Personal Expense Tracker Application

NALAIYA THIRAN PROJECT BASED LEARNING ON

PROFESSIONAL READINESS FOR INNOVATION, EMPLOYNMENT AND ENTERPRENEURSHIP

Team ID: PNT2022TMID08765

A PROJECT

REPORT BY

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1.   INTRODUCTION

a.   Project Overview

Due to the lack of a complete tracking system, there is a constant overload to rely on thedaily entry of the expenditure and totaling it down at the end of the month. So to avoid all the hassles of the age-old traditional system, this project is an attempt to manage our daily expenses in a more efficient, simple, fast, smooth and effective way.

b.   Purpose

This system enables the user to track their expenses as well as it makes valuablesuggestions, feedback and timely alerts for a smooth experience.

2.   LITERATURE SURVEY

a.   Existing problem

Tracking daily expenses isn't therefore innovative. Several ancient and technological approaches are found to trace our expenses and budget with their own practicality. From decades ago and these days we've been writing our expenditure in a register to calculate theprofit or saving. Not solely this several desktop and mobile applications have been developed for this purpose. Quicken and Microsoft cash were the primary desktop applications developed decades ago however weren't therefore acquainted with the users. My budget book application is employed to check the expenses in charts or graphs with the calendar system. QuickBooks were the appliance for the little business holder to finish off their whole business. YNAB and Penny were the most recent applications that were embedded with AI and applicable for commerce expenses mechanically. However, Mint was the one that was widely used and trustworthy.

b.   References

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C. Problem Statement Definition

There is no proper solution available in the market which enables people to keep a track of their daily expenses easily. To do so people have to maintain all the records of their expenses in some form or other, also all the calculations are to be performed manually by the user which may at times result in errors leading to unfavourable circumstances. Due to the lack of a complete tracking system, there is a constant overload to rely on the daily entry of the expenditure and totalling it down at the end of the month. So to avoid all the hassles of the age-old traditional system, this project is an attempt to manage our daily expenses in a more efficient, simple, fast, smooth and effective way. The system aims to eliminate the burden of the user by eliminating the need for manual tracking and calculations to keep track of the expenditure. This system enables the user to track their expenses as well as it makes valuable suggestions, feedback and timely alerts for a smooth experience.

IDEATION & PROPOSED SOLUTION
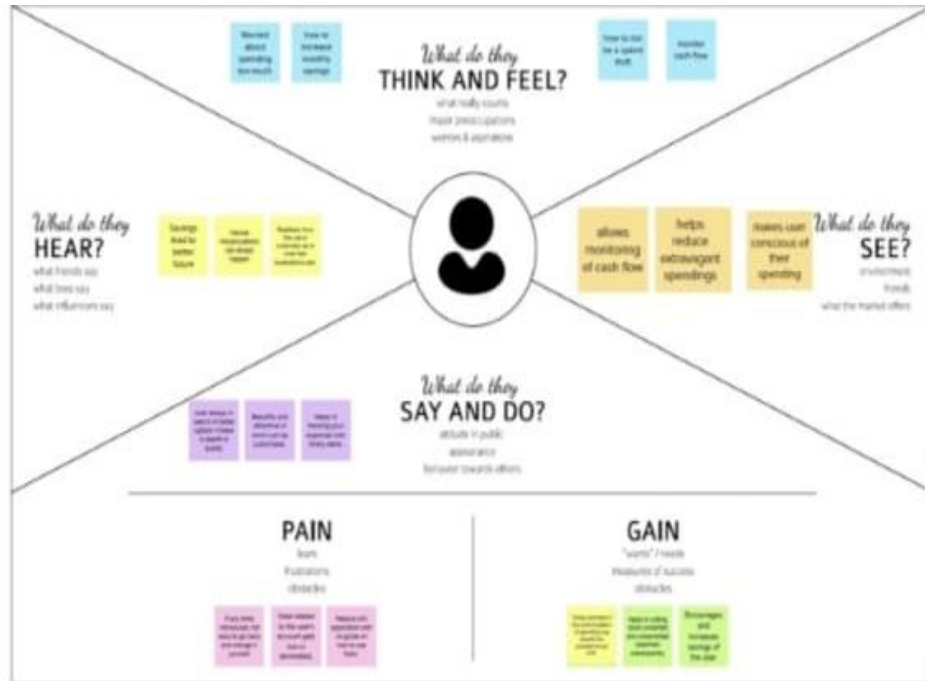
Empathy Map Canvas

Ideation & Brainstorming

Step-1: Team Gathering, Collaboration and Problem Statement

Step-2: Brainstorm, Idea Listing and Grouping

Step-3: Idea Prioritization
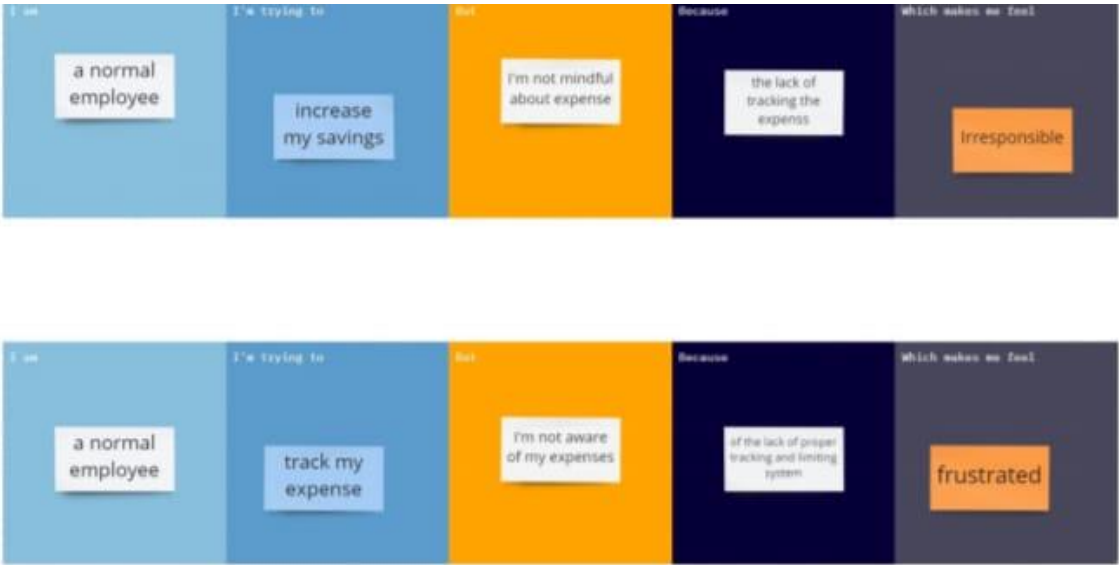
Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

⏱ 20 minutes

Importance

If each of these tasks could get done without any difficulty or cost, which would have the most positive impact?

Feasibility

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

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	helps you see your money situation and figure out possible money problems before they occur.
2.	Idea / Solution description	It's easy to make this part of your everyday routine thanks to expense tracker apps that help you manage your money on the go. These apps certainly overlap with budgeting apps, but while the latter provides a big-picture view of your finances, expense tracker apps put more of an emphasis on your spending. These apps usually categorize your expenses and help you get a good idea of your purchasing behavior
3.	Novelty / Uniqueness	It can track the donors in real time and monitor them with accurate details like name, age, and whether they have donated within the stipulated time, etc.. and can notify via email or message when the recipient finds the donor.

4.	Social Impact / Customer Satisfaction	Recipients need not worry about the right donor. All they must do is feed the data into the application to search for the right donor.
5.	Business Model (Revenue Model)	Based on the status of the donors, the recipient needs to offer to the user. The more critical the case is, the bigger the revenue.
6.	Scalability of the Solution	It can track and maintain any number of donors and recipients without any errors and give them accurate results.

D.Problem Solution Fit

REQUIREMENT ANALYSIS

Functional requirement

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Form for collecting details
FR-2	Login	Enter username and password
FR-3	Calendar	Personal expense tracker application must allow user to addthe data to their expenses.
FR-4	Expense Tracker	This application must graphically represent the expense like report.
FR-5	Report generation	Report must be generated in a graphical form.
FR-6	Category	This application shall allow users to add categories of their expenses.

Non-Functional requirements

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	It helps you to keep an eye on your income and expense.
NFR-2	**Security**	This expense tracking application might save you from committing cybercrimes.
NFR-3	**Reliability**	There is no loss of data as the data is stored in an efficient data storage.
NFR-4	**Performance**	The types of expense are categories along with an option. Throughput of the system is increased due to light weight database support.
NFR-5	**Availability**	The application must have a 100% up-time.
NFR-6	**Scalability**	The ability to appropriately handle increasing demands.

3. PROJECT DESIGN

Data Flow Diagrams
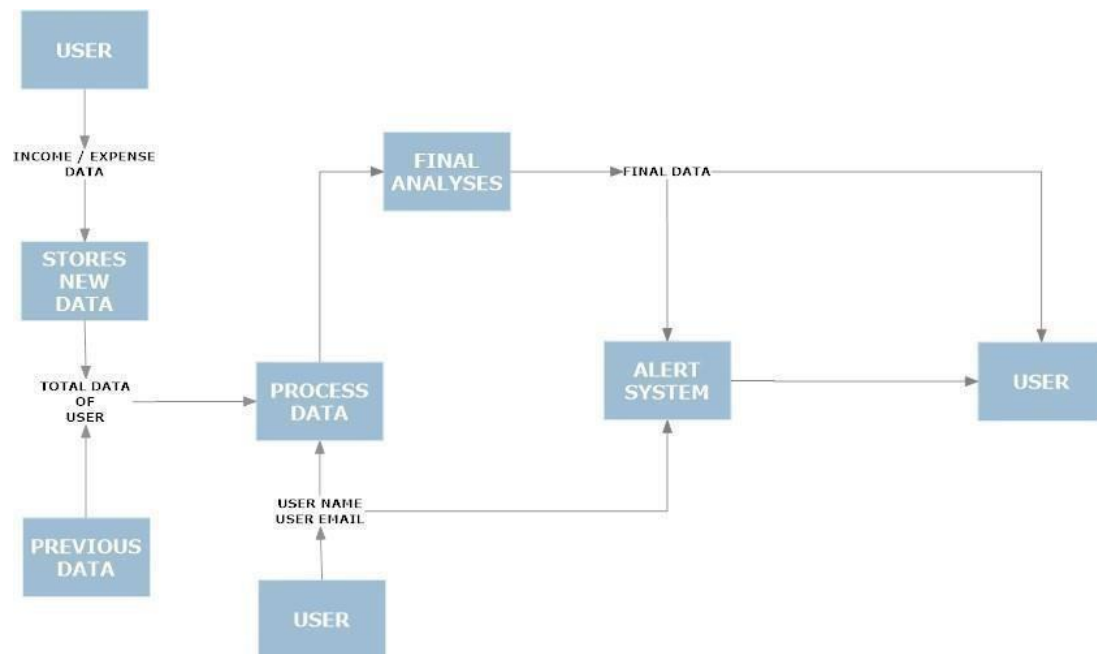
Solution & Technical Architecture

Solution Architecture:

● Software Requirements:
  Python, Flask , Docker, IBM Cloud, SendGrid

● Minimum System Requirements:
  8GB RAM,Intel Core i3,OS-Windows/Linux/MAC ,Laptop or Desktop

Product Requirements:

1. Initialize balance on signing up.
2. Update balance whenever necessary.
3. Add expenses along with their categories.
4. Update an expense.
5. Display remaining balance.
6. Visualize expenditure patterns with pictorialization tools.
7. Set a monthly limit on expenditure.
8. Notify users when they exceed their monthly limit
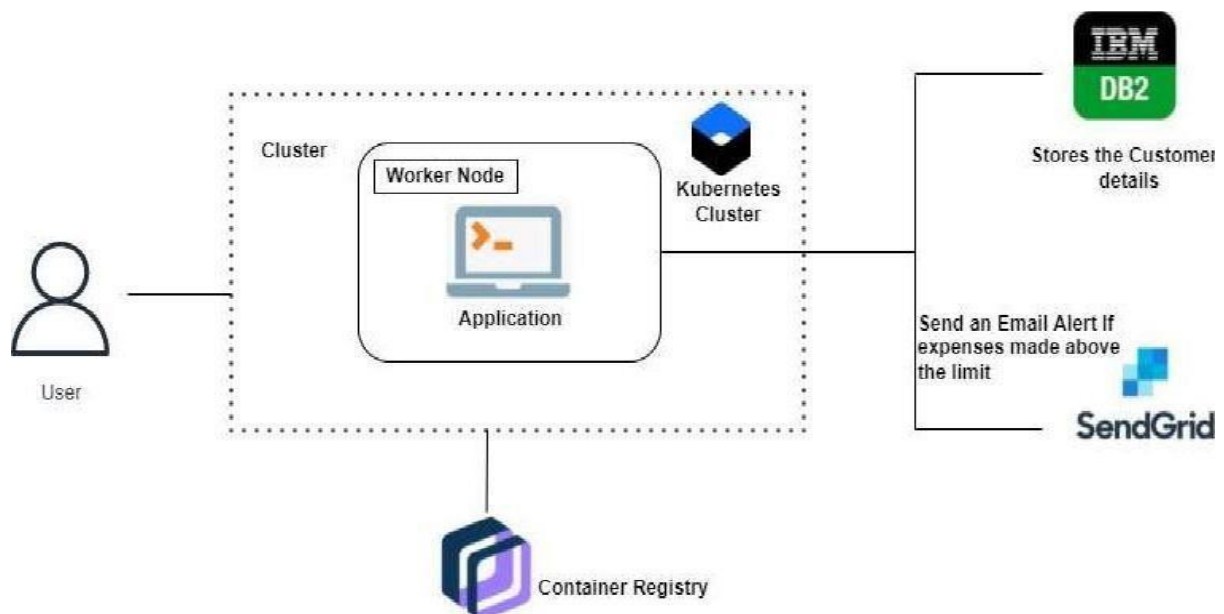
Technology Architecture
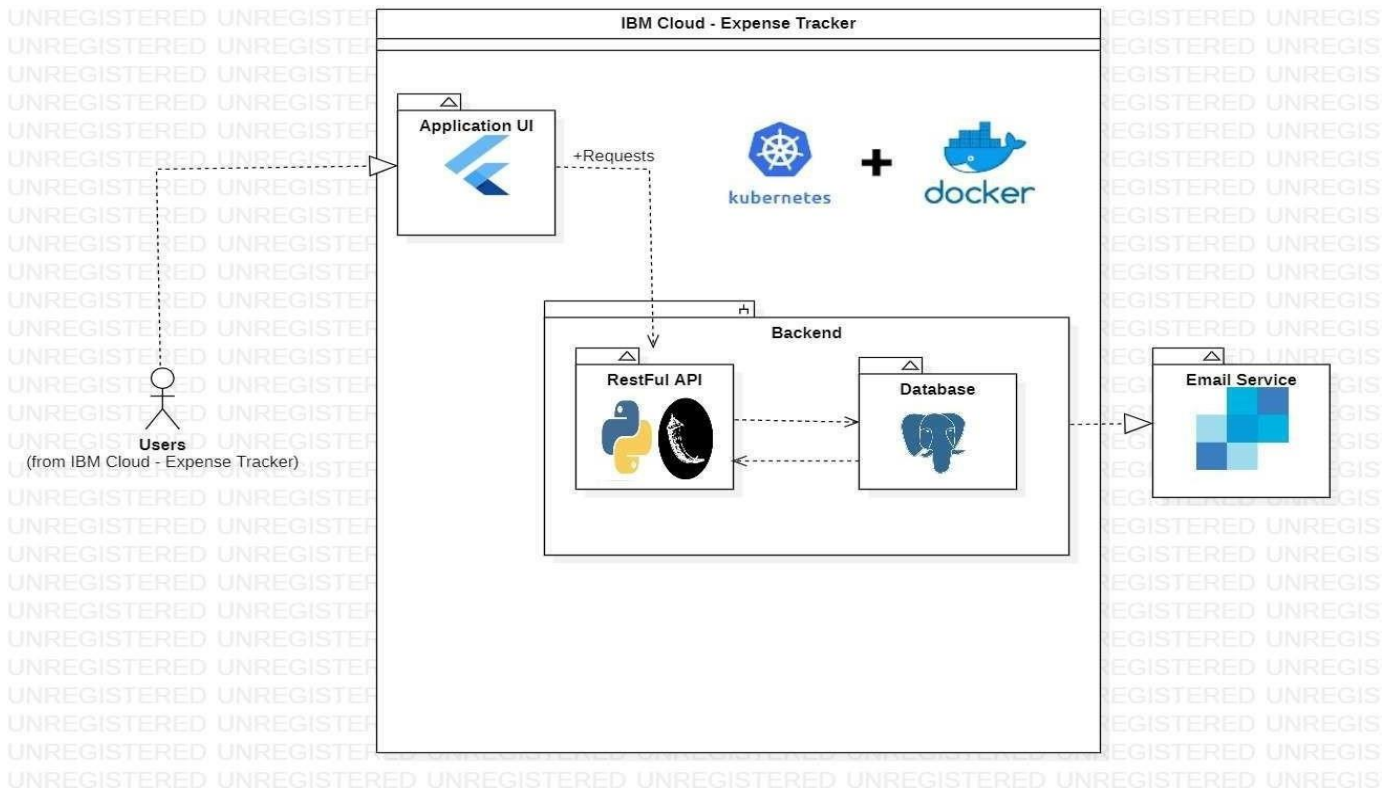
Component	Description	Technology
UI	User Interface for accessing features of the application	Flutter
Server Implementation	Provides RestFul Services for manipulating user data from the events of UI	Python:Flask
DB	Persistent Data storage	PostgresSQL
Mail Service	Sending mail to user in case of any important event	Sendgrid
Deployment	Deployment of application in the cloud	Containerization by Docker, Orchestration by Kubernetes

Application Characteristics: Personal Expense Tracker Application

Characteristics	Description	Technology
Open Source	Source Code of tools available to public	All tools used for development are open source by nature
Security	Maintaing Data Confidentiality and Authorization	Brcypt for hashing and AES for encryption, HTTPS for overall security during transmission
Scalability and Availability	Use of microservices ensures scalability in business logic, Cloud Application serves very well in Scability and Availability	Flask – microservices architecture, Kubernetes for maintaing scalibility in deployment

PROJECT PLANNING & SCHEDULING

a. **Sprint Planning & Estimation**
   Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Homepage	USN-1	AS a user I can view the index page to seethe about of the Expense tracker	10	High	Sandhiya
Sprint-1	Registration	USN-2	As a User, I need to register user id and passcode for every workers over there in municipality	10	High	Dhevadarshni
Sprint-1	Login	USN-3	As a user, I need to login with user id and password to get in to the website	10	High	Selvatharshni
h	Dashboard	USN-4	As a User, I will follow Co-Admin's instructionto reach the filling bin in short roots and save time	20	Low	Sandhiya Selvatharshni
Sprint-3	Add Expenses	USN-5	As a User I will add my expense throughout the month I spend on	20	Medium	Dhevadarshni Nandhini
Sprint-3	Total Expense Graph	USN-6	As a user I should be able to see mydaily expenditure	20	Medium	Sandhiya

Project Tracker, Velocity & Burndown Chart: (4 Marks)

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	7	6 Days	24 Oct 2022	29 Oct 2022	7	(Meet Planned Date)
Sprint-2	7	6 Days	31 Oct 2022	05 Nov 2022	7	- (Meet PlannedDate)
Sprint-3	13	6 Days	07 Nov 2022	12 Nov 2022	13	- (Meet PlannedDate)
Sprint-4	8	6 Days	14 Nov 2022	19 Nov 2022	8	- (Meet Planned Date)

Velocity:

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)

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

b. Sprint Delivery Schedule

	OCT							NOV						NOV						NOV					
	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Sprints			IBM Sprint 1						IBM Sprint 2							IBM Sprint 3							IBM Sprint 4					
∨ ⊞ IM-3 Login Page																												
⊡ IM-1 As a user I should be able to register to the app DONE																												
⊡ IM-2 As a user I should be able to login to the app DONE																												
∨ ⊞ IM-9 Timeline Page																												
⊡ IM-4 As a user I should be able to access my Timelines tab DONE																												
⊡ IM-5 As a user I should be able to filter according to date DONE																												
⊡ IM-6 As a user I should be able to see my expenses graph DONE																												
⊡ IM-7 As a user I should be able to see my daily expenditure DONE																												
⊡ IM-8 As a user I should be able to fix the categry of expense DONE																												
∨ ⊞ IM-20 Profile Page																												
⊡ IM-16 As a user I should be able to access my profile page IN PROGRESS																												
⊡ IM-17 As a user I should be able to edit my details IN PROGRESS																												
⊡ IM-18 As a user I should be able to logout IN PROGRESS																												
∨ ⊞ IM-15 Budgets Page + Deployment																												
⊡ IM-10 As a user I should be able to access the budgets page TO DO																												
⊡ IM-11 As a user I should be able to set my monthly budgets TO DO																												
⊡ IM-12 As a user I should be able to edit my monthly budget TO DO																												
⊡ IM-13 As a user I should be able to monitor different category of expenses TO DO																												
⊡ IM-14 As a user I should be able to see the graphical representation of my expenses TO DO																												
⊡ IM-19 As a user I should be able to use the app on the cloud platform TO DO																												

7. CODING & SOLUTIONING (Explain the features added in the project along with code)

a. Feature 1 Login

Page:

Aim: to create a login page and test it

Purpose: the purpose of the login page is to give a way for the user to login into the application and also to enable him/her to register to the app

Code:

```
import      'package:flutter/material.dart';
import 'package:flutter/services.dart';
import      'package:google_fonts/google_fonts.dart';
import 'package:ledgerfe/login/utilities/logo.dart';
import  'package:ledgerfe/login/utilities/submit_button.dart';  import
'package:ledgerfe/login/utilities/username_field.dart';

class MobileView extends StatelessWidget {
const MobileView({Key? key}) : super(key: key);

 @override
Widget build(BuildContext context) {return
Scaffold(
backgroundColor: const Color(0xFF5BA66E),appBar:
AppBar(
    systemOverlayStyle:
                                                      SystemUi
OverlayStyle(statusBarColor:Colors.white.withOpacity(0)),
backgroundColor: const Color(0xFF5BA66E),elevation:
0,
```

```dart
      ),
  body:  SingleChildScrollView(  child:
   Column(
  children: <Widget>[Logo(),
   SizedBox(
   height: MediaQuery.of(context).size.height*0.05,
   ),
   UsernameField(),Padding(
         padding:
                                    EdgeInsets.fromLTRB(MediaQuery.of(c
   ontext).size.width*0.07,                0,
   MediaQuery.of(context).size.width*0.07, MediaQuery.of(context).size.width*0.07),
  child:    TextField(  obscureText:    true,
   enableSuggestions: false, autocorrect: false,
   decoration: InputDecoration(

   border: OutlineInputBorder(),
   ),
   ),
   ),
   SizedBox(
   height: MediaQuery.of(context).size.height*0.05 ,
   ),
   const SubmitButton(),SizedBox(
   height: MediaQuery.of(context).size.height*0.05 ,
   ),
   Row(
   mainAxisAlignment:   MainAxisAlignment.spaceEvenly,  children:
   <Widget>[
   Text(
   "Don't    have    an    account?",   style:
   GoogleFonts.kanit()
   ),
 TextButton(  onPressed:  ()  {}, child:
   Text( "Register now",
   style: GoogleFonts.kanit()
   ),
   )
   ],
   )
   ],
   ),
   ),
   );
   }
   }
```

b. Feature 2 Timeline page:

Aim: to create a dashboard page for the app for the user to travel to other associatedpages and also to show vital information in the template page and also allow the user to add and monitor daily expenses

Purpose: the purpose of this age is to integrate the functionality of the app using this as the dashboard where the daily expenses and related category of expenses are added and also monitor the expenses by displaying the infographic on a graph structure.

Code:

```
import 'package:flutter/material.dart';
import    'package:font_awesome_flutter/font_awesome_flutter.dart';
import 'package:ledgerfe/timeline/services/expense_data.dart';  import
'package:ledgerfe/timeline/utilities/expense_cards.dart';         import
'package:ledgerfe/timeline/utilities/representation.dart';
import 'package:flutter_datetime_picker/flutter_datetime_picker.dart'

class MobileView extends StatefulWidget {
const MobileView({Key? key}) : super(key: key);

 @override
 State<MobileView> createState() => _MobileViewState();
 }

class _MobileViewState extends State<MobileView> { PageController
 controller = PageController(viewportFraction: 1.0);
  List<ExpenseData>        val=<ExpenseData>[ExpenseData(tag:    "education",time:
 "Monday",remarks:    "summa",amount:    25.0),ExpenseData(tag:    "education",time:
 "Monday",remarks: "summa",amount: 25.0)];
 DateTime   from   =   DateTime.now();
 DateTime   to   =   DateTime.now();
 StatefulBuilder filter(){
 return StatefulBuilder(
builder:  (context,setState){return   AlertDialog(  title:
 const Text("Filter by date"),
content:    Column(    children:
 <Widget>[ElevatedButton(
onPressed:   (){    DatePicker.showDateTimePicker(
 context,
 showTitleActions:       true,      minTime:
 DateTime(1970,1,1),             maxTime:
```

```dart
      DateTime(2080,1,1),onConfirm: (date){
    setState(() { from = date;
      });
      }, currentTime: DateTime.now(), locale: LocaleType.en);
      },
    child: Text( "${from.year}/${from.month}/${from.day}"
      ),
      ),
ElevatedButton(onPressed: (){
DatePicker.showDateTimePicker(context,
    showTitleActions: true,

    minTime:       DateTime(1970,1,1),       maxTime:
    DateTime(2080,1,1),onConfirm: (date){
    setState(() {to = date;
      });
      }, currentTime: DateTime.now(), locale: LocaleType.en);
      },
    child: Text( "${to.year}/${to.month}/${to.day}"
      ),
      )
      ],
      ),
    actions: <Widget>[TextButton(
      onPressed: () => Navigator.pop(context, 'Cancel'),child: const
      Text('Cancel'),
      ),
    TextButton( onPressed: () {
      Navigator.pop(context, 'OK');
      },
      child: const Text('Submit'),
      ),
      ],
      );}
      );
      }
      @override
    Widget build(BuildContext context) {return
      Scaffold(
    appBar: AppBar(actions: [
      IconButton(
onPressed:   ()   =>   showDialog( context:
      context,
      builder: (BuildContext context) => filter()
      ),
    icon:               const               Icon(
      FontAwesomeIcons.filter,           color:
      Color(0xFF3e688c),
```

```dart
      )
    ),

InkWell( onTap: () {},
  child: const Padding(
  padding: EdgeInsets.fromLTRB(0, 0, 12, 0),child: Icon(
  FontAwesomeIcons.user,            color:
  Color(0xFF3e688c),
  ),
  ),
  ),
  ],
  ),
body:          RawScrollbar(
  thickness: 10,
  radius:  const  Radius.circular(12),  timeToFade:
  const Duration(seconds: 1),controller: controller,
child: PageView( pageSnapping: false,
  scrollDirection: Axis.vertical,controller:
  controller, children: [
  const                 Representation(),
  ExpenseCards(expenses: val),
  ],
  ),
  ),
floatingActionButton:   FloatingActionButton(  child:
  const Icon(Icons.add),
  onPressed: () {},
  ),
  );
  }
  }
```

8. TESTING

a. Test Cases

S.no	Test Scenarios
	Authentication
1	Verify user is able to see login page
2	Verify user is able to loginto application or not?
3	Verify user is able to navigate to create your account page?
4	Veriify login page elements
	Expense
1	User after successful authentication can view the the time line?
2	Can user view the consolidated expenses in the form of pie chart?
3	Can user filter by date and view that specific expense by date?

LoginPage_TC_OO1	Functional	Home Page	Verify user is able to see the Login/Signup popup when user clicked on My account button	1.Open the app 2.Incase of registered users,enter username and password. 3.If the user doesnt have an account, go over to register now	https://shopenzer.com/	1. Newly registed users are redirected to login page. 2. Exisiting users when entered the correct credentials get redirected to go timeline	Working as expected	Pass			
LoginPage_TC_OO2	UI	Home Page	Verify the UI elements in Login/Signup.	1.Open the application 2.Verify login/Singup with below UI elements: a.email text box b.password text box c.Dont have an account? register now	https://shopenzer.com/	Application should show below UI elements: a.email text box b.password text box c.Submit button with blue button d.Dont have an account? Register now	Working as expected	ail	Steps are not clear to follow		BUG-1234

				d.New customer? Create account link							
LoginPage _TC_OO3	Funct ional	Home page	Verify user is able to log into applica tion with Valid credent ials	1.Open the applicati on 2.Enter Valid email in Email text box 4.Enter valid passwor d in passwor d text box 5.Click on submit button	email:test@ test.com password: abc	User should be navigate d to the timeline	Wor ks as expe cted	Pa ss			
LoginPage _TC_OO4	Funct ional	Login page	Verify user is able to log into applica tion with InValid credent ials	1.Open the applicati on 2.Enter IValid userna me/ema il in Email text box 4.Enter Invalid passwor d in passwor d text box 5.Click on submit button	email: chalam@gm ail.com password:xy z	Applicati on should show 'Invalid Credenti als ' validatio n message .	Wor ked as expe cted				

imeLine_ TL_OO1	Funct ional	TimeL ine Page	Verify if the user is automa tically redirec ted to timelin e once the user comple tes authen tication success fully	1.Open the applicati on 2.Enter the valid creditio nals. 3.Wait	email:test@ test.com password: abc	The user is redirecte d to the timeline page	Wor ked as expe cted	pa ss		

b. User Acceptance Testing

1. Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the Personal expense tracker project at the time of the release to User Acceptance Testing (UAT).

2. Defect Analysis

This report shows the number of resolved or closed bugs at eachseverity level, and how they were resolved

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	2	0	0	0	2
External	0	2	0	1	3
Fixed	2	1	0	0	3
Skipped	0	1	0	0	1
Won't Fix	0	0	0	1	1
Totals	4	4	0	2	10

TEST CASE ANALYSIS:
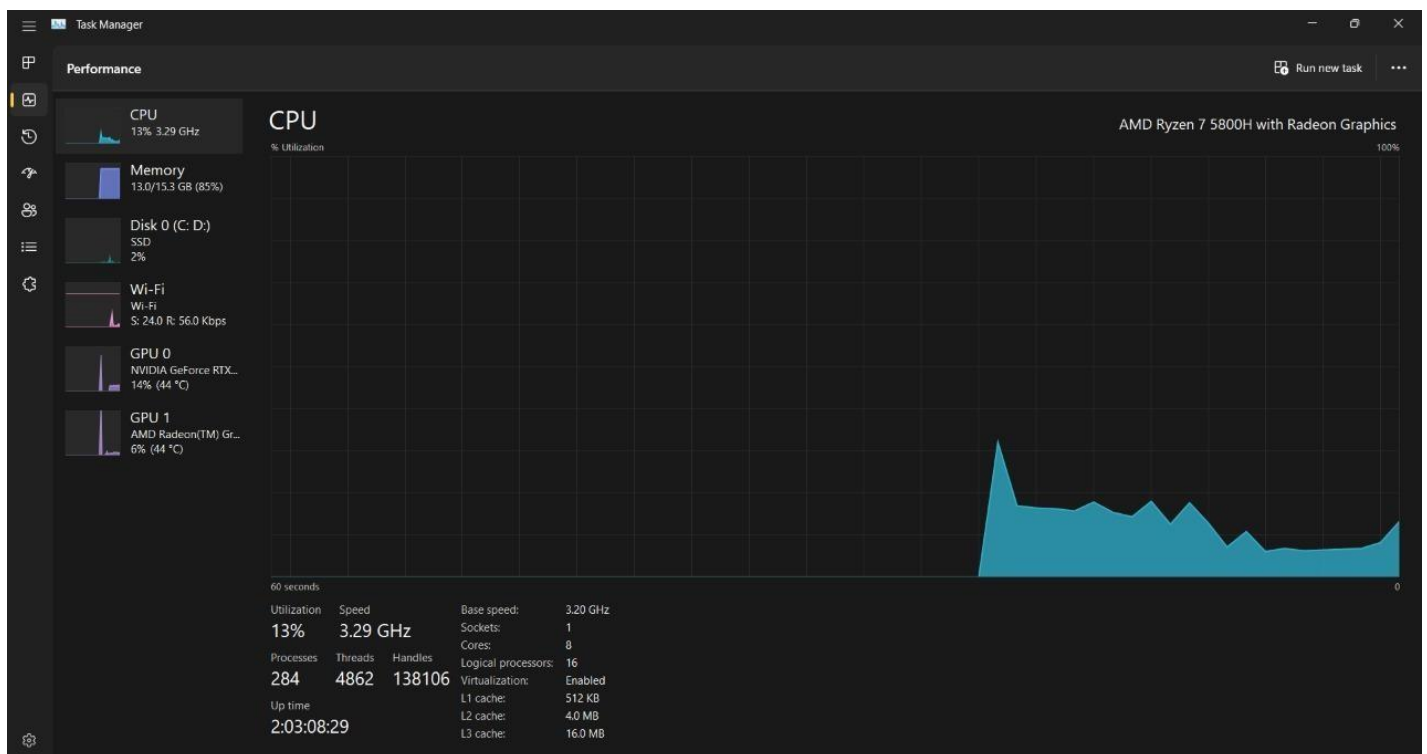
This report shows the number of test cases that have passed, failed, anduntested

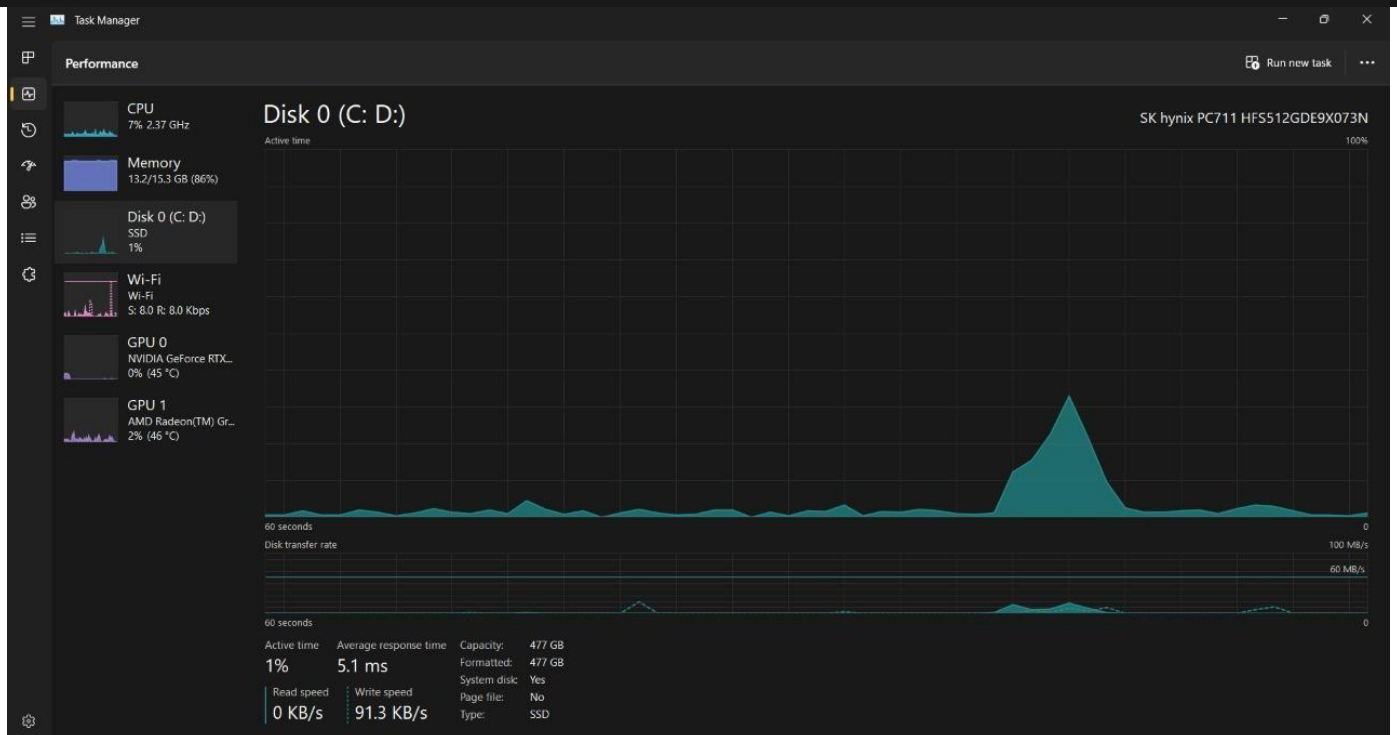| Section	Total Cases	Not Tested	Fail	Pass
UI	3	0	0	3
Database	2	0	0	2
Design	4	0	0	4
Deployment	1	0	1	0

9. RESULTS

a. Performance Metrics

CPU Utilization:

Memory Utilization:
Disc Utilization:
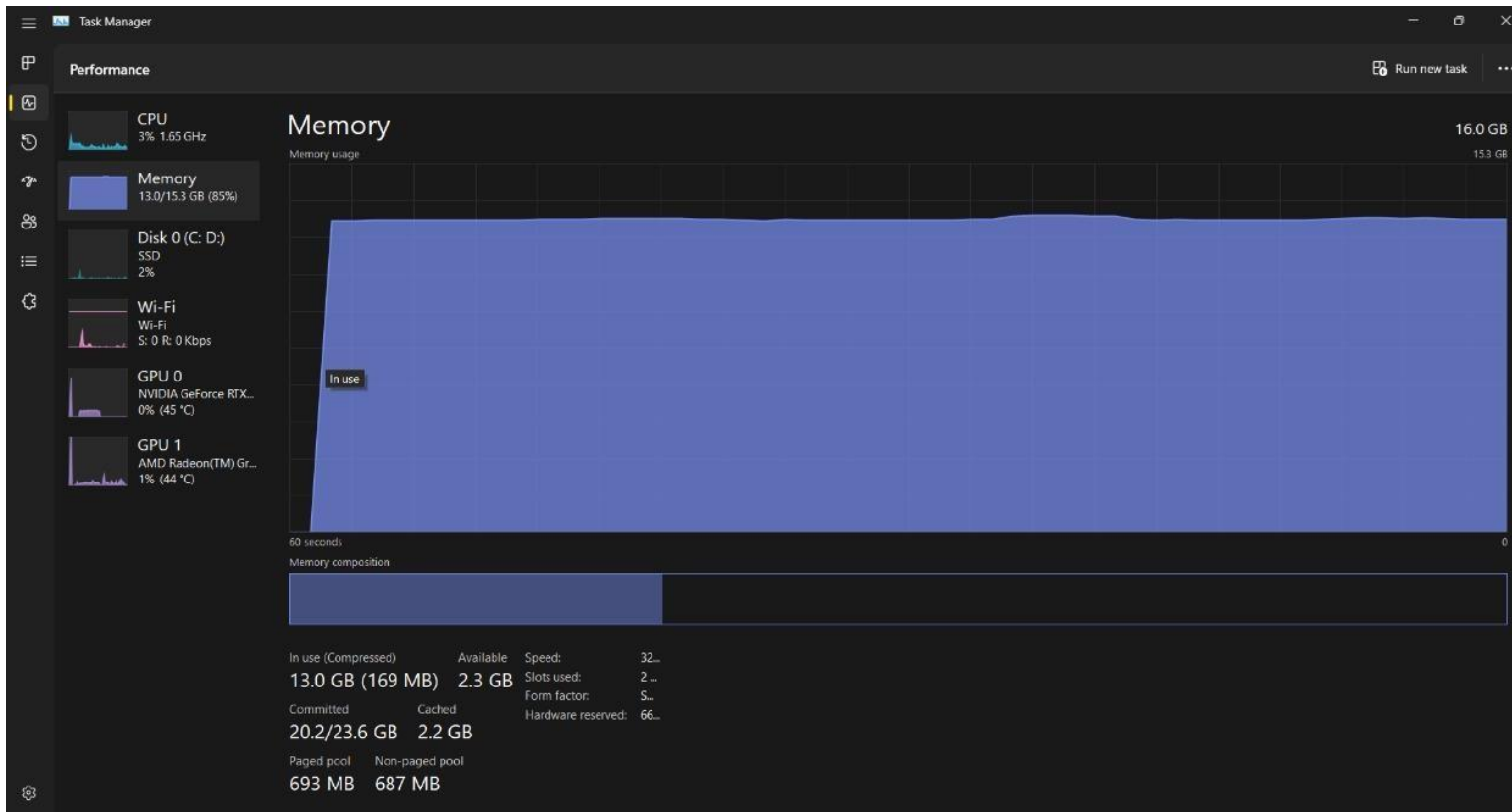
GPU Utilization:

Application Performance Metrics

Error rates :
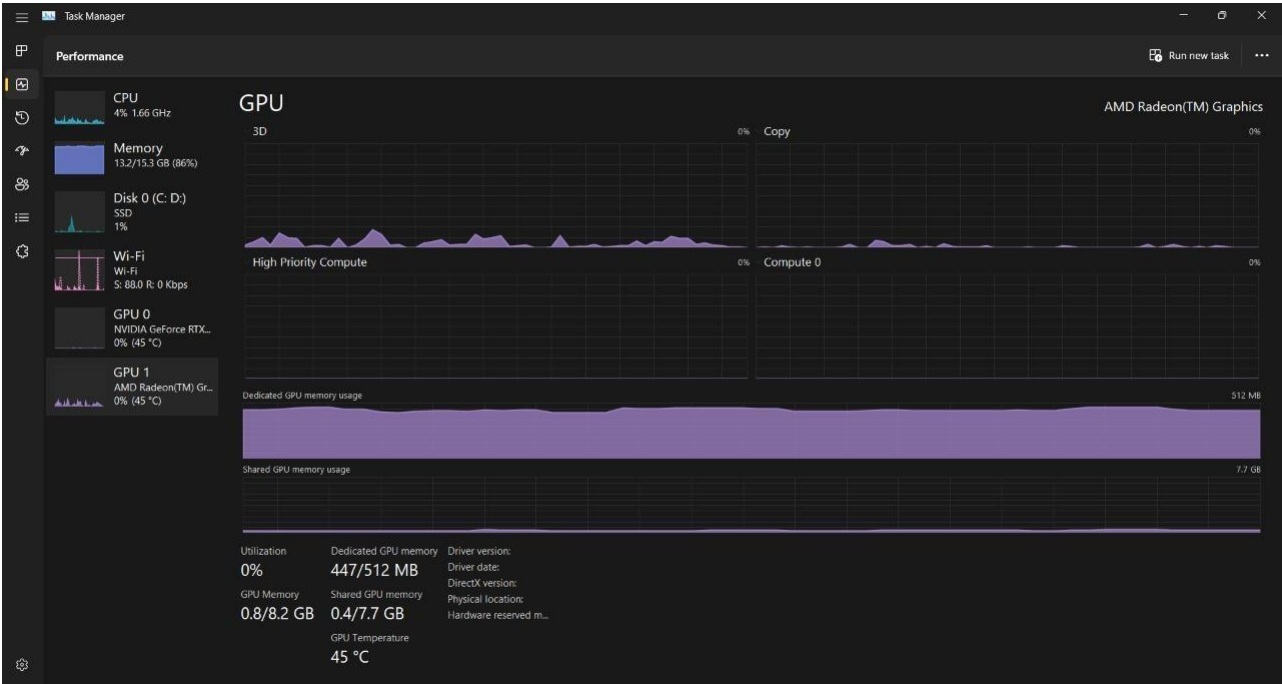
This is the term that describes the degree of errors encountered during data transmission over a communication or network connection. The higher the error rate, the lower the reliability of the connection or data transfer.A 3rd party tool called new relic was used for this.

The error rate for the application Ledger is as mentioned below:

Call to obtain error

```
curl -X GET "https://api.newrelic.com/v2/applications/$APP_ID/metrics/data.xml" \
    -H "Api-Key:$API_KEY" -i \
    -d 'names[]=Errors/-
all&values[]=error_count&from=2022-11-17T00:00:00+00:00&to=2022-11-18T23:35:00+00:00&summarize=true'
```

Output from error count call

```
{
  "metric_data": {
      "from": "2022-11-17T00:00:00+00:00",
      "metrics": [
          {
              "name": "Errors/all",
              "timeslices": [
                  {
                      "from": "2022-11-17T00:35:00+00:00",
                      "to": "2022-11-18T23:35:00+00:00",
                      "values": {
                          "error_count": 5
                      }
                  }
              ]
          }
      ],
      "metrics_found": [
          "Errors/all"
      ],
      "metrics_not_found": [],
      "to": "2022-11-18T23:35:00+00:00"
  }
}
```

Response times:

Response time is the total amount of time it takes to respond to a request for service.Anonline too named Site24*7 was used to test the response time of the API endpoints.

Method	Rest API Endpoint		User-Agent ⓘ
GET ▾	http://ledger.com/expense		None ▾

Test Location		Custom Headers ⓘ	Content Check ⓘ	
Mumbai - IN ▾		○ Yes ● No	○ Yes ● No	Test Again

107 ms	2 ms	69 ms	338 ms	353 ms	531 ms
DNS Time	Connection Time	SSLHandshake Time ⓘ	FirstByte Time	LastByte Time	Response Time

Request Rates:

A rate is the number of API calls an app or user can make within a given time period. We can approximately calculate the request rates by identifying the number of times the database has been accessed.

The request rate for the application "Ledger" is:

TPS	0.0011
Index hit rate	92.2%
Cache hit rate	96.9%

Customer experience :

The application starts with collecting registration details and then takes into the login page. Once,after logging in with username and password, I can set the monthly budget limit in the budgets tab's page. Following that I am able to add my daily expenditure report in the form of the amount of money used, reason/purpose of use and also the category of expenditure that it falls under. There are nine exhaustive categories to choose from. The expenditure reports are skillfully displayed with a line graph and bar graphand hence are very easy to understand and refer to. The application is also customisable with different themes and also permits changing passwords. One area to improve is the number of themes available for customisation and other add on features to make it more attractive to the user. Another major drawback is that, though the application takes in the monthly budget, it doesn't indicate when the expenses outrun the budget. If there was an alert system in place for this it will be more helpful. Besides this there are no provisions for group money management to highlight about the expenditure to be shared among the members of this group. If these issues are addressed it will make this wonderful application even better.

10. ADVANTAGES & DISADVANTAGES

Advantages:

1) You will spend mindfully

When you write down every expense it helps you spend more mindfully and prevents you fromsplurging. It makes you responsible with your spending.

2) Making financial control

When you track your expenses, you take complete control over your finances. At any one time, you will know exactly how much money is sitting in your bank account, and how much you can spend.

3) Identify problem areas

As you track your spending over time, you'll get a better idea of what's happening with your cash.Many of your daily expenses may seem really, but once you add up everything you spend on dining out, coffee, lottery tickets, or whatever your indulgence is, you may be shocked to find outhow much your habits actually cost.

4) Make a better budget

By tracking your expenses it will help you make clear budgets for your monthly spends. After you set up a budget, which is a monthly plan for spending that takes into account your income and expenses, tracking expenses daily is essential to keeping you on that budget

5) Tracking your financial progress

Tracking your expenses on a day-to-day basis helps you to see your progress on the road to your financial goals.

Tracking your expenses on a day-to-day basis helps you to see your progress on the road to your financial goals.

6) Keeping finances organized

Disorganized finances lead to financial problems. It is easier to stay organized than it is to organize a messy financial situation.

7) Improving financial security

It helps you track your bank accounts. What if somebody steals your debit card information and starts spending your money? If you have a track on your spends you avoid these risks.

8) Encourages and increases savings

When you track your expenses you are likely to find wasteful expenses you can eliminate. This will help you encourage and increase your savings. By eliminating wasteful expenses it opens up the opportunity to redirect that money into savings.

9) Avoids debt

Tracking your expenses can be a powerful motivator to steer clear of debt. When you are in debt, and not tracking your day-to-day expenses, it's easy to let the amount of debt you are paying eachmonth slip through the cracks, unnoticed. But, once you start tracking every dollar that leavesyour bank account, you will start to add up the debt payments, and it can be eye-opening.

Disadvantages:

- Negligence during approval
- Due to the ease of being able to approve expense reports instantly at the click of a button, managers and approvers may sometimes be negligent. Although the software checks the reports for policy violations automatically, any violation that the software misses couldbe ignored by the approvers. Thus, some expense management software like Fyle offers multi-level approval workflow options.

- Negligence during auditing
- Although software simplifies the work of auditors, there is less scope for auditors to investigate suspicious activities. External verification can become minimal or redundant since all expense reports are already internally verified by the software. Due to this, auditors may choose to trust the software's discretion and neglect uncertainties. For avoiding such a situation, audit trails come in very handy. It helps keep every report audit-ready and traceable.

- Poor customer support
- Poor customer support can be a blocker for your operations when you experience glitches, need to set something up, or even if you just need to ask for information. It is, therefore, crucial to consider a software's customer service reputation while choosing it. Fyle, therefore, provides a detailed implementation plan during onboarding so you know exactly what is happening and when.

- Another important factor to consider while choosing an expense management software is to check customer reviews. After all, both your employees and finance teams have to be happy about the software.

11. CONCLUSION

Tracking your expenses daily can not only save your amount, but it can also assist you set financial goals for the longer term. If you know exactly where your amount goes every month,you will easily see where some cutbacks and compromises can be made. The project that we have developed is more efficient than the other income and expense trackers. The project successfully avoids the manual calculation which is performed usually in the absence of an expense tracker. The modules are developed efficiently and also in an attractive manner. The application will eliminate sticky notes, spreadsheets, and ledgers that cause confusion, data inconsistency problems while recording and splitting expenses. With our application users canmanage their expenses more effectively and they will be better at managing the expenses.

Tracking the daily expenses can not only help in saving money but also help in setting financialgoals for the future. If we know where our money is being spent every day, it is easy to set some cutbacks and such to help reduce expenditure. This project is developed to work more efficiently in comparison to other trackers and avoid manual calculation. It is developed to be efficient and look attractive at the same time.

12. FUTURE SCOPE

1) It will have various options to keep record (for example Food, Travelling Fuel, Salary etc.).

2) Automatically it will keep on sending notifications for our daily expenditure.

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

4) Here user can define their own categories for expense type like food, clothing, rent and billswhere they have to enter the money that has been spend and likewise can add some data in extra data to indicate the expense.

13.APPENDIX

Github and Project Demo Link:

https://github.com/IBM-EPBL/IBM-Project-7212-1658850044.git