

PERSONAL EXPENSE TRACKER APPLICATION:

Introduction:

The web application “Personal Expense Tracker” is developed to manage the 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, user can provide his income to calculate his total expenses per day and these results will be stored for each user. Sometimes we can’t remember where our money goes. And we can’t handle our cash flow.

For this problem, we need a solution that everyone can manage their expenses. So, we decided to find an easier way to get rid of this problem. So, our application attempts to free the user with as much as possible the burden of manual calculation and to keep the track of the expenditure. Instead of keeping a diary or a log of the expenses, this application enables the user to not just keep the control on the expenses but also to generate reports and analysis.

With the help of this application, the user can manage their expenses on a daily, weekly, monthly, and yearly basis. Users can insert and delete transactions as well as can generate reports and analysis. The graphical representation of the application along with the reminders and loan tracking is the main part of the system as it makes a full-fledged application of managing all the tasks.

Purpose:

The main purpose of this application is to provide the customers with all the abilities to manage their personal expenses. For an average individual, it is very difficult to track expenses as it takes a long time because there are way too many expenses to track. It is not feasible to manage personal transactions in various accounts as it is not trackable because there are various payment options to consider. This makes it hard to save money because of high unmanageable expenditures. It is also difficult to calculate the taxes because needs statistical thinking and management of various assets such as vehicles, properties, salary etc. Users try to analyze expenses, but they can’t do it efficiently because it may involve a lot of data and graphical representations which makes it complicated. Users feel frustrated, confused, stressed etc. which makes them give up.

LITERATURE SURVEY:

Project Title	Publisher	Advantages	Disadvantages
Expenditure Management System	Journal Of Engineering, Computing & Architecture	It provides reminders to assist user to track the project	Lacks in providing the savings analysis and records
Expense Tracker: A Smart Approach to Track	EasyChair Preprint	It provides the user to choose an expense category and add additional info such as a photo, a location, expense made.	The application is not user friendly and lacks in UI.
Expense Tracker	IJAR SCT	The application they proposed allows users to keep up a digital automated diary.	Security provided by the application is low.
Application for Predictive Recommendation and Visualization of Personal Expenses	Darsh Shah, Sanay Shah, Ritik Savani	They offer shortcut and indicators to the consumer to go into the ordinary expenses from time to time	The tracking of loans and reminders is not provided
Daily Expense Tracker	Muskaan Sharma ¹ , Ayush Bansal ²	They used ReactJS to make it feasible for builders to broaden User Interfaces (UI) without difficulty via way of means of dividing it into diverse additives and additionally to develop fast systems	The analysis reports the expenses and savings is not generated.
A Review on Budget Estimator Android Application	Namita Jagtap, Priyanka Joshi, Aditya Kamble	This utility is meant to run on android tool specifically clever phone.	No specific usage of Chabot in the cloud or the usage of any helping service that would serve the expense customers

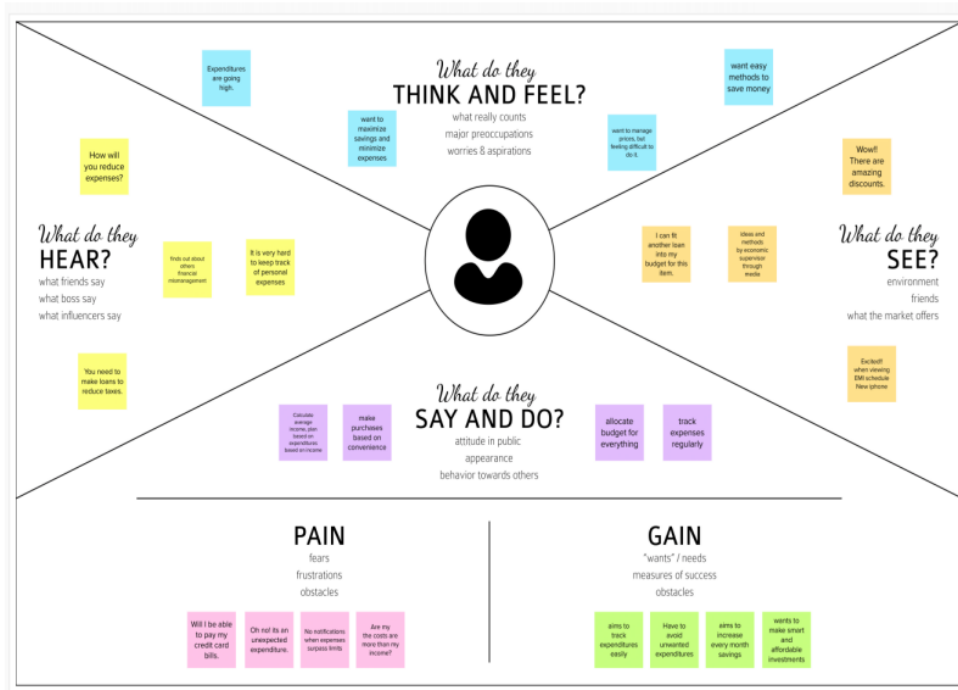
Problem Statement Definition:

In order to guide the customers to manage all the expenses in their everyday life, a personal expense tracker has to be introduced to provide people with the best solution possible. The users are the customers who need to manage expenses, and guide them through the various features of the application. So, an enhanced and smarter way of interaction with the customers has to be built to ensure efficient way of managing the expenses. In order to overcome the user satisfaction issues associated with tracking services, a Chatbot will provide personal and efficient communication between the users. It is built to be the managing system that can facilitate customers to track expenses, add savings, loan management and getting reminders for the same.

IDEATION & PROPOSED SOLUTION:

Empathy Map Canvas:

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviors and attitudes. It is a useful tool to help teams better understand their users. Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.



Ideation & BrainStorming:

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

Template



Brainstorm & idea prioritization

Personal Expense Tracker (Cloud App Development)

40 minutes to prepare
1 hour to collaborate
3-8 people recommended

Share template feedback

2

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

1

Team gathering

Each user should participate in the session and send an invite. Share relevant information or prior work of each.

2

Set the goal

Think about the problem you'd be focusing on solving in the brainstorming session.

3

Learn how to use the facilitation tools

Use the Facilitation Responses to run a happy and productive session.

[Open article](#)

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 track expenses of user?

PROBLEM

How might we help user to manage the expense?

PROBLEM

How do we create analytics that user can understand easily?

PROBLEM

What kind of graphs should we make use of?

PROBLEM

How might we integrate various modes of payments into the app?

PROBLEM

How might we alert users about the due dates for various payments?

PROBLEM

How might we help users increase savings?

PROBLEM

How to manage personal transaction?

PROBLEM

How might we calculate taxes?

PROBLEM

How might we manage government funds?

PROBLEM

How might we track user data.

PROBLEM

How might we maintain security of user data?

Recent some inspiration?

How to maintain the security of user data.

Recent Inspiration

1

Brainstorm

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

20 minutes

No idea is a bad idea. You can't be afraid to have a bad idea. It's better to have a bad idea than no idea at all.

V. Neelima



V. Leela Sathvika



S. Pragnasya



S. Safeena



2

Group Ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

20 minutes

Advantages of this idea are to make a user to have better, secure, easy, and managing his/her money. It's better to have a good idea than a bad idea.



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

TIP

Participants can use their fingers to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the H key on the keyboard.



Proposed Solution:

The solution to the problems described is a personal expense tracker application with capabilities for analysis and graphical implementations. Users can add their expenses, their payment options, contacts, loans, reminders, EMIs etc which are also tracked and manageable by the user. Detailed graphs are generated as per user convenience. Limits can be set for each payment option and salary. Alerts are provided when expenditure reaches the set limit. This application can also be used to calculate taxes, provident fund and deposits. The application also provides tips to save money and has a news section for financial updates. This application is user-friendly and has easy accessibility. Users can add recurring payments like rent, loans, etc, set due dates and be reminded from time to time. It is an allround application to track a user's expenses that makes life easier.

Problem Solution Fit:

Problem-Solution fit canvas 2.0		PERSONAL EXPENSE TRACKER APPLICATION - TEAM ID: PNT2022TMID09298	
Define CS, fit into CC	1. CUSTOMER SEGMENT(S) CS Who is your customer? i.e. working parents of 0-5 y.o. kids <ul style="list-style-type: none"> Customers are people who spend money either carelessly or with difficulty keeping track of it. Provides a whole lot of different categories of expenditure types to avoid mismatch of expenditure. The Need for Financial Management for Common People. 	6. CUSTOMER CONSTRAINTS CC 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. <ul style="list-style-type: none"> The majority of online solutions include numerous ads that restrict their effectiveness. The approach proposed here features a function that allows you to view expenses visually. It also has a functionality that notifies you throughout email if a spending exceeds a predetermined limit. Devices That Are Available. Network Relationship 	5. AVAILABLE SOLUTIONS AS Which solutions are available to the customers when they face the problem or need to get the job done? i.e. pen and paper is an alternative to digital notetaking <ul style="list-style-type: none"> Applications that track expenses and are accessible for both iOS and Android. A personal expense tracking tool was created for this project. 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
	2. JOBS-TO-BE-DONE / PROBLEMS J&P Which jobs-to-be-done (or problems) do you address for your customers? i.e. explore different sides. <ul style="list-style-type: none"> This application's goal is to make it possible for users to keep track of their spending. The categories for the expenses are made available to the clients. They also have the choice of viewing the costs as a graphical depiction for the duration of a year, six months, etc. Fixed by establishing a cap on the amount that can be spent in a given month; if the cap is surpassed, the user will be notified through email. 	9. PROBLEM ROOT CAUSE RC What is the real reason that this problem exists? i.e. customers have to do it because of the change in regulations. <ul style="list-style-type: none"> Inappropriate expenses result in high taxes. Easy company forecasting; significant cost savings; difficulty in manually tracking expenses due to the abundance of payment options An opportunity lost A reduction in savings A poor investment No comprehensive and simple way to keep track of everyday spending excessive spending without effective management insufficient financial knowledge mistake prone and it takes time. 	7. BEHAVIOUR BE 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) <ul style="list-style-type: none"> Start utilising the cost tracker software. Classify expenses as they are incurred to save money Set a monthly spending cap and maintain separate in-hand wallet and online accounts. Ask your neighborhoods or coworkers for information. Obtain recommendations from professionals who are knowledgeable in the finance sector.
Identify strong TR & EM	3. TRIGGERS TR What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news. <p>Knowing that these expenditure applications can help clients save a lot of money.</p>	10. YOUR SOLUTION SL 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. <p>Create a flask-based personal cost tracker application, use the sendgrid framework to enable email-based expense notifications, and offer a graphical expense display option.</p>	8. CHANNELS OF BEHAVIOUR CH 8.1 ONLINE What kind of actions do customers take online? Extract online channels from #7 <p>Virtual budget trackers have numerous advertising channels when clicked, capture information including account numbers they are provided.</p> 8.2 OFFLINE What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development. <ul style="list-style-type: none"> Access to data that has already been downloaded. Make sure they are familiar with the tax laws by having them read the available books on taxes.
	4. EMOTIONS: BEFORE / AFTER EM 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. <p>Before: Users are in a depressive state prior. After: Users feel ready to handle the cost.</p>		

REQUIREMENT ANALYSIS

Functional requirement

The 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
FR-2	User Confirmation	Confirmation via Email
FR-3	User Login	Authentication
FR-4	Dashboard	Small graph previews, news updates, monthly savings and expense previews.
FR-5	Navigation Side Menu	Nav buttons to all modules, Sign out, Settings and profile module
FR-6	Expense Tracker Module	Add Expense, Delete Expense, Modify Expense, View Expenditure Graph,
FR-7	Remainders Module	Add Remainder, Add Recurring Expense Payment Remainder, Add Loan Remainders
FR-8	Savings and Finance Module	Add Monthly income, Modify monthly income, Add Other sources of income, View Savings graph
FR-9	User Profile Module	Edit User Profile
FR-10	Settings Module	Edit settings

Non-Functional requirements

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

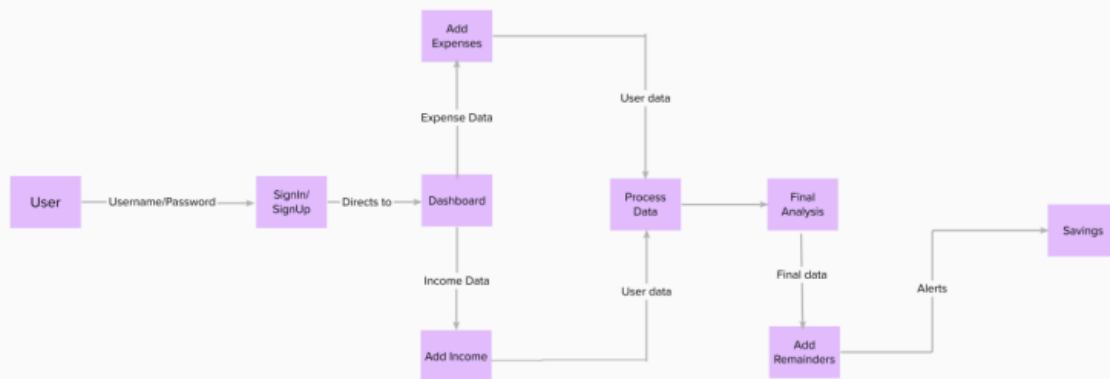
FR No.	Non-Functional Requirement	Description
NFR-1	Usability	The solution is easy to use as the UI is made to be accessible and user-friendly. Easy navigation is provided through an integrated sidemenu and chatbot assistance.
NFR-2	Security	Application is highly secure as all data is encrypted using a secure encryption algorithm and user data is accessible only on authentication.
NFR-3	Reliability	Application is highly reliable as it is deployed with IBM cloud assistance.
NFR-4	Performance	Performance is stable and smooth as it is very light weight application built with flask.
NFR-5	Availability	It is available easily as it is deployed on the internet.
NFR-6	Scalability	Application is scalable as it uses IBM cloud resources and microservices architecture. Extensions and modifications are done easily.

Project Design:

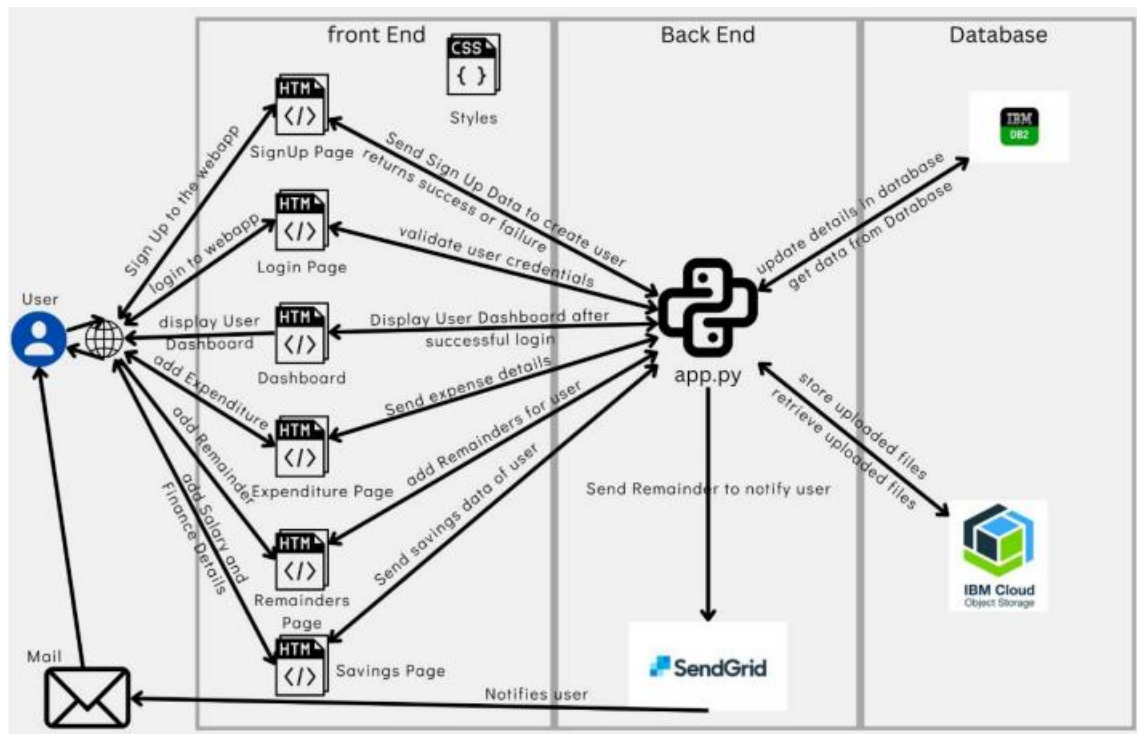
Data Flow Diagrams

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.

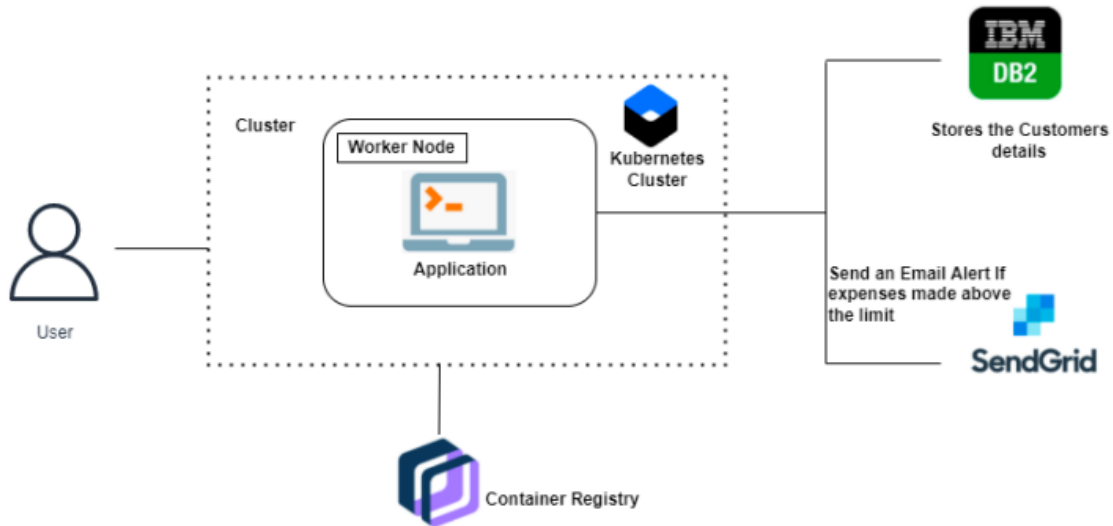
Data Flow Diagram



Solution Architecture:



Technical Architecture:



Project Planning and Designing:

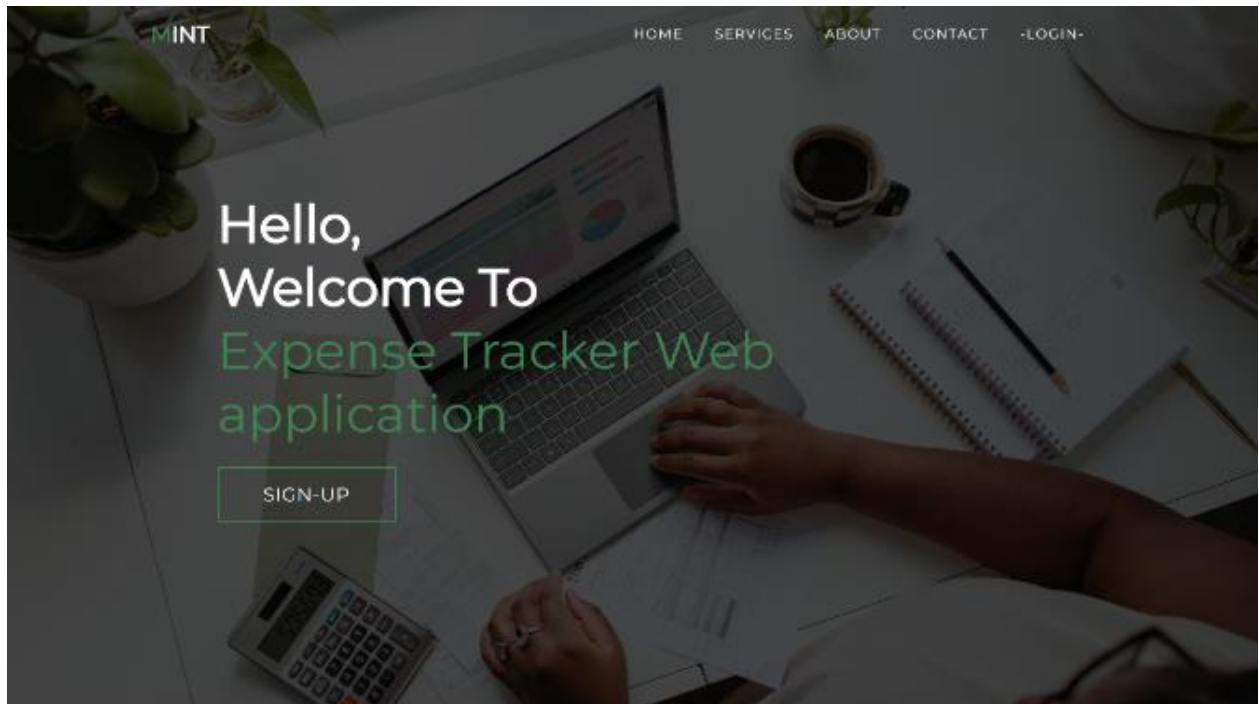
Sprint Planning & Estimation:

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	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.	High	Mohamed Rafi
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	High	Praghadiesh
Sprint-1		USN-3	As a user, I can register for the application through Facebook	Low	Pritam
Sprint-1		USN-4	As a user, I can register for the application through Gmail	Medium	Rohit Krishna
Sprint-2	Login	USN-5	As a user, I can log into the application by entering email & password	High	Mohamed Rafi
Sprint-2	Dashboard	USN-6	As a user, I can create my user profile	High	Praghadiesh

Sprint-2		USN-7	As a user, I can add total income and total expenses	High	Pritam
Sprint-2		USN-8	As a user, I can visualize the expenses	Medium	Rohit Krishna
Sprint-3		USN-9	As a user, I will upload my monthly income in the application	High	Rohit Krishna
Sprint-3	Account Sync	USN-10	As a user, I can sync my accounts and wallets	High	Mohamed Rafi
Sprint-3		USN-11	As a user, I can edit income and expenses	Low	Praghadiesh
Sprint-3		USN-12	As a user, I can set the targeted budget	High	Pritam
Sprint-4		USN-13	As a user, I can add reminder and get notified	Low	Mohamed Rafi
Sprint-4		USN-14	As a user, I can filter the expenses by graphs and periods	Medium	Praghadiesh
Sprint-4	Service Support	USN-15	As a user, I can chat with the inbuilt customer care chat bot	High	Pritam
Sprint-4		USN-16	As a user, I can export the raw data from the app	Medium	Rohit Krishna

Project Screenshots:

Application Landing Page:



SERVICES

Mint provides a many services to the customer and industries.
Financial solutions to meet your needs whatever your money
goals, there is a Mint solution to help you reach them.



PERSONAL EXPENSES

Budgeting is more than paying bills and setting aside savings it's about creating a money plan for the life you want.



INVESTMENTS

Follow your investments and bring your portfolio up to date with support for stocks, bonds, mutual funds and more.



ONLINE BANKING

Mint application can automatically download transactions and send payments online from many financial institutions.



FINANCIAL LIFE

Get your complete financial picture at a glance. With Mint application you can view your all the financial activities.



ABOUT US

Financial Solution

Mint financial solution is one among leading financial company from many years.Mint provides a many services to the customer and industries. Financial solutions to meet your needs whatever your money goals,there is a mint solution to help you reach them you can Contact our service center for further information and also follow our social media for update on new services

[FOLLOW US](#)

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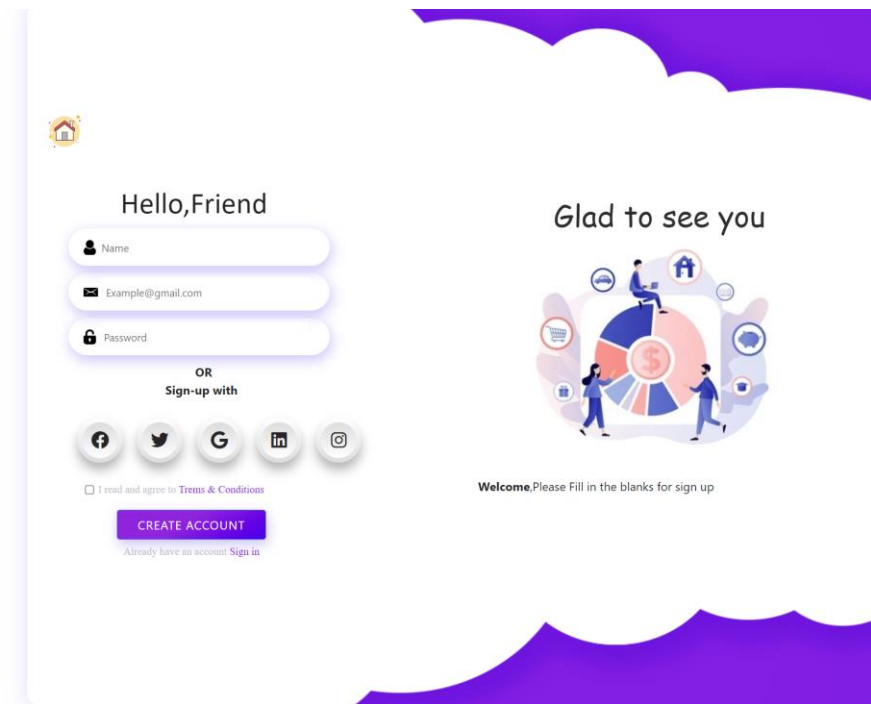
MINT

Your Complete Financial Solution



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Registration Page:



The registration page features a clean, modern design with a white background and purple accents. On the left, a sidebar contains a home icon, a greeting 'Hello, Friend', and input fields for Name, Email (pre-filled with 'Example@gmail.com'), and Password. Below these are social media login options (Facebook, Twitter, Google, LinkedIn, Instagram) and a checkbox for terms and conditions. A prominent purple 'CREATE ACCOUNT' button is at the bottom of the sidebar. The main area on the right has a purple header, a 'Glad to see you' message, a circular illustration of people interacting with a large dollar sign, and a 'Welcome, Please Fill in the blanks for sign up' prompt.

Home

Hello, Friend

Name

Email Example@gmail.com

Password

OR

Sign-up with

Facebook Twitter Google LinkedIn Instagram

☐ I read and agree to [Terms & Conditions](#)

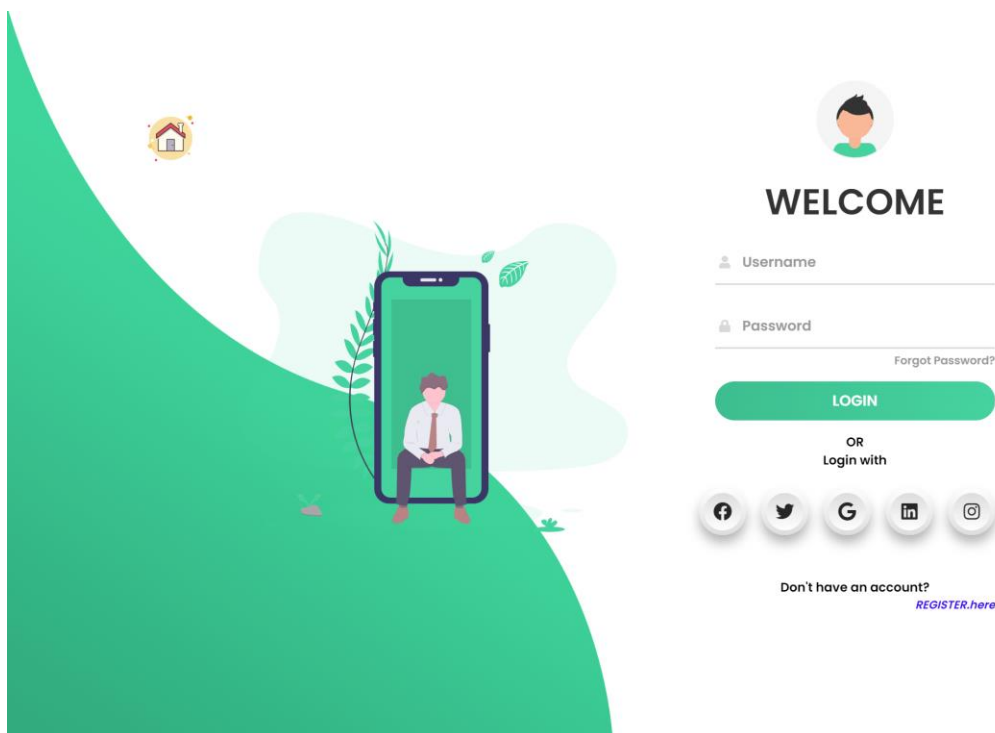
CREATE ACCOUNT

Already have an account? [Sign in](#)

Glad to see you

Welcome, Please Fill in the blanks for sign up

Login Page:



The login page has a green and white color scheme. On the left, a large green hill features a smartphone illustration with a person sitting inside it. The right side contains a login form with a user profile icon, a 'WELCOME' heading, and input fields for Username and Password. A 'Forgot Password?' link is next to the password field. A green 'LOGIN' button is below the fields. Social media login options (Facebook, Twitter, Google, LinkedIn, Instagram) are provided below the button. At the bottom, a link for users without an account points to the registration page.

Home

WELCOME

Username

Password

[Forgot Password?](#)

LOGIN

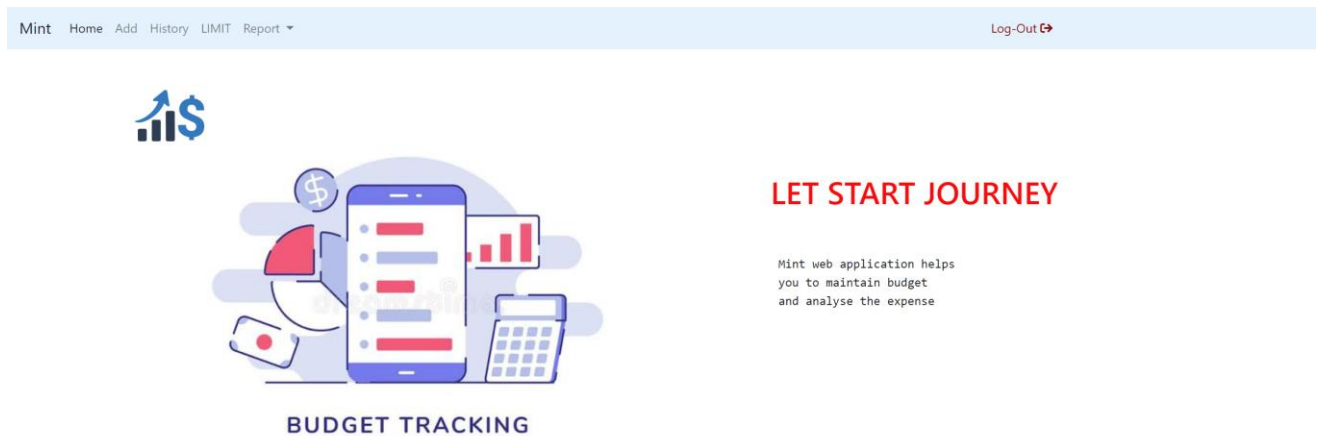
OR

Login with

Facebook Twitter Google LinkedIn Instagram

Don't have an account? [REGISTER here](#)

Home Page:



Add Expense Page:

The Add Expense Page of the Mint web application features a light blue header with navigation links: Mint, Home, Add, History, LIMIT, and Report. A Log-Out button is located on the right. The main content area includes the heading "Add Expense" and a form with the following fields: Date (dd-mm-yyyy), Expense name, Expense Amount, Pay-Mode (dropdown), and Category (dropdown). A red "Add" button is located below the form. To the right, there is an illustration of a spiral notebook with a checklist titled "EXPENSES" containing items: FOOD, ELECTRIC, WATER, PHONE, and INTERNET, each with a checkbox. A yellow pencil and a calculator are also shown.

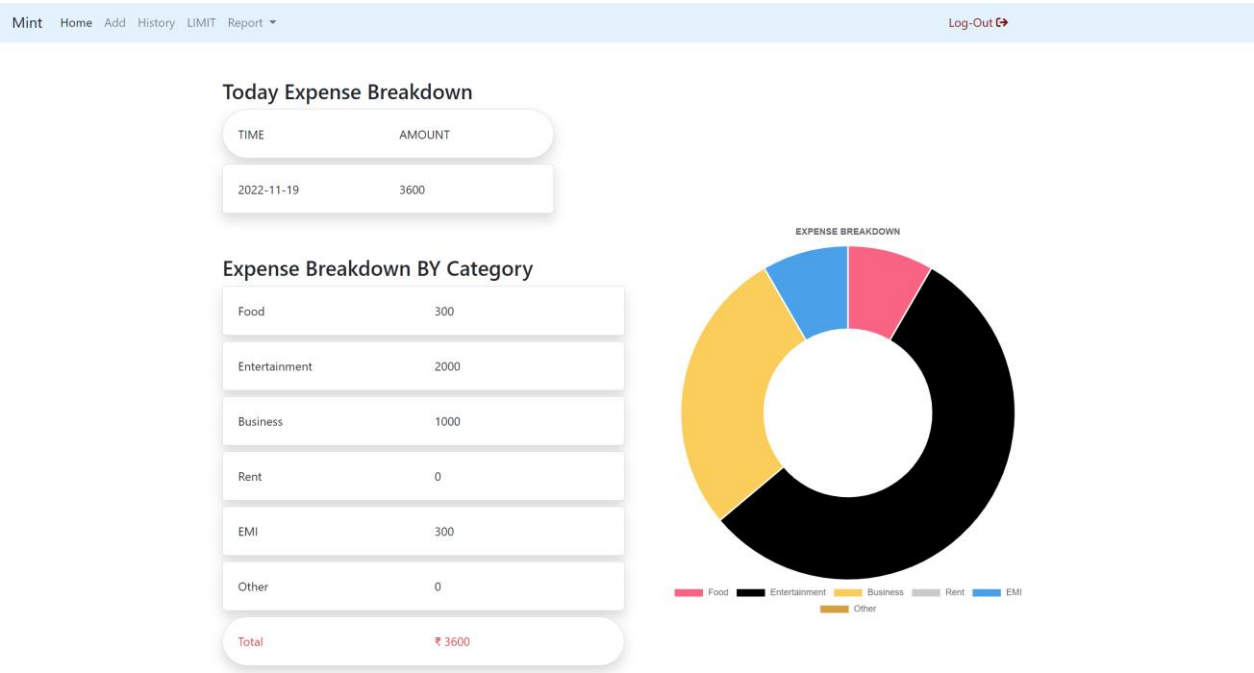
Expenses Page:

Mint	Home	Add	History	LIMIT	Report	Log-Out
EXPENSES						
test	600	₹ debitcard	entertainment	Edit	Delete	
test	600	₹ debitcard	entertainment	Edit	Delete	
test	600	₹ debitcard	entertainment	Edit	Delete	
test	500	₹ onlinebanking	business	Edit	Delete	
test	500	₹ onlinebanking	business	Edit	Delete	
test	300	₹ epayment	EMI	Edit	Delete	
test	200	₹ cash	entertainment	Edit	Delete	
test	100	₹ cash	food	Edit	Delete	
test	---					

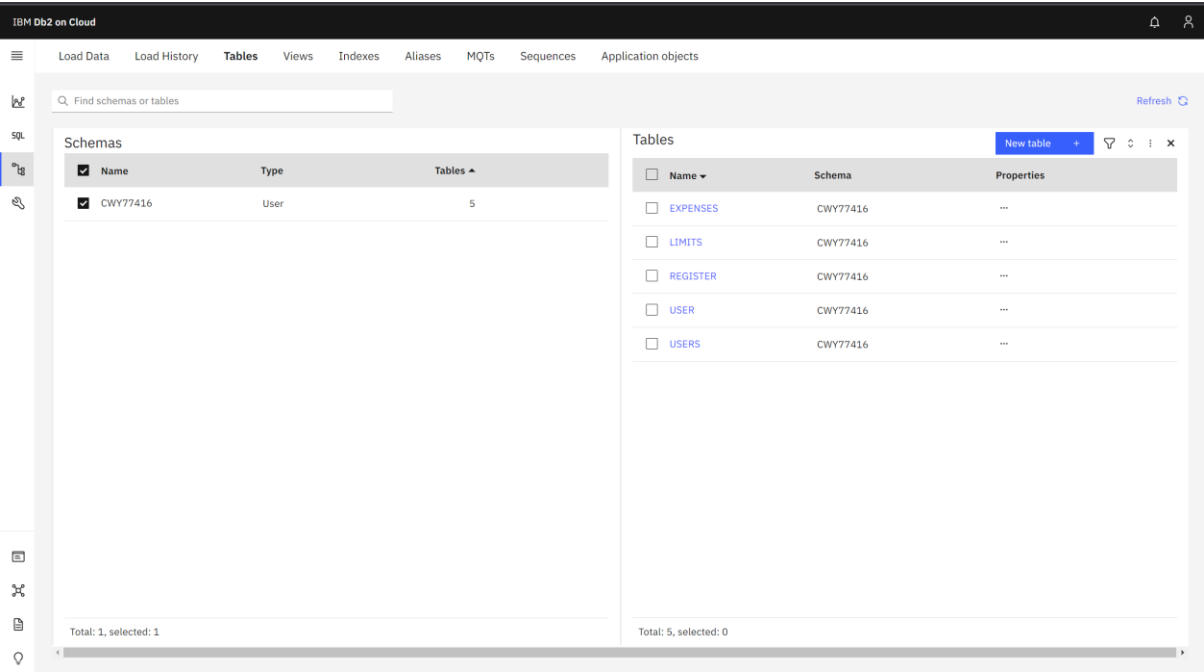
Set Limit Page:

Mint	Home	Add	History	LIMIT	Report	Log-Out
Currently your MONTHLY limit is ₹ 10000						
ENTER the MONTHLY LIMIT to avoid over EXPENSES						
<input type="text"/>		ENTER				

Report Generation Page:



Database Schema:



TESTING

Test Cases

S.No	Test Cases	Passed/ Failed
1.	Login and Logout	Passed
2.	Profile Creation and Editing	Passed
3.	Expenses – Add, Edit and Delete	Passed
4.	Expense Analysis Module	Passed
5.	Savings – Add, Edit and Delete	Passed
6.	Savings Analysis Module	Passed
7.	Reminders – Add, Edit and Delete	Passed
8.	Loan Tracker – Add, Edit and Delete	Failed to Deploy

User Acceptance Testing

S.No	Test Cases	Yes/ No
1.	Keyword driven	Yes
2.	Responds in manually drafted rules	Yes
3.	Manages multiple users	Yes
4.	Conversational Paradigm	Yes
3.	Learns from real interactions	Yes
4.	Training via historical data	No
5.	Has decision-making skills	No

RESULTS

Performance Metrics

Cloud performance monitoring and testing tools help organizations gain visibility into their cloud environments, using specific metrics and techniques to assess performance. Efficient cloud performance is critical for maintaining business continuity and ensuring all relevant parties gain access to cloud services. This is true for basic cloud usage of public clouds and complex hybrid clouds and multi-cloud architectures. Cloud performance metrics enable you to effectively monitor your cloud resources, to ensure all components communicate seamlessly. Typically, cloud performance metrics measure input/output operations per second (IOPS), filesystem performance, caching, and autoscaling.

S. No	Test Cases	Time
1.	Error rates	1 second
2.	Response times	3 seconds
3.	Request rates	1.14 seconds
4.	Customer experience	Good

ADVANTAGES & DISADVANTAGES

Advantages

- Available 24/7 across the globe
- Easy tracking of savings and expenses
- User friendly dashboards
- Understandable charts and graphs
- Updated to the latest details
- Easy to setup and communicate

Disadvantages

- Direct connection with bank account could not be achieved
- Loan Tracker page could not be deployed
- Multiple profiles not available

CONCLUSION

This project focuses on tracking the personal finances of a user. It is implemented in a user-friendly and accessible manner to achieve all the financial asset maintenance goals of an individual. The new system has overcome most of the limitations of the existing system and works according to the design specification given. The project what we have developed is work more efficient than the other income and expense tracker. The project avoids the manual calculation for avoiding calculating the income and expense per month. The modules are developed with efficient and also in an attractive manner. The developed systems dispense the problem and meet the needs of by providing reliable and comprehensive information. All the requirements projected by the user have been met by the system.

The newly developed system consumes less processing time, and all the details are updated and processed immediately. Since the screen provides online help messages and is very user-friendly, any user will get familiarized with its usage. Modules are designed to be highly flexible so that any future requirements can be easily added to the modules without facing many problems. The best organizations have a way of tracking and handling these reimbursements. This project also focuses on giving set reminders for users who wish to be up to date in their payments. This project gives aesthetic charts and analysis for the user's financial records.

FUTURE SCOPE

The future of project lies entirely on how the customers get benefitted from the interaction and the interface. We would have to make improvements in the application to make it more user-friendly. The following areas could have a serious impact on our scope:

- i. Support for multiple accounts
- ii. Direct Connection with bank
- iii. Tips and Recommendations on where to save money.