

PROJECT REPORT

Date	19 November 2022
Team ID	PNT2022TMID26477
Project Name	Personal Expense Tracker Application

1. INTRODUCTION:

1.1 PROJECT OVERVIEW:

In simple words, 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 help you with budgeting and accounting and give you helpful insights into 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 expenditures in graphical forms. They have the 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:

Personal finance management is an important part of people's lives. However, everyone does not have the knowledge or time to manage their finances properly. And, even if a person has time and knowledge, they do not bother with tracking their expenses as they find it tedious and time-consuming. Many people in India live on a fixed income, and they find that they don't have sufficient money towards the end of the month to meet their needs. While this problem can arise due to low salary, invariably it is due to poor money management skills.

People tend to overspend without realizing it, which can prove disastrous. Using a daily expense manager can help you keep track of how much you spend every day and on what. At the end of the month, you will have a clear picture of where your money is going. This is one of the best ways to get your expenses under control and bring some semblance of order to your finances.

2. LITERATURE SURVEY:

2.1 EXISTING PROBLEM:

Expense is an outflow of money to another person or group to pay for an item or service or a category of costs. It is a cost that is "paid", usually in exchange for something of value. Examples of our daily expenses include buying recharge cards, buying food, junk, provision, fruits, subscription,

clothing, and so on. According to Kim (2012), expense management refers to the system deployed by a person or business to process, pay, and audit personal or employee-initiated expenses. Expense management includes the policies and procedures that govern such spending, as well as the technologies and services utilized to process and analyze the data associated with it.

Many home budgeting tools already exist but most of them are local-based and some of them are app-based.

Below are identified strategies tailored toward expense management systems

- Spreadsheets: Spreadsheets can be an easy, cheap way to keep track of expenses, but they still have paper receipts that go along with them that can be lost or damaged. This can also be a labor-intensive method and it can be confusing if employees are not good at using spreadsheets
- Paper forms: Paper forms work well with paper receipts. This is also an inexpensive way to manage expense reports. However, this can amount to a lot of manual work of logging and tracking these reports for both employees, approvers, and the people who need to pay the bills in the accounting department
- Software: Software reduces the workload, but it may also be expensive to implement. The Software can solve the major problems of compliance, manual labor, approval time, and the cost of expense reporting overall.

2.2 REFERENCES:

[1] A. Velmurugan, J. Albert Mayan, P. Niranjana, Richard Francis,” EXPENSE MANAGER APPLICATION ” ICCPET 2020- Journal of Physics: Conference Series, December 2020.

[2] Uday Pratap Singh, Aakash Kumar Gupta, Dr. B.Balamurugan,” SPENDING TRACKER: A SMART APPROACH TO TRACK DAILY EXPENSE” Turkish Journal of Computer and Mathematics Education (TURCOMAT), June 2021.

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[4] Anjali Kumari, Utkarsh Raj, Aman Kumar,” D2D EXPENSE TRACKER APPLICATION”, Galgotias University, 2022

[5] S. Chandini, T. Poojitha, D. Ranjith, V.J. Mohammed Akram, M.S. Vani, V. Rajyalakshmi,” ONLINE INCOME AND EXPENSE TRACKER”, International Research Journal of Engineering and Technology (IRJET), March 2022

[6] Atiya Kazi, Praphulla S. Kherade, Raj S. Vilankar, Parag M. Sawant,” EXPENSE TRACKER”, Iconic Research And Engineering Journals, May 2021

[7] Y.Anitha, R.Ranjini, S.Gomathi,” EASY APP FOR EXPANSES MANAGER USING ANDROID”, International Journals for Computer Techniques, April 2016

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2.3 PROBLEM STATEMENT DEFINITION:

Problem Statement (PS)	I am (Customer)	I’m trying to	But	Because	Which makes me feel
PS-1	Employee	Manage my Personal Expense	I can’t do it manually	Don’t have time to track my expense separately	Financially Unstable
PS-2	Homemaker	Manage my House Expense	I am not aware of my personal savings	I am spending all the given money only on my household needs	Impecunious

As mentioned in the above table, still many problems are happening for the people who are earning or saving money. It is difficult for a person to manage their daily expense and to cultivate as well as continue this habit. If a person starts to imbibe this culture of tracking expenses, It will be difficult to do calculations frequently and to store the entries in a note or spreadsheet without any Security.

To avoid such problems, we need to create an expense tracking system where users can be tracking all financial activities and can store, and view previous income and expense reports:

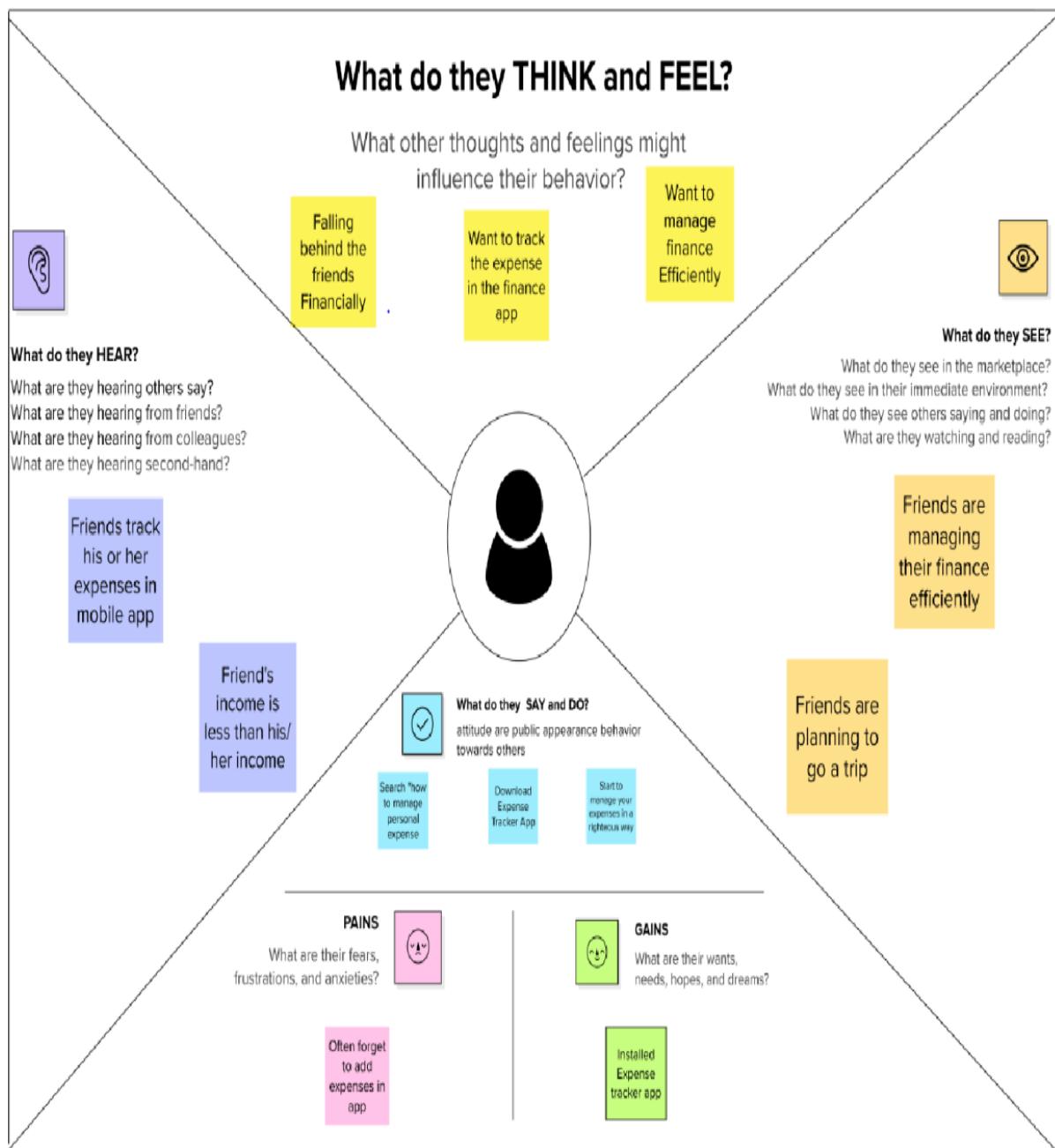
- Users can easily review the reports daily, weekly, monthly, or yearly
- Users can update or delete records

- Users can get notifications daily. Create a Category and Change currency.
- Users can also change Notification time and modify some features.
- Add Expenses and Income

3. IDEATION & PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS:

To gain a deep understanding of user behavior, we created an empathy map to visualize the factors that influence their thought processes. This mapping helped us prioritize users' subconscious needs and align the findings for meaningful innovation and an engaging interface.

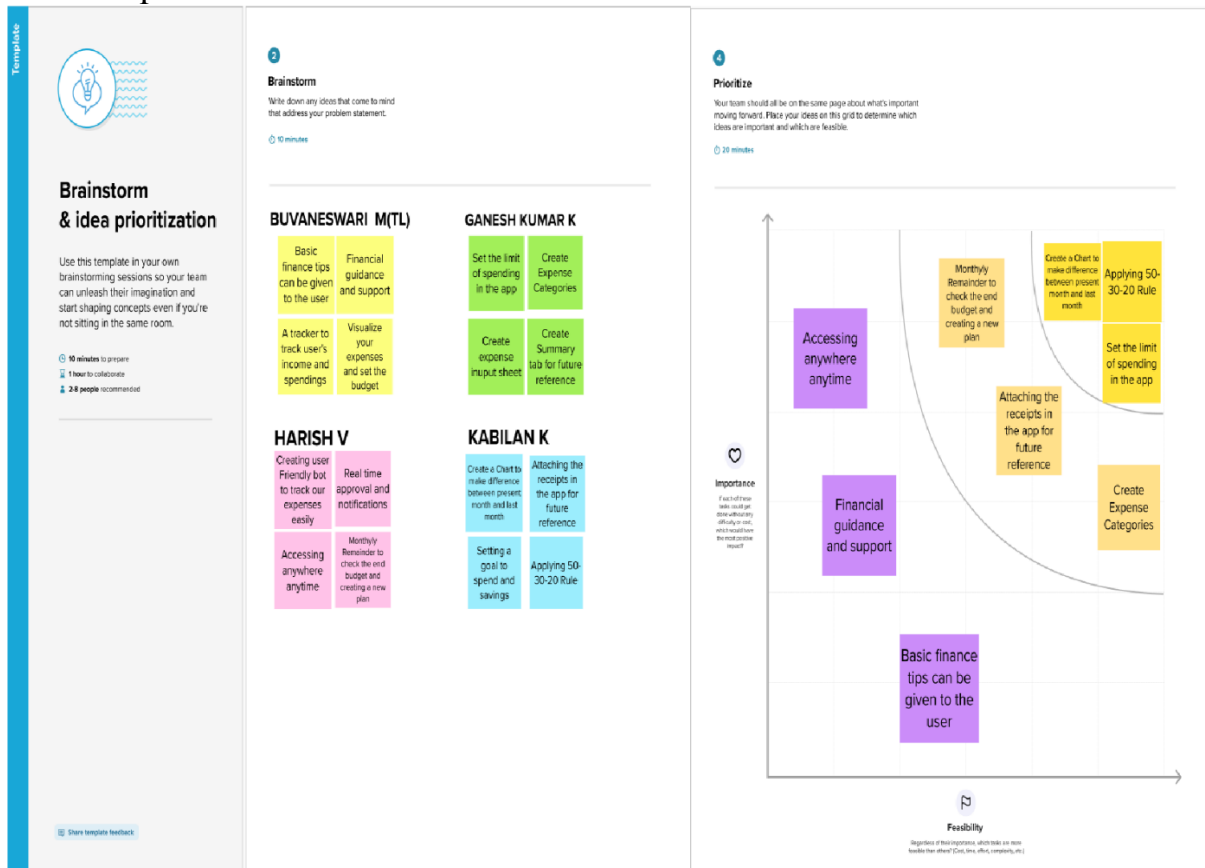


The Key Takeaways for the Personal Expense Tracker App are,

- Notify the user to add expenses.
- Add gamification to motivate users to add expenses.

3.2 IDEATION & BRAINSTORMING:

As a team of four members, we pour our thoughts and ideas through this Brainstorming. Each of us shared 4 Ideas(Total=16 Ideas) and the 9 best ideas were chosen and categorized into low, medium, and High Priorities based on the user's requirements.



- High Priority:
 - Applying 50-30-20 Rule
 - Create a chart to make the difference between the present Month and Last Month
 - Set the limit of Spending in the App
- Mid Priority:
 - Create Expense Categories
 - Attaching the receipts in the app for future reference
 - Monthly Reminder to check the end budget and create a new plan

- Low Priority:
 - i. Accessing anytime anywhere
 - ii. Financial guidance and support
 - iii. Basic finance tips can be given to the user

3.3 PROPOSED SOLUTION:

- Problem To be Solved: As a user, we faced many difficulties in our daily life. In our daily life money is the most important portion and without it, we can't last one day but if we keep on track of all financial data then we can overcome this problem. Most people cannot track their expenses and income one way they can face a money crisis and depression. This situation motivates us to make a web application to track all financial activities.
- Idea / Solution description: The web application "Expense Tracker" is developed to manage daily expenses in a more efficient and manageable way. By using this application we can reduce the manual calculations of the daily expenses and keep track of the expenditure. In this application, the user can provide his income to calculate his total daily expenses, and these results will be stored for each user. In the future, the user can compare his present month's Budget with his last month's budget so that he can maintain his budget. And also the user can set a limit for him to spend money daily
- Novelty / Uniqueness:
 - i. We can record our daily transactions and upload its receipt.
 - ii. We can set our budget according to our needs and savings.
 - iii. We can manage our loans and debts.
 - iv. It also contains a travel mode so we can change to our desired currency as per the latest exchange rates.
 - v. It contains multiple expense categories and allows for better report analysis.
- Social Impact / Customer Satisfaction: With this Personal Expense Tracker Application, the user will be able to allocate money to different priorities and this will also help the user to cut down on unnecessary spending. As a result, the users will be able to save and be able to keep worried at bay. It also helps users budget their money so that they can use it wisely.
- Business Model (Revenue Model):

- i. Cost Effective
 - ii. Need to pay a one-time subscription for permanent use of the application
- Scalability of the Solution:
 - i. Eco-friendly
 - ii. Secure to use
 - iii. Can be used on any device

3.4 PROBLEM-SOLUTION FIT:

Here we have found the problem with our customer related to the personal expense tracker app and then we have realized the solution which solves the customer's problem. Therefore below table is evidence that our project, solves the customer's problem.

Define CS, fit into CC	<div>1. CUSTOMER SEGMENT(S)<div>CS</div></div> <div>Who is your customer? I.e. working parents of 0-5 yo. kids</div> <div><div>1. Home Maker</div><div>2. Employees</div><div>3. Students with Pocket Money</div><div>4. Traders</div><div>5. Travellers around the world</div></div>	<div>6. CUSTOMER CONSTRAINTS<div>CC</div></div> <div>What constraints prevent your customers from taking action or limit their choices of solutions? I.e. spending power, budget, no cash, network connection, available devices.</div> <div><div>1. Spending Time to Analyse the daily or monthly or yearly Expense</div><div>2. Basic Knowledge of Savings</div><div>3. Network Connection</div><div>4. Available Devices</div></div>	<div>5. AVAILABLE SOLUTIONS<div>AS</div></div> <div>Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? I.e. pen and paper is an alternative to digital notetaking</div> <div><div>1. Pen and Paper</div><div>2. Envelope System</div><div>3. Computer Spreadsheet</div><div>4. Budgeting App</div></div>	Explore AS, differentiate
	<div>2. JOBS-TO-BE-DONE / PROBLEMS<div>J&P</div></div> <div>Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one, explore different sides.</div> <div><div>1. Handles Document</div><div>2. Tracks and arrange Receipts</div><div>3. Prevention of Data Loss and Frauds</div><div>4. Mitigate Human Errors</div><div>5. Offering Precise Analytics</div><div>6. Chatbots</div><div>7. Budget vs Actual expenditure</div></div>	<div>9. PROBLEM ROOT CAUSE<div>RC</div></div> <div>What is the real reason that this problem exists? What is the back story behind the need to do this job? I.e. customers have to do it because of the change in regulations.</div> <div>Customer needs to know the importance of the money. Tracking their expenses for at least a week will show them where their money goes and may uncover habits that they can change to save more money.</div>	<div>7. BEHAVIOUR<div>BE</div></div> <div>What does your customer do to address the problem and get the job done? I.e. directly related: find the right solar panel installer; calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)</div> <div>Directly Related:<div><div>1. Categorizing the Expenses</div><div>2. Creating the Monthly Budget</div></div></div> <div>Indirectly Related:<div><div>1. Having 2 Bank accounts</div><div>2. Not sharing their tracking sheet to anyone</div></div></div>	
<div>3. TRIGGERS<div>TR</div></div> <div>What triggers customers to act? I.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.</div> <div>Friends track his or her expenses in mobile app. Since they are managing efficiently they are using their saved money for different needs</div>	<div>10. YOUR SOLUTION<div>SL</div></div> <div>If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality. If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.</div> <div>Creating an expense tracker app that helps the customer to track all transactions like bills, refunds, payrolls, receipts, taxes, etc., on a daily, weekly, and monthly basis and also stores the collected data in cloud as a backup</div>	<div>8. CHANNELS of BEHAVIOUR<div>CH</div></div> <div>8.1 ONLINE What kind of actions do customers take online? Extract online channels from #7</div> <div>8.2 OFFLINE What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.</div> <div>Online: Creating Expense Categories, Input sheets, and Summary Tab. As spending the amount present in bank Automatically it detects the SMS and calculates the expense</div> <div>Offline: Creating a budget. Noting down the daily or monthly expenses. Subtracting Total Budget with actual expense and following the Limit manually.</div>	Identify strong TR & EM	
<div>4. EMOTIONS: BEFORE / AFTER<div>EM</div></div> <div>How do customers feel when they face a problem or a job and afterwards? I.e. lost, insecure > confident, in control - use it in your communication strategy & design.</div> <div>Financially Unstable, Impecunious, Anxiety<< Secured, Wealthy, Contentedness</div>				

4. REQUIREMENT ANALYSIS:

4.1 FUNCTIONAL REQUIREMENTS:

The following are the Functional Requirements for the proposed solution,

- User Registration:
 - i. Registration through Form
 - ii. Registration through Gmail
 - iii. Registration through Phone Number
- User Confirmation:
 - i. Confirmation via Email
 - ii. Confirmation via OTP
- Adding of Expense: Enter the everyday expense
- Chart Representation: Categorical graph on monthly expense
- Limit Salary: To set the limit on our daily spending of money
- Travel Mode: To change our desired currency as per the latest exchange rates

4.2 NON FUNCTIONAL REQUIREMENTS:

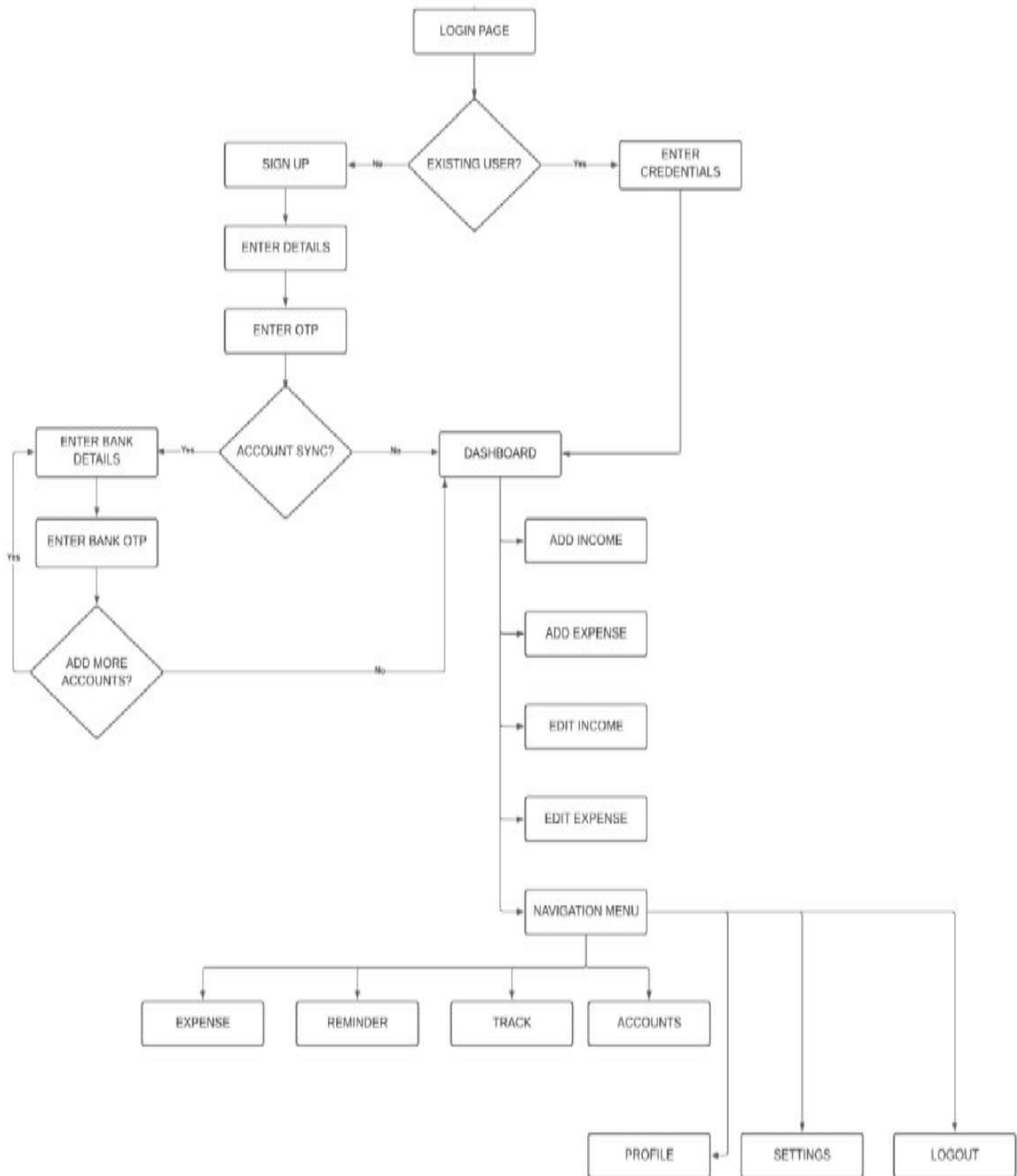
Following are the non-functional requirements of the proposed solution,

- Usability: By using this application we can reduce the manual calculations of the daily expenses and keep track of the expenditure
- Security: Since there is the usage of IBM cloud all the expense data will be safe and secure
- Reliability: There is no risk of data loss
- Performance: Fast and easily manageable. Can be accessed anywhere, anytime, and at anyplace
- Availability: This application must have a 100% up-time
- Scalability: Seamlessly manage your money and budget without any financial paperwork

5. PROJECT DESIGN:

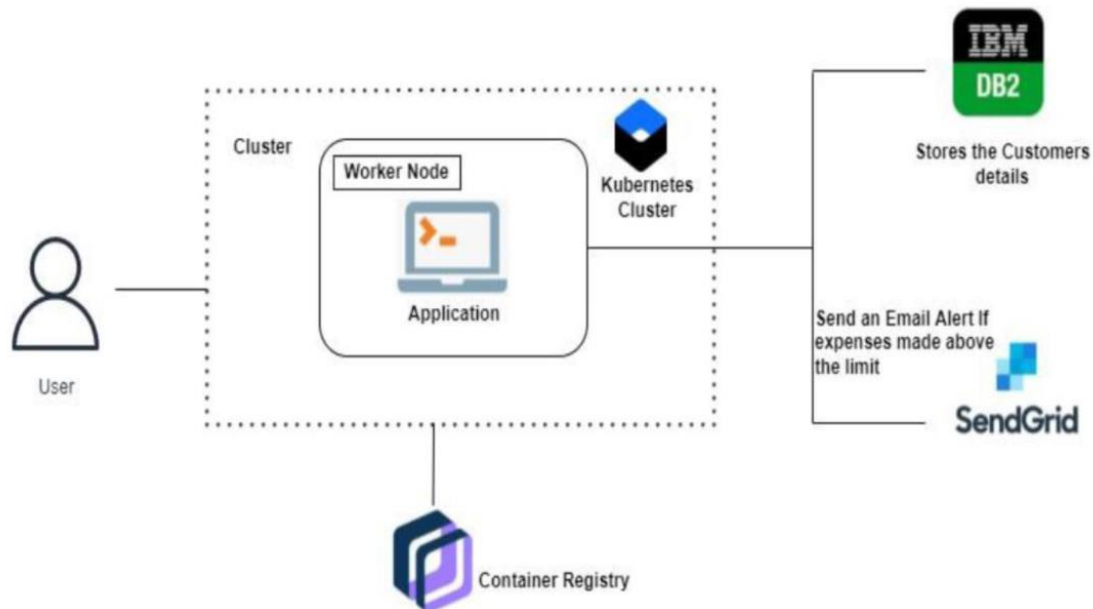
5.1 DATA FLOW DIAGRAMS:

The below Data Flow Diagram visually displays the sequence of activities in a process and who is responsible for those activities.



5.2 SOLUTION AND TECHNICAL ARCHITECTURE:

The architectural description of the proposed solution is given below,



- Cluster: The dynamic system that places and manages containers, grouped in pods, running on nodes, along with all the interconnections and communication channels.
- Kubernetes Cluster: The Kubernetes cluster is a set of nodes that run containerized applications.
- Container Registry: It is a service for storing private container images.
- IBM-DB2: It helps you modernize the management of both structured and unstructured data across on-premises and multi-cloud environments.
- SendGrid: It is a cloud-based SMTP provider that allows you to send email without having to maintain email servers.
- Worker Node: A worker node is a node that runs the application in a cluster and reports to a control plane.

The expense Data stored in the Application will be running inside the cluster with the help of the working node and then the data will be sent to the Control plane where the data of the customer will be stored (IBM-

DB2). If the expense is made above the limit by the user, Then an email alert will be sent with the help of SendGrid.

5.3 USER STORIES:

The user stories given below are an informal, general explanation of the personal expense tracker application which has been made from the perspective of the end-user or customer. The purpose of this user story is to articulate how our piece of work will deliver a particular value back to the customer.

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 can register for the application by entering my mobile number	I can receive OTP and can enter it for verification	High	Sprint-1
		USN-3	As a user, I can register for the application through Gmail	Can access directly through Gmail	Medium	Sprint-1
	Login	USN-4	As a user, I can log into the application by entering email & password	I can use the application	High	Sprint-1
	Dashboard	USN-5	As a user, I can enter my income details	I can view my daily expense	High	Sprint-3
Customer (Web user)	Alert message	USN-6	As a user, if you exceed the budget the user should get the alert message	I get the alert message	High	Sprint-4
Customer Care Executive	Support	USN-7	As a customer care executive, I can solve the login issues and other issues of the application	I can provide support or solution at any time 24*7	Medium	Sprint-4
Administrator	Application	USN-8	As a administrator, I can upgrade or update the application	I can fix the bug which arises for the customers and users of the application	Medium	Sprint-2

6. PROJECT PLANNING & SCHEDULING:

6.1 SPRINT PLANNING AND ESTIMATION:

The objective of this Estimation would be to consider the User Stories for the Sprint by Priority and by the ability of our team to deliver during the Time Box of the Sprint.

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High	Buveneswari M
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Buveneswari M
Sprint-1		USN-3	As a user, I can register for the application through Phone Number	2	Low	Ganesh Kumar K
Sprint-1		USN-4	As a user, I can register for the application through Gmail	2	Medium	Kabilan K
Sprint-1	Login	USN-5	As a user, I can log into the application by entering email & password	1	High	Kabilan K
Sprint-2	Dashboard	USN-6	As a user, I can able to see the details which was given by the user	1	Medium	Harish V
Sprint-2	Dashboard	USN-7	As a user, I can be able to fill my income details and start to track my Expense	2	High	Harish V
Sprint-3	Updation and limiting of Daily Expenses	USN-8	As a user, I can record the daily transactions and limit my expenses to spend	3	High	Ganesh Kumar K
Sprint-3	Storage	USN-9	Recorded data will be stored in IBM cloud	2	Medium	Ganesh Kumar K
Sprint-4	Monitor the System	USN-10	As a administrator I should be able to monitor the cloud system and fix errors before customer	1	Low	Kabilan K

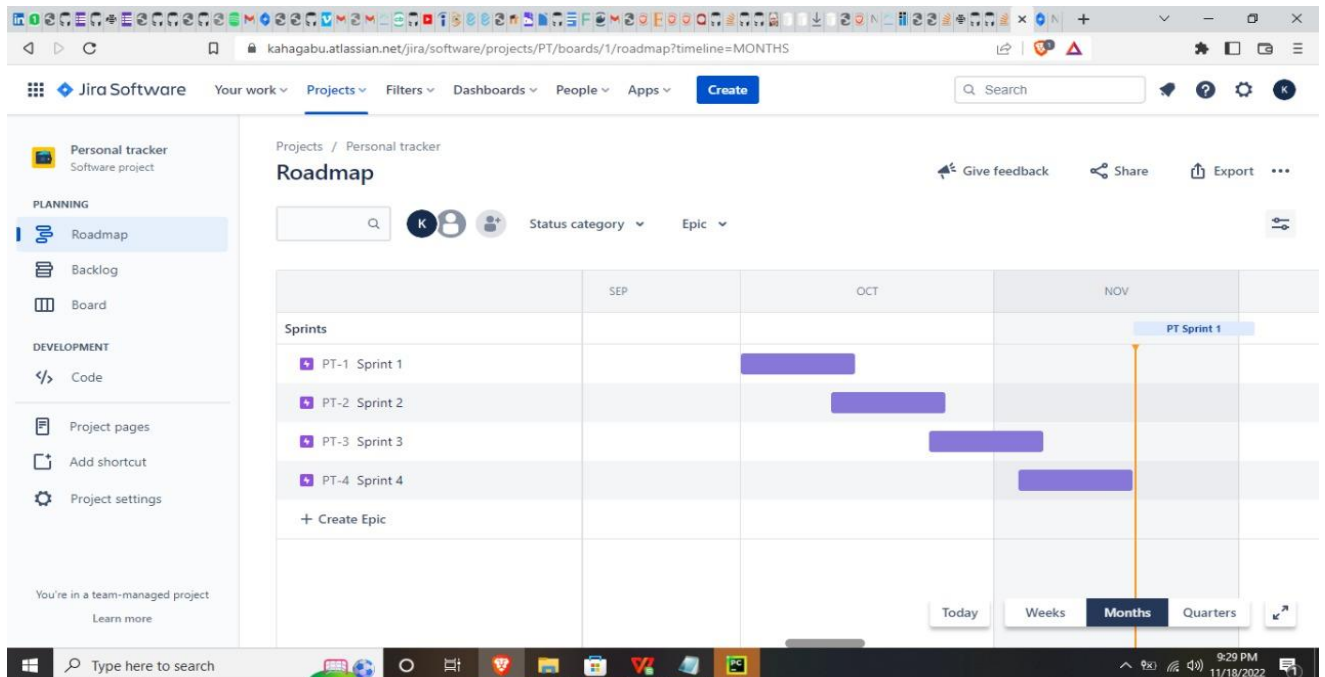
Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	8	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	4	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	5	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	4	19 Nov 2022

6.2 SPRINT DELIVERY SCHEDULE:

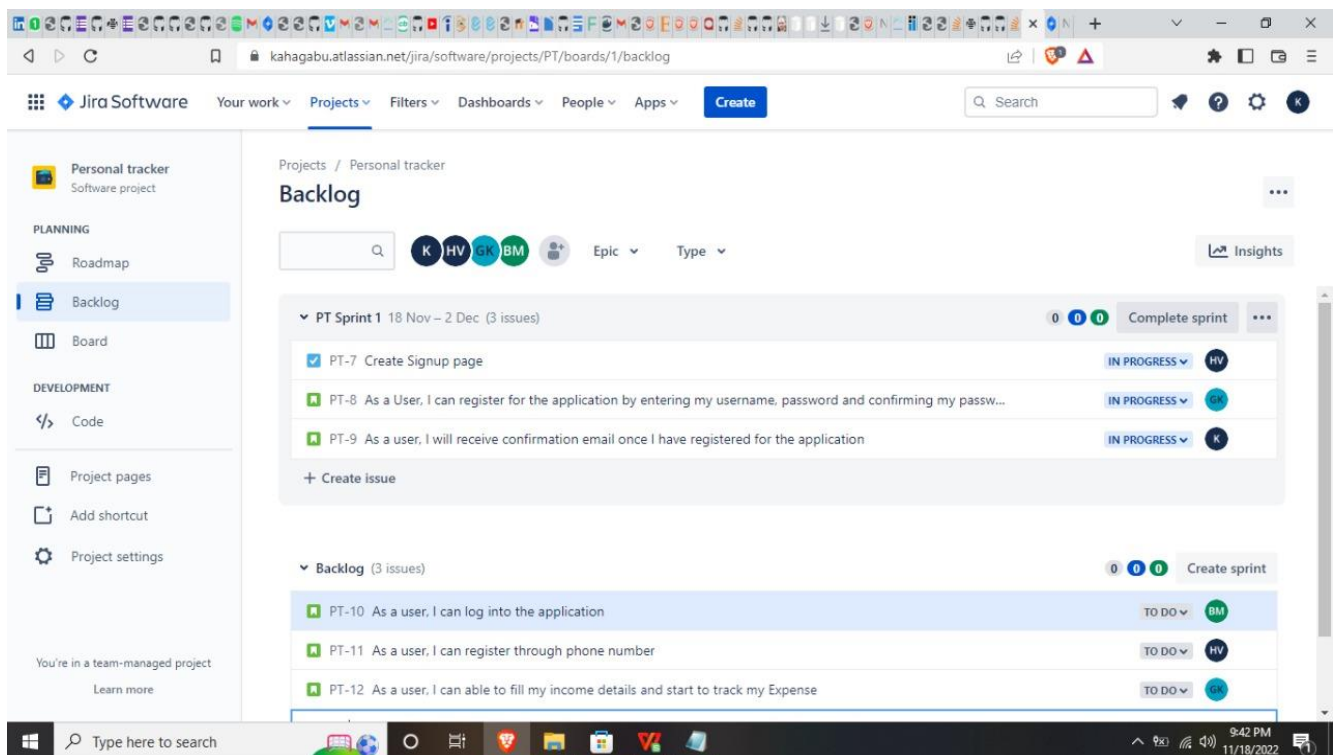
- Registration: Any user can register the application through the Gmail account or by using their Mobile Number
- Code: The HTML, CSS, and Js code has been implemented for the frontend application and Python has been used as a backend to manage and store the expense data
- Software: Some program-oriented devices are created in the Docker app and, IBM-DB2 for better performance.
- SendGrid: An extra software that has been implemented to send an email alert to the user when the expense is made above the limit
- Login: It is used to get into an account for getting further details about the system. The only entryway use the expense tracker app
- Dashboards: It is used to enter the daily expense and to use many features in the application.
- Updating and Limiting of Daily Expenses: The user can able to start entering their daily expense and can set a limit of spending money in a day so that after exceeding the limit automated email alert will be sent
- Storage: To store and secure the expense data IBM-DB2 is used
- Monitor the System: A chatbot has been installed in the app as a user-friendly guide. The administrator of the app must monitor the cloud system, spot and fix the errors
- Testing and development phase 1- During the deployment phase, testing is done to check the working of the application.
- Linking- The app is now linked with IBM cloud.
- Implementation- This app is now put into action by starting to track our expenses in an efficient way.

6.3 REPORTS FROM JIRA

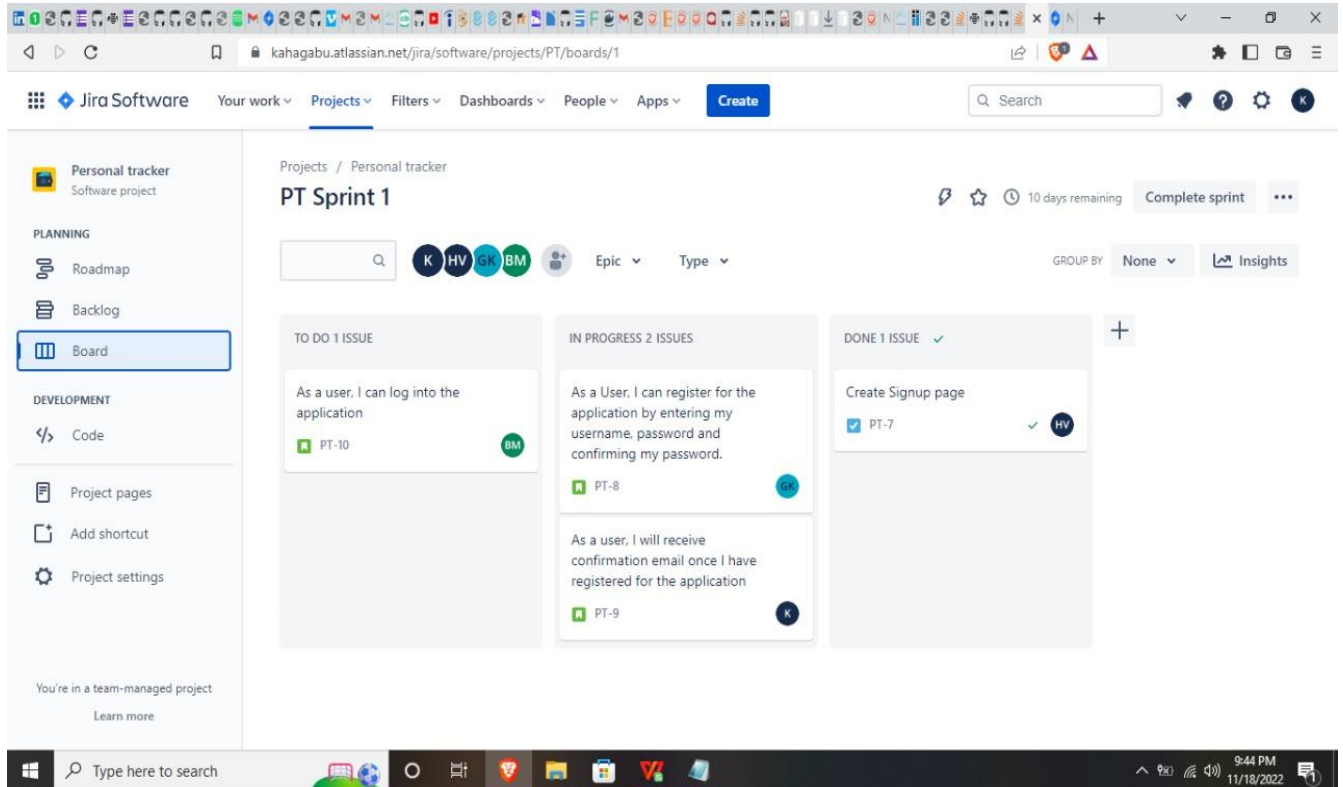
- **Creating Roadmap:** Roadmaps in JIRA Software offer quick and easy planning and are available as part of all JIRA Software plans



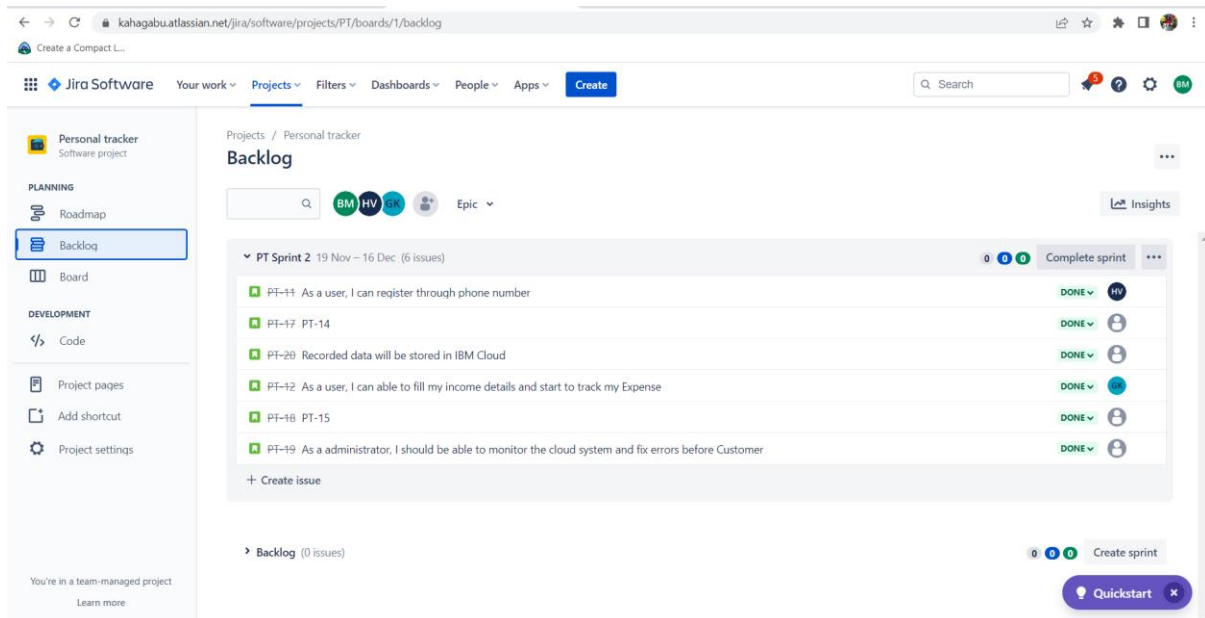
- **Creating Backlog:** A list of issues described in the backlog on what our team is going to do on this project.



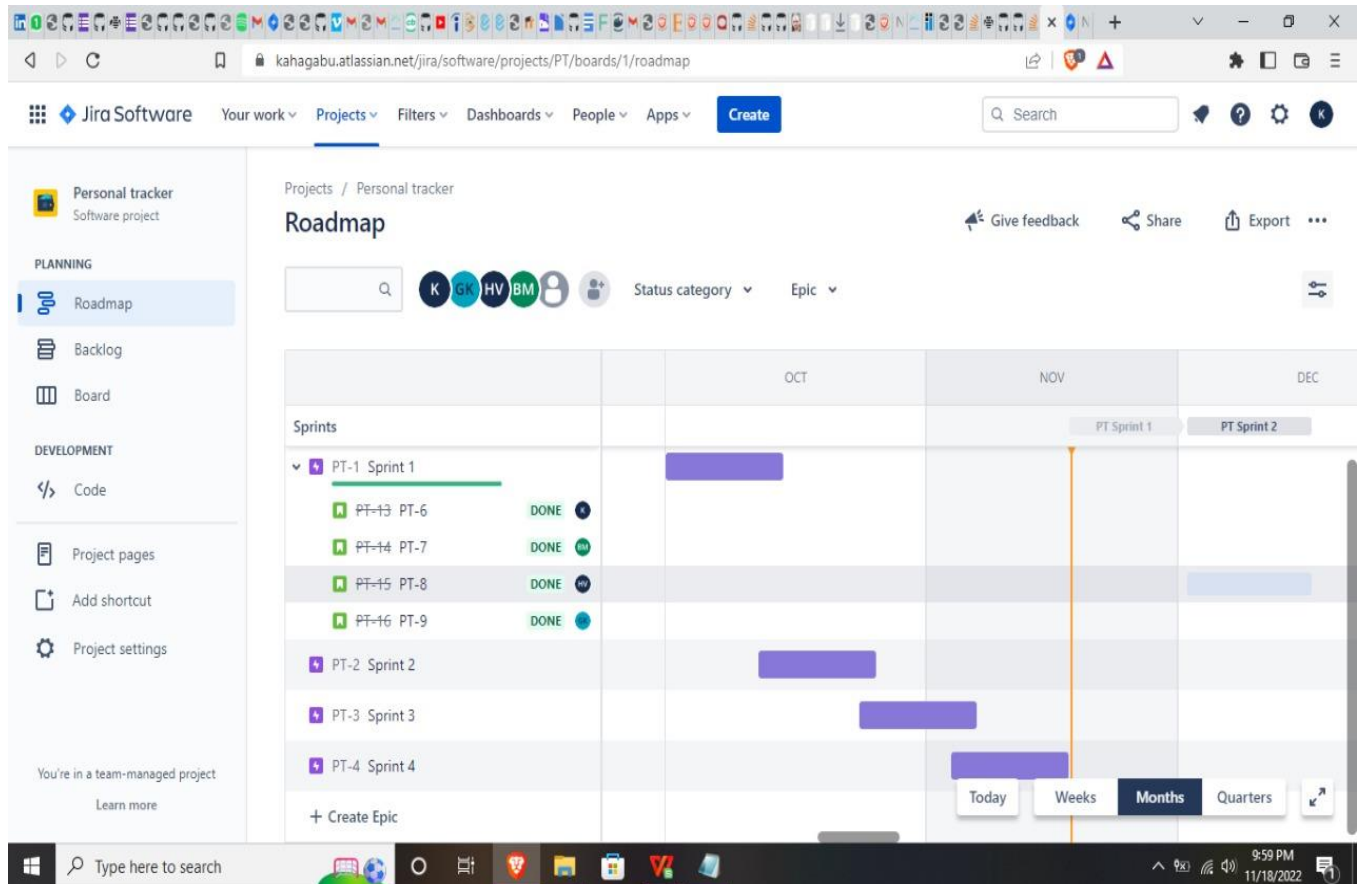
- Processing of Sprints On Board:



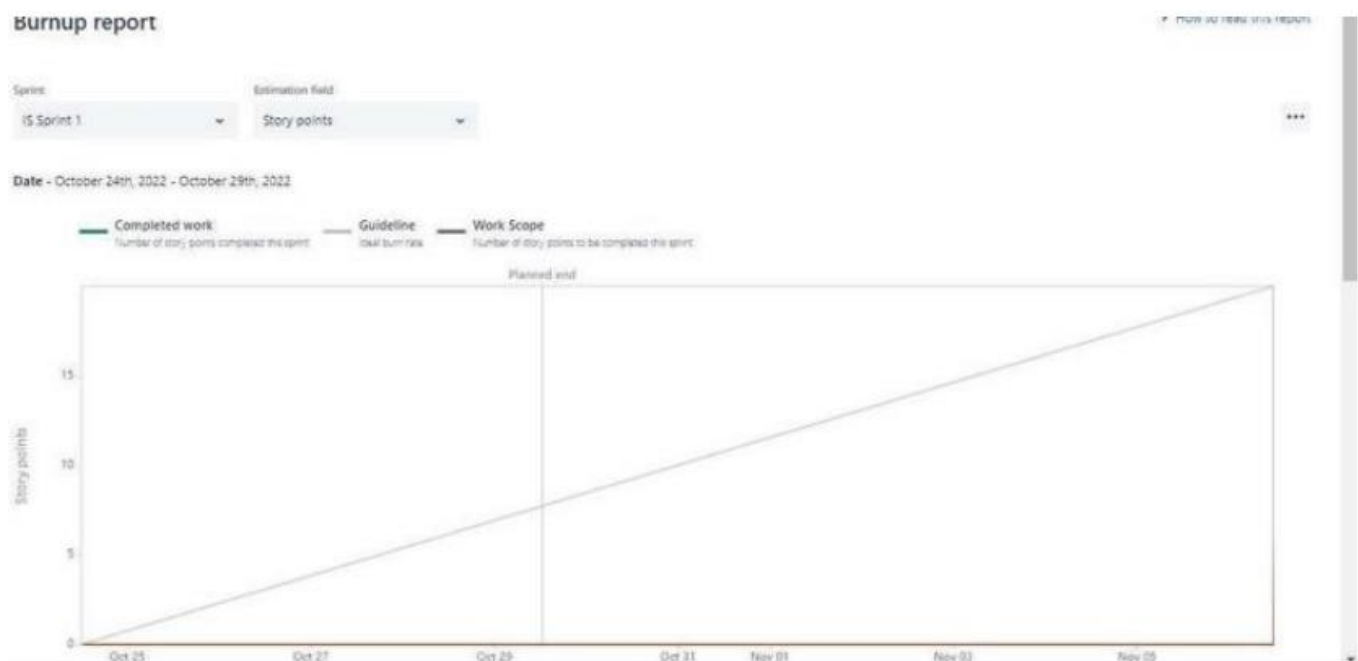
- Completion of Sprint:



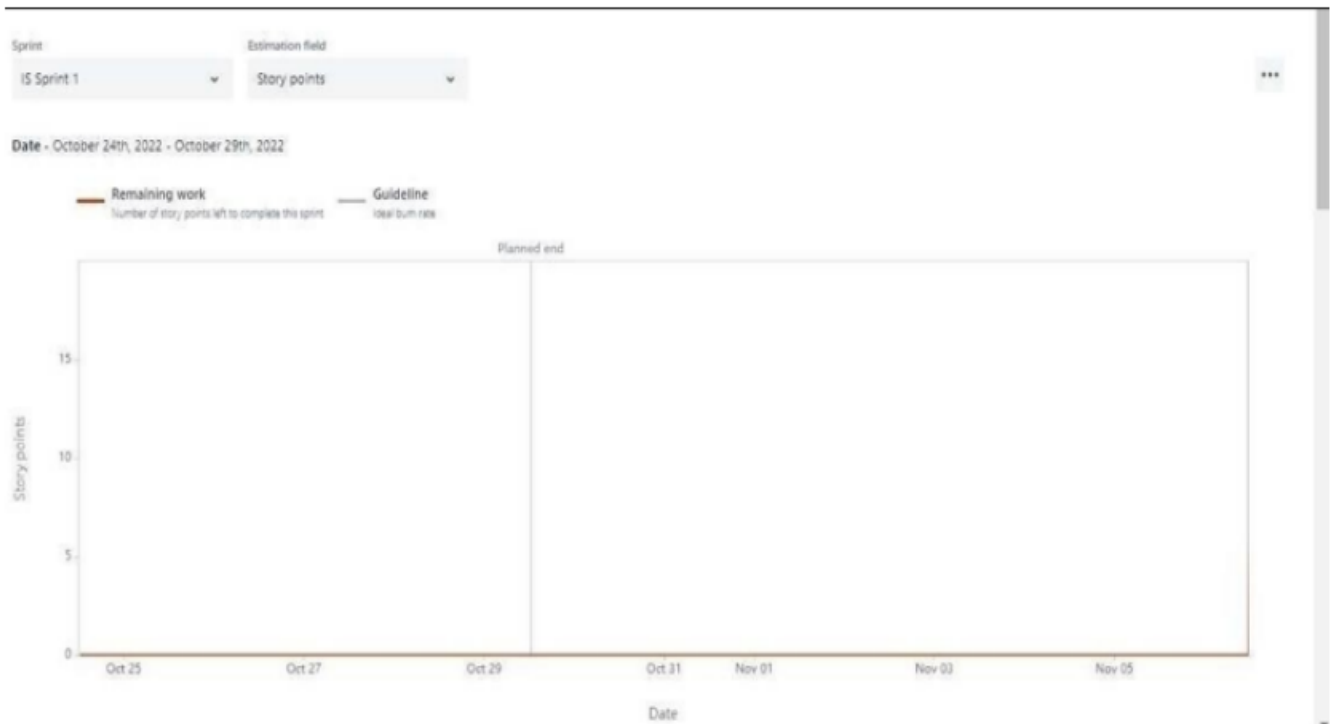
- Roadmap by all Sprints:



- Sprint Burn up RBurn-up



- Sprint Burn Down Report:



7. CODING AND SOLUTIONING:

7.1 FEATURE 1:

- Expense and revenue tracking

This is an essential feature of the app. This corresponds to the primary function of the app, namely, expense tracking and evaluating revenues. It requires incorporating transactions from different interfaces and types of financial products such as mobile wallets, bank accounts, credit cards, etc.

While incorporating these transaction avenues and channels, it is important to prevent risking the details of accounts. By incorporating these avenues, you can clearly understand how much you are spending and how much revenue you are making.

- Managing transaction receipts and records

One of the key functions of an expense tracker is helping you to maintain a well-organized and consolidated record of different expenses. For managing transaction records and arranging them nearly through the tracker app, you need to take images and screenshots of all receipts and keep them saved through the app. When you build an expense tracking app, the receipts and records being saved in the cloud allow you to retrieve and check them whenever needed.

- Processing payments and invoices

An expense tracker app that allows financial transactions through debit cards, bank transfers, credit cards, and net banking will help you make payments quickly against the invoices.

An expense tracker app will also send reminders for payments and match the payments to customer accounts. The app will also help businesses to create professional-looking invoices with the brand logo that can be sent using different channels.

- Monitoring sales

E-commerce businesses can get huge aid from such expense-tracking apps. By syncing the mobile card reader functions with the app, you can track sales and product movement in real time for the store. E-commerce stores need to connect to any of their preferred e-commerce APIs.

- Repeated billing

An expense tracking app helps track the particular bills and transactions that are recurring in nature or the ones that keep coming every once in a while. This feature will particularly focus on keeping track of recurring or repeated expenses, bills, invoices, and checks.

7.2 FEATURE 2:

Code Implementation:

<pre> <!DOCTYPE html> <!-- Created By CodingNepal - www.codingnepalweb.com --> <html lang="en" dir="ltr"> <head> <meta charset="UTF-8"> <meta name="viewport" content="width=device-width, initial-scale=1.0"> <!--<title> Website Layout Codinglab</title>-----> <link rel="stylesheet" href="home.css"> <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/5.15.2/css/all.min.css"/> </head> <body> <nav> <div class="menu"> <div class="logo"> Personal Expense Tracker </div> Home About Services Contact Feedback </div> </nav> <div class="img"></div> <div class="center"> <div class="title">Track Your Expenses</div> <div class="sub title">By yourself</div> <div class="btns"> <button>Learn More</button> <button>Subscribe</button> </div> </div> </body> </html> </pre>	<pre> <!DOCTYPE html> <html lang="en"> <head> <meta charset="UTF-8"> <meta name="viewport" content="width=device-width, initial-scale=1.0"> <link rel="stylesheet" href=""> <title>My Website</title> </head> <body> <!-- Header --> <section id="header"> <div class="header container"> <div class="nav-bar"> <div class="brand"> <h1>Personal Expense Tracker</h1> </div> <div class="nav-list"> <div class="hamburger"> <div class="bar"></div> </div> Home Services About Contact - Login- </div> </div> </div> </section> <!-- End Header --> </pre>
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Here we used HTML, CSS, and JS programs to design the Signup Page, Login page, Home Page, Adding of Expense, Daily Breakdown page, Yearly breakdown page, Limit exceeding notification.

To refer to the Final code:

<https://github.com/IBM-EPBL/IBM-Project-22777-1659858103/blob/main/Project%20Development%20Phase/Sprint%204/templates/final.html>

- **Keep Your Entire Transaction Details at One Place:**

When you are managing your finances manually, there are chances that you could lose some details. An app will help you have everything on a single platform, do not lose out on any transaction detail, as well as keep the procedure transparent and accurate.

- **Get Accurate Analytics:**

Even when you are relying on your excel sheets or even a diary wherein you note down and store all your transactions, but these keep the function only up to this level. An app goes way beyond, providing predictive analysis, ease comparison with last month's finance, categorize what costing is unnecessary or what should be done next month to make for more effective finance management.

- **Arranges and Stores Receipts:**

The most important and major functionality that a user looks for from an expense tracker app is that it should keep record of their entire transactions and helps to track them easily. Whether you are making a payment or receiving, all the transactions should be managed easily with the app.

- **Payment Approvals:**

An expense tracker app works integrated with your bank accounts, online payment apps, debit and credit cards, UPI payments and such. This helps to create a complete tracking of what payments are done, with your permission and approvals.

- **Arrange tax deductions:**

While filing taxes, simply upload your documents to the app. The app will arrange revenues and expenses into various tax categories. Expense management apps will organize your business spendings into the right tax categories, helping you get more of what you earn.

8. TESTING:

8.1 TEST CASES:

Test Case 1: In the Signup page, the user will start to register all his personal details which will be stored safely and securely in the cloud. After registering, the user will get an OTP via e-mail and then he will enter it for verification. After Verifying with the given OTP, the user can start to use the Application.

Test Case 2: On the login page, the user will get into the app by just entering the email ID and Password. If the user forgets the password, then he can reset his password by giving Forgot Password and he can enter his e-mail ID for verification. After that the user can enter and save his New Password. Now getting back to the Login page, the user can get into the app by entering the email ID and his new password. This will redirect him to the Dashboard.

Test Case 3: In the Dashboard, the user can enter his Income and he can update his daily expense in the Add expense Tab. While adding expense, it is necessary to upload the receipt. If it is an Online transaction then the receipt will be saved automatically in the app.

Test Case 4: The user can set a limit of spending his expense. If the user exceeds the limit of spending the expense, then he will get a notification to his mail of overspending his daily expense.

Test Case 5: The Report will be generated at the end of each month. Along with that for a better understanding, a chart will be generated for the comparison of spending expense from previous month to present month. By seeing the report, the user can be able to analyse.

8.2 USER ACCEPTANCE TESTING:

Here we invited five people between 25 and 55 years with different experiences in their financial management, that way we could analyze their perspectives against their profiles, observing pain points and assertions on usability and desirability of the product. In order to have a clear process to follow and compare results, I asked the users to complete 3 main scenarios:

- Scenario 1:
User Goal: Save Money to travel abroad
Task: Use the PARTNER APP for the first time in order to help you save money to travel abroad.

- Scenario 2:
User Goal: Understand how is spending money
Task: Use the PARTNER APP to help you understand how you are spending money
- Scenario 3:
User Goal: Understand where spent money last week
Task: Use PARTNER APP to help you understand details on where you spent money last week

As a result we got the following point that we divide into High and Low priorities. High Priority for points that affect the usability of the project and Low Priority for points that don't affect the core experience of the app.

High Priority:

- When users were on the categories screen, it wasn't clear for them to click on the subcategories (Scenario 2 and 3)
- During the onboarding, some users had problems to understand the information after creating a goal. (Scenario 1)
- On the login screen, some users took time to understand how to start the registering process. (Scenario 1 and 2)
- During the onboarding process, it wasn't clear for some users how the app was connecting to the bank account (Scenario 1 and 2)
- The information on the overview page wasn't clear for some users because it was showing too much information (Scenario 1 and 2)
- On the overview page, some users want more warm messages. (Scenario 1 and 2)

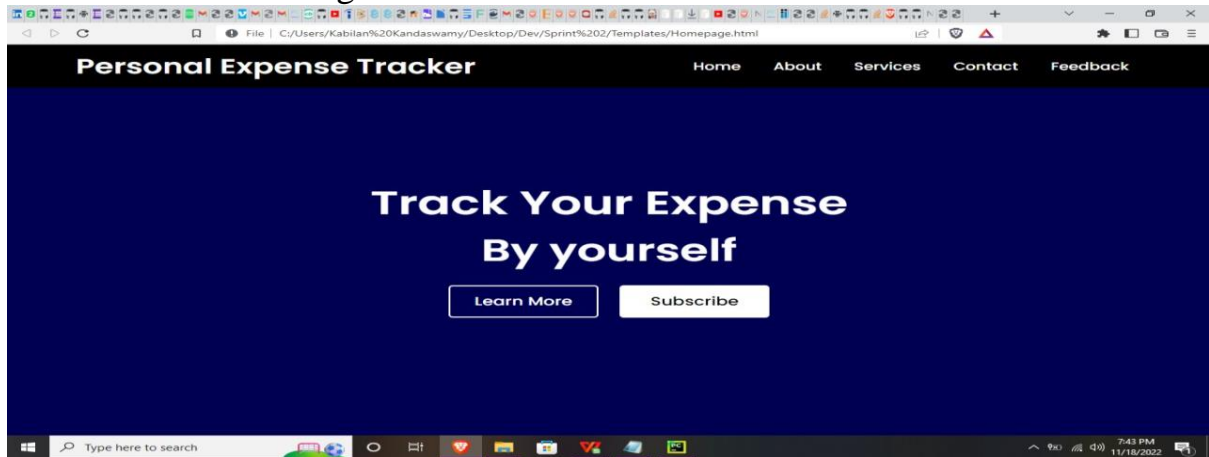
Lower Priority:

- On the categories page, users request for a goal by category, to add more categories and to create a general category. (Scenario 2 and 3)
- Users who already have control of their money asked for more advanced features (Scenario 2 and 3)

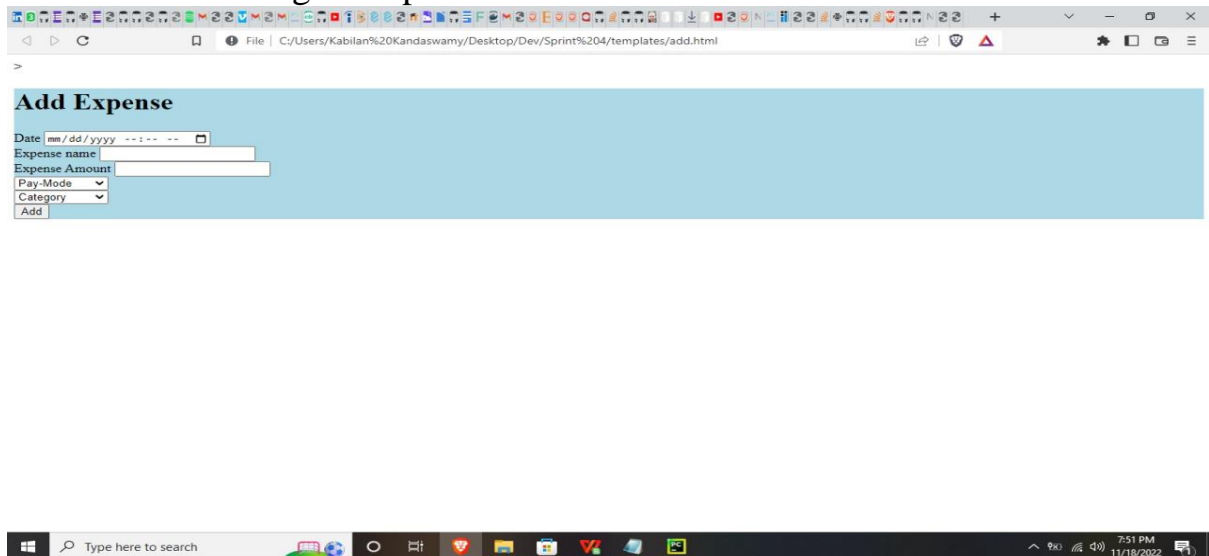
9. RESULTS

9.1 PERFORMANCE METRICS:

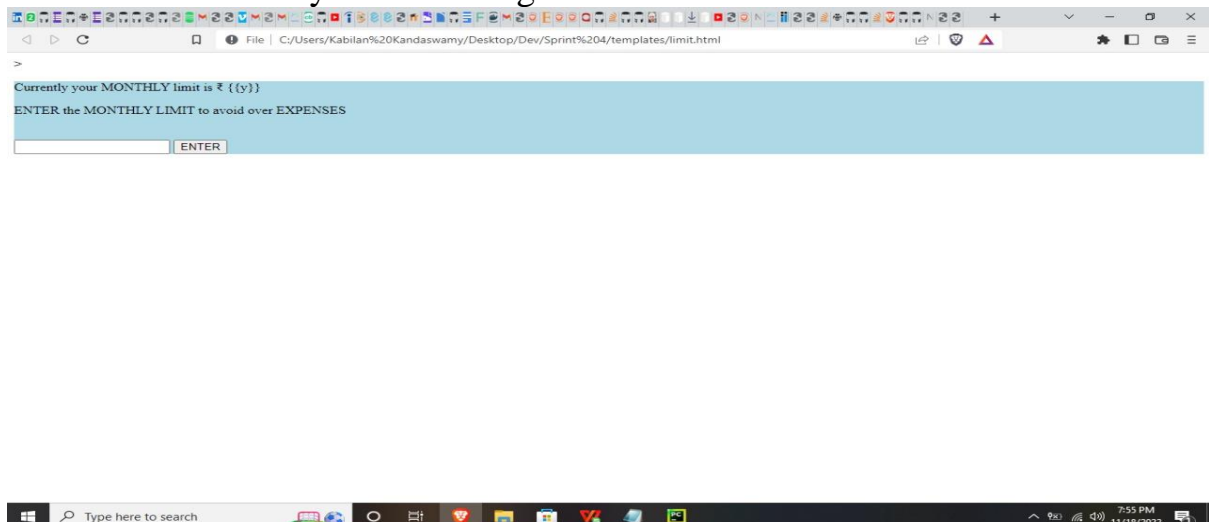
- Home Page:



- Adding of Expense:



- Monthly Limit Setting:



10. ADVANTAGES & DISADVANTAGES:

ADVANTAGES:

- **Faster, Simpler Processes:** Eliminate Paper; automatically route expense reports to approvers and pay approved expenses electronically, reducing the time and cost of processing expenses.
- **Faster employee reimbursement:** Employees recoup out of pocket expenditures much faster than through outmoded manual processes, enhancing employee satisfaction.
- **Fewer delays and errors:** Software reduces likelihood of data-entry errors and can flag duplicate entries and prevent overpayment.
- **Simplified Reporting:** Reporting and analytics provide real time insight into expenses by employee, by project and by category.
- **Enhanced Productivity:** Employees scan receipts using smartphones and submit expense reports from anywhere. Manual tasks are eliminated for users.
- **Increased operational efficiency:** Reduced processing time and cost increases operational efficiency and enables employees to spend more time on higher value task.
- **Expense Policy enforcement:** Using custom rules, Automated expense management, Software flags out of policies expenses.
- **Improved Visibility:** Dashboards display metrics like expenses per employee or per category and the time it takes to approve expense reports.
- **Increased Compliance:** Software simplifies compliance by Automatically categorizing expenses and creating audit trail for tax purposes.

DISADVANTAGES:

- The risk of limited accessibility
- Lack of control of your data
- Internet Connectivity is required
- Lack of visibility into spend data

11.CONCLUSION:

In this project, After making this application we assure that this application will help its users to manage the cost of their daily expenditure. It will guide them and aware them of their daily expenses. It will prove to be helpful for the people who are frustrated with their daily budget management, irritated because of the number of expenses and wishes to manage money and to preserve the record of their daily cost which may be useful to change their way of spending money.

On the off chance that you know precisely where your sum is going much of a stretch see where a few reductions and bargains can be made. Expense Tracker project is for keeping our day-to-day expenditures will helps us to keep record of our money daily. The project what we have created is work more proficient than the other income and expense tracker. The project effectively keeps away from the manual figuring for trying not to ascertain the pay and cost each month. It's a user-friendly application.

Recommendation: Spending Tracker app is usable by anyone willing to manage their expenses and aiming to save for future investments. This app has no range criteria or any kind of profession or gender are focused so it will be used hugely by any other person.

12. FUTURE SCOPE:

In the future, The Online Income and Expense Tracker application can be further enhanced to include following features:

- The application can be extended to include scanning of barcode on the price tag which decreases the effort of entering the data in the input fields.
- Group: Apart from keeping a personal log, we are planning to extend this system to incorporate a shared expense group.
- In further days, there will be mails and pay mode embedded with the app. Also, backup details will be recorded on the database.
- It will have various options to keep record (for example Food, Travelling Fuel, Salary etc.)

- Automatically it will keep on sending notifications for our daily expenditures.

- In today's busy and expensive life, we are in a great rush to make money, but at the end of the month we broke off. As we are unknowingly spending money on titles and unwanted things. So, we have come over with a plan to follow our profit.

- Here user can define their own categories for expense types like food, clothing, rent, and bills where they have to enter the money that has been spent and likewise can add some data in extra data to indicate the expense.

- Sharing records by method for Bluetooth, and Whatsapp can be allowed.

13. APPENDIX:

- Source Code: Uploaded in Github(Final Deliverables)
- GitHub Link: <https://github.com/IBM-EPBL/IBM-Project-22777-1659858103>
- Project Demo Link: <https://youtu.be/e9sJv4KMPxI>