

**PERSONAL EXPENSE TRACKER APPLICATION**

**TEAM ID: PNT2022TMID39663**

**NALAIYA THIRAN PROJECT BASED LEARNING ON  
PROFESSIONAL READINESS FOR INNOVATION  
EMPLOYMENT AND ENTREPRENEURSHIP.**

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## **1. INTRODUCTION**

### **1.1 Project Overview**

Personal Expense Tracker is a web application that allows you to track the daily expense of the user and help them to keep track of their expenses daily, monthly, weekly and yearly basis. It will also create a digital records for the user's income and various expenses spent by the user is calculated. It also gets the input from the user as how much income earned and the date of the income earned and further creates a transaction entry and sums up all the total income. Further we can give voice commands and it is responsive. It will be very helpful for the users to manage their needs and they can spend in a better way by keeping track of the application daily basis.

### **1.2 Purpose**

The main purpose of personal expense tracker application is used to keep track of expenses based on the user income and how much they spent and they can keep track of their expenses daily, monthly, weekly and yearly basis.

## 2. LITERATURE SURVEY

## 2.1 Existing Problem

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

Not having a complete tracking.

## 2.2 Reference

- <https://nevonprojects.com/daily-expense-tracker-system/>
- <https://data-flair.training/blogs/expense-tracker-python/>
- <https://phpgurukul.com/daily-expense-tracker-using-php-and-mysql/>
- <https://ijarsct.co.in/Paper391.pdf>
- [evs&gclid=Cj0KCQiAgribBhDkARIsAASA5bukrZgbI9UZxzpoyf0PofB1mZNxxcokUP-3TchpYMclHTYFYiqP8aAmmwEALw\\_wcB](https://kandi.openweaver.com/?landingpage=python_all_projects&utm_source=google&utm_medium=cpc&utm_campaign=promo_kandi_ie&utm_content=kandi_ie_search&utm_term=python_d</a><br/><a href=)

### **2.3 Problem Statement Definition**

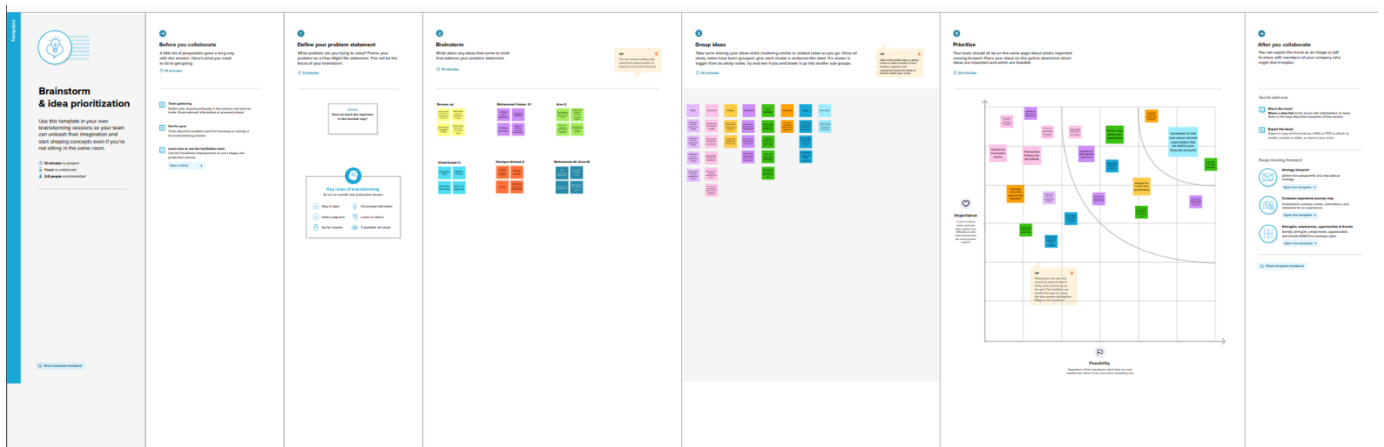
This Expense Tracker is a web application that facilitates the users to keep track and manage their personal as well as business expenses. This application helps the users to keep a digital diary. It will keep track of a user's income and expenses on a daily basis. The user will be able to add his/her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

### 3. IDEATION & PROPOSED SOLUTION

#### 3.1 Empathy Map canvas



#### 3.2 Ideation & Brainstorming



### 3.3 Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	<ul style="list-style-type: none"> <li>Manual calculation is difficult in the modern world so digitalized calculation is developing among the people.</li> <li>Manual calculation sometimes leads to wrong calculations for that the expense app is more useful for all the people.</li> <li>In the expense app we are adding more features such as automatic linking with the debit, credit, mobile banking etc....</li> </ul>
2.	Idea / Solution description	<ul style="list-style-type: none"> <li>User friendly</li> <li>Normal people can be able to aware about the finance using this app</li> </ul>
3.	Novelty / Uniqueness	<ul style="list-style-type: none"> <li>Market trading and stock marketing and crypto recent updates can be added in this app.</li> </ul>
4.	Social Impact / Customer Satisfaction	<ul style="list-style-type: none"> <li>It will help the people to track their expenses and alerts when you exceed the limit of your budget.</li> <li>For customer Satisfaction we are improving the user interface.</li> <li>Helps customer to reduce unwanted expenses.</li> </ul>
5.	Business Model (Revenue Model)	<ul style="list-style-type: none"> <li>Customer can use the app in open source.</li> <li>Customer revenue can be increased using this by avoiding the unwanted Expenses.</li> </ul>
6.	Scalability of the Solution	<ul style="list-style-type: none"> <li>To improve the financial management knowledge among all the people.</li> <li>User friendly.</li> </ul>





### 3.4 Proposed Solution Fit

## PROBLEM-SOLUTION FIT

Define CS, fit into CC	<b>1. CUSTOMER SEGMENT(S)</b> <ul style="list-style-type: none"><li>• Working Individuals</li><li>• Students</li><li>• Budget conscious consumers</li></ul>	<b>6. CUSTOMER CONSTRAINTS</b> <ul style="list-style-type: none"><li>• Internet Access</li><li>• Device (Smartphone) to access the application</li><li>• Data Privacy</li><li>• Cost of existing applications</li><li>• Trust</li></ul>	<b>5. AVAILABLE SOLUTIONS</b> <ul style="list-style-type: none"><li>• Expense Diary or Excel sheet</li></ul> <p>PROS : Have to make a note daily which helps to be constantly aware</p> <p>CONS : Inconvenient, takes a lot of time</p>								
Focus on J&P, tap into BE, understand RC	<b>2. JOBS-TO-BE-DONE / PROBLEMS</b> <ul style="list-style-type: none"><li>• To keep track of money lent or borrowed</li><li>• To keep track of daily transactions</li><li>• Alert when a threshold limit is reached</li></ul>	<b>9. PROBLEM ROOT CAUSE</b> <ul style="list-style-type: none"><li>• Reckless spendings</li><li>• Indecisive about the finances</li><li>• Procrastination</li><li>• Difficult to maintain a note of daily spendings (Traditional methods like diary)</li></ul>	<b>7. BEHAVIOUR</b> <ul style="list-style-type: none"><li>• Make a note of the expenses on a regular basis.</li><li>• Completely reduce spendings or spend all of the savings</li><li>• Make use of online tools to interpret monthly expense patterns</li></ul>								
Identify strong TR & EM	<b>3. TRIGGERS</b> <ul style="list-style-type: none"><li>• Excessive spending</li><li>• No money in case of emergency</li></ul> <b>4. EMOTIONS</b> <table><thead><tr><th>BEFORE</th><th>AFTER</th></tr></thead><tbody><tr><td>• Anxious</td><td>• Confident</td></tr><tr><td>• Confused</td><td>• Composed</td></tr><tr><td>• Fear</td><td>• Calm</td></tr></tbody></table>	BEFORE	AFTER	• Anxious	• Confident	• Confused	• Composed	• Fear	• Calm	<b>10. YOUR SOLUTION</b> <p>Creating an application to manage the expenses of an individual in an efficient and manageable manner, as compared to traditional methods</p>	<b>8. CHANNELS OF BEHAVIOUR</b> <p>ONLINE Maintain excel sheets and use visualizing tools</p> <p>OFFLINE Maintain an expense diary</p>
BEFORE	AFTER										
• Anxious	• Confident										
• Confused	• Composed										
• Fear	• Calm										

## 4. REQUIREMENT ANALYSIS

### 4.1 Functional requirement

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 Confirmation via OTP
FR-3	Login	Enter the valid username and password
FR-4	Calender	Personal expense tracker application shall allow user to add the data to their expenses.
FR-5	Expense Tracker	This application should graphically represent the expense in the form of report.
FR-6	Report generation	Report generation through Message Report generation through Gmail
FR-7	Category	This application shall allow users to add categories of their expenses.

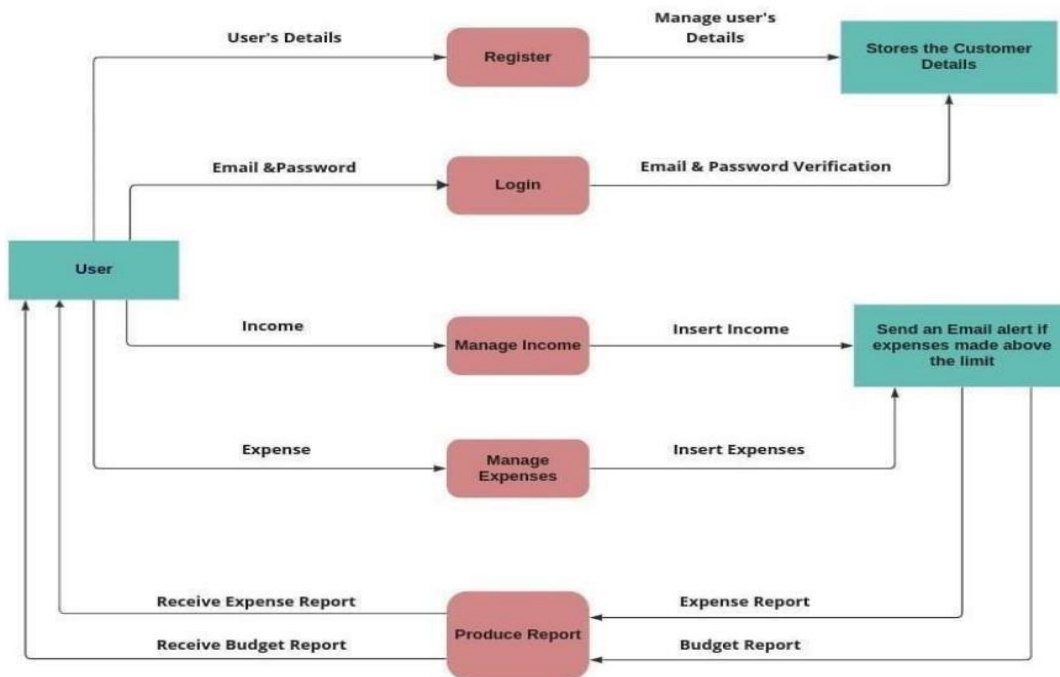
### 4.2 Non-Functional requirement

NFR No.	Non-Functional Requirement	Description
NFR-1	<b>Usability</b>	Keeps an accurate record of your earnings and outgoings.
NFR-2	<b>Security</b>	A detailed accounting of your income and expenses.
NFR-3	<b>Performance</b>	There are categories of expenses as well as an option. Because of lightweight database support, the system's throughput is increased.
NFR-4	<b>Availability</b>	The application must be completely operational at all times.
NFR-5	<b>Scalability</b>	The application must always function in its entirety.

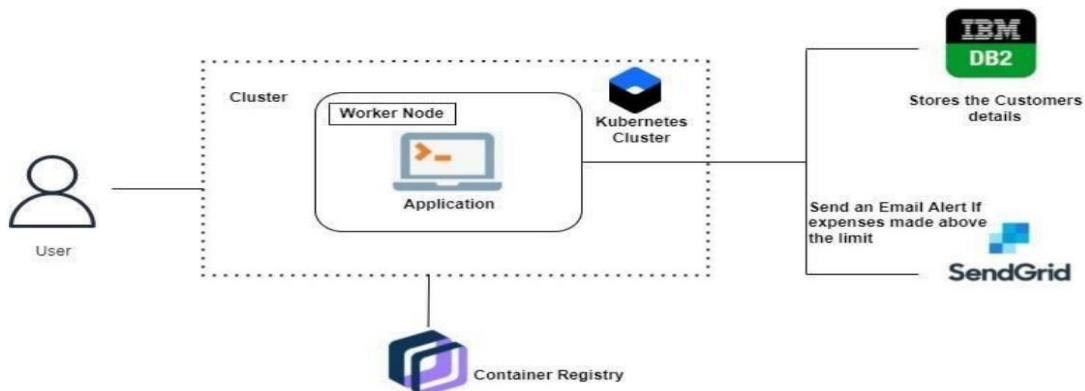
## 5. PROJECT DESIGN

### 5.1 Data Flow Diagrams

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



### 5.2 Solution & Technical Architecture



### 5.3 User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user & web user)	Registration	USN-1	As a user, I can register for the application by entering my email, and password, and confirming my password.	I can access my account/dashboard	High	Sprint-1
		USN-2	As a user, I will receive a confirmation email once I have registered for the application	I can receive a confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through a Google account.	I can register & access the dashboard with a Google Account login.	Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering my email & password	I can access the application.	High	Sprint-1
	Dashboard	USN-6	As a user, I can see the expenditure details and the daily expense.	I can view the daily expenses and add the expense details.	High	Sprint-1
Customer Care Executive		USN-7	As a customer care executive, I can solve the problem that customers face.	I can provide support to customers at any time 24*7.	Medium	Sprint-1

## 6 PROJECT PLANNING & SCHEDULING

### 6.1 Sprint Planning & Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High	Naveenraj K, Sharique Ahmed A
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Mohammed Uvaise S I, Arun S
Sprint-2		USN-3	As a user, I can register for the application through Facebook	2	Low	Vimal Kumar U
Sprint-1		USN-4	As a user, I can register for the application through Gmail	2	Medium	Mohammed Ali Jinna M
Sprint-1	Login	USN-5	As a user, I can log into the application by entering email & password	1	High	Naveenraj K, Sharique Ahmed A
Sprint-3	Dashboard	USN-6	As a user, I can view the expenditure details and can add new expenses on the dashboard	3	High	Mohammed Uvaise S I, Arun S, Vimal Kumar U
Sprint-3	Limits	USN-7	As a user, I can set my monthly expense limit and I will receive an email when the expense exceeds limit	4	High	Naveenraj K, Sharique Ahmed A, Mohammed Ali Jinna M
Sprint-4	Reports	USN-8	As a user, I can view the expenditure details in the graphical form	5	Medium	Mohammed Uvaise S I, Sharique Ahmed A

### 6.2 Sprint Delivery Schedule

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

## 6.3 Reports from JIRA

The top screenshot displays the Jira Software interface for the 'Personal Expense Tracker' project. The left sidebar shows the navigation menu with 'Backlog' selected. The main area shows the 'Backlog' view, listing four sprints and the backlog. The bottom screenshot displays the Jira Software interface for the same project, but with the 'Board' view selected. The main area shows a Kanban board with issues in 'TO DO', 'IN PROGRESS', and 'DONE' columns.

**Backlog View (Top Screenshot):**

- Project: Personal Expense Tracker
- Views: Roadmap, Backlog (selected), Board
- Development: Code
- Project pages: Project pages, Add shortcut, Project settings
- Backlog items:
  - PET Sprint 1: 24 Oct – 29 Oct (4 issues)
  - PET Sprint 2: 31 Oct – 5 Nov (1 issue)
  - PET Sprint 3: 7 Nov – 12 Nov (2 issues)
  - PET Sprint 4: 14 Nov – 19 Nov (1 issue)
  - Backlog: (0 issues)

**Board View (Bottom Screenshot):**

- Project: Personal Expense Tracker
- Views: Roadmap, Backlog, Board (selected)
- Development: Code
- Project pages: Project pages, Add shortcut, Project settings
- Board title: PET Sprint 1
- Board subtitle: Registration
- Board columns:
  - TO DO 1 ISSUE:
    - As a user, I can register for the application through Gmail (PET-7)
  - IN PROGRESS 3 ISSUES:
    - As a user, I can register for the application by entering my email, password, and confirming my password. (PET-4)
    - As a user, I will receive confirmation email once I have registered for the application (PET-5)
    - As a user, I can log into the application by entering email & password (PET-8)
  - DONE ✓





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

### 7.1 Feature

Feature 1: Add Expense Feature 2:

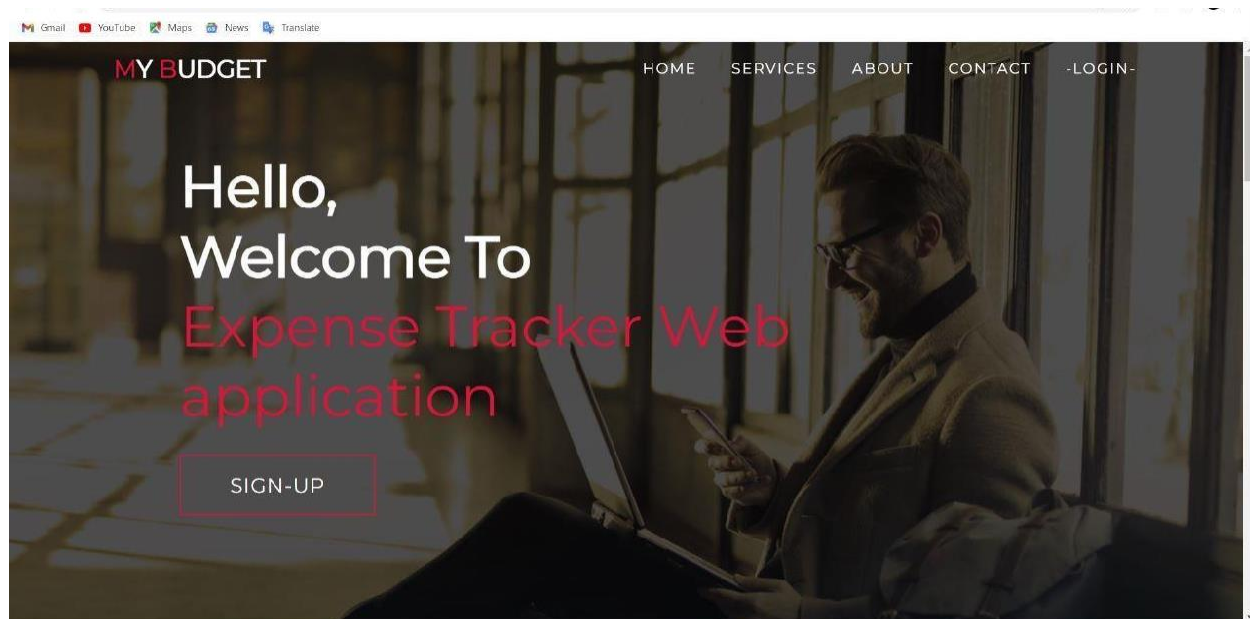
Update ExpenseFeature 3: Delete

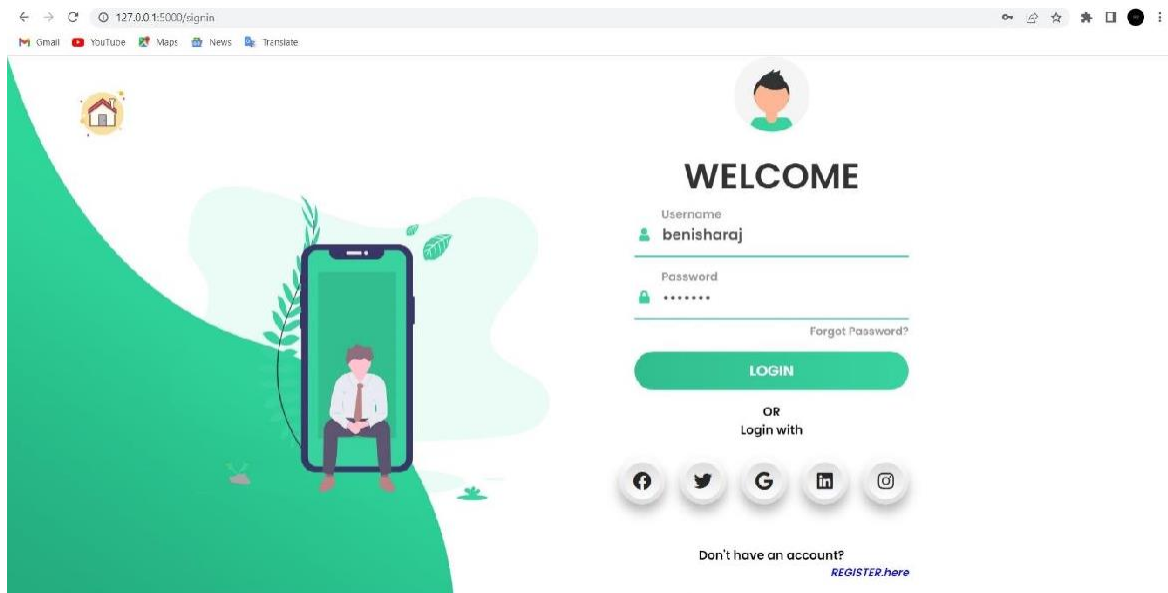
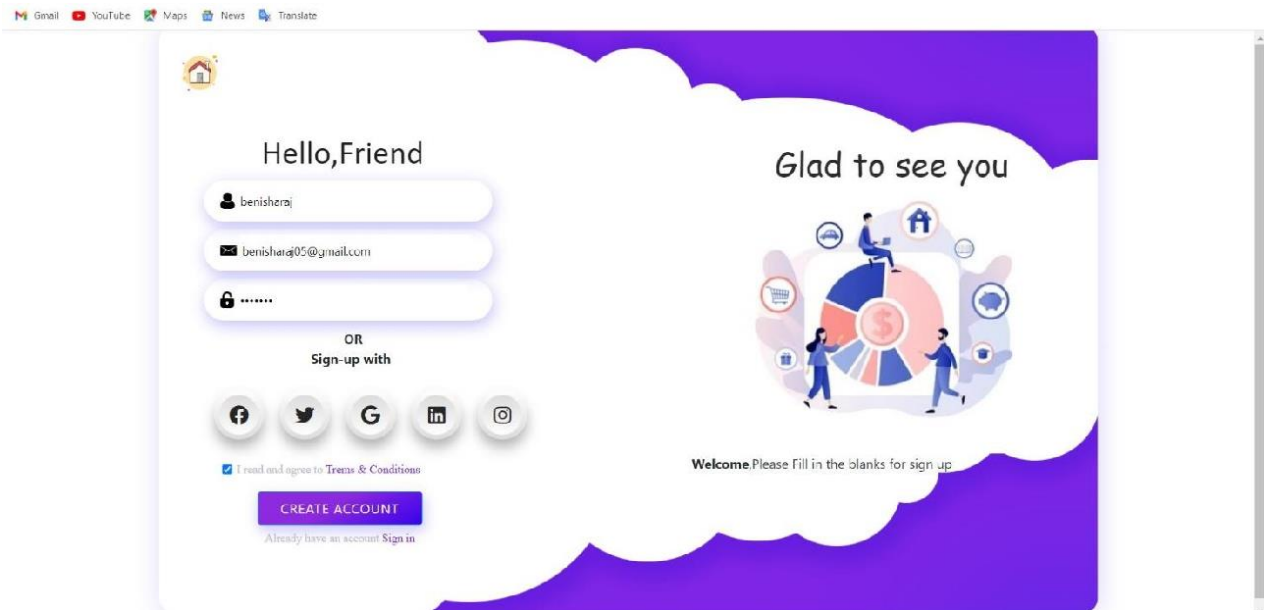
ExpenseFeature 4: Set Limit

Feature 5: Send Alert Emails to users

### 7.2 Feature

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





## Add Expense

Date

14/11/2022 --:-- --

Expense name

Cake

Expense Amount

1200

creditcard

food

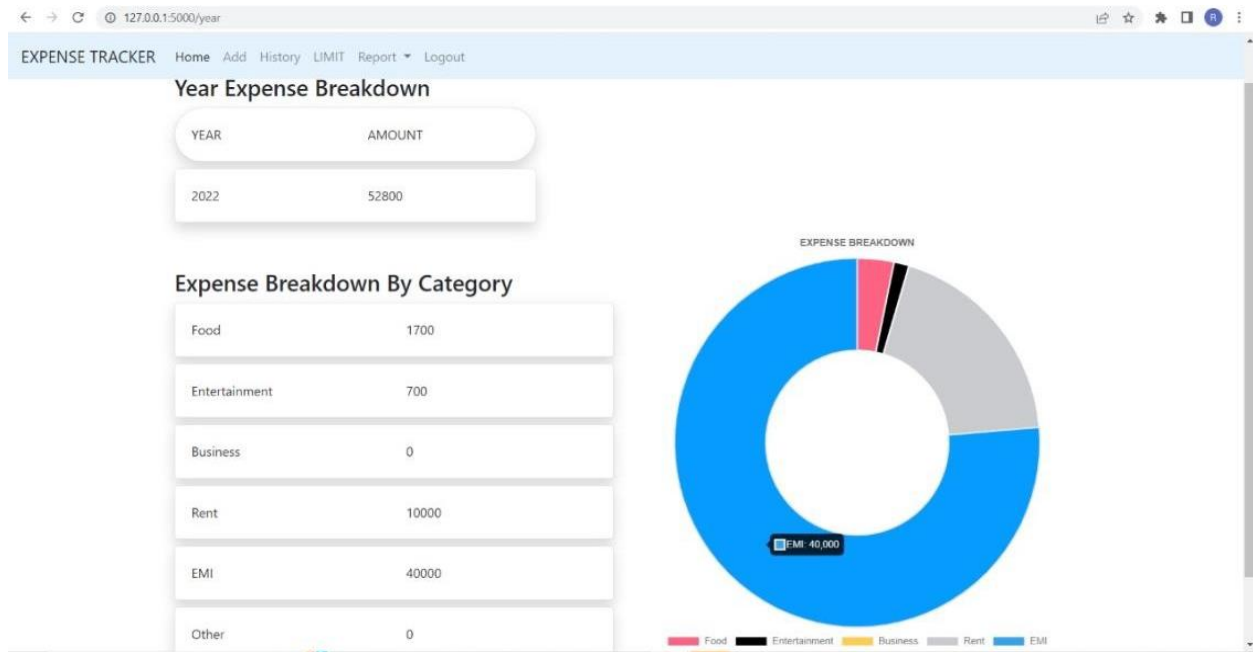
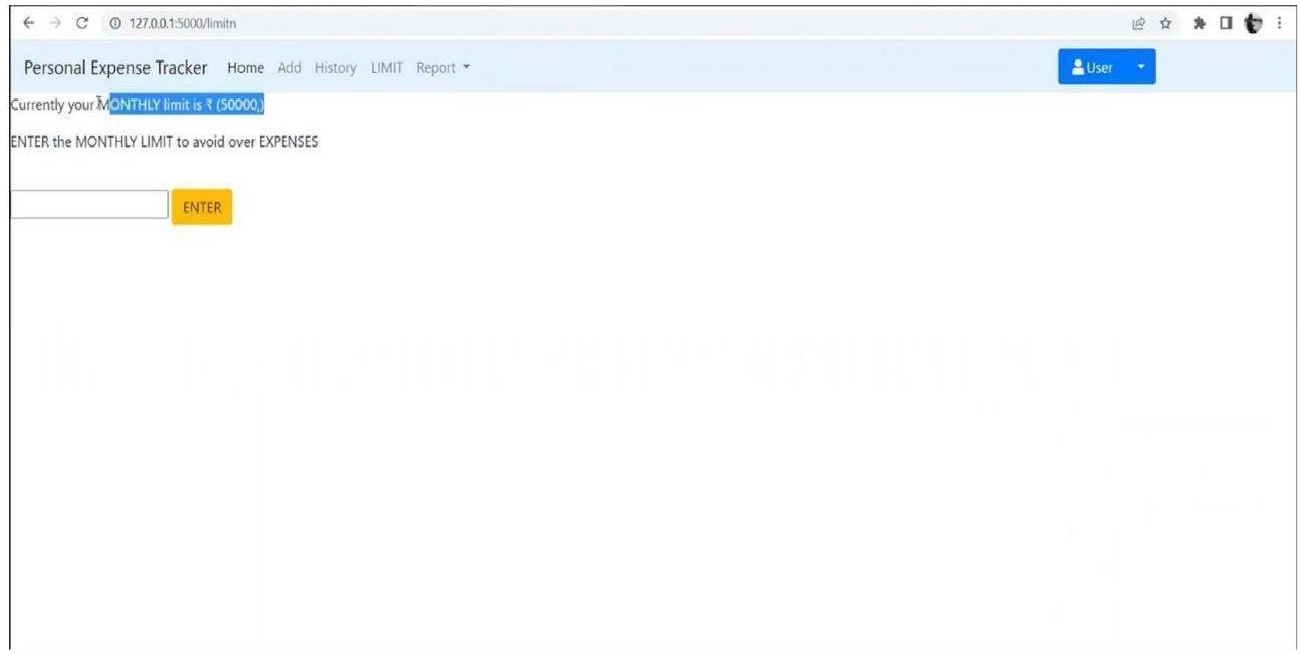
Add



## EXPENSES

TV	2000	₹ creditcard	EMI	Edit	Delete
home rent	5000	₹ cash	rent	Edit	Delete
Rent	1000	₹ cash	rent	Edit	Delete
chocolate	400	₹ epayment	food	Edit	Delete
Loan	3000	₹ onlinebanking	business	Edit	Delete

EXPENSE BREAKDOWN



IBM Db2 on Cloud

Load DataLoad History**Tables**ViewsIndexesAliasesMQTsWithoutSequencesApplication objects

Find schemas or tables

Refresh

Schemas

<input checked="" type="checkbox"/>	Name	Type	Tables
<input checked="" type="checkbox"/>	DKH61031	User	3

Total: 1, selected: 1

Tables

New table

<input type="checkbox"/>	Name	Schema	Properties
<input type="checkbox"/>	EXPENSE	DKH61031	...
<input type="checkbox"/>	LIMIT	DKH61031	...
<input type="checkbox"/>	USERS	DKH61031	...

Total: 3, selected: 0

## CODE:

```
from flask import Flask, render_template, request, redirect, session

import re

from flask_db2 import DB2
import ibm_db
import ibm_db_dbi
from sendemail import sendgridmail, sendmail

# from event.pywsgi import WSGIServer
import os

app = Flask(__name__)

app.secret_key = 'a'

"""
dsn_hostname = "2d46b6b4-cbf6-40eb-bbce-6251e6ba0300.bs2io90l08kqb1od8lcg.databases.appdomain.cloud"
dsn_uid = "qbs37391"
dsn_pwd = "Qe0BUshQSIcc66gG"
dsn_driver = "{IBM DB2 ODBC DRIVER}"
dsn_database = "bludb"
dsn_port = "32328"
dsn_protocol = "tcpip"

dsn = (
    "DRIVER={0};"
    "DATABASE={1};"
    "HOSTNAME={2};"
    "PORT={3};"
    "PROTOCOL={4};"
    "UID={5};"
    "PWD={6};"
).format(dsn_driver, dsn_database, dsn_hostname, dsn_port, dsn_protocol, dsn_uid, dsn_pwd)
"""

# app.config['DB2_DRIVER'] = '{IBM DB2 ODBC DRIVER}'
app.config['database'] = 'bludb'
app.config['hostname'] = '2d46b6b4-cbf6-40eb-bbce-6251e6ba0300.bs2io90l08kqb1od8lcg.databases.appdomain.cloud'
app.config['port'] = '32328'
app.config['protocol'] = 'tcpip'
app.config['uid'] = 'qbs37391'
app.config['pwd'] = 'Qe0BUshQSIcc66gG'
app.config['security'] = 'SSL'
try:
    mysql = DB2(app)
```

```
conn_str='database=bludb;hostname=2d46b6b4-cbf6-40eb-bbce-
6251e6ba0300.bs2io90l08kqb1od8lcg.databases.appdomain.cloud;port=32328;protocol=tcip;\
uid=qbs37391;pwd=Qe0BUshQSIcc66gG;security=SSL'
ibm_db_conn = ibm_db.connect(conn_str,"")
```

```
print("Database connected without any error !!")
except:
    print("IBM DB Connection error : " + DB2.conn_errormsg())
```

```
#HOME--PAGE
@app.route("/home")
def home():
    return render_template("homepage.html")
```

```
@app.route("/")
def add():
    return render_template("home.html")
```

```
#SIGN--UP--OR--REGISTER
```

```
@app.route("/signup")
def signup():
    return render_template("signup.html")
```

```
@app.route('/register', methods =['GET', 'POST'])
def register():
    msg = "
    print("Break point1 ")
    if request.method == 'POST' :
        username = request.form['username']
        email = request.form['email']
        password = request.form['password']

    print("Break point2" + "name: " + username + "-----" + email + "-----" + password)

    try:
        print("Break point3")
        connectionID = ibm_db_dbi.connect(conn_str, ", ")
        cursor = connectionID.cursor()
        print("Break point4")
    except:
        print("No connection Established")
```

```

print("Break point5")
sql = "SELECT * FROM register WHERE username = ?"
stmt = ibm_db.prepare(ibm_db_conn, sql)
ibm_db.bind_param(stmt, 1, username)
ibm_db.execute(stmt)
result = ibm_db.execute(stmt)
print(result)
account = ibm_db.fetch_row(stmt)
print(account)

param = "SELECT * FROM register WHERE username = " + "\"" + username + "\""
res = ibm_db.exec_immediate(ibm_db_conn, param)
print("---- ")
dictionary = ibm_db.fetch_assoc(res)
while dictionary != False:
    print("The ID is : ", dictionary["USERNAME"])
    dictionary = ibm_db.fetch_assoc(res)

print("break point 6")
if account:
    msg = 'Username already exists !'
elif not re.match(r'^[a-zA-Z0-9]+@[a-zA-Z0-9]+\.[a-zA-Z0-9]+', email):
    msg = 'Invalid email address !'
elif not re.match(r'[A-Za-z0-9]+', username):
    msg = 'name must contain only characters and numbers !'
else:
    sql2 = "INSERT INTO register (username, email,password) VALUES (?, ?, ?)"
    stmt2 = ibm_db.prepare(ibm_db_conn, sql2)
    ibm_db.bind_param(stmt2, 1, username)
    ibm_db.bind_param(stmt2, 2, email)
    ibm_db.bind_param(stmt2, 3, password)
    ibm_db.execute(stmt2)
    msg = 'You have successfully registered !'
    return render_template('signup.html', msg = msg)
continues .....

```



## 8 TESTING

### 8.1 Test Cases

#### 1 Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the [PERSONAL EXPENSE TRACKER APPLICATION] project at the time of the release to User Acceptance Testing (UAT).

#### 2 Defect Analysis

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	10	0	0	10
Client Application	50	0	0	50
Security	1	0	0	1
Outsource Shipping	3	0	0	3

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	10	3	1	2	16
Duplicate	1	0	3	0	4
External	2	3	0	1	6
Fixed	11	2	4	20	37
Not Reproduced	0	0	1	0	1

Skipped	0	0	1	1	2
Won't Fix	0	5	2	1	8
Totals	24	13	12	25	74

### 3 Test Case Analysis

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

Exception Reporting	8	0	0	8
Final Report Output	4	0	0	4
Version Control	2	0	0	2

## 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.
- In-depth insights and analytics: Provides in-built tools to generate reports with easy-to-understand visuals and graphics to gain insights about the performance of your business.
- 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**

### **ADVANTAGES:**

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

### **DISADVANTAGES:**

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

## **11 CONCLUSION**

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 SCOPE**

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.
- Mobile apps advantage.

## **13 APPENDIX**

### **Source Code Github Link :**

<https://github.com/IBM-EPBL/IBM-Project-18183-1659680554>

### **Project Demo Link :**

[https://drive.google.com/file/d/1Lf\\_XNnvI0qssoucNFMggUNDpPG-v62/view?usp=sharing](https://drive.google.com/file/d/1Lf_XNnvI0qssoucNFMggUNDpPG-v62/view?usp=sharing)