PERSONAL EXPENSE TRACKER
TEAM ID: PNT2022TMID53316

TEAM LEAD:

ASHIK MEERAN MOHIDEEN S (2127190501020)

TEAM MEMBERS:

1) BEBIN JOHN SIMSON (2127190501026)
2) DHIVYAA R (2127190501032)
3) BALASUBRAMANIAN (2127190501302)
4) NAVEEN KUMAR (2127190501306)

1. INTRODUCTION:

1.1 PROJECT OVERVIEW:

Personal finance entails all the financial decisions and activities that a Finance app makes your life easier by helping you to manage your finances efficiently. A personal finance app will not only help you with budgeting and accounting but also give you helpful insights about money management.

Personal finance applications will ask users to add their expenses and based on their expenses wallet balance will be updated which will be visible to the user. Also, users can get an analysis of their expenditure in graphical forms. They have an option to set a limit for the amount to be used for that particular month if the limit is exceeded the user will be notified with an email alert.

1.2 PURPOSE:

The purpose of the system is to enable a user to track all his expenses. The application will serve as a platform for the user to manage his expenses and will also be able to view his expenses.

The developed system must help a user to properly manage his financial expenses by alerting the user when the expenses limit has been exceeded. Thus the system will help a user to properly manage his expenses.

2. LITERATURE SURVEY:

2.1 EXISTING PROBLEM:
There has always been the problem of managing financial expenses of a person. Most of us tend to forget the expenses that we do and at the end of the month are left with no clue of our expenses.

Even though the conventional way of maintaining accounts of our expenses, it is not practical to follow the same approach in the current fast moving world.

Also maintaining accounts itself has a lot of problems, it can be missed or damaged or human mistakes can occur while doing the accounts.

Our proposed solution is to develop a software based system which overcomes all of the above problems and can effectively help a person to maintain his expenses in a much simpler way.

2.2 REFERENCES:

	PROS	CONS
INTUIT mint	Free to use Integrate bank account and credit card Customized alerts	Expenses are assigned to wrong category
Goodbudget	Good for beginner Customized alerts	Paid Manually enter the transactions
Spendee	Integrate bank account and credit card + crypto wallets Customized alerts	Paid Expenses are assigned to wrong category Less categorization icons

2.3 PROBLEM STATEMENT DEFINITION:

The developed Personal finance applications will ask users to add their expenses and based on their expenses wallet balance will be updated which will be visible to the user.

 Also, users should be able to get an analysis of their expenditure. The users should also have an option to set a limit for the amount to be used for that particular month if the limit is exceeded the user will be notified

with an email alert.

3. IDEATION AND PROPESED SOLUTION:

3.1 EMPATHY MAP CANVAS:

Empathy Map

SAYS	THINKS
What would be the budget?	Are we exceeding the budget?
How can I track my expenses?	Will my details be safe?
Which application can help me?	I should be alerted if exceed

USER

DOES	FEELS
Exceeds the budget	Worried
Asks friends/relatives	Overthinks Confused
Checks the available applications	Hard to choose

PAINS	GAINS
Overspends	Can track their expenses
No proper financial management	Better financial management

3.2 IDEATION AND BRAINSTORMING:

Brainstorm & idea prioritization

Personal Expense Tracker

- 10 minutes to prepare
- 1 hour to collaborate
- 2-8 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.
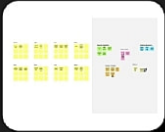
5 minutes

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 finished version of this template to kickstart your work.

Open example →

Step-2: Brainstorm, Idea Listing and Grouping

Brainstorm

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

⏱ 10 minutes

Naveen & Balasubramaian

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

Bebin

security	offer tips to lower expenses
monitor transcations	allocate budget based on each location

Dhivyaa

Easy Accessbility	Well Categorizationof 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

Ashik

integrate multipe 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

3

Group ideas

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

⏱ 20 minutes

Integration

Can integrate with UPI	integrate multipe bank accounts
Can integrate with crypto hardware wallets	Integrate Any wallets like Paytm, Amazon

Experience

Better UI and UX for users	monitor transcations	Various themes in the app
Easy Accessbility	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 comparision of different monthly spendings)

Others

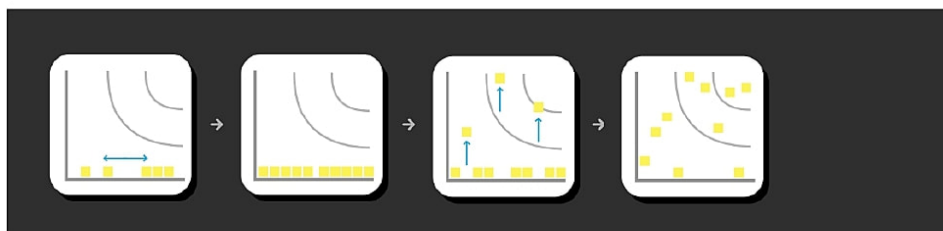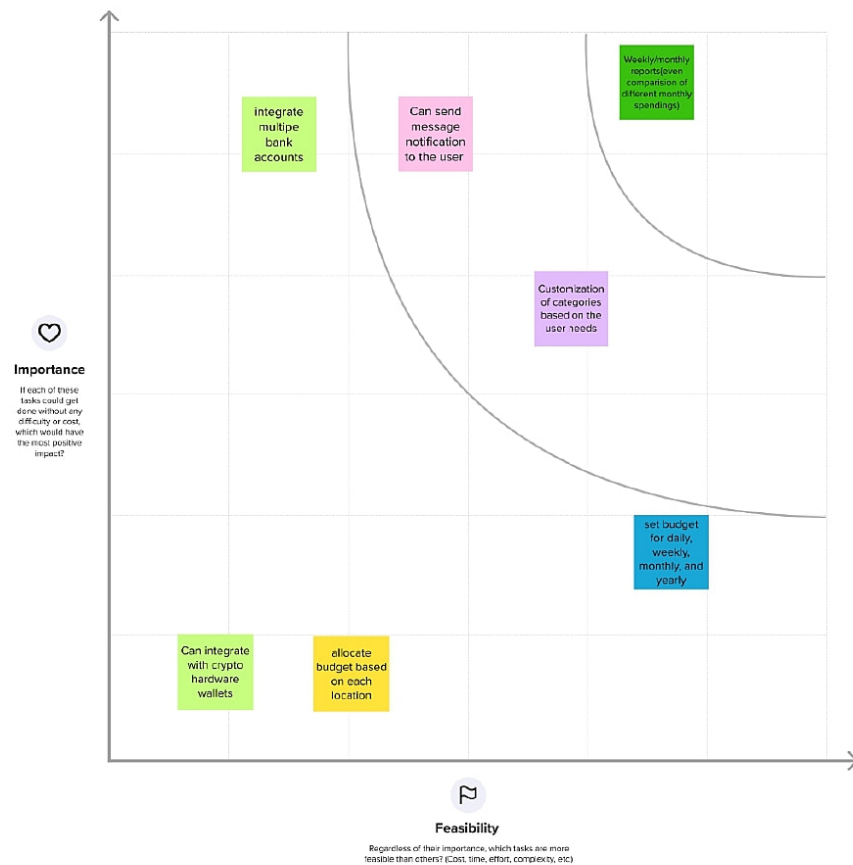|	
allow to enter manually	security

4

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?

integrate multiple bank accounts

Can send message notification to the user

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

Customization of categories based on the user needs

set budget for daily, weekly, monthly, and yearly

Can integrate with crypto hardware wallets

allocate budget based on each location

Feasibility

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

3.3 PROPOSED SOLUTION:

S.No.	Parameter	Description
1.	**Problem Statement (Problem to be solved)**	All people in the earning sector needs a way to manage their financial resources and track their expenditure, so that they can improve and monitor their spending habits. This makes them understand the importance of financial management and makes them better decisions in the future.
2.	**Idea / Solution description**	An application developed for tracking the user expense based on his/her expenditures. The user creates separate section for each expense and track all his expenses incurred. It is user friendly application for people who can't keep on calculating every expense manually.
3.	**Novelty / Uniqueness**	The uniqueness in expense tracker app is all based on its security, financial motivations and suggestions, record every expense and controls the inflow and outflow of money.
4.	**Social Impact / Customer Satisfaction**	It gains customer satisfactory by identifying and eliminating wasteful spending habits in their financial life. More-over it creates an impact on how much of average money is being wasted on unwanted expenses and leads finally to debt.
5.	**Business Model (Revenue Model)**	We are using the Subscription based model. This model looks at offering a consistent service to a consumer at a monthly fee. The benefits of this model are that you know on an ongoing basis how money should make each month.
6.	**Scalability of the Solution**	The scalability of the application depends on security, the working of the application even during when the network gets down etc..

3.4 PROBLEM SOLUTION FIT:

Project Title: Project – Personal Expense Tracker Application   **Project Design Phase-I - Solution Fit Template**   **Team ID: PNT2022TMID53316**

Define CS, fit into CC

1. CUSTOMER SEGMENT(S) `CS`

Working and earning people who spend on a daily basis.

Extravagant spender or frequent traveler.

Calculative and young adults who are just beginning to earn and handle expenses.

Old people to keep track of when, where and how much they spend.

6. CUSTOMER CONSTRAINTS `CC`

Daily habitual tracking.

Available and awareness of technology to make this possible.

Tardiness even on notification or fear of losing their personal spending information.

5. AVAILBLE SOLUTIONS `AS`

Tracking expenses through pen and paper is an alternative but its not that safe or effective.

Random notes lack consistency and there is no proper order or exact details when needed.

Calculations done manually and there is no proper record of consolidated effect of spending habits to refelect and improve upon.

Explore AS, differentiate

Focus on J&P, tap into BE, understand RC

2. JOBS-TO-BE-DONE / PROBLEMS `J&P`

Way to notify on time while the budgeting limit they set exceed so that they can be aware of their expenses.

Users can get an analysis of their spending habits to improve upon.

As there is a way for well recorded and documented records they can better manage and invest into newer fields.
An application can easily manage the calculations and tracking than doing it manually

9. PROBLEMS ROOT CAUSE `RC`

Users especially in the earning sector need to manage their finance in a better way for long term needs and benefits so that they do not accidentally fall in debt.

People need to know when and how much they spend as there are so many ways and sources for spending in today's world.

Keeping track of cash flow is essential for basic money management, and future planning.

7. BEHAVIOUR `BE`

Find a proper system to keep track of their expenses and make it a daily habit to keep track and analyze their spending's manually.

People have to make time and overcome tardiness to put in the effort and reflect upon their financial choices.

Focus on J&P, tap into BE, understand RC

Identify strong TR & EM

3. TRIGGERS `TR`
Seeing other people effectively manage money and leading comfortable lives.

People who are financially stable and successful, better life choices made possible with minimal effort and careful spending.

4. EMOTIONS: BEFORE / AFTER `EM`
Before:

Chaotic and freaked or overwhelmed by their situation and expenses, unable to track and control.

After:

In control and confident and more aware of their situations.

Stress free and planned and settled.

10. YOUR SOLUTION `SL`

Users need an effective way to monitor and keep track of their expenses and cash flow and this app helps them to achieve that.

Constant notifications and updates and being able to view their records and analyze gives user the control over their finance.

Budgeting and tracking become an easy process when its grouped together in a particular place where they can better plan accordingly.

8. CHANNELS OF BEHAVIOUR `CH`

8.1 ONLINE
They monitor and analyze for better options and improve their finance

8.2 OFFLINE
Be more aware and stable to make better financial decisions

Identify strong TR & EM

4. REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENTS:

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Dash Board Panel	This shows the overview of the app and the features Included by navigating .
FR-2	User Registration	Registration through Form Registration through Gmail Registration through LinkedIN
FR-3	User Confirmation	Confirmation via Email Confirmation via OTP
FR-4	Add Bank Account	Add your bank. Give the necessary details for tracking the expense flow.
FR-5	Tracking Flow	App will keep on track the user expenses inflow and outflow. If It exceeds alerts the user.
FR-6	Expense Planner	Plan according to the amount spent in previous month and it gives a clear graph about the expenditure. It gives an idea how to manage the expenses.
FR-7	Notification	User receives notification either via mail or phone number when the limit set is exceeded.

4.2 NON FUNCTIONAL REQUIREMENTS:

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	How easy user interfaces are to use and improving ease-of-use during the design process
NFR-2	**Security**	As the users are giving their personnel info and banking info it should be secure from the attacker.
NFR-3	**Reliability**	Tells about the Service that is performed by the application intended to how much period of time or which will operate without failure
NFR-4	**Performance**	Indicates how the app is functioning and how responsive the app is to end user.
NFR-5	**Availability**	Is the extent to which an application is operational ,functional and usable to the user
NFR-6	**Scalability**	Scalability of the application depends on security ,the working of the application even during when the networks gets down etc….

5 PROJECT DESIGN

5.1 DATA FLOW DIAGRAMS

Example: (Simplified)
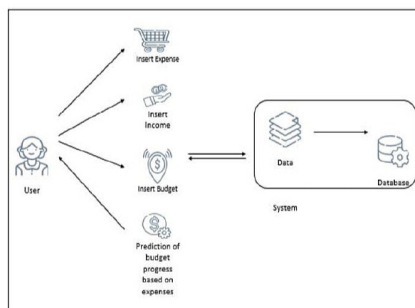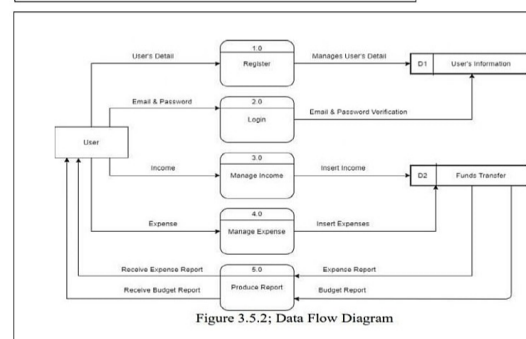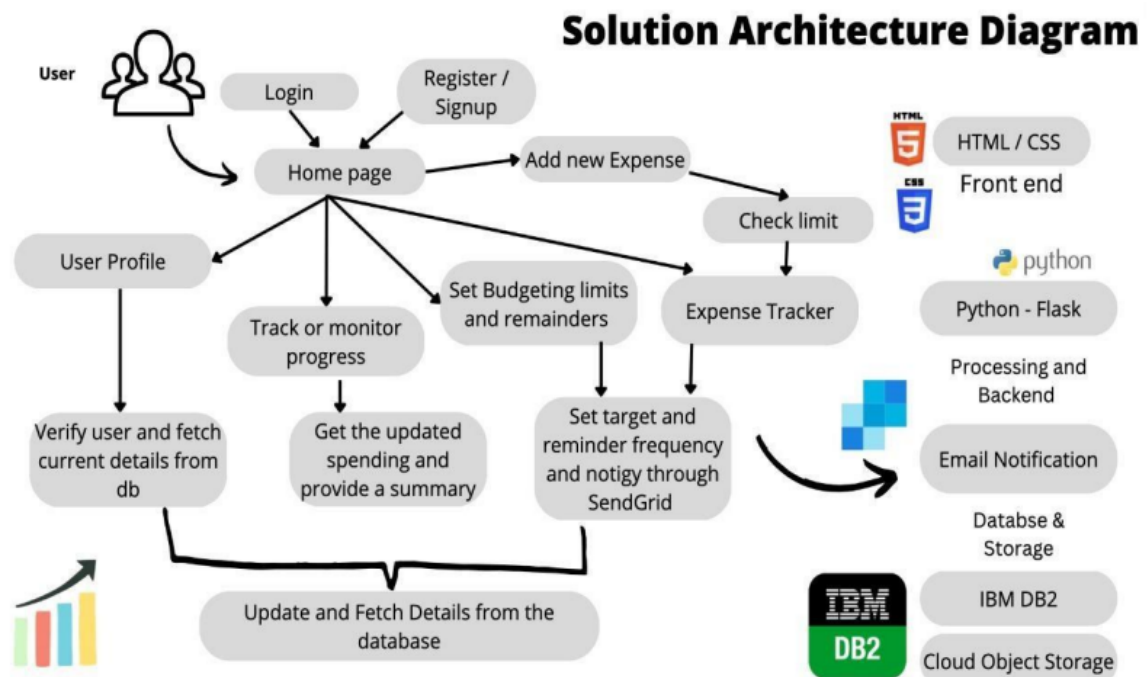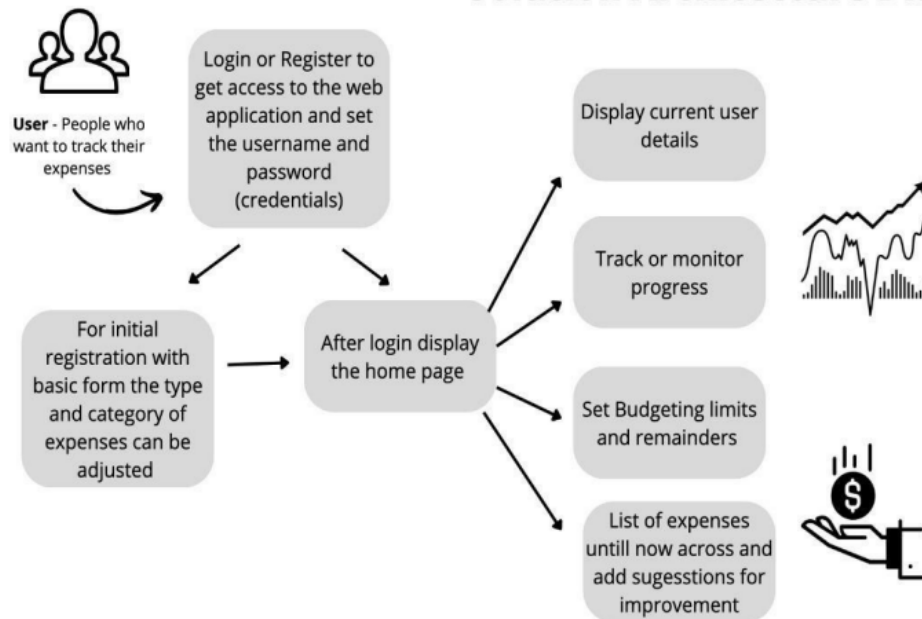

Example: DFD Level 0 (Industry Standard)

Figure 3.5.2; Data Flow Diagram

5.2 SOLUTION AND TECHNICAL ARCHITECTURE:

Solution Architecture Diagram

User can login if he/she already have an account else need to create an account by signing in . Homepage contains information about expenses and profile of the user . so based upon the user expense application will set a limit of the amount to be used in a month.

Solution Architecture Diagram

User - People who want to track their expenses

Login or Register to get access to the web application and set the username and password (credentials)

For initial registration with basic form the type and category of expenses can be adjusted

After login display the home page

Display current user details

Track or monitor progress

Set Budgeting limits and remainders

List of expenses untill now across and add sugesstions for improvement

Folks who need to keep track on their expense can use this app by registering and keep monitor on their progress . Which will be helpful to shallow their spending.

5.3 USER STORIES:

User Stories

Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	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 Mobile number	I can register & access the dashboard with Mobile number	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail	I can access my account through gmail account	Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password	I can receive login confirmation and login credentials	High	Sprint-1
	Dashboard	USN-6	As a user, can access dashboard my to manage my expenses.	Overall credit outlook	Low	Sprint-1
Customer (Web user)	Web User	USN-7	As a Customer, can access the application using the web based platform also	Can have separate web page form	Medium	Sprint-2
Customer Care Executive	Expense Management		As a Customer care Executive, Periodically update and maintains expense application	Can have the login access when Admin permits	High	Sprint-1
Administrator	Creates and Makes the application into use		As a administrator, is responsible for every expense count management.	I can have the direct access to the application	High	Sprint-2

6 PROJECT PLANNING AND SCHEDULING

6.1 SPRINT DELIVERY AND ESTIMATION:

SPRINT	FUNCTIONAL REQUIREMENT	USER STORY NUMBER	USER STORY / TASK	STORY POINTS	PRIORITY	TEAM MEMBERS
Sprint 1	Login, registration	USN 1	As a user I can register and access the application	25	Medium	- Ashik - Dhivyaa - Bebin - Naveen - Balasubramanian

Sprint 2	Adding, viewing expenses	USN 2	As a user, I can add and view my expenses	25	High	- Ashik - Dhivyaa - Bebin - Naveen - Balasubramanian
Sprint 3	Wallet management, Sending alert	USN 3	As a user, I can access my wallet and get an alert when expenses are above limit	25	High	- Ashik - Dhivyaa - Bebin - Naveen - Balasubramanian
Sprint 4	Containe raising and deploying application	USN 4	As a user I can access my application effectively from any device.	25	Medium	- Ashik - Dhivyaa - Bebin - Naveen - Balasubramanian

6.2 SPRINT DELIVERY AND SCHEDULE:

Sprint	Total Story Points	Duration	Sprint Start Date	SprintEnd 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	31 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:

Velocity

Sprint Duration - 6 Days
Velocity of the Team - 20 (points per sprint)
Team's Average Velocity AV = story points / velocity sprint duration = 206 = 3.3

Burndown Chart

Date - October 24th, 2022 - October 29th, 2022

Sprint goal - to complete user registration ,login, and product dashboard

Remaining work
Number of story points left to complete this sprint

Guideline
ideal burn rate
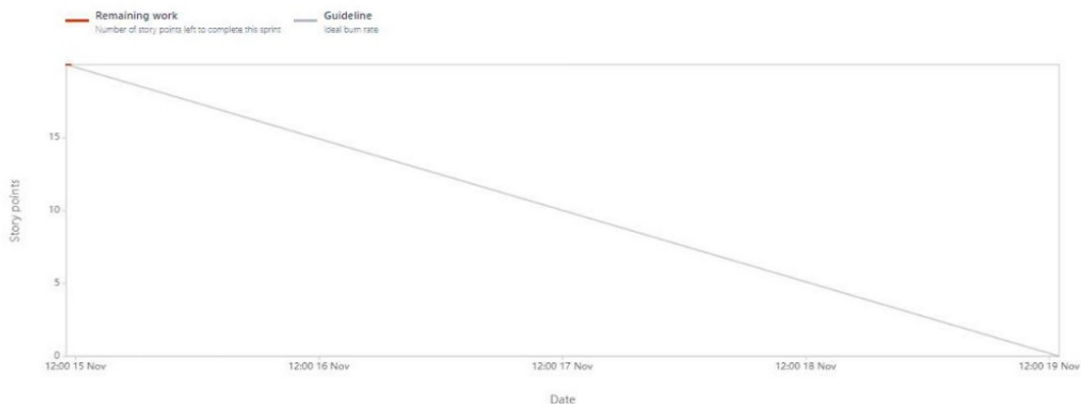
Report: IMSFR Sprint 1

*Issue added after sprint start

7 CODING AND SOLUTIONING:

7.1 FEATURE 1:
USER MANAGEMENT

The application supports multi user access. Users can create accounts and access the application.

7.2 FEATURE 2:
EXPENSE MANAGEMENT

A user can add their expenses and the data is saved to a database and later data is fetched from database and displayed to the user.

7.3 FEATURE 3:
EXPENSE HISTORY

A user can get a statement of his expenses by selecting a sepcific date range.

7.4 FEATURE 4:
WALLET

Each user has a associated wallet, which gets updated when expenses are added.

7.5 FEATURE 5:
WALLET MANAGMENT

A user can configure his wallet and can set his wallet limit as needed.

7.6 FEATURE 6:
EMAIL ALERT

When a user's expenses exceeds the set limit an email alert is sent to the user.

7.7 DATABASE SCHEMA
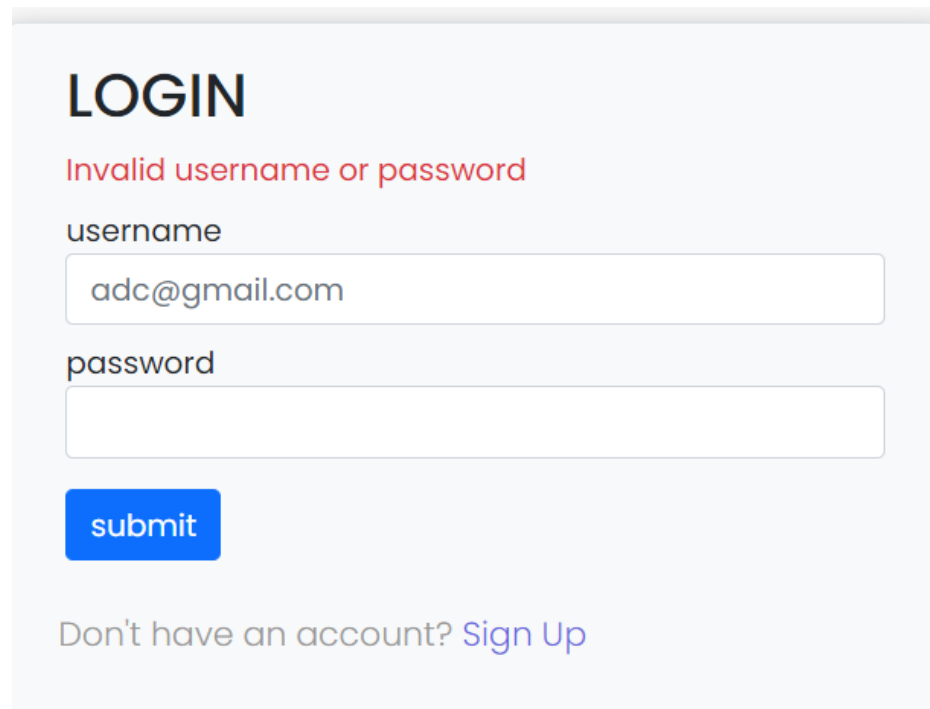
```
CREATE TABLE users (
  username character(30) NOT NULL,
  password character(30) NOT NULL,
  email character(30) NOT NULL
);


CREATE TABLE wallet (
  id BIGSERIAL PRIMARY KEY,
  user_email CHARACTER(30) NOT NULL,
  balance FLOAT DEFAULT 0 NOT NULL,
  wallet_limit FLOAT DEFAULT 1000 NOT NULL,
  FOREIGN KEY (user_email) REFERENCES users(email)
);

CREATE TABLE expenses (
  user_email CHARACTER(30) NOT NULL,
  title character(50) NOT NULL,
  amount float NOT NULL,
  description character(100) NOT NULL,
  dateTime timestamp NOT NULL,
  credit BOOLEAN NOT NULL
);
```

8 TESTING AND TEST CASES:
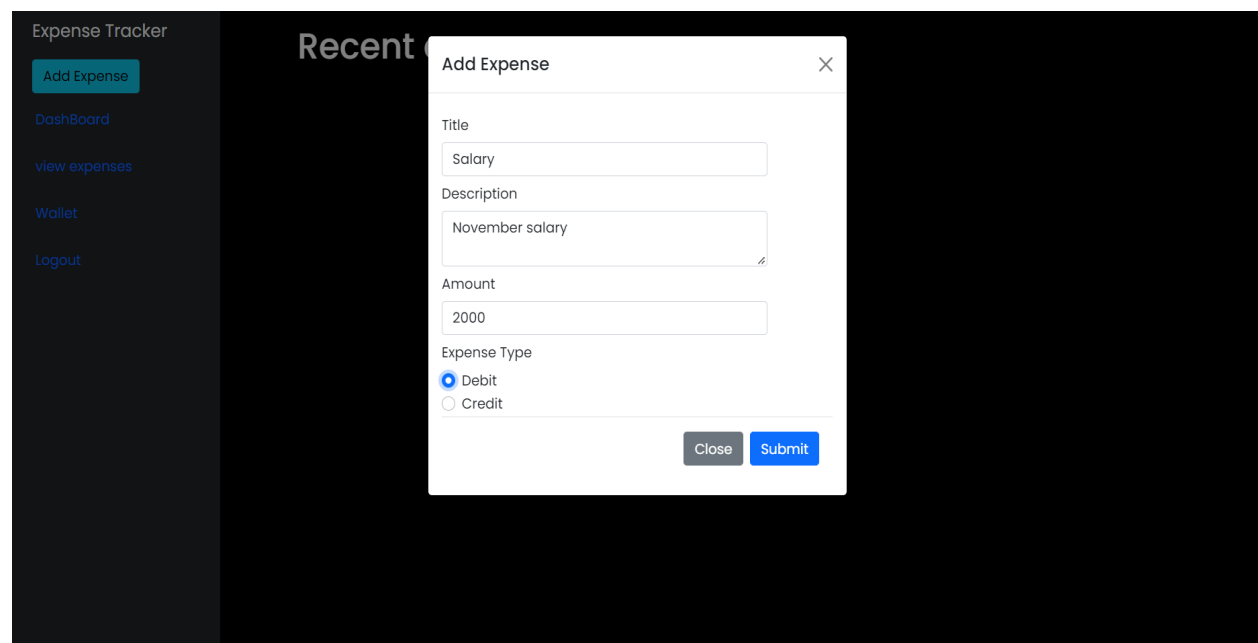
Testing login

LOGIN

Invalid username or password

username

adc@gmail.com

password

submit

Don't have an account? Sign Up

9 RESULTS:

Adding expense

Expense Tracker

Add Expense

DashBoard

view expenses

Wallet

Logout

Recent

Add Expense   ✕

Title

Salary

Description

November salary

Amount

2000

Expense Type

⦿ Debit
○ Credit

Close   Submit

Recent expenses

Expense Tracker

Add Expense

DashBoard

view expenses

Wallet

Logout

Recent expenses

Title: Salary

Description: November salary

Amount: 30000

Type: Credit

Title: Home loan

Description: My home loan

Amount: 20000

Type: Debit

WALLET:

Expense Tracker

Add Expense

DashBoard

view expenses

Wallet

Logout

Wallet Details:

Balance:

10000

Amount Spent:

20000

Amount Earned:

30000

Alert Limit:

40000

Update Wallet Limit

10. ADVANTAGES AND DISADVANTAGES:

ADVANTAGES:

1) Users can easily manage their expenses.
2) Users can get an alert when they overspend.
3) Manage expenses from anywhere.
4) Easily view a statement of my expenses

DISADVANTAGES:

1) Need to pay for deploying and maintaining application.
2) Technical faults in application can only be addressed by the developed team.

11. CONCLUSTION:

Thus, the personal expense tracker application was able to perform all of its intended functionalities properly. The developed application helped a lot of users to manage their personal expenses properly. The system has enabled a user to manage his expenses from anywhere and therby has helped the users in recording each and every small expense a user makes.

12. FUTURE SCOPE

The application has certain future scopes:
i) The wallet balance has to be automatically set to 0 during the start of the month.
ii) Users should get their monthly statements by mail during the last day of the month.

13. APPENDIX

Source Code:

The source code of the application can be found in the following github repository.

https://github.com/IBM-EPBL/IBM-Project-12596-1659454647

Project demo link:

The demo link for the project can be found in the below URL.

http://drive.google.com/add-link