

# **PERSONAL EXPENSE TRACKER APPLICATION**

**NALAIYA THIRAN PROJECT BASED LEARNING ON PROFESSIONAL  
READLINESS FOR INNOVATION, EMPLOYMENT AND  
ENTREPRENEURSHIP**

**A PROJECT REPORT**

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# 1. INTRODUCTION

## 1.1 Project Overview

Category : Cloud Application

Team Id : PNT2022TMID27692

### **Skills Required:**

IBM Cloud, HTML, Java script , IBM Cloud ObjectStorage, Python-Flask, Kubernetes, Docker, IBM DB2, IBM Container Registry

### **Project Description:**

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 not only help you with budgeting and accounting but also give you helpful insights about money management.

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

## 1.2 Purpose

Personal finance management is an important part of people's lives. However, everyone does not have the knowledge or time to manage their finances in a proper manner. 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. Now, you don't have to worry about managing your expenses, as you can get access to an expense tracker that will help in the active management of your finances. 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. While this problem can arise due to low salary, invariably it is due to poor money management skills.

People tend to overspend without realizing, and this can prove to be 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 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 AND REFERENCES

Author: Prof Miriam Thomas , Lakshmi P,Dr.Mahalakshmi T  
(2020)

- Budgeting systematically and Expense Tracking takes a crucial role in managing the expenses of business organizations.
- By using software for managing expense tracking will help to control unnecessary expenses.
- The project what we have developed is work more efficient than the other income and expense tracker.
- Modules are designed to be highly flexible so that any failure requirement can be easily added to the modules without facing many problems.

Author: Adepegba, O. A., Fayemiwo, M.A., Oduwole, O. A. & Onamade A.  
(2019)

The use of this application will among other things help to monitor rate of spending, refresh information and give warning notifications among other things.

- The wide use of these android mobile phones and their ability to run software applications, make a lot of sense in making this application android based.
- Great advantages of the use of Information technology in the financial sector of our growing economy in such a way that enhances expenses monitoring and financial life in general.

Author: Atiya Kazl1,Praphulla,S.Kherade RAJ, S.Vilankar,ParagM.Sawant(2021)

- The “Expense Tracker” is developed using Angular 8 for frontend andSQL lite foe back end.
- The application keeps the track of the Income and Expenses both ofuser on a day-to-day basis.
- When the month’s end is arrived at the complete pay, all out past expense and all-out future expense are determined and shown for the user.

Author: Velmurugan A,Albert Mayan J, Niranjaa P andRichard Francis(2020)

- The main aim of this paper is to manage personal and group expenses. Not many applications provide a variety of features within a single application.
- We develop an android application that keeps record of user personalexpenses, his/her personal contribution towards group expenses, top investment options , view stock market , read authenticated news and grab the best ongoing offers in the market inpopular categories.
- It is designed efficiently to give you the best suggestions for finance planning. The application size is less than 10 MB.

Author: Saumya Dubey,Pragya

**Dubey, Rigved Rishabh Kumar ,Aisha Khatoon.(2022)**

- “STUDENT EXPENSE TRACKING APPLICATION” app marksall the expenses and helps the user to keep an eye on his/her expenses so that the user is on financially stable path.
- The conclusion can be derived using some basic techniques such asclustering, classification and association.
- In this world of growing technologies everything is digitalized. With large number of money transaction and many more things done by the students related to money.

## 2.1 Existing Problem

In a study conducted by Forrester in 2016 surveying small and medium businesses (SMBs) across the world, 56% companies reported expense management as being the biggest challenge for their finance departments.

In another survey conducted by Level Research in 2018 in North America, respondents reported the following pain points in expense management before adopting automation:

- Manual entry and routing of expense reports (62%)
- Lack of visibility into spend data (42%)
- Inability to enforce travel policies (29%)
- Lost expense reports (24%)

Lengthy expense approval system and reimbursement cycles (23%)

## 2.2 Problem Statement Definition

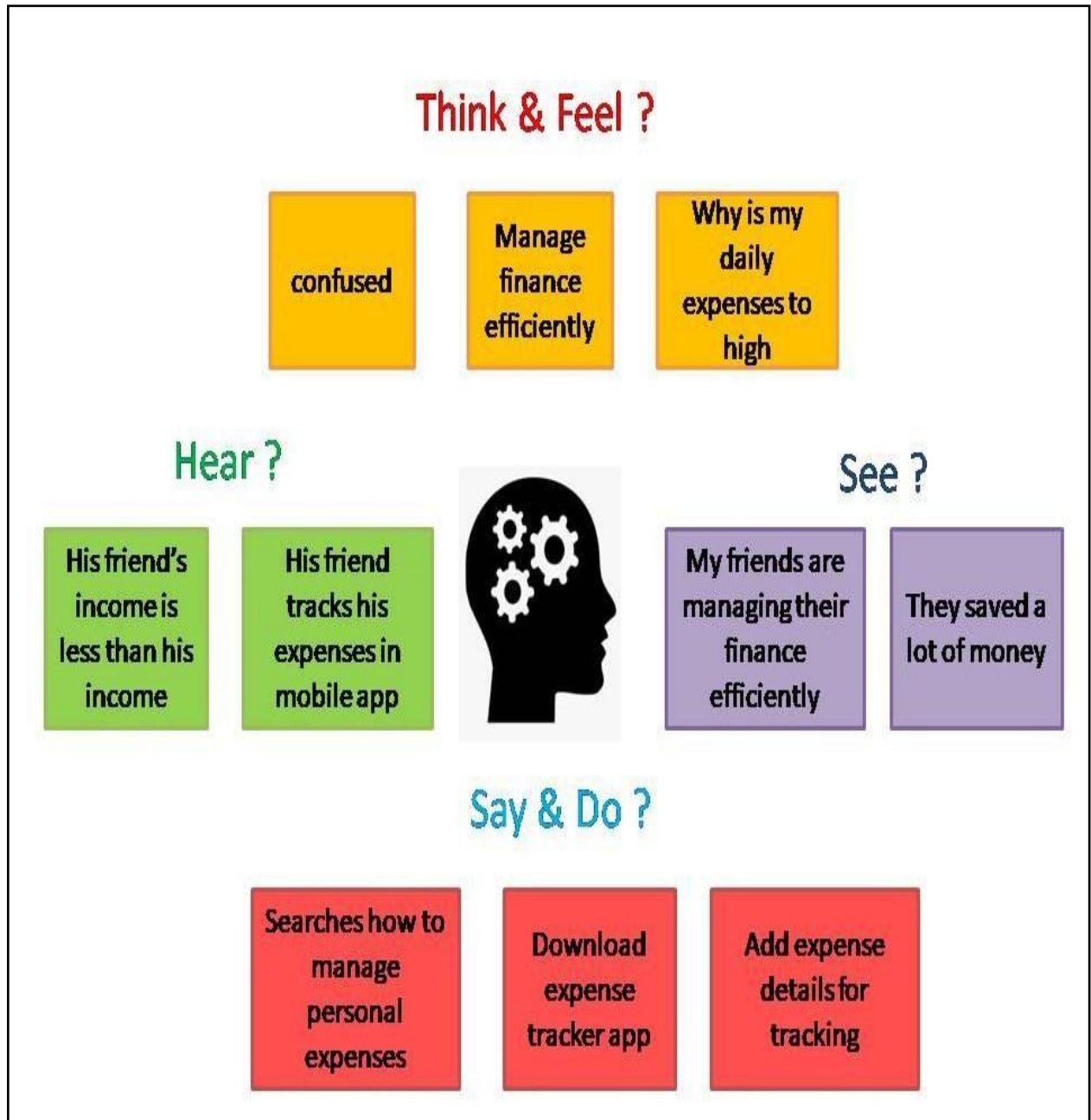
Now a day's people are concerned about regularity of their daily expenses. This is done mainly for keep a track of the users' daily expenses to have a control of users' monthly expenses. this application is used to manage the user's daily expenses in a more coherent and manageable way . This will help us to reduces the manual calculations for their daily expenses and also keep the track of the expenses. With the help of this application, user can calculate his total expenses per day and these results will stored for unique user. Money is most valuable portion of our life so this application helps the user to avoid unexpected expenses and bad financial situations.



I am	People who wants to track their expenses. (business persons, salaried persons, housewives )
I'm trying to	to keep an accurate record of the money inflow and outflow to solve budget problems
But	We need to maintain traditional methods of budgeting such as word, excel, notes, files, bills,etc. This may leads to error
Because	I don't want to affect the savings of the expenses
Which makes me feel	Confuse and unable to maintain proper manual notes for the expenses.

### 3. IDEATION & PROPOSED SOLUTION

#### 3.1 Empathy Map Canvas




## 3.2 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.

### Step-1: Team Gathering, Collaboration and Select the Problem Statement

Template



## Brainstorm & idea prioritization

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

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

[Share template feedback](#)

➔

### 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

A

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

B

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

C

**Learn how to use the facilitation tools**  
Use the Facilitation Superpowers 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

1. How might we can help users manage their monthly expenses using application
2. How might we can help the user's family to track each other spending
3. How might we help the user plan their budget
4. How might we solve the problem of cluttered UI
5. How might we cross-check the amount entered is correct or not.

2

### Key rules of brainstorming

To run an smooth and productive session:

🗣️ Stay in topic.


💡 Encourage wild ideas.

⏸️ Defer judgment.

👂 Listen to others.

🗨️ Go for volume.

👁️ If possible, be visual.



**Need some inspiration?**  
See a finished version of this template to kickstart your work.  
[Open example](#) ➔

## Step-2: Brainstorm, Idea Listing and Grouping

2

### Brainstorm

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

🕒 10 minutes

**TIP**  
You can select a sticky note and hit the pencil icon to edit the text.

SHUAB



THULASI



SIVA



BALAJI



3

### 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



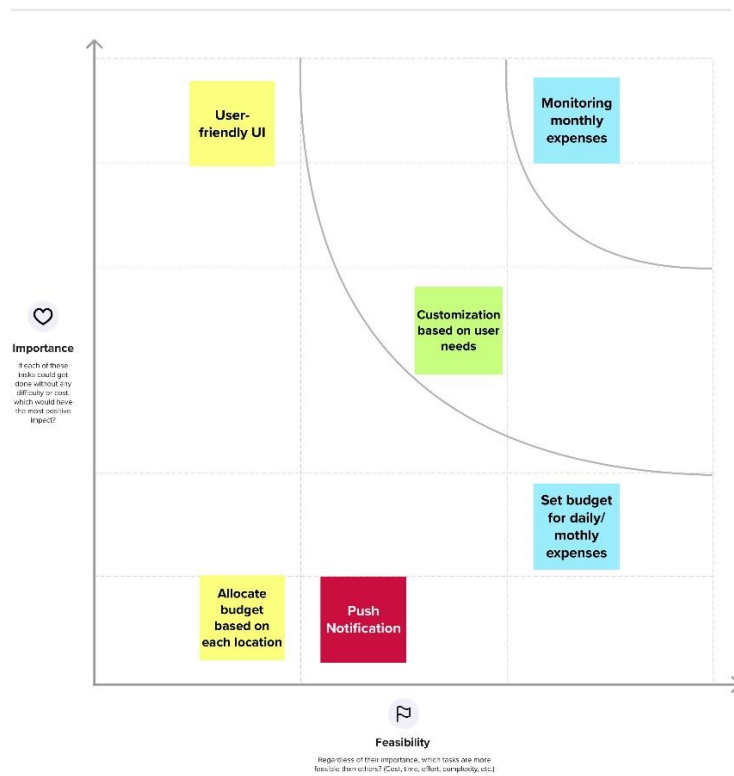
## Step-3: Idea Prioritization

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



→

### After you collaborate

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

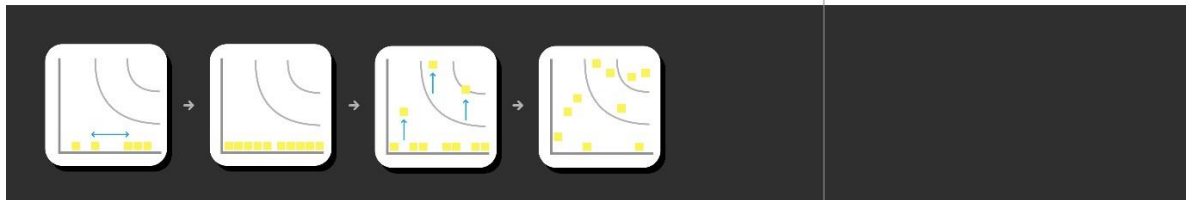
#### Quick add-ons

- A Share the mural**  
Share a view link to the mural with stakeholders to keep them in the loop about the outcomes of the session.
- B Export the mural**  
Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save in your drive.

#### Keep moving forward

- Strategy blueprint**  
Define the components of a new idea or strategy.  
[Open the template →](#)
- Customer experience journey map**  
Understand customer needs, motivations, and obstacles for an experience.  
[Open the template →](#)
- Strengths, weaknesses, opportunities & threats**  
Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.  
[Open the template →](#)

[Share template feedback](#)



### 3.3 Proposed Solution

<b>S No</b>	<b>Parameter</b>	<b>Description</b>
<b>1</b>	Problem statement (problem to be solved)	This application aims to create an easy, faster and smooth tracking system between the expense and income
<b>2</b>	Idea/solution description	Using cloud, we developed this application which keeps track of user's personal expenses. This enables you to adjust your spending habits and make better purchasing decisions.
<b>3</b>	Novelty / uniqueness	Track your expenses anywhere, anytime. Seamlessly manage your money and budget without any financial paperwork. Access, Submit and approve invoices. Avoid data loss by scanning bills. Approval of bills and expenditures in real time. Get notified instantly when budget crosses the limit. Reduced human errors with an automated and streamlined billing process.
<b>4</b>	Social impact/customer satisfaction	This application empower customers to take more control over their financial lives by tracking spending, managing incomes, and maintaining greater visibility into their overall financial health. It also has charts and graphs for visualizing your expenditure against the income. supports on multiple device.

<b>5</b>	Business model (revenue model)	This application will generate revenue by offering premium features to the user. Advertising through app is the easy way to earn money. Users may pay to remove the app advertisements. Through subscription the users can able to connect their bank account.
<b>6</b>	Scalability of the solution	Since this application is deployed on IBM Cloud, it can handle multiple users at a time. With our application, the users can be able to manage their expenses more effectively and know about their budget vs income.

### 3.4 Problem Solution fit

<b>1.CUSTOMER SEGMENTS</b> <ul style="list-style-type: none"> <li>• Business persons</li> <li>• Salaried persons</li> <li>• Average adults</li> <li>• Family members</li> <li>• Spenders, shoppers and traders</li> </ul>	<b>6.CUSTOMER LIMITATIONS</b> <ul style="list-style-type: none"> <li>• Security issues</li> <li>• The risk of limited accessibility</li> <li>• Lack of control of your data</li> <li>• Available devices</li> </ul>	<b>5.AVAILABLE SOLUTIONS</b> <p>People can do the manual calculations in notes and diaries for tracking their expenses.</p> <p><b>Pros:</b></p> <ul style="list-style-type: none"> <li>• Doesn't need any expense tracking devices.</li> <li>• data leakage can be avoided</li> </ul> <p><b>Cons:</b></p> <ul style="list-style-type: none"> <li>• errors may occur</li> <li>• time consuming</li> </ul>
<b>2.JOBS TO BE DONE / PROBLEMS</b> <ul style="list-style-type: none"> <li>• People have to track their expenses regularly.</li> <li>• Add Credit and debit details</li> <li>• They need to keep their receipts and bills for calculating the amount</li> <li>• Add or remove the desired categories</li> </ul>	<b>9.PROBLEM ROOT/CAUSE</b> <ul style="list-style-type: none"> <li>• The root cause for this problem is the delay in the budget.</li> <li>• No one alerts if their spending exceeds particular limit.</li> <li>• There may be a chance of getting errors in human calculations.</li> </ul>	<b>7.BEHAVIOUR</b> <ul style="list-style-type: none"> <li>• User should update their receipts, bills regularly</li> <li>• Add the credits and debit details and set the budget</li> <li>• When budget crosses the limit according to their credit and debit details , notify with alert message</li> </ul>



<b>3. TRIGGERS TO ACT</b> <ul style="list-style-type: none"> <li>• To make financial control</li> <li>• To identify problem areas</li> <li>• To make a better budget</li> <li>• Encourages and increases savings</li> </ul>	<b>10. YOUR SOLUTION</b> <ul style="list-style-type: none"> <li>• A cloud based application tracks expenses for you in real time. there's an easy user interface for everything as well.</li> <li>• You can setup budget, track a type of expense, or look over your financial history. just u should update the financial details.</li> <li>• Automated workflows</li> <li>• Custom notifications and reminders</li> <li>• Integration with accounting software</li> </ul>	<b>8. CHANNELS OF BEHAVIOUR</b> <p><b>ONLINE</b></p> <ul style="list-style-type: none"> <li>• Provide the details of day-to-day expenses.</li> <li>• Select the area where customers use.</li> <li>• Maintain the expenses for budgeting.</li> </ul> <p><b>OFFLINE</b></p> <ul style="list-style-type: none"> <li>• Maintain the required documents regularly.</li> <li>• Inspect the expenses for budgeting.</li> </ul>
<b>4. EMOTIONS</b> <p><b>Before</b></p> <ul style="list-style-type: none"> <li>• Don't know about money flow</li> <li>• Tensed about their budgets and spending</li> <li>• Afraid of financial problems</li> </ul> <p><b>After</b></p> <ul style="list-style-type: none"> <li>• Will spend mindfully</li> <li>• Keeping finances organized</li> <li>• Happy about their savings</li> <li>• Easy expense reporting</li> </ul>		

## 4.REQUIREMENT ANALYSIS

### 4.1Functional requirement

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 LinkedIn
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Add Expenses	Split the everyday expenses into many categories. (Example:- Groceries, Rent, Entertainment)
FR-4	Reminder Mail	Sending reminder mail to the user if he/she has not filled that's day's expenses.
FR-5	Creating Graphs	Shows the graph with everyday and weekly expenses.
FR-6	Add Salary	Users must enter the salary at the start of the month
FR-7	Export CSV	User can export the raw data to their expenditure as CSV

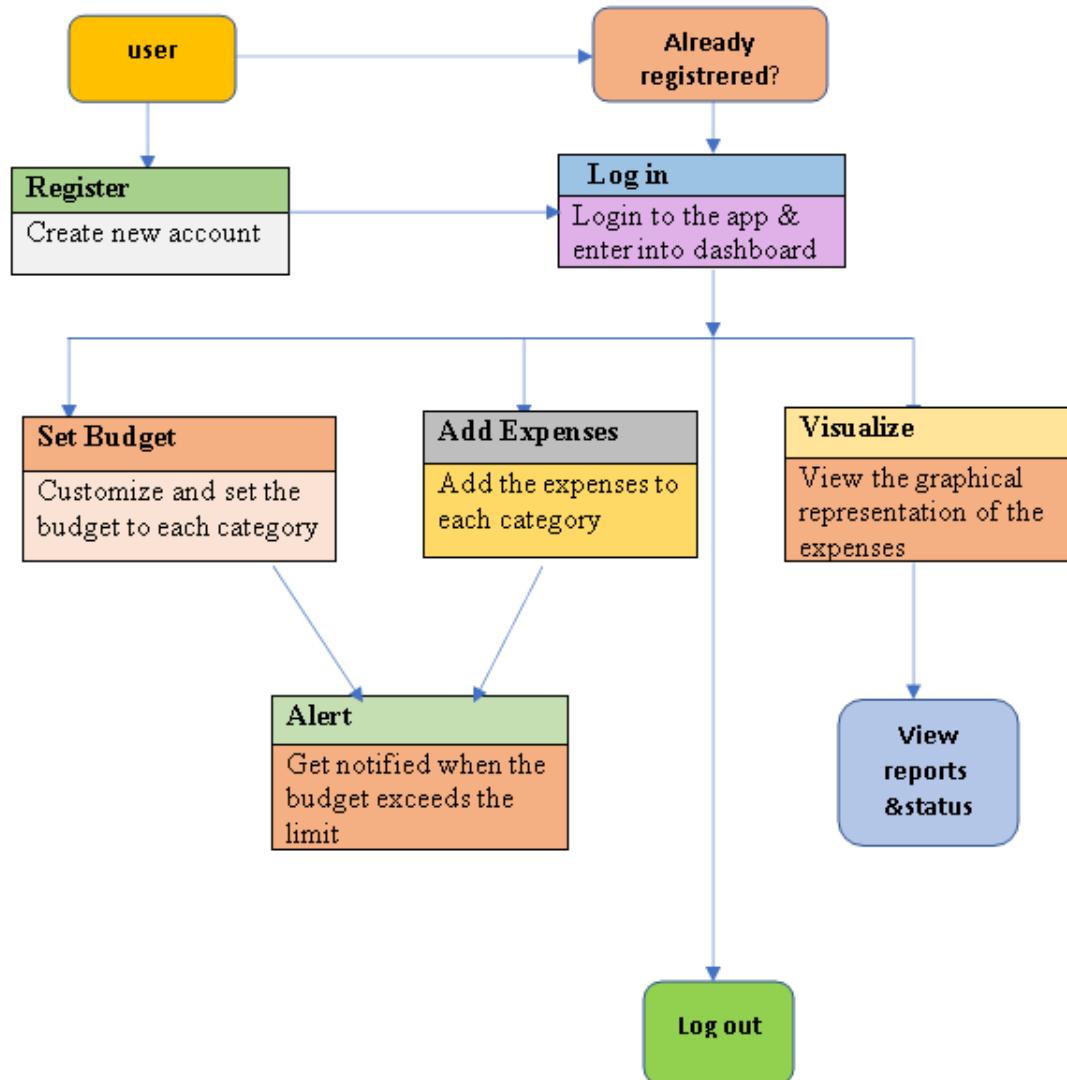
## 4.2 Non-Functional requirements

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

FR No.	Non-Functional Requirement	Description
NFR-1	<b>Usability</b>	A quality attribute that assesses how easy user interfaces are to use.
NFR-2	<b>Security</b>	The state of feeling safe and being free from worry.
NFR-3	<b>Reliability</b>	The quality of being trustworthy or of performing consistently well.
NFR-4	<b>Performance</b>	The load is managed through the load balancer used with docker. Thus ensuring good performance.
NFR-5	<b>Availability</b>	With load balancing and multiple container instances, the service is always available.
NFR-6	<b>Scalability</b>	The ability to increase or decrease in performance and cost in response to changes in application and system processing demands.

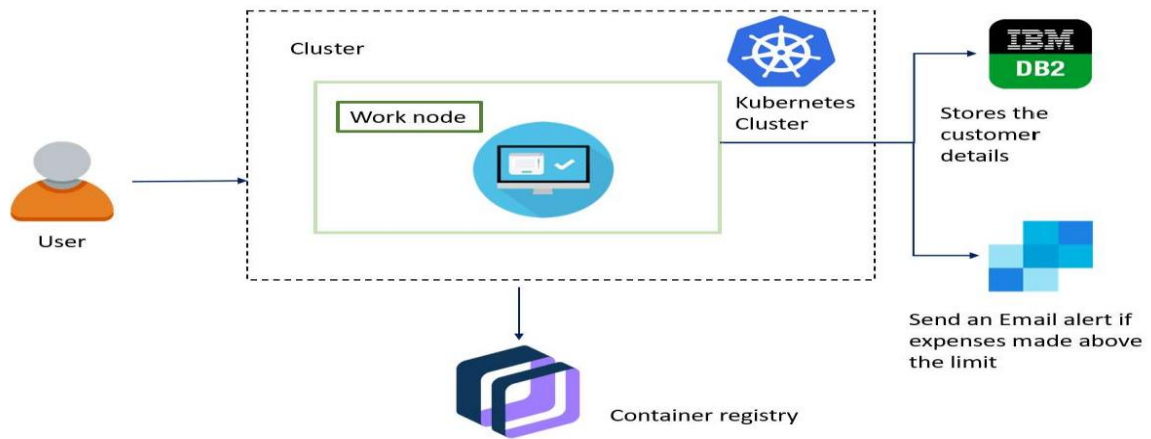
## 5. PROJECT DESIGN

### 5.1 Data Flow Diagrams

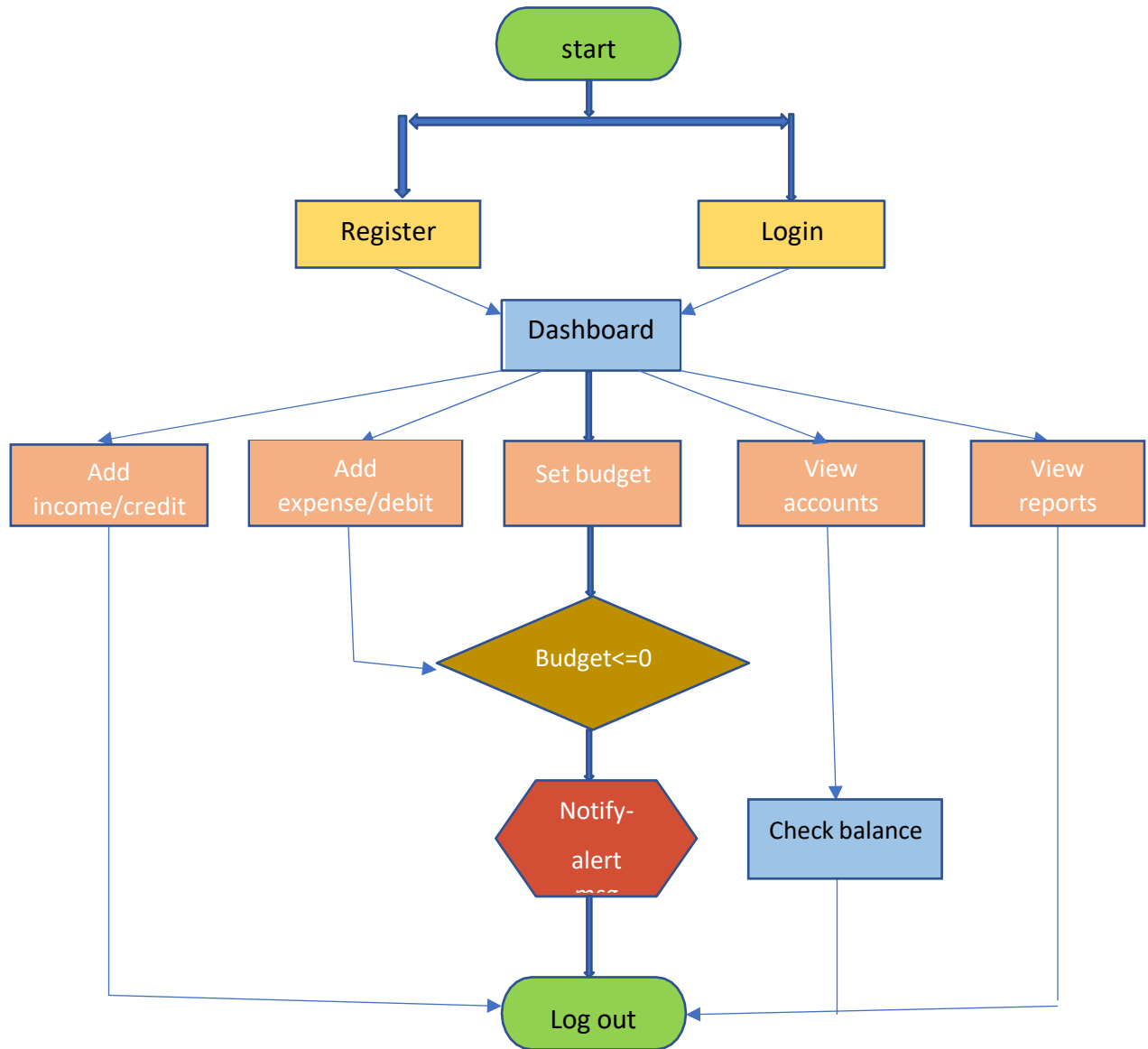


## 5.2 Solution & Technical Architecture

Technical Architecture:



## Solution Architecture



### 5.3 User Stories

User Type	Functional Requirements (Epic)	User story Number	User Story/Tasks
Customer (Mobile User)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.
	login	USN-2	As a user, I can log into the application by entering email & password
	Set	USN-3	As a user, I can customize and set budget to each category
	Add	USN-4	As a user, I can add the details of my expenses
	View	USN-5	As a user, I can view my expenses in the form of graphical representations
	Get Notify	USN-6	As a user I will get alert messages if the target amount gets exceed
Administrator	application	USN-7	As an admin, I can upgrade or update the application

## 6.PROJECT PLANNING & SCHEDULING

### 6.1Sprint Planning

<b>Sprint</b>	<b>Functional Requirement (Epic)</b>	<b>User Story Number</b>	<b>User Story / Task</b>	<b>Story Points</b>	<b>Priority</b>	<b>Team Members</b>
Sprint-1	Creating loginpage	USN-1	As a user, I can create my account and get mylogin credentials.	10	High	4
Sprint-1	IBM Cloud	USN-2	As a user, my data is stored in IBM cloud so I can access my account through multiple devices.	10	Medium	4
Sprint-2	Adding Expenses to an application	USN-3	As a user, I can add my budget and track my monthly expenses based on expenditure.	10	High	4
Sprint-2	Kubernetes	USN-4	As a developer, scaling your applications up and down to fit changing needs, monitoring your applications, and more—making it easier to manage.	10	Medium	4
Sprint-3	Integration of IBM Cloud and SendGrid	USN-5	As a user, I can get my details, my transactionhistory, latest updates about my expenses.	10	High	4
Sprint-3	Dashboard	USN-6	As a user, I can get all my reports lists andfeatures at aninstant in the dashboard.	10	Medium	4
Sprint-4	Tips and suggestion	USN-7	As a user, I can get useful tips to save money based on my transaction.	10	Low	4
Sprint-4	Overall	USN-8	Expense ,income, transaction, invest and manyfeatures can be benefitted from this app.	10	High	4



## Estimation

### Project Tracker, Velocity & Burndown Chart:

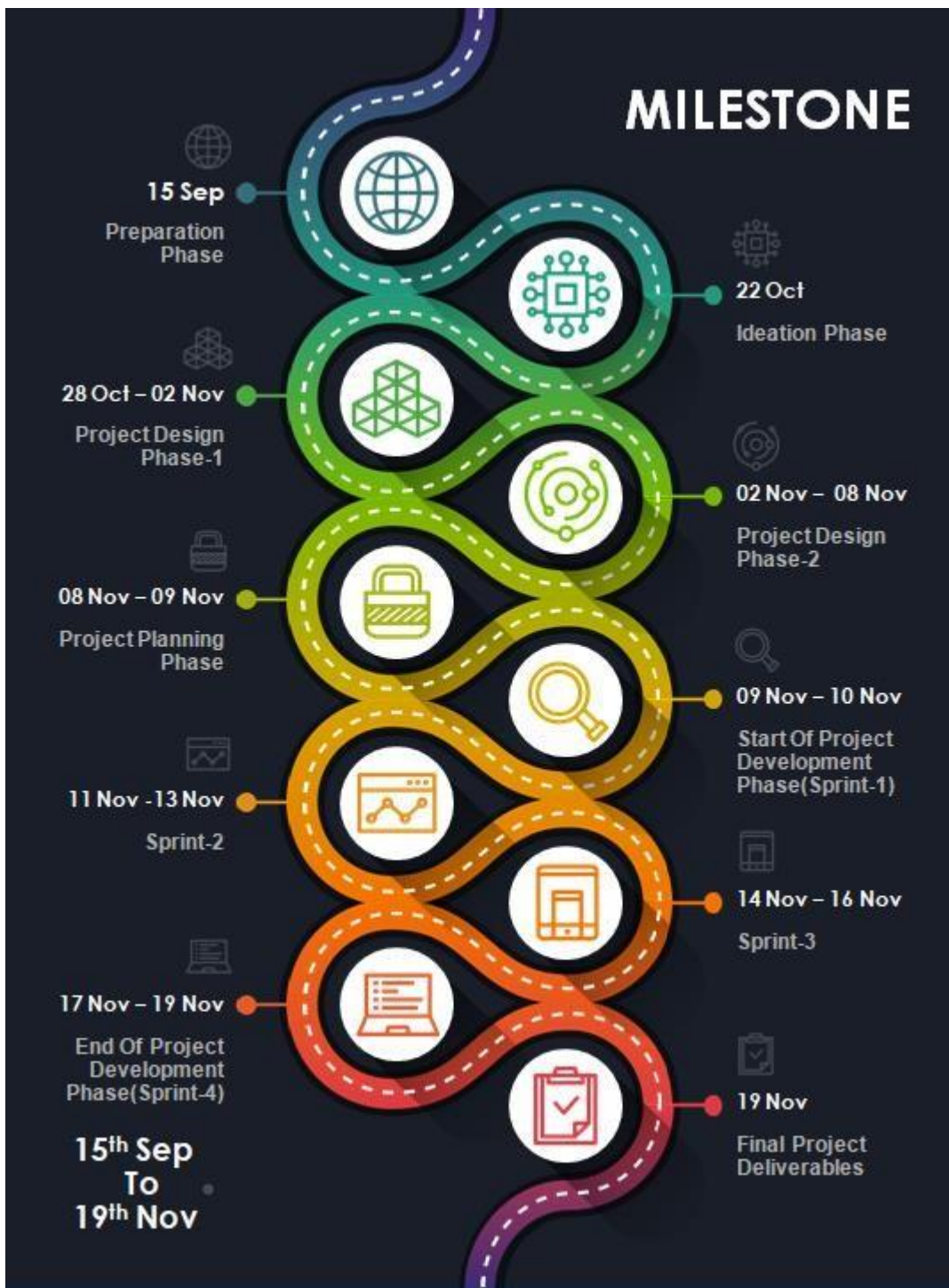
Sprint	Total Story Point	Duration	Sprint Start Date	Sprint End Date Planned	Story Points Completed (as on Planned End Date)	Sprint Release Date(Actual)
Sprint-1	20	2 Days	09 Nov 2022	10 Nov 2022	20	20 Nov 2022
Sprint-2	20	3 Days	11 Nov 2022	13 Nov 2022	20	20 Nov 2022
Sprint-3	20	3 Days	14 Nov 2022	16 Nov 2022	20	20 Nov 2022
Sprint-4	20	3 Days	17 Nov 2022	19 Nov 2022	20	20 Nov 2022

### Velocity:

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

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

## 6.2 Sprint Delivery Schedule



## 7. CODING & SOLUTIONING

### 7.1 Feature 1

We have added the data visualization methods for expenditure. The pie chart have been used to represent the monthly expenses. The pie chart is a pictorial representation of data that makes it possible to visualize the relationships between the parts and the whole of a variable. For example, it is possible to understand the industry count or percentage of a variable level from the division by areas or sectors. The recommended use for pie charts is two- dimensional, as three-dimensional use can be confusing.

- You are looking to categorize and compare a set of data
- You only have positive values.
- You have less than seven categories since a larger number can make it difficult to perceive each segment

### CODE :

Function for implementing feature

```
@app.route("/month")
```

```
def month():
```

```
    cursor = mysql.connection.cursor()
```

```
    cursor.execute('SELECT DATE(date), SUM(amount) FROM expenses WHERE  
userid= %s AND MONTH(DATE(date))= MONTH(now()) GROUP BY DATE(date)  
ORDER BY DATE(date) ',(str(session['id'])))
```

```
    texpanse = cursor.fetchall()
```

```
    print(texpanse)
```

```
    cursor = mysql.connection.cursor()
```

```
    cursor.execute('SELECT * FROM expenses WHERE userid = % s AND
```

```
MONTH(Date(date))= MONTH(now()) AND date ORDER BY `expenses`.`date`  
DESC',(str(session['id'])))
```

```
expense = cursor.fetchall()
```

```
total=0
```

```
t_food=0
```

```
t_entertainment=0
```

```
t_business=0
```

```
t_rent=0
```

```
t_EMI=0
```

```
t_other=0
```

```
for x in expense:
```

```
    total += x[4]
```

```
    if x[6] == "food":
```

```
        t_food += x[4]
```

```
    elif x[6] == "entertainment":
```

```
        t_entertainment += x[4]
```

```
    elif x[6] == "business":
```

```
        t_business += x[4]
```

```
    elif x[6] == "rent":
```

```
t_rent += x[4]
```

```
elif x[6] == "EMI":
```

```
t_EMI += x[4]
```

```
elif x[6] == "other":
```

```
t_other += x[4]
```

```
print(total)
```

```
print(t_food)
```

```
print(t_entertainment)
```

```
print(t_business)
```

```
print(t_rent)
```

```
print(t_EMI)
```

```
print(t_other)
```

```
return render_template("month.html", texpanse = texpanse, expense = expense,  
total = total ,
```

```
t_food = t_food,t_entertainment = t_entertainment,
```

```
t_business = t_business, t_rent = t_rent,
```

```
t_EMI = t_EMI, t_other = t_other )
```

Month.html

{% extends 'base.html' %} {% block body %}

## **MONTH Expense Breakdown**

DATE

AMOUNT

{% for row in texpanse %}

{{row [0]}}

{{row[1] }}

{% endfor %}

## **Expense Breakdown BY Category**

Food

{{ t\_food}}

Entertainment

{{ t\_entertainment}}

Business

{{t\_business}}

Rent

{{ t\_rent }}

EMI

{{ t\_EMI }}

Other

{{ t\_other}}

Total

₹ {{total}}

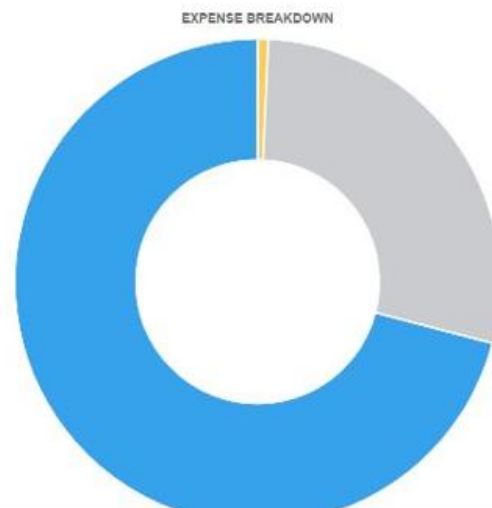
{% endblock % }

### MONTH Expense Breakdown

DATE	AMOUNT
2022-11-02	200
2022-11-09	8000
2022-11-18	20000

### Expense Breakdown BY Category

Food	0
Entertainment	0
Business	200
Rent	8000
EMI	20000



## 7.2 Feature 2

One of the salient feature is that user can track their expenses history. The expenses are displayed based on the priority of latest transaction.

### CODE

#### Display .html

```
{% extends 'base.html' %} {% block body %}
```

#### EXPENSES

```
{% if expense is defined %} {% for row in expense %}
```

```
{{row[2]}}
```

```
{{row[3]}}
```

```
₹ {{row[4]}}
```

```
{{row[5]}}
```

```
{{row[6]}}
```

[Edit](#)

[Delete](#)

{% else %}

{% endfor %} {% endif %} {% endblock %}

Expense Tracker Home Add History LIMIT Report <span>▼</span> Logout						
EXPENSES						
<	2022-11-18 18:19:00	phone	₹ 20000	cash	EMI	<a href="#">Edit</a> <a href="#">Delete</a>
	2022-11-09 22:06:00	House	₹ 8000	creditcard	rent	<a href="#">Edit</a> <a href="#">Delete</a>
	2022-11-02 22:05:00	Food	₹ 200	debitcard	business	<a href="#">Edit</a> <a href="#">Delete</a>

## 7.3 Database Schema

-- Table structure for table `expenses`

--

```
CREATE TABLE `expenses` (  
  `id` bigint(10) NOT NULL,  
  `userid` int(11) NOT NULL,  
  `date` datetime(6) NOT NULL,  
  `expensename` varchar(255) NOT NULL,  
  `amount` int(20) NOT NULL,  
  `paymode` varchar(255) NOT NULL,  
  `category` varchar(255) NOT NULL
```



**) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;**

**--**

**-- Table structure for table `limits`**

**--**

**CREATE TABLE `limits` (  
 `eid` int(11) NOT NULL,  
 `userid` int(11) NOT NULL,  
 `number` int(255) NOT NULL  
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;**

**-- Table structure for table `register`**

**--**

**CREATE TABLE `register` (  
 `userid` int(11) NOT NULL,  
 `username` varchar(255) NOT NULL,  
 `email` varchar(255) NOT NULL,  
 `password` varchar(255) NOT NULL  
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4**

## 8.TESTING

### 8.1Test Cases

Test Case ID	Purpose	Test Cases	Result
TC1	Authentication	Password with length less than 4 characters	Password cannot be less than 4 characters
TC2	Authentication	User name with length less than 2 characters	User name cannot be less than 2 characters
TC3	Authentication	Valid user name with minimum 2 characters	User name accepted

TC4	Authentication	User name left blank	User name cannot be less than 2 characters
TC5	Authentication	Password field left blank	Password cannot be empty
TC6	Authentication	Minimum 4 characters valid password	Password accepted
TC7	Authentication	Password and Confirm Password did not match	Please enter same password
TC8	Authentication	Confirm Password field left blank	Please enter same password

## 8.2 User Acceptance Testing

Technical Requirement Document (TSD)	
Test Case ID	Test Case Description
TC_001	Verify if user is able to order single product.
TC_002	Verify if user is able to order multiple products.
TC_003	Verify if user can apply single or multiple filters
TC_004	Verify if user can apply different sort by
TC_005	Verify if user is able to pay by Master Card
TC_006	Verify if user is able to pay by Debit Card
TC_007	Verify if user is able to pay fully by reward points
TC_008	Verify if user is able to pay partially by reward points

## 9.RESULTS

### 9.1 Performance Metrics

- Tracking income and expenses: Monitoring the income and tracking all expenditures (through bank accounts, mobile wallets, and credit & debit cards).
- Transaction Receipts: Capture and organize your payment receipts to keep track of your expenditure.
- Organizing Taxes: Import your documents to the expense tracking app, and it will streamline your income and expenses under the appropriate tax categories.
- Payments & Invoices: Accept and pay from credit cards, debit cards, net banking, mobile wallets, and bank transfers, and track the status of your invoices and bills in the mobile app itself. Also, the tracking app sends reminders for payments and automatically matches the payments with invoices.
- Reports: The expense tracking app generates and sends reports to give a detailed insight about profits, losses, budgets, income, balance sheets, etc.,

- E-commerce integration: Integrate your expense tracking app with your eCommerce store and track your sales through payments received via multiple payment methods.
- Vendors and Contractors: Manage and track all the payments to the vendors and contractors added to the mobile app.
- Access control: Increase your team productivity by providing access control to particular users through custom permissions.
- Track Projects: Determine project profitability by tracking labor costs, payroll, expenses, etc., of your ongoing project.
- Inventory tracking: An expense tracking app can do it all. Right from tracking products or the cost of goods, sending alert notifications when the product is running out of stock or the product is not selling, to purchase orders.

Recurrent Expenses: Rely on your budgeting app to track, streamline, and automate all the recurrent expenses and remind you on a timely basis.

## 10.ADVANTAGES & DISADVANTAGES

1. **Achieve your business goals** with a tailored mobile app that perfectly fits your business.
2. **Scale-up** at the pace your business is growing.
3. Deliver an **outstanding** customer experience through additional control over the app.
4. Control the **security** of your business and customer data.
5. **Boost the productivity** of all the processes within the organization.
6. Increase **efficiency** and **customer satisfaction** with an app aligned to their needs.
7. **Seamlessly integrate** with existing infrastructure.
8. Ability to provide **valuable insights**.
9. Optimize sales processes to generate **more revenue** through enhanced data collection.

## **11. CONCLUSION**

From this project, we are able to manage and keep tracking the daily expenses as well as income. While making this project, we gained a lot of experience of working as a team.

We discovered various predicted and unpredicted problems and we enjoyed a lot solving them as a team. We adopted things like video tutorials, text tutorials, internet and learning materials to make our project complete.

## **12. FUTURE**

The project assists well to record the income and expenses in general. However, this project has some limitations:

- The application is unable to maintain the backup of data once it is uninstalled. This application does not provide higher decision capability.

To further enhance the capability of this application, we recommend the following features to be incorporated into the system:

- Multiple language interface.
- Provide backup and recovery of data.
- Provide better user interface for user.