PERSONAL EXPENSE TRACKER

Team ID : PNT2022TMID12557

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1. INTRODUCTION

1.1 Project Overview

After birth, there is an obvious demand for commodities and possessions in the human life cycle.We purchase things in order to satisfy our needs and desires.Having money is a requirement in order to purchase desired items, according to earthly law.

The cycle of earning and spending continues in our lives in this way.

People utilize a conventional paper system to record their income and expenses in order to keep track of their spending.

It takes longer and is more laborious to use a traditional system.

Thus, a management system is required that makes it simple for us to keep track of our daily income and expenses while also enabling effective record analysis.

Therefore, we developed an application called "Personal Expense Tracker" that replaces the conventional system with a digital, portable, easier, and simpler manner to record this data in only a few clicks.

1.2 Purpose

In existing, there is no such complete solution to keep a track of its daily expenditure easily. To do so a person has to keep a log in a diary or in a computer, also all the calculations need to be done by the user which may sometimes results in errors leading to losses. to reduce manual calculations, we propose an application which is developed by android. This application allows users to maintain a digital automated diary. each user will be required to register on the system at registration time, the

user will be provided id,which will be used to maintain the record of each unique user application keeps the track of the Income and Expenses both of the user on a day-to-day basis. This application takes the income of a user and manages its daily expenses so that the user can save money. If you exceed the daily expense allowed amount it will give you a warning, so that you don't spend much and that specific day. If you spend less money than the daily expense allowed amount, the money left after spending is added into the user's savings. The application generates report of the expenses of each end of the month. The amount saved can be used for celebrating festivals, Birthdays or Anniversary

2. LITERATURE SURVEY

2.1 Existing problem

Currently, we must maintain Excel sheets, CSV files, and other documents for each user's daily and monthly spending.There is currently no such comprehensive way to conveniently keep track of daily expenses.To do this, one must maintain a log in a diary or on a computer. Additionally, one must perform all calculations themselves, which can occasionally result in mistakes that result in losses.Using a manual accounting system may have a number of drawbacks.Any business' accounting process can be challenging. A computerized accounting system may not require you to comprehend the accounting process in the same way that a manual accounting system does.Depending on who is conducting the bookkeeping, this could be a benefit or a drawback. To ensure that accounting is done correctly, a skilled

professional is frequently required.By hand, it could take a while to sort through your financial records' complexity. Therefore report generation takes time.

2.2 References

We found various similar products that have already been developed in the market. Unlike all those products, Personal Expense Tracker provides security and reliability. We analyzed these applications for Ease of Use, Backup, Expense/Income, Decision Making , Notification , Focus Group, Password Protection, Detailed Report generation. We tried to get inspiration from all these applications to build an application that does all these tasks better.

1. "Intelligent Online Budget Tracker" is an application in which most of the goals set at the start of the development phase have been met. Security problems like web security or network security have also been treated in the design and development of the system, thus increasing considerably the reliability of the system. Quality management issues have also been handled in a satisfactory manner.

2. "Online Income and Expense Tracker", This project successfully avoids the manual calculation for calculating the income and expense per month. The modules are developed efficiently and also in an attractive manner. This project is work more efficient than the other income and expense tracker.

3. "Family Expense Manager Application" can be a part of daily life to update and view daily personal expenses and family expenses. This helps to keep track of expenses & manage it for the user as they are busy in their daily routine, they are not able to keep track of their incomes & expenses.

4. "Personalized Expense Managing Assistant Using Android " is an android application with features such as enabling users to register to the application using an existing email or social network account and synchronize the user's profile information to the application. Apart from this, the application can be used to gather samples of data related to the user's expenses with consents and use those sample data as parameters to assess patterns of spending. Using some data mining techniques expenses can be classified and can be used in market analysis and planning

2.3 Problem Statement Definition

Personal Expense Tracker (PET) is a daily expense management system that was created specifically for paid and non-salaried employees in order to keep track of their daily expenses in a simple and efficient manner through a computerised system that tends to avoid manual paperwork.

Users can easily access the stored data, and records will be managed in a methodical way.

3. IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas

3.2 Ideation & Brainstorming

Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

- 10 minutes to prepare
- 1 hour to collaborate
- 2-8 people recommended

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

⏱ 10 minutes

Team gathering
Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

Set the goal
Think about the problem you'll be focusing on solving in the brainstorming session.

Learn how to use the facilitation tools
Use the Facilitation Superpowers to run a happy and productive session.
Open article

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

How might we track the personal expenses of a user?

Key rules of brainstorming
To run a smooth and productive session

- Stay in topic.
- Encourage wild ideas.
- Defer judgment.
- Listen to others.
- Go for volume.
- If possible, be visual.

Brainstorm
Write down any ideas that come to mind that address your problem statement.

⏱ 10 minutes

TIP: You can select a sticky note and hit the pencil (switch to sketch!) icon to start drawing!

Gowtham T · Pranav Vardhan D.A · Manishikkka S P · Sanaya Nikhitha V C · Samyuktha Sreekanth Parubli

Group ideas
Take turns sharing your ideas while clustering similar or related notes as you go. In the last 10 minutes, make each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you break it up into smaller sub-groups.

⏱ 20 minutes

- Income
- tracking
- monthly bills
- support
- expenses
- user interface/profile
- issues

TIP: Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

Prioritize
Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

⏱ 20 minutes

Importance
If each of these tasks could get done without any difficulty or cost, which would have the most positive impact?

Feasibility
Regardless of their importance, which tasks are more feasible than others? (Cost, time, effort, complexity, etc.)

After you collaborate
You can export the mural as an image or pdf to share with members of your company who might find it helpful.

Quick add-ons

Share the mural
Share a view link to the mural with stakeholders to keep them in the loop about the outcomes of the session.

Export the mural
Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save in your drive.

Keep moving forward

Strategy blueprint
Define the components of a new idea or strategy.
Open the template →

Customer experience journey map
Understand customer needs, motivations, and obstacles for an experience.
Open the template →

Strengths, weaknesses, opportunities & threats
Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.
Open the template →

Share template feedback

3.3ProposedSolution

| S.NO.	Parameter	Description
1.	Problem Statement	Due to the busy and hectic lifestyle, people tend to overlook their budget and end up spending an excessive amount of money without planning their budget wisely. This project is an attempt to manage our daily expenses in a more efficient and manageable way. The system attempts to free the user with as much as possible the burden of manual calculation and to keep track of the expenditure.

2.	Idea /Solution Description	There is no complete and easy solution to keep track of daily expenditure. To reduce manual calculations, promote healthy spending behavior, and keep track of expenses, we propose an application. This application allows users to maintain a digital automated diary. It takes the income of a user and manages daily expenses so that the user can save money. If the user exceeds the daily expense allowed amount, it will give a warning, so that user doesn't spend much. If you spend less money than the daily expense allowed amount, the money left after spending is added to the user's savings. The application generates a report of the expenses at each end of the month.
3.	Novelty / Uniqueness	● Providing alerts when expenditure exceeds a certain set amount. ● Display the costs on a monthly and weekly basis in a pie chart. ● Instead of manually adding recurring expenses, they are automatically added

4.	Social Impact / Customer Satisfaction	● Curbs unnecessary expenditure. Improves the habit of saving. ● Healthy spending habits can be developed by looking at previous weeks or months' spending.
5.	Business Model / Revenue Model	● We can provide pop-up ads, overlay ads, and other advertising services from third-party advertisers. ● A pro version without any ads and with added benefits
6.	Scalability Of Solution	● Inbuilt payment system. ● Provide enhanced customer support

3.4 Problem Solution fit

PROBLEM FIT		TEAM ID - PNT2022TMID12557 PERSONAL EXPENSE TRACKER

Define CS, fit into

1. CUSTOMER SEGMENT(S) — CS

Common People in need of financial management

6. CUSTOMER LIMITATIONS — CC

Available Devices
Network Connection

5. AVAILABLE SOLUTIONS — AS

Calculating the total spendings of the user

Alerting the user nearing the budget

Notifying the user of spending above budget

Providing useful financial tips for better savings

Providing reports for assessments

Explore AS,

Focus on J&P, tap into BE, understand

2. JOBS-TO-BE-DONE / PROBLEMS — PR

Reduction of manual calculations and Promoting healthy spending behaviour

Adding and updating spendings in various categories

Maintaining a monthly budget

9. PROBLEM ROOT / CAUSE — RC

No complete and easy solution to keep track of daily expenditure

Overspending without proper Management

Lack of Financial Knowledge

Error prone

Time consuming

7. BEHAVIOUR — BE

Enquire the people in the neighbourhood or acquaintances

Get reference from Experts with good knowledge in finance domain

Focus on J&P, tap into BE, understand

Identify strong TR & EM

3. TRIGGERS TO ACT — TR

Monotonous and error prone

4. EMOTIONS: BEFORE / AFTER — EM

Before : Frustrated , Breaking Head
After : Stress Free , In control

10. YOUR SOLUTION — SL

A web application allows users to maintain a digital automated diary. It takes the income of a user and manages expenses so that the user can save money. If the user exceeds allowed amount, it will give a warning. If you spend less money than allowed amount, the money left after spending is added to the user's savings. The application generates a report of the expenses at each end of the month.

8. CHANNELS of BEHAVIOUR — CH

8.1 ONLINE
Immediate accessibility irrespective of place and time

8.2 OFFLINE
Access of previously downloaded information

Extract online & offline CH of BE

4. REQUIREMENT ANALYSIS

4.1 Functional requirement

S No.	Functional Requirement	Sub Requirement
1	Registration	Registration through registration form. Registration through One-Tap Google Sign- in.
2	Login	Login using the correct credentials.
3	Add and updating expenses to various categories	Easily track expense information for each category. Easy updating everyday and keep a check on the upper bound.
4	Monthly Expense Report Generation	Quickly produce reports for single or multiple category. Monthly reports will help in tracking annual expense A track of the most expensive and least expensive month could be kept.

| 5 | Alert email/ Remainder | Remainder to update and add every day's expenses

Alert when upper bound is reached |
| 6 | Logout | Logout when the updating and reviewing of the day's expense is done

Can login again with user credentials to use the app |

4.2 Non-Functional requirements

The non-functional requirements of the proposed solution are as follows,

S No.	Non Functional Requirement	Description

1	Usability	The UI should be accessible to everybody despite of diversity in languages. People with some impairments should also be able to use the application with ease. (Example, integrate google assistant so that blind people can use it). The app and UI should be platform and device independent. It should be compatible with wide range of devices possible.
2	Security	The security requirements deal with the primary security. Only authorized users can access the system with their credentials. Administrator or the concerned security team should be alerted on any unauthorized access or data breaches so as to rectify it immediately.
3	Reliability	The software should be able to connect to the database in the event of the server being down due to a hardware or software failure.

		The recovery of the application should be immediate such that the downtime of the application should be negligible. The users must me intimated by the periodic maintenance break of the server so that they will be aware of it.
4	Performance	Performance of the app should be reliable with high-end servers on which the software is running.
5	Availability	The software should be available to the users 24/7 with all functionalities working. New module deployment should not impact the availability of existing modules and their functionalities.
6	Scalability	The whole software deployed must be easily scalable as the customer base increases.

5. PROJECT DESIGN

5.1 DATA FLOW DIAGRAM

A Data Flow Diagram (DFD) is a traditional visual representation of how information flows within a system. A neat and clear DFD can thus depict the right

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amount of the system requirements graphically. It not only shows how data enters and leaves the system, but also what changes the information and where the data is stored.
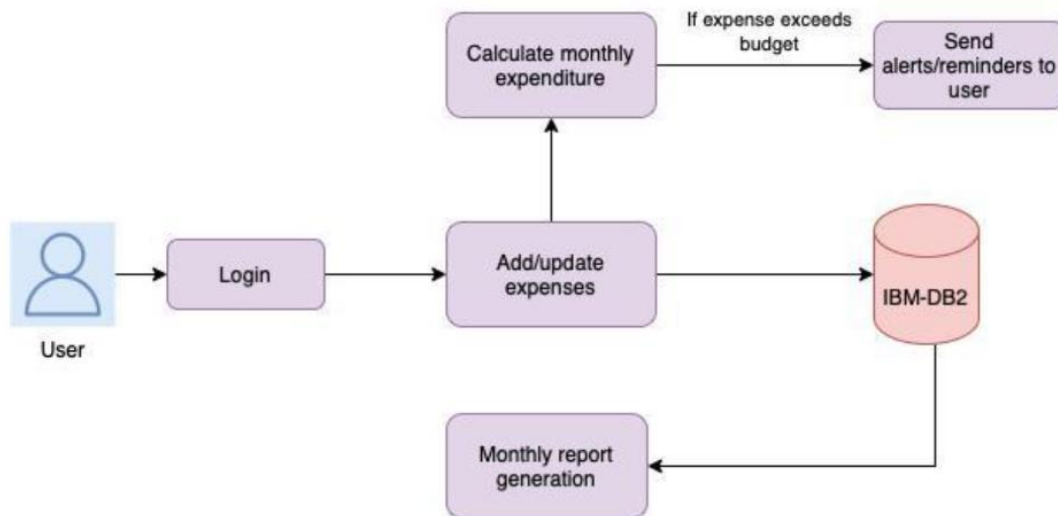
5.2 TECHNICAL ARCHITECTURE
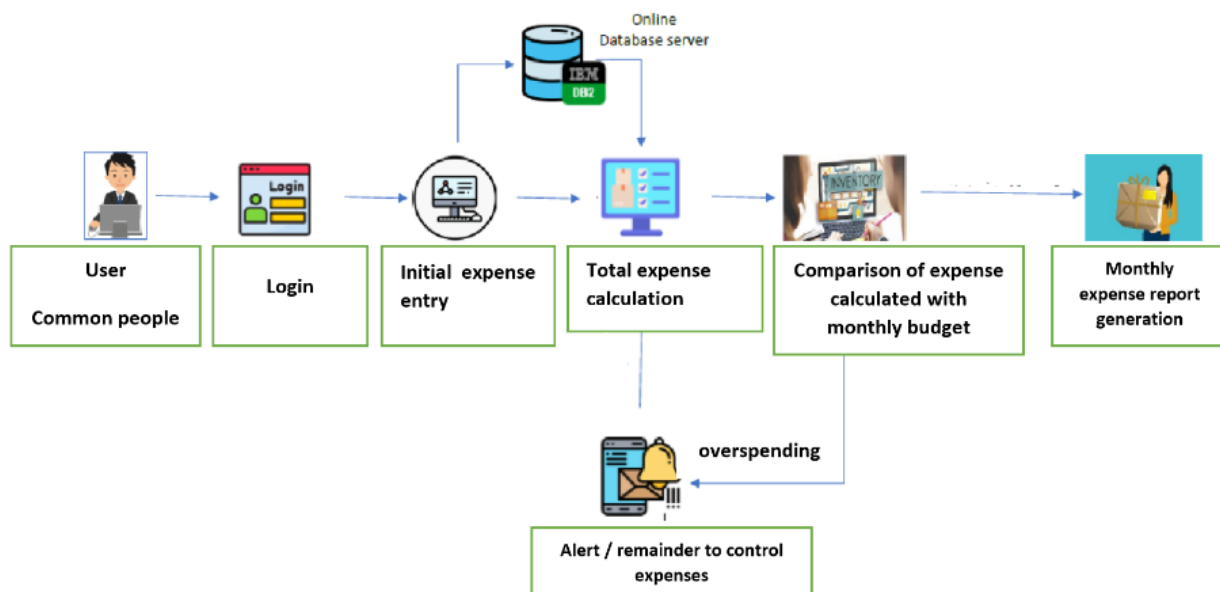
Table-1:Components and Technologies

S.NO	Component	Description	Technology
1.	User Interface	How the user interacts with the application eg,Web UI,Mobile App,Chat Box etc.	HTML,CSS,JavaScript /Angular JS/ReactJS etc.
2.	Application Logic-1	Logic for a process in the application	Java/Python
3.	Application logic-2	Logic for a process in the application	IBM Watson STT service
4.	Application logic-3	Logic for a process in the application	IBM Watson Assistant
5.	Database	Data Type,Configurations etc.	MySQL,NoSQL, etc.
6.	Cloud Database	Database Service on cloud	IBM DB2,IBM Cloud ant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	Purpose of External API used in the application	IBM Weather API,etc.
9.	External API-2	Purpose of External APi used in the application	Aadhar API,etc.
10.	Machine Learning Model	Purpose of Machine learning Model	Object Recognition Model etc.
11.	Infrastructure (Server/Cloud)	Application Deployment on Local System / Cloud Local Server Configuration	Local,Cloud Foundry,Kubernetes,etc.

Table-2: Application Characteristics:

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

5.3 User Stories

User Type	Functional Requirements	User Story Number	User Story / Task Acceptance	Criteria	Priority	Release

Common Man	Registration	USN -1	As a user , I can register for the Application by entering the email , password ,and confirming my password	I can access my account / dashboard	High	Sprint - 1
	Login	USN -2	As a user , I can log into the application by entering username and password	I can access my account / dashboard	High	Sprint -1
	Add and Updating Expenses to various categories	USN -3	As a user , I can add and update the different expenses including income , bills , savings etc	The details are stored in the database	High	Sprint -2
	Monthly Expense Report Generation	USN -4	As a user , I can view the generated expense report for further savings	I can use it to further better the savings	High	Sprint -2
	Alert Email / Remainder	USN -5	As a user , I'll receive alerts and reminders when the expenses	I can keep tabs on my expenditure	Medium	Sprint -3
	Logout	USN -5	User will be logged out of the system .crosses the given budget	I can keep tabs on my expenditure	High	Sprint -1

6. PROJECT PLANNING AND SCHEDULING

6.1 Sprint Planning And Estimation

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Homepage	USN-1	AS a user I can view the index page to see the about of the Expense tracker	20	High	Pranav vardhan
Sprint-1	Registration	USN-2	As a User, I need to register user id and passcode for every workers over there in municipality	10	High	Gowtham
Sprint-1	Login	USN-3	As a user, I need to login with user id and password to get in to the website	10	High	Samyuktha
Sprint-2	Dashboard	USN-4	As a User, I will follow Co-Admin's instruction to reach the filling bin in short roots and save time	20	Low	Sarayu Miththira

Sprint-3	Add Expenses	USN-5	As a User I will add my expense throughout the month I spend on	10	Medium	Monirithika
Sprint-3	Total Expense Graph	USN-6	As a User I can view my expense in a graph of overview of the expenseI spend.	30	Medium	Pranav vardhan
Sprint-4	Deployment in cloud	USN-7	As a User I can access the cloud to store my data of expense	20	High	Monirithikka

6.2 Sprint Delivery Schedule

Project Tracker, Velocity & Burndown Chart: (4 Marks)

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	40	6 Days	18 Oct 2022	23 Oct 2022	40	24 Oct 2022
Sprint-2	20	6 Days	25 Oct 2022	30 Oct 2022	20	31 Oct 2022

Sprint-3	40	6 Days	01 Nov 2022	06 Nov 2022	40	07 Nov 2022
Sprint-4	20	6 Days	08 Nov 2022	13 Nov 2022	20	14 Nov 2022

6.3 Reports for JIRA

Velocity:

$$AV = \frac{sprint\ duration}{velocity} = \frac{20}{10} = 2$$

Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day).

7. CODING AND SOLUTION

7.1 Feature 1
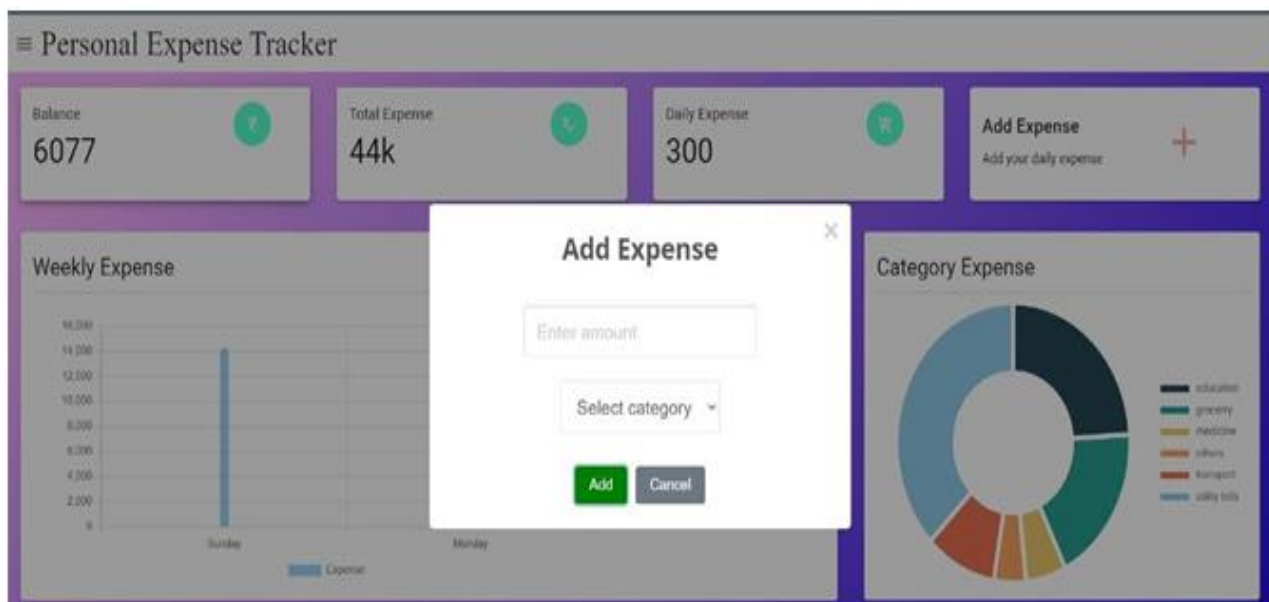
7.2 Feature 2
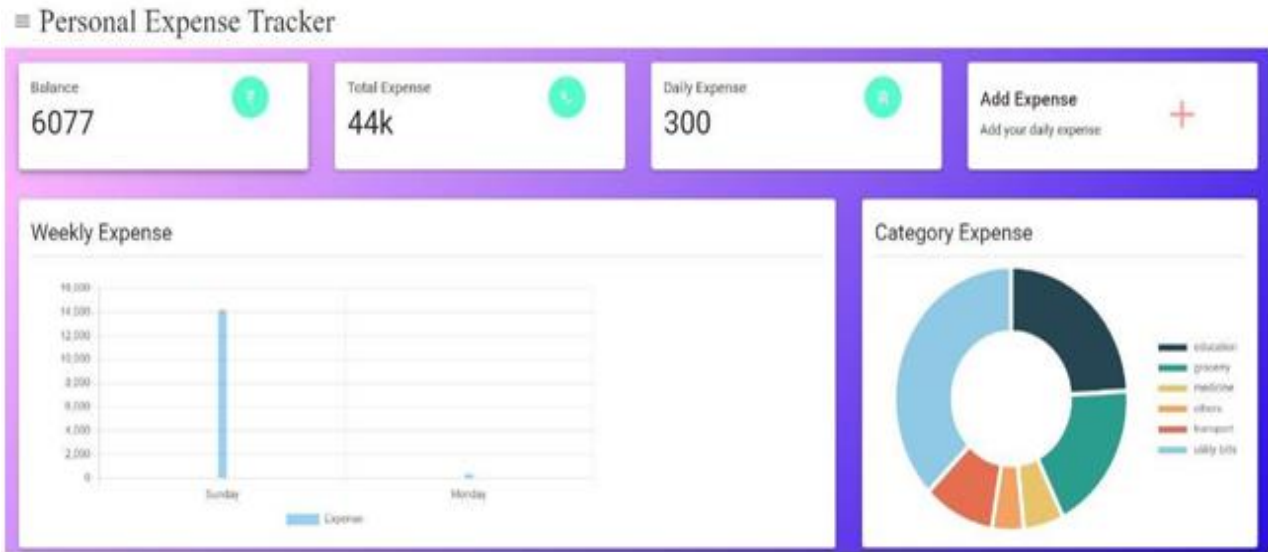
8. TESTING

8.1 Test Cases
8.2 User Acceptance Testing
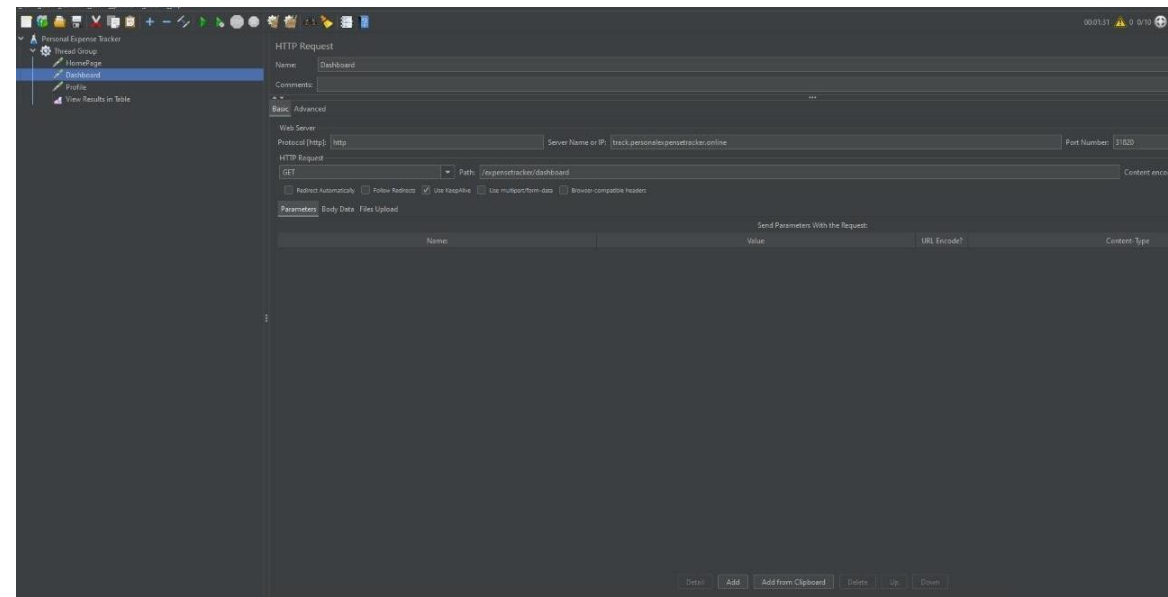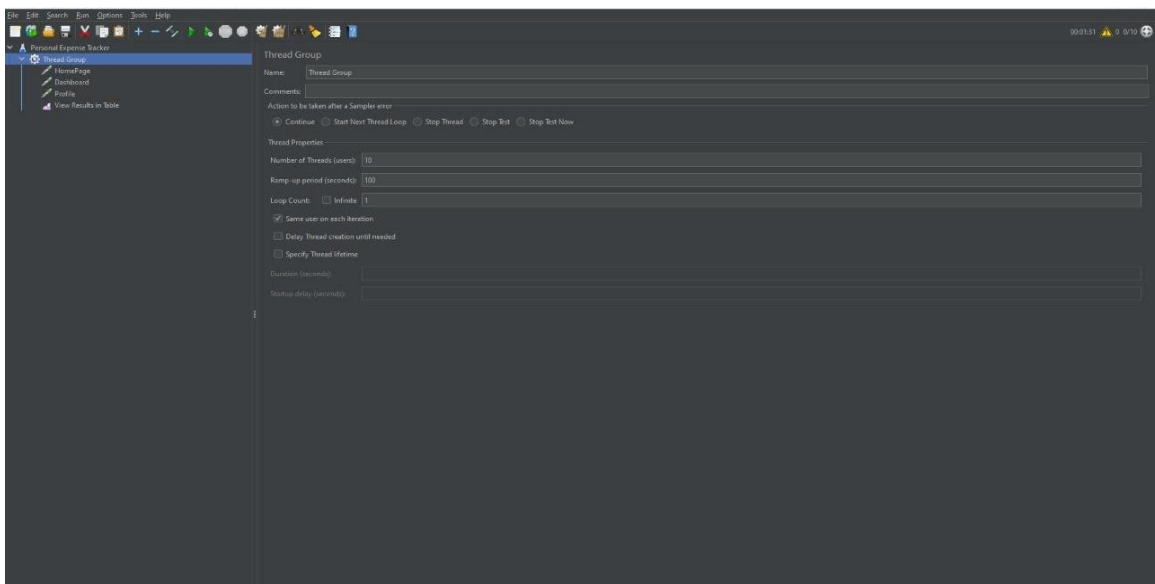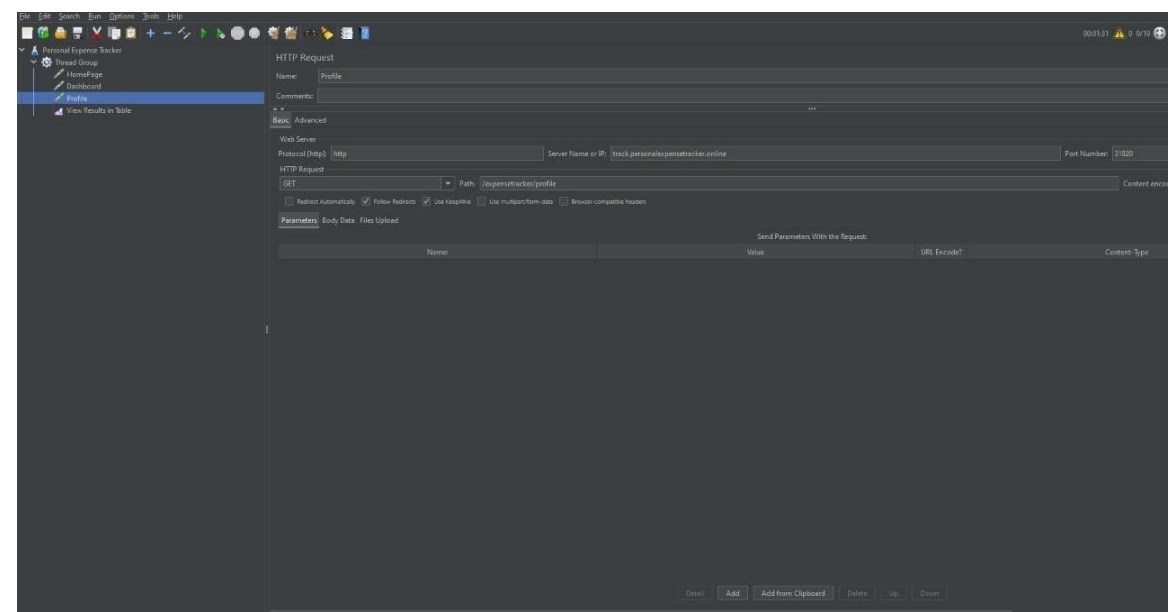
9. RESULT

9.1 Performance Metrics
10. ADVANTAGES AND DISADVANTAGES

ADVANTAGES

- Being constantly aware of one's personal financial situation is one of the main benefits of keeping track of spending.

- Another benefit is the abundance of free automatic expenditure tracking software tools.

- You may control expenditures and understand what you're spending your money on by keeping a daily log of your business expenses.

- These daily numbers serve as your benchmark for determining whether you are in or out of your monthly budget.

- Your financial awareness increases as a result of the entire process.

DISADVANTAGES

- Any technique for keeping tabs on spending can have the drawback that one may start using it, then slack down until they completely stop.

- This risk exists for any new objective, including attempting to lose weight or stop smoking.
- The tracking objective might be helpful if a person first creates a budget plan, then puts money in savings before spending any new pay period or month.

- This reduces the amount of time needed to manage expenditures and make sure all receipts are accounted for to once or twice per month.

- There is no assurance that one will achieve their financial goals, even with ongoing tracking of their spending patterns.

- Although this can be viewed as a drawback of spending tracking, it could be turned into a benefit if one decides to maintain attempting to handle all finances effectively.

- Errors can also be a disadvantage while spending is being recorded, but if tracking is done often, this drawback might be turned into a plus.

- Frequent monitoring of cash expenditures can help one identify and fix mistakes so that the budget can still be followed in spite of the error.

11. CONCLUSION

From this project, we are able to manage and keep tracking the daily expenses as well as income.The manual calculation for estimating the income and expenses every month is successfully avoided by the project.
The modules are created in a beautiful and efficient manner.By offering accurate and complete information, the developed systems solve problems and satisfy demands.All the requirements projected by the user and IBM have been met by the system.

12. FUTURE SCOPE

Users will be able to stick to their spending limits, resulting in customer satisfaction. They can scan their bills at any time, preventing data loss.Users can monitor their credit card balances and make prompt payments to avoid accruing unnecessary interest.
Business strategy (revenue strategy):
We keep this programme free because it is only meant to be used for educational reasons.
Ability to scale the solution:

The application is built on an IBM cloud and scalable using Kubernetes and Dockers to support heavy traffic.

Our programme has the performance and security to handle lots of users and data.

It is flexible enough to adapt to both large- and small-scale uses.

Simple to access on all types of devices

13. APPENDIX

GITHUB   LINK-https://github.com/IBM-EPBL/IBM-Project-37336-1660304561

SOURCE   CODE-https://github.com/IBM-EPBL/IBM-Project-37336-1660304561