PERSONAL EXPENSE TRACKER APPLICATION

NALAIYA THIRAN PROJECT BASED LEARNING

on

PROFESSIONAL READINESS FOR INNOVATION, EMPLOYABILITY AND ENTREPRENEURSHIP

Project Report Submitted by

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1. INTRODUCTION

1.1 Project overview

Mobile applications are top in user convenience and have over passed the web applications in terms of popularity and usability. There are various mobile applications that provide solutions to manage personal and group expense but not many of them provide a comprehensive view of both cases. In this paper, we develop a mobile application developed for the android platform that keeps record of user personal expenses, his/her contribution in group expenditures, top investment options, view of the current stock market, read authenticated financial news and grab the best ongoing offers in the market in popular categories. With our application can manage their expenses and decide on their budget more effectively.

1.2 Purpose

It also known as expense manager and money manager, an expense tracker is a software or application that helps to keep an accurate record of your money inflow and outflow. Many people in India live on a fixed income, and they find that towards the end of the month they don't have sufficient money to meet their needs.

2. LITERATURE SURVEY

2.1 Existing Problem

The problem of current generation population is that they can't remember where all of the money they earned have gone and ultimately have to live while sustaining the little money they have left for their essential needs. In this time there is no such perfect solution which helps a person to track their daily expenditure easily and efficiently and notify them about the money shortage they have. For doing so have to maintain long ledgers or computer logs to maintain such data and the calculation is done manually by the user, which may generate error leading to losses. Not having a complete tracking.
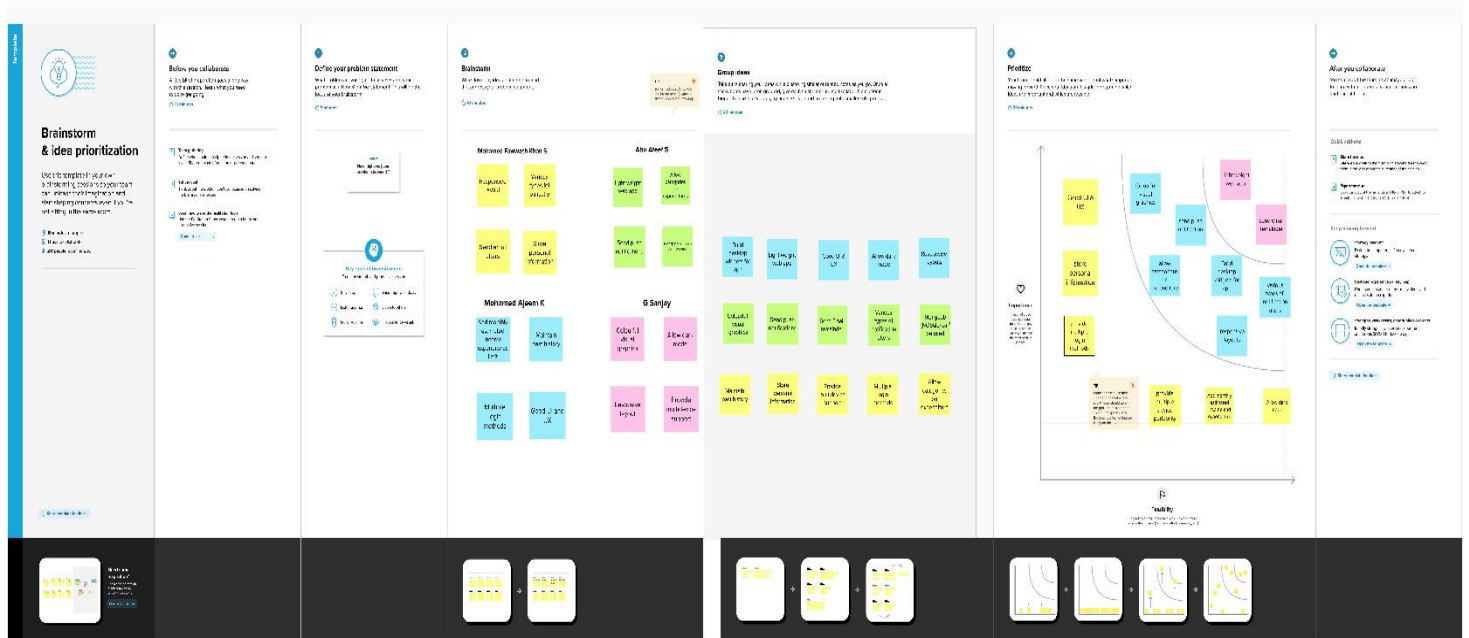
2.2 Reference

•https://nevonprojects.com/daily-expense-tracker-system/

•https://data-flair.training/blogs/expense-tracker-python/

•https://phpgurukul.com/daily-expense-tracker-using-php-and-mysql/

•https://ijarsct.co.in/Paper391.pdf

• https://kandi.openweaver.com/?landingpage=python_all_projects&utm_source=google&utm_medium=cpc&utm_campaign=promo_kandi_ie&utm_content=kandi_ie_search&utm_term=python_devs&gclid=Cj0KCQiAgribBhDkARIsAASA5bukrZgbI9UZxzpoyf0P-ofB1mZNxzc-okUP- 3TchpYMclHTYFYiqP8aAmmwEALw_wcB
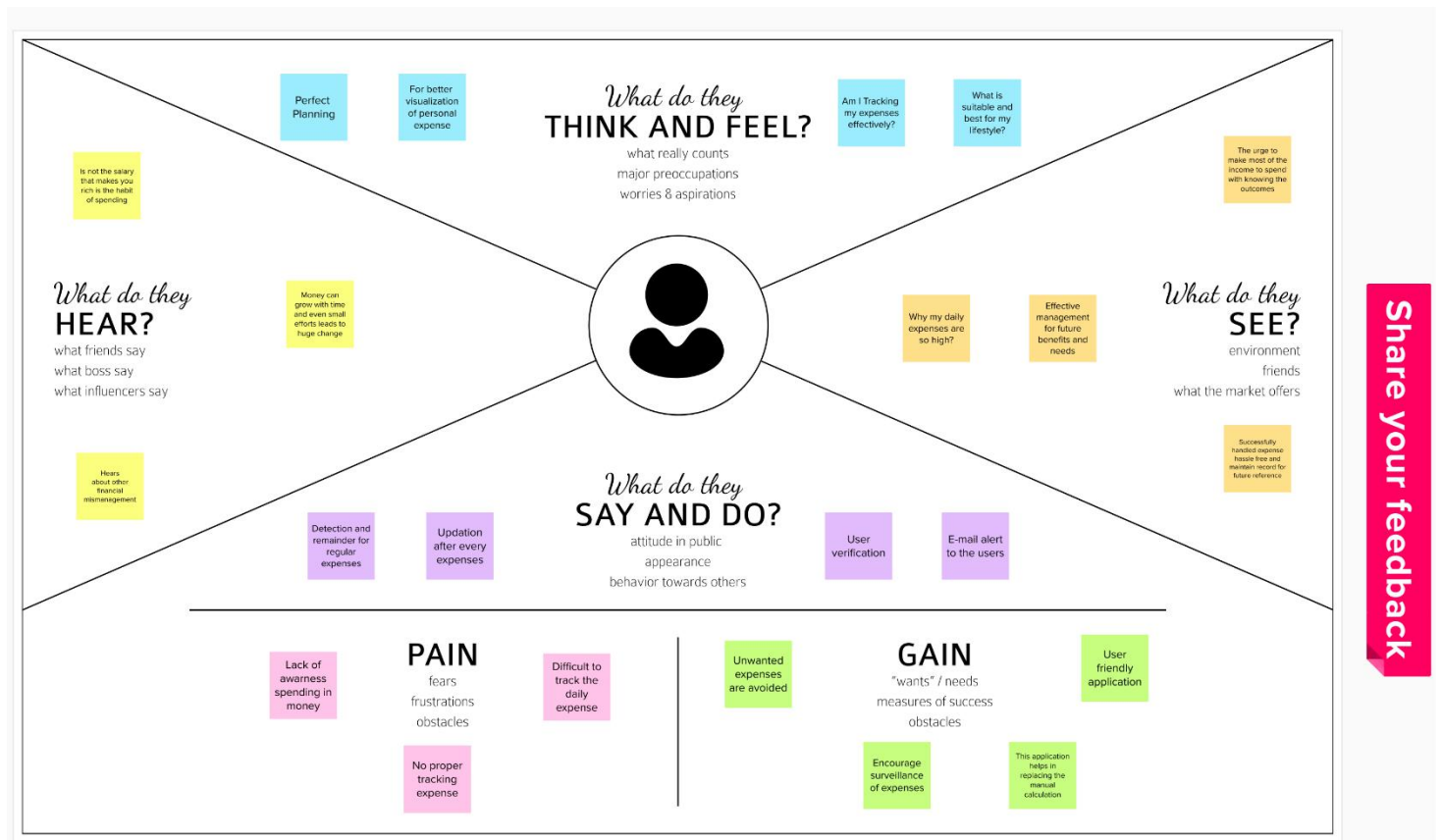
2.2 Problem Statement Definition

This Expense Tracker is a web application that facilitates the users to keep track and manage their personal as well as business expenses. This application helps the users to keep a digital diary. It will keep track of a user's income and expenses on a daily basis. The user will be able to add his/her expenditures instantly and can review them anywhere and anytime with the help of the internet. He/she can easily import transactions from his/her mobile wallets without risking his/her information and efficiently protecting his/her privacy. This expense tracker provides a complete digital solution to this problem. Excel sheets do very little to help in tracking Furthermore, they don't have the advanced functionality of preparing graphical visuals automatically. Notonly it will save the time of the people but also it will assure error free calculations. The user just has to enter the income and expenditures and everything else will be performed by the system. Keywords: Expense Tracker, budget, planning, savings, graphical visualization of expenditure.

3. IDEATION PHASE

3.1 Ideation & Brainstorming

3.2 Prepare Empathy Map

3.3 Proposed Solution

S. No	Parameter	Description
1	Problem Statement (Problem to be solved)	The problem to be solved is that people find it hard to keep track of the monthly expenses and also to prevent compulsive spending.
2	Idea / Solution description	Personal expense tracker application allows the user to add the income and expenses. Accordingly, the expense wallet gets updated. An analysis of the expenditure in graphical form could be obtained. The user also gets notified if the monthly limit for the budget is exceeded.
3	Novelty / Uniqueness	The personal expense tracker application helps the user not only in budgeting and accounting; it also provides the insights about money management through the analysis. The user also gets notified if the monthly limit is exceeded.
4	Social Impact / Customer Satisfaction	The application allows the user to budget, account and get insights on money management. So the users get satisfied with efficient planning.
5	Business Model (Revenue Model)	The application can have free and premium version where the user can upgrade to premium version to access additional features. Also, the premium version may be advertisement free.
6	Scalability of the Solution	This application is not only applicable for personal use but also can be extended to business organisations.

3.4 Problem Solution Fit

Problem-Solution fit canvas 2.0 — PERSONAL EXPENSE TRACKER – TEAM ID (PNT2022TMID47667)

Define CS, fit into

1. CUSTOMER SEGMENT `CS`
The person who is busy and couldn't manage their expenses regularly and we will keep track of the expenses regularly and will notify them.

6. CUSTOMER CONSTRAINT `CC`
Taking high expenses, requires constant devices network connection to sync acdevices.

5. AVAILABLE SOLUTIONS `AS`
The application can be extended to include scanning of barcods on the price tag which decrease the effort of entering the data in the input fields.

A notification system can be enabled incase when the expenses cross over the Income generated by the user to warn him or her about the situation.

Explore AS,

Focus on J&P, tap into BE, understand

2. JOBS-TO-BE-DONE / PROBLEMS `J&P`
Personal finance application will ask user 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.

9. PROBLEM ROOT CAUSE `RC`
People think that their bank details might have sold to an unauthorised person. People think that their personal details might have sold.

Customer have to do it because of the change in the regulations
i.e. customers have to do it because of the change in regulations.

7. BEHAVIOUR `BE`
The customer believes more in manual tracking of their expenditure rather than virtual tracking applications.

The customer will exhibit this behaviour until an authenticated application serves it's purpose rightly.

Focus on J&P, tap into BE, understand

Identify strong TR & EM

3. TRIGGERS `TR`
The customer is triggered by their surrounding talking about the approach of tracking the expenses

4. EMOTIONS: BEFORE / AFTER `EM`
BEFORE:
Fear at spending lot of money and couldn't manage their expenses.

AFTER:
They can manage their expense regularly.

10. YOUR SOLUTION `SL`
The proposed system makes a attempt to track the user expenses daily and if their expenses exceeds the fixed budget we will notify them through mail and user will get an analysed report.

If the user spends large amount of money in a particular area continuously, we will notify them to reduce the spending in that particular area

8. CHANNELS of BEHAVIOUR `CH`
8.1   Online: Customer will take action as evaluate their expenses and can track it in online. The customer will exhibit this behaviour until an authenticated application serves it's purpose rightly.

8.2   Offline: Maintain a separate diary, note the expenses at the moment and calculate the daily expenses at the end of the day

Extract online & offline CH of BE

4. Requirement Analysis

4.1 Functional Requirements:
Following are the functional requirements of the proposed solution.

| FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through Linked IN
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User Access / Login	Login through email id & password
FR-4	User Data	Adding user expenses through input field & categories.
FR-5	User Alert	Alerting through their email id.

4.2 Non-functional Requirements:

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

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Capture and organize your payment receipts to keep track of your expenditure Monitoring the income and tracking all expenditures
NFR-2	**Security**	Increase your team productivity by providing access control to particular users through custom permissions.
NFR-3	**Reliability**	Increase efficiency and customer satisfaction with an app aligned to their needs. Seamlessly integrate with existing infrastructure
NFR-4	**Performance**	Deliver an outstanding customer experience through additional control over the app.
NFR-5	**Availability**	Website, Android App.
NFR-6	**Scalability**	Available anytime at anywhere. It have an ability of computing process to be used in the range of capabilities.

5. Project Design

5.1 Data Flow Diagrams

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored
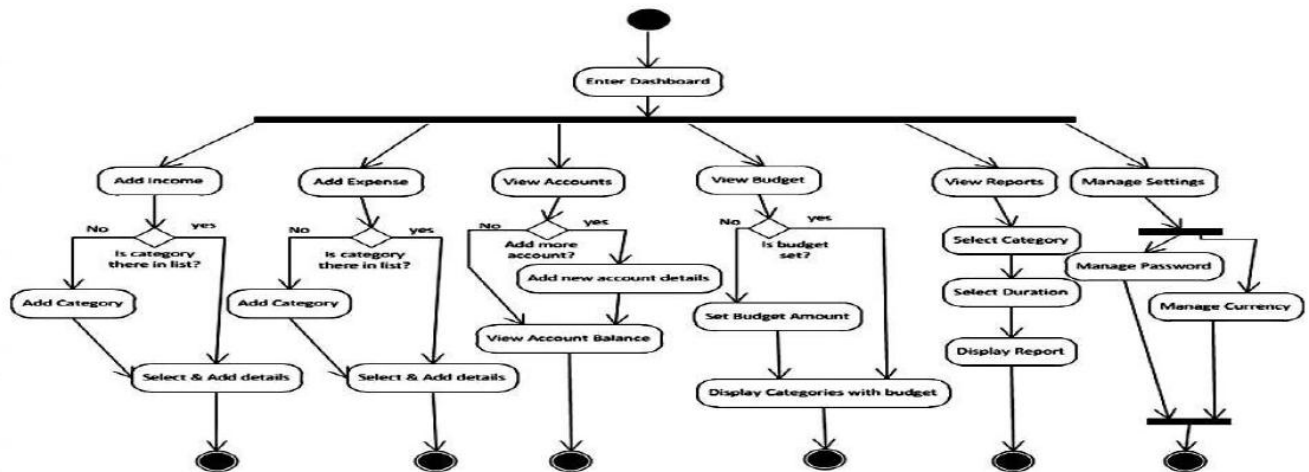
5.2 Solution Architecture

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to: Find the best tech solution to solve existing business problems.

Describe the structure, characteristics, behaviour, and other aspects of the software to project stakeholders.

Define features, development phases, and solution requirements.

Provide specifications according to which the solution is defined, managed, and delivered.
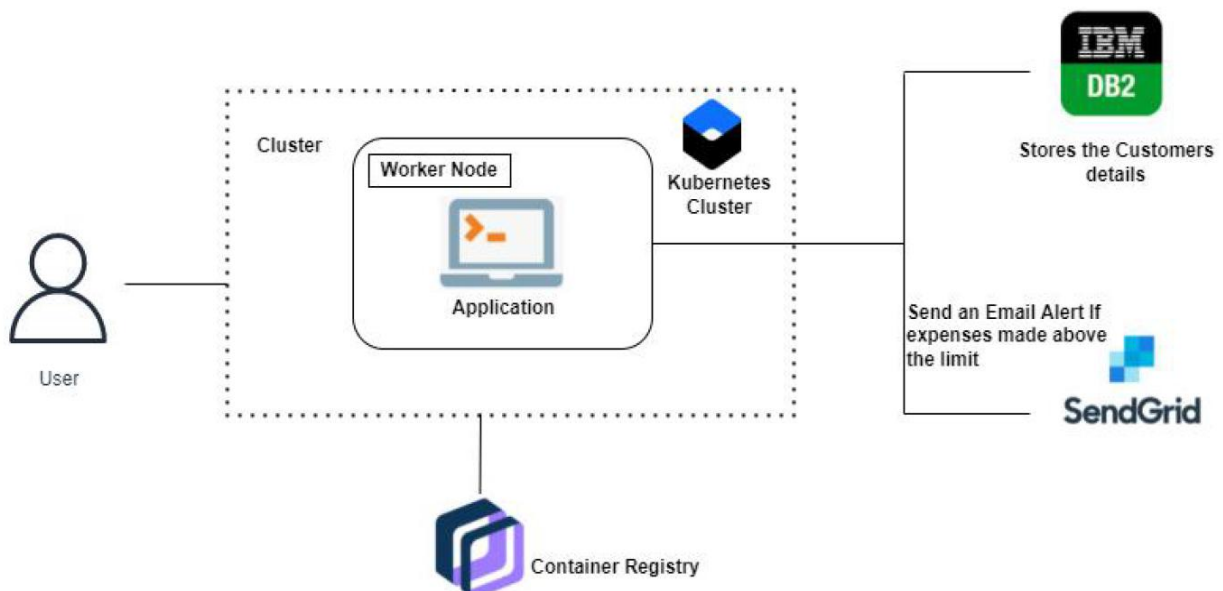
Technical Architecture

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table2

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js / React Js 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 Cloudant 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: Cloud 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	Technology of Opensource 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 application (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

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 Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail		Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password	The mail id and password should be the same.	High	Sprint-1
	Dashboard	USN-6	As a user I can enter my income and expenditure details	I can view my daily expenses.	High	
Customer Care Executive		USN-7	As a customer executive, I can solve the log in issue and other issues of the application	I can provide support or solution at any time.	High	
Administrator		USN-8	As an Administrator I can upgrade or update the application	I can fix the bug which arises for the customers and users of the application.	Medium	

6. Project Planning & Scheduling

6.1 Sprint Planning & Estimation

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

Use the below template to create product backlog and sprint schedule

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.	8	High	Mohamed Fawwash Khan, Abu Afeef
Sprint-1	Login	USN-2	As a user, I can log into the application by entering email & password	8	High	Mohamed Ajeem, Sanjay
Sprint-1	Validating user	USN-3	Checking whether new user or existing user of the application	4	Medium	Mohamed Fawwash Khan, Abu Afeef
Sprint-2	Add Expense	USN-4	As a user, I can add the day-to-day expense to the application	8	High	Mohamed Ajeem, Sanjay
Sprint-2	Edit and Delete Expense	USN-5	As a user, I can edit and delete the previously created expense	8	High	Mohamed Fawwash Khan, Abu Afeef
Sprint-2	Creating time-based filters in history.	USN-6	As a user, I can see the time-based history of expenses.	4	Medium	Mohamed Ajeem, Sanjay
Sprint-3	Integrating with pie charts for analysis	USN-7	As a user, I can view diagrammatic representation of expenses	8	High	Mohamed Fawwash Khan, Abu Afeef
Sprint-3	Enabling limit feature	USN-8	As a user, I can set monthly limit to expenses	4	Medium	Mohamed Ajeem, Sanjay
Sprint-3	Sending Email Alerts	USN-9	As a user, I will receive a mail if I cross a limit	8	High	Mohamed Fawwash Khan, Abu Afeef
Sprint-4	Testing	USN-9	Testing the application with various tools	10	High	Mohamed Ajeem, Sanjay
Sprint-4	Deployment	USN-9	Deployment of the application	10	High	Mohamed Fawwash Khan, Abu Afeef

6.2 Sprint Delivery Schedule

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

7. Coding and Solutioning:

7.1 Features

Feature 1: Add Expense

Feature 2: Update Expense

Feature 3: Delete Expense

Feature 4: Set Limit

Feature 5: Send Alert Emails to users

7.2 Other Features

Track your expenses anywhere, anytime. Seamlessly manage your money and budget without any financial paperwork. Just click and submit your invoices and expenditures. Access, submit, and approve invoices irrespective of time and location. Avoid data loss by scanning your tickets and bills and saving in the app. Approval of bills and expenditures in real-time and get notified instantly. Quick settlement of claims and reduced human errors with an automated and streamlined billing process.

8.TESTING

8.1 TESTING:

- •Login Page (Functional)

- •Login Page (UI)

- •Add Expense Page (Functional)

8.2User Acceptance Testing:

1.Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of [product name] project time of the release to User Acceptance Testing (UAT)

2. Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and how they are resolved.

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	10	4	2	8	15
Duplicate	1	0	3	0	4
External	2	3	0	1	6
Fixed	9	2	4	11	20
Not Reproduced	0	0	1	0	1
Skipped	0	0	1	1	2
Won't Fix	0	5	0	1	8
Totals	22	14	11	22	51

3. Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested

Section	Total Cases	Not Tested	Fail	Pass
Interface	7	0	0	7
Login	43	0	0	43
Logout	2	0	0	2
Limit	3	0	0	3

9. RESULTS

Homepage

Signup

Login

Adding Expense

Expense History

Expense Limit

9.1 Performance Metrics

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Commnets	TC for Autom	BUG ID	Executed By
LoginPage_TC_001	Functional	Home Page	Verify user is able to see the Login/Signup popup when user clicked on My account button	None	1. Go to website 2. Home page appears	Username: Fawwash Khan password: 123456	Login/Signup popup should display	Working as expected	Pass	-			Mohamed Fawwash Khan S
LoginPage_TC_002	UI	Home Page	Verify the UI elements in Login/Signup popup	Home	1.Go to website 2.Enter details and click login	Username: Fawwash Khan password: 123456	Application should show below UI elements: a.email text box b.password text box c.Login button with orange colour d.Newcustomer? Create account linke.Last password? Recovery password link	Working as expected	Pass	-			Mohamed Fawwash Khan S & Abu Afeef S
LoginPage_TC_003	Functional	Home page	Verify user is able to log into application with Valid credentials	Username & password	1.Go to website 2.Enter details and click login	Username: Fawwash Khan password: 34567	User should navigate to user accounthomepage	Working as expected	Pass	-			Mohamed Ajeem K & Sanjay G
LoginPage_TC_004	Functional	Login page	Verify user is able to log into application with InValid credentials	Username & password	1.Go to website 2.Enter details and click login	Username: Fawwash Khan password: 123456	Application should show 'Incorrectemailor password' validation message.	Working as expected	Pass	-			Mohamed Fawwash Khan S
LoginPage_TC_004	Functional	Login page	Verify user is able to log into application with InValid credentials	Login first	1.Go to website 2.Enter details and click login	Username: Fawwash Khan password: 123456	Application should show 'Incorrectemailor password' validation message.	Working as expected	Pass	-			Abu Afeef S
LoginPage_TC_005	Functional	Login page	Verify user is able to log into application with InValid credentials	Login first	1.Go to website 2.Enter details and click login	Username: Fawwash Khan password: 123456	Application should show 'Incorrectemailor password' validation message.	Working as expected	Pass	-			Mohamed Ajeem K
AddExpensePage_TC_005	Functional	Add Expense page	Verify whether user is able to addexpense or not	Have some expense to add	1. Add date, expense name and other details 2.Check if the expense gets added	add rent = 6000	Application adds expenses	Working as expected	Pass	-			Sanjay G

10.ADVANTAGES AND DISADVANTAGES

ADVANTAGES:

One of the major pros of tracking spending is always being aware of the state of one's personal finances. Tracking what you spend can help you stick to your budget, not just in a general way, but in each category such as housing, food, transportation and gifts. While a con is that manuallytracking all cash that is spent can be irritating as well as time consuming, a pro is that doing this automatically can be quick and simple. Another pro is that many automatic spending tracking software programs are available for free. Having the program on a hand-held device can be a main pro since it can be checked before spending occurs in order to be sure of the available budget.

DISADVANTAGES:

A con with any system used to track spending is that one may start doing it then taper off until it's forgotten about all together. Yet, this is a risk for any new goal such as trying to lose weightor quit smoking. If a person first makes a budget plan, then places money in savings before spending any each new pay period or month, the tracking goal can help. In this way, tracking spending and making sure all receipts are accounted for only needs to be done once or twice a month. Even withconstant tracking of one's spending habits, there is no guarantee that financial goals will be met. Although this can be considered to be a con of tracking spending, it could be changed into a pro if one makes up his or her mind to keep trying to properly manage all finances.

11.CONCLUSION

A comprehensive money management strategy requires clarity and conviction for decision-making. You will need a defined goal and a clear vision for grasping the business and personal finances. That's when an expense tracking app comes into the picture. An expense tracking appis an exclusive suite of services for people who seek to handle their earnings and plan their expenses and savings efficiently. It helps you track all transactions like bills, refunds, payrolls, receipts, taxes, etc., on a daily, weekly, and monthly basis.

12. FUTURE SCOPE

•Achieve your business goals with a tailored mobile app that perfectly fits your business.

•Scale-up at the pace your business is growing.

•Deliver an outstanding customer experience through additional control over the app.

•Control the security of your business and customer data.

•Open direct marketing channels with no extra costs with methods

such as pushnotifications.

•Boost the productivity of all the processes within the organization.

•Increase efficiency and customer satisfaction with an app aligned to their needs.

•Seamlessly integrate with existing infrastructure.

•Ability to provide valuable insights.

•Optimize sales processes to generate more revenue through enhanced data collection.

Chats: Equip your expense tracking app with a bot that can understand

and answer alluser queries and address their needs such as account

balance, credit score, etc.

•Prediction: With the help of AI, your mobile app can predict your next purchase, according to your spending behavior. Moreover, it can recommend products and provideunique insights on saving money. It brings out the factors causing fluctuations in your expenses.

13.APPENDIX:

SOURCE CODE

Link: https://github.com/IBM-EPBL/IBM-Project-10702-1659197755/tree/main/Final%20Deliverables/Final%20code

GITHUB AND PROJECT DEMO LINK

GitHub link: https://github.com/IBM-EPBL/IBM-Project-10702-1659197755

Video Demo Link:
https://drive.google.com/file/d/1Lyxeik4ZYObezSUPdM0jyTiW_6GF71_8/view?usp=share_link