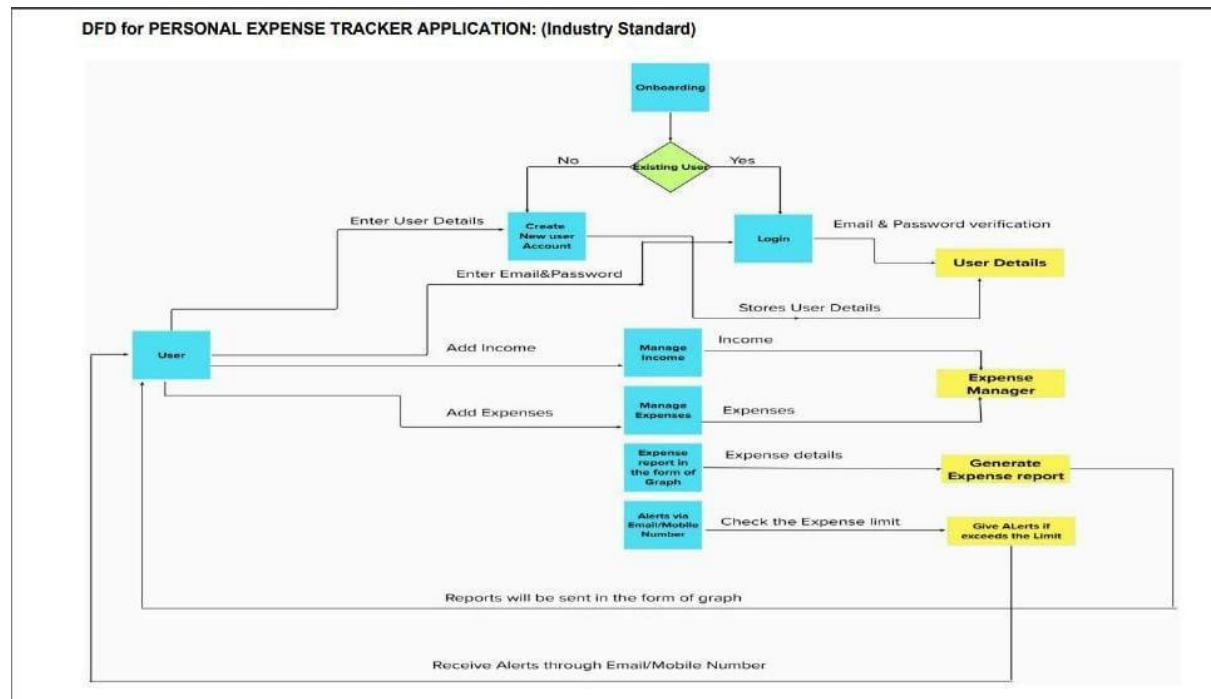
5.1 DATA FLOW DIAGRAM:

PERSONAL EXPENSE TRACKER APPLICATION: (Simplified)



5.2 TECHNICAL ARCHITECTURE:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2



6.PROJECT PLANNING AND SCHEDULING:

6.1 SPRINT PLANNING AND ESTIMATION:

sprint	Functional requirement (epic)	User story number	User story task	Story points	Priority number	Team members
Sprint 1	Registration	<u>USN-1</u>		10	high	M.Harshitha,D.pooja

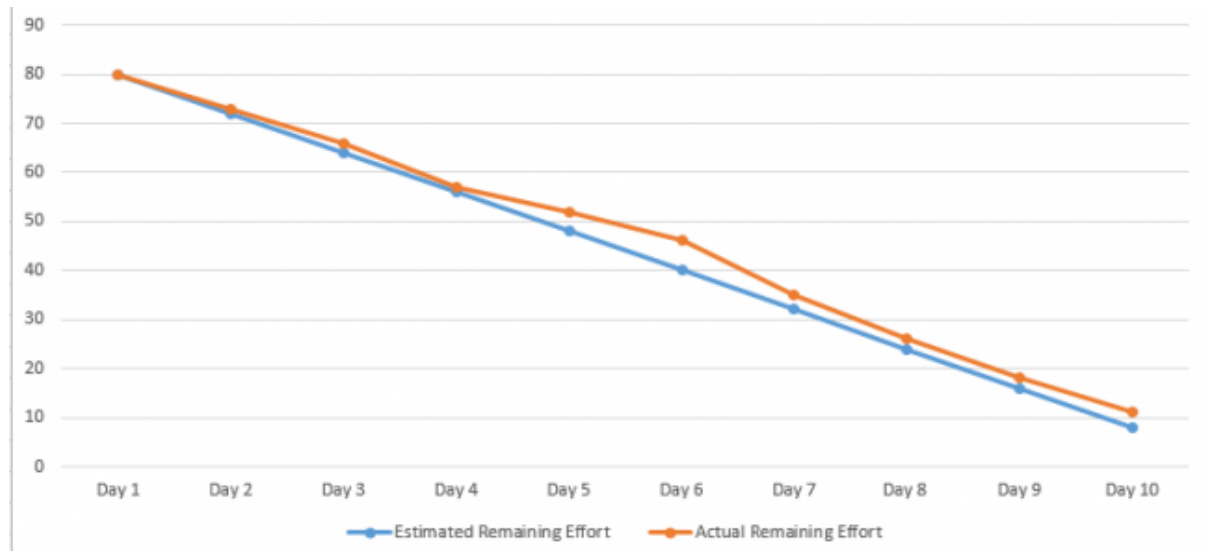
Sprint 1	login	USN-2		10	high	M.Harshitha,N.VS meghana
Sprint 2	Dash board	USN-3		20	high	M.Harshitha,L.Bhuvan a sri
Sprint 4	profile	USN-4		10	low	d.pooja,L.Bhuvana sri
Sprint 3	alerts	USN-5		20	high	M.Harshitha,D.pooja

PROJECT TRACKER &VELOCITY AND BURN DOWN CHART:

Sprint	Total story points	Duration	Sprint start Date	Sprint End Date(Planned)	Story points completed(as 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	07 Nov 2022	20	07 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	10	19 Nov 2022

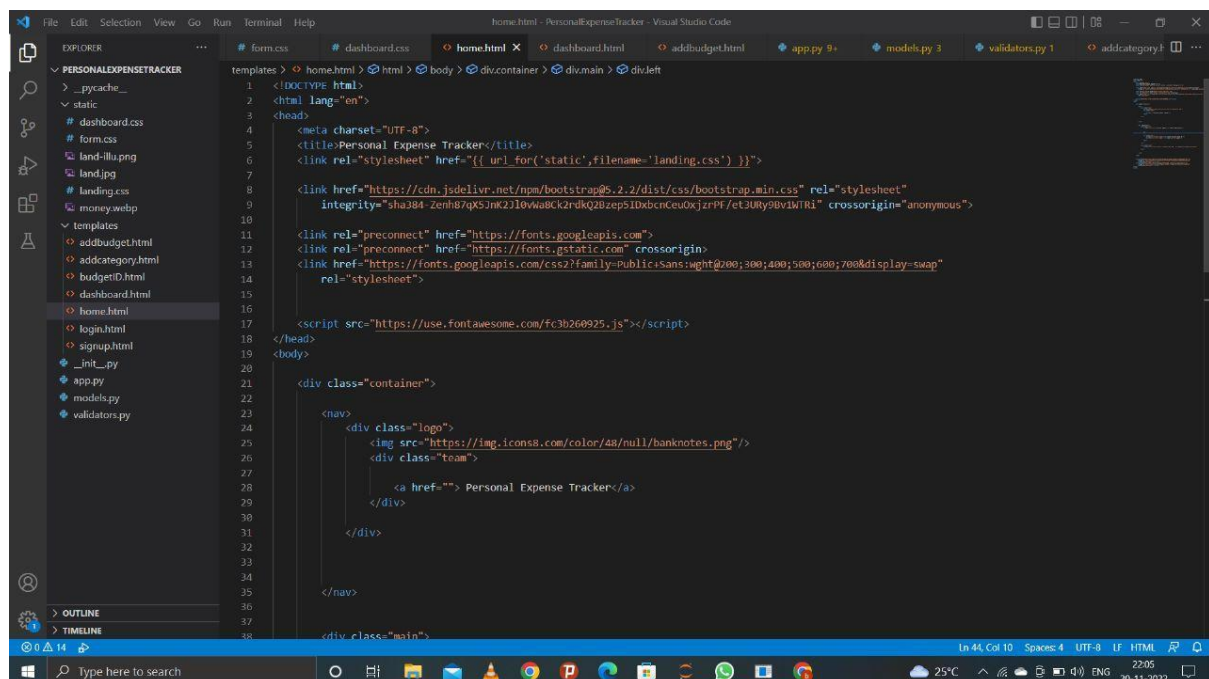
Average velocity=20/6

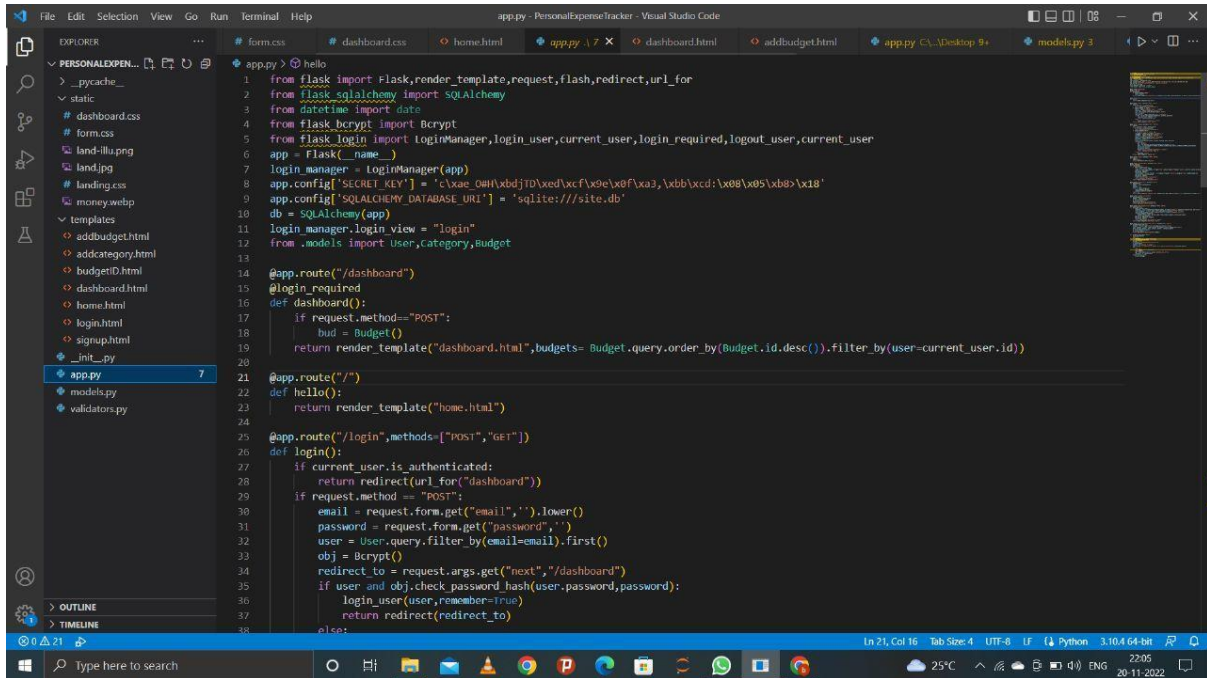
BURN DOWN CHART:



7.CODING AND SOLUTIONING:

7.1 FEATURES:





```
File Edit Selection View Go Run Terminal Help
app.py - PersonalExpenseTracker - Visual Studio Code

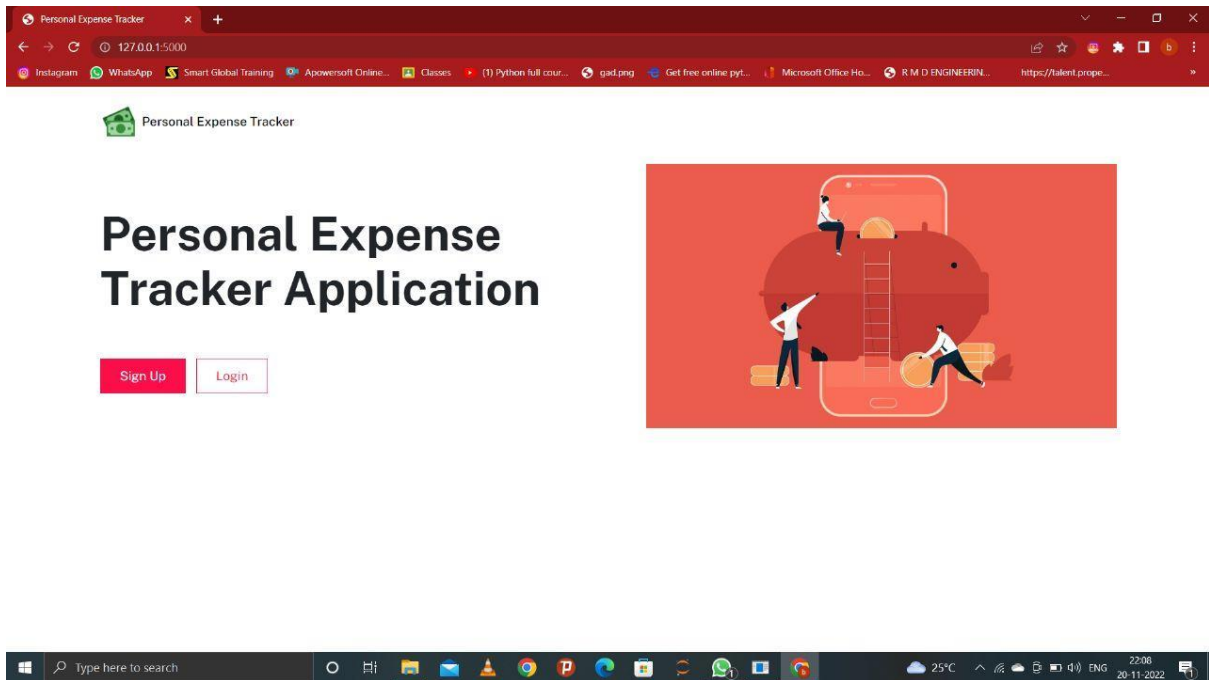
EXPLORER
PERSONALEXPENSETRACKER
  > __pycache__
  > static
  > dashboard.css
  # form.css
  > land-illu.png
  > landing.jpg
  # landing.css
  > money.webp
  > templates
    > addbudget.html
    > addcategory.html
    > budgetD.html
    > dashboard.html
    > home.html
    > login.html
    > signup.html
  > _init_.py
  > app.py
  > models.py
  > validators.py

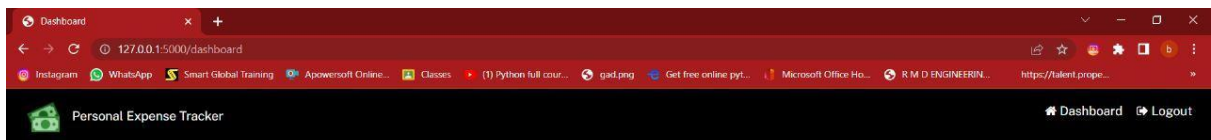
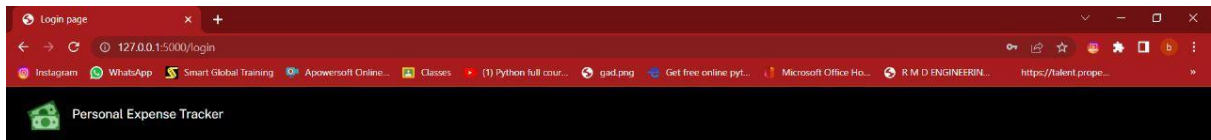
app.py
1 from flask import Flask,render_template,request,flash,redirect,url_for
2 from flask_sqlalchemy import SQLAlchemy
3 from datetime import date
4 from flask_bcrypt import Bcrypt
5 from flask_login import LoginManager,login_user,current_user,login_required,logout_user,current_user
6 app = Flask(__name__)
7 login_manager = LoginManager(app)
8 app.config['SECRET_KEY'] = 'c\xae_04f\xbdjtd\xed\xcf\x9e\x9f\xa3,\xb5\xcd:\xb8\xb5\xb8>\xb8'
9 app.config['SQLALCHEMY_DATABASE_URI'] = 'sqlite:///site.db'
10 db = SQLAlchemy(app)
11 login_manager.login_view = "login"
12 from .models import User,Category,Budget
13
14 @app.route("/dashboard")
15 @login_required
16 def dashboard():
17     if request.method=="POST":
18         bud = Budget()
19         return render_template("dashboard.html",budgets= Budget.query.order_by(Budget.id.desc()).filter_by(user=current_user.id))
20
21 @app.route("/")
22 def hello():
23     return render_template("home.html")
24
```

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/powershell

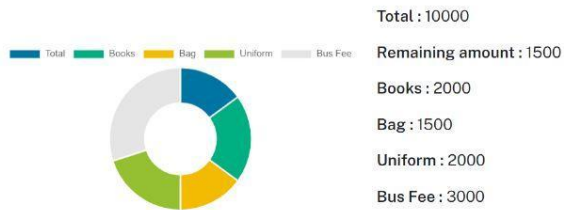
PS C:\Users\DELL\OneDrive\Desktop\PersonalExpenseTracker> flask run
 * Debug mode: off
 * WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
 * Running on http://127.0.0.1:5000
Press CTRL+C to quit
```





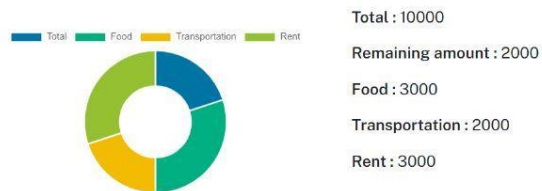
Education

+ Add Transaction



Personal Expenses

+ Add Transaction



8.TESTING

8.1 Test Cases

Test Case ID	Feature Type	Component	Test Scenario	Steps to execute	Test Data	Expected Result	Actual Result	Status	Comments	Bug
Login&Register TC-01	UI	LoginPage	Verify UI elements in the LoginPage	Go to site -Verify UI elements like email field, password field, Login button, new user signup link	http://127.0.0.1:5000/login	Following elements should be shown in the interface : email field, password field, Login button, new user signup link	Working as expected	Pass		
Login&Register TC-02	Functional	LoginPage	Verify the user is able to login	Go to page -Enter valid email and password	email: poojadh at2001@gmail.com --- password: poo12@gy	Should direct to dashboard	Working as expected	Pass		
Login&Register TC-03	UI	SignupPage	Verify UI elements in the SignupPage	Go to site -Verify UI elements like Firstname and lastname field, email field, username field, password field, Signup button, existing user login link	http://127.0.0.1:5000/signup	Following elements should be shown in the interface: Firstname and lastname field, email field, username field, password field, Signup button, existing user login link	Working as expected	Pass		

Login&Register TC-04	Functional	SignupPage	Verify the user is able to create an account	Go to page -Fill up the fields in the Signup form	Enter valid details in the signup form	Should direct to login page	Working as expected	Pass		
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Dashboard TC-01	UI	Dashboard	Verify UI elements in the Dashboard	Go to site -Login -- Go to Dashboard and verify UI elements like create budget button, created budgets and delete button for deleting budgets	http://127.0.0.1:5000/dashboard email: poojadhat2001@gmail.com--- password : poo12@gy	Following elements should be shown in the interface: create budget button, created budgets and delete button for deleting budgets	Working as expected	Pass
Dashboard TC-02	Functional	Dashboard	Verify the user is able to create budget	Go to page -Login -- Go to Dashboard -Click on create budget button -- Enter the budget name and amount -submit	Budget name: August Budget -Amount : 10000	Should create a budget in the dashboard	Working as expected	Pass

Budget TC-01	UI	BudgetPage	Verify UI elements in the Budget page		email: poojadhat2001@gmail.com --- password : testing123	Following elements should be shown in the interface: graph(pie-chart), Total amount, Remaining amount, Categories and money spent on that, and Add transaction button	Working as expected	Pass	
Budget TC-02	Functional	BudgetPage	Verify the user is able to add transactions in each budget with category	Go to page -Login -- Go to Dashboard -Click on any budget -- Click on add transaction button	Category name : Vehicle -Amount : 3000	Should add a new transaction record and also it should affect the pie-chart	Working as expected	Pass	
Budget TC-03	Functional	BudgetPage	Verify the graph values are correct	Go to page -Login -- Go to Dashboard -Click on any budget -- Click on add transaction button	Category name : Vehicle -Amount : 2000	The pie-chart should get updated with the values after adding new transactions	Working as expected	Pass	

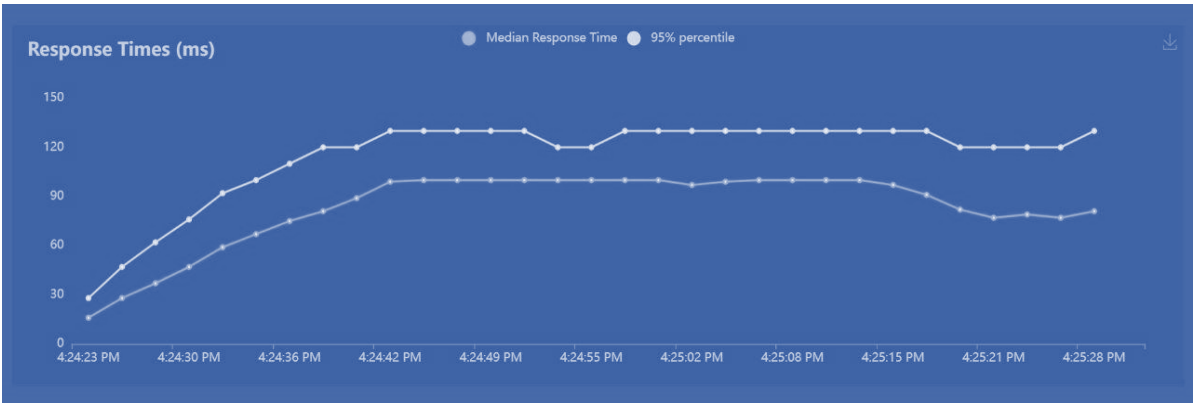
Budget TC-04	Functional	BudgetPage	Verify the user is able to add transactions to the same category	Go to page -Login -- Go to Dashboard -Click on any budget -- Click on add transaction button -- Try adding a transaction to a same category	Category name : Vehicle -Amount : 2000	The amount should get added if the category exists already	Not working as expected	Fail	1 a d a a n v c e o
--------------	------------	------------	--	---	---	--	-------------------------	------	--

9.RESULTS

9.1 Performance Metrics

Performance testing was conducted with this application using a performance testing tool called Locust. The following are the performance charts of the application.

Response Times Chart



10.ADVANTAGES:

1. Helps You Stick to Your Budget.
2. Tracking Your Expenses Can Reveal Spending Issues.
3. It Helps You Meet Your Financial Objectives.

4. Make It Easier With an App or Software.
5. Work Together as a Couple.
6. The users will be able to track their expenses easily.
7. Avoid papers and calculations
8. Better understanding of their spending behavior
9. Avoid overspending

DISADVANTAGES:

1. Feeling constrained. ...
2. Spending more than necessary. ...
3. Finding the time for it.

11 .CONCLUSION:

A spending plan (also called a budget) is simply a plan you create to help you meet expense and spend money the way you want to spend it. A good spending plan can help you stop “spending leaks”; in other words, it can keep you from spending money without thinking. It can help you make sure you have money to pay bills on time, even when your bills and income change each month.

- *Track your payments*
 - *stick to a budget .*
- save money . It's that simple*

12.FUTURE SCOPE:

- 1) *keeping a daily record of their expenses by tracking improves the financial health of their budget.*
- 2) *In this application they can have multiple accounts and can also use*

For multiple purposes ,like about travelling , studies ,groceries etc..

3)Payment tracking makes business forecasting easier.

4)It prepare you for Tax Season.

5)This can be developed into a mobile application so that the users find it easy to use as mobile applications then a web application

6) Summary can be provided to the users based on the spending behavior in the application.

13.GITHUB AND PROJECT DEMO LINK:

GITHUB LINK:<https://github.com/IBM-EPBL/IBM-Project-32967-1660213288>

PROJECT DEMO LINK:<https://drive.google.com/drive/u/0/folders/1yu6t4MsZJ9yWMaKF3cj7vQuw6zoxXZxY>
