

# Personal Expense Tracker Application

## Project Report

Team ID	<b>PNT2022TMID19751</b>
Project Name	Personal Expense Tracker Application
Team Members	<b>Tushar R</b> <b>Sanjay S</b> <b>Shruthika</b> <b>Jeyasri</b>

# **CONTENTS**

## **1. INTRODUCTION**

1. Project Overview
2. Purpose

## **2. LITERATURE SURVEY**

1. Existing problem
2. References
3. Problem Statement Definition

## **3. IDEATION & PROPOSED SOLUTION**

1. Empathy Map Canvas
2. Ideation & Brainstorming
3. Proposed Solution
4. Problem Solution fit

## **4. REQUIREMENT ANALYSIS**

1. Functional requirement
2. Non-Functional requirements

## **5. PROJECT DESIGN**

1. Data Flow Diagrams
2. Solution & Technical Architecture
3. User Stories

## **6. PROJECT PLANNING & SCHEDULING**

1. Sprint Planning & Estimation
2. Sprint Delivery Schedule

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

1. Feature 1
2. Feature 2
3. Database Schema (if Applicable)

## **8. TESTING**

1. Test Cases
2. User Acceptance Testing

## **9. RESULTS**

1. Performance Metrics

## **10. ADVANTAGES & DISADVANTAGES**

## **11. CONCLUSION**

## **12. FUTURE SCOPE**

## **13. APPENDIX Source Code GitHub & Project Demo Link**

## **1. INTRODUCTION**

## **1.1 Project overview**

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

## **1.2 Purpose**

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

## 2. LITERATURE SURVEY

## 2.1 Existing Problem

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

## 2.2 Reference

- <https://nevonprojects.com/daily-expense-tracker-system/>
- <https://data-flair.training/blogs/expense-tracker-python/>
- <https://phpgurukul.com/daily-expense-tracker-using-php-and-mysql/>
- <https://ijarsct.co.in/Paper391.pdf>
- [https://kandi.openweaver.com/?landingpage=python\\_all\\_projects&utm\\_source=google&utm\\_medium=cpc&utm\\_campaign=promo\\_kandi\\_ie&utm\\_content=kandi\\_ie\\_search&utm\\_term=python\\_devs&gclid=Cj0KCQiAgribBhDkARIsAASA5bukrZgbI9UZxzpoyf0PofB1mZNxzcokUP-3TchpYMcIHTYFYiqP8aAmmwEALw\\_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_devs&gclid=Cj0KCQiAgribBhDkARIsAASA5bukrZgbI9UZxzpoyf0PofB1mZNxzcokUP-3TchpYMcIHTYFYiqP8aAmmwEALw_wcB)

## **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**

Dive into the mind of the user for focused product development

The diagram illustrates a central figure, a man in a suit, surrounded by various emotions and thoughts related to using a tracking app. The figure is positioned in the center, with a speech bubble and a thought bubble above him, and a hand icon pointing at him. The emotions and thoughts are arranged in a circle around him, with labels like 'Says', 'Thinks', 'Feels', and 'Does' indicating the type of expression. The emotions include 'I spend alot everyday', 'I don't want to use a tracking app', 'Why is my daily expense so high?', 'Having security issues', 'I have no time', 'Don't know how much percentage I should spend', 'I don't know what more to do with my money', 'Wasting of time my using it', 'Makes sticky notes for utility bills', 'Keep transaction slip for his reference', 'Unsure', 'Curious', 'Check bank statements', 'Confused', and 'Inadequate'.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	<p>Earlier, our parents use to track all their expenses by writing down in a small notebook and calculating it on their own Even still many of them follow the same to maintain their financial expenses even some of them don't care of their expenses and spendings.</p> <p>Not only in our homes ,Expenses are need to be tracked in many large scale and small scale sectors such as in many schools, colleges, marketing companies , departmental stores , etc</p> <p>So in order to optimize their work and make peoples life easier our expense tracker application will be much helpful for financial management</p> <p>The outcome of the application will be much useful for them to acknowledge the daily expenses and track the monthly expenses from their income with a limit to spend. They can easily track and view their expenses</p>

Proposed Solution

2.	Idea / Solution description	Due to the busy and hectic lifestyle people tend to overlook their budget and end up spending an excessive amount of money since they usually didn't plan their budget wisely. user cannot predict future expenses. While they can write down their expenses in a excel spreadsheet, their lack of knowledge in managing finances will be a problem
3.	Novelty / Uniqueness	This application tracks your every expenses anywhere and anytime without using the paper work. Just click and enter your expenditure. to avoid data loss, quick settlements and reduce human error. To provide the pie chart or graph lines in this application.
4.	Social Impact / Customer Satisfaction	Using this application one can track their personal expenses and frame a monthly/annual budget. If your expense exceeded than specified limit, the application will show you an alert message in form of a pie chart.
5.	Business Model (Revenue Model)	Business people can use subscription/premium feature of this application to gain revenue.

3.4Proposed Solution Fit

Define CS, fit into CL	<b>1. CUSTOMER SEGMENT(S)</b> <span>CS</span> People who are struggling to track their expenses are our customers. They can use our app to maintain records about their income and expenses	<b>6. CUSTOMER LIMITATIONS</b> <small>EG. BUDGET, DEVICES</small> <span>CL</span> User have to entry every record manually. The category divided may be blunder or messy. person who is handling system must have some technical knowledge.	<b>5. AVAILABLE SOLUTIONS</b> <small>PLUSES &amp; MINUSES</small> <span>AS</span> User can add their income and expenses. 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.
	<b>2. PROBLEMS / PAINS</b> <small>+ ITS FREQUENCY</small> <span>PR</span> In paper-based expense tracker system it is difficult to track our monthly expenses manually. The paper-based expense records may get lost in case of fire accidents, flood etc.	<b>9. PROBLEM ROOT / CAUSE</b> <span>RC</span> When the digits could not be recognized correctly. When the transactions are not successful. When the elder people unable to understand the smaller handwritten digits. When the paper based expense tracker records are subjected to fire accident, flood, etc.	<b>7. BEHAVIOR</b> <small>+ ITS INTENSITY</small> <span>BE</span> They may keep a temporary note on their mobile. He/She will tell the other persons to remember the expense they do while calculating the expenses they consider only on the expenses that are single time and huge and leave the rest
Focus on PR, map into BE, understand RC	<b>3. TRIGGERS TO ACT</b> <span>TR</span> This application can create awareness among common people about their income and expenses. It Reduces time rather than entering details manually.	<b>10. YOUR SOLUTION</b> <span>SL</span> The application should be able to generate reports of their spending and notify users if they have exceeded their budget. This application can create awareness among common people about finance and stuffs. This application also helps user to be financially responsible.	<b>8. CHANNELS of BEHAVIOR</b> <span>CH</span> ONLINE Download statements from bank and pay monthly installment
	<b>4. EMOTIONS</b> <small>BEFORE / AFTER</small> <span>EM</span> Frustration, Confusion, Inadequate > Boost, Feeling smart, Be an example for others		OFFLINE Using spreadsheets and notes for financial management
Identify strong PR & EM			



## 4. REQUIREMENT ANALYSIS

### 4.1 Functional requirement

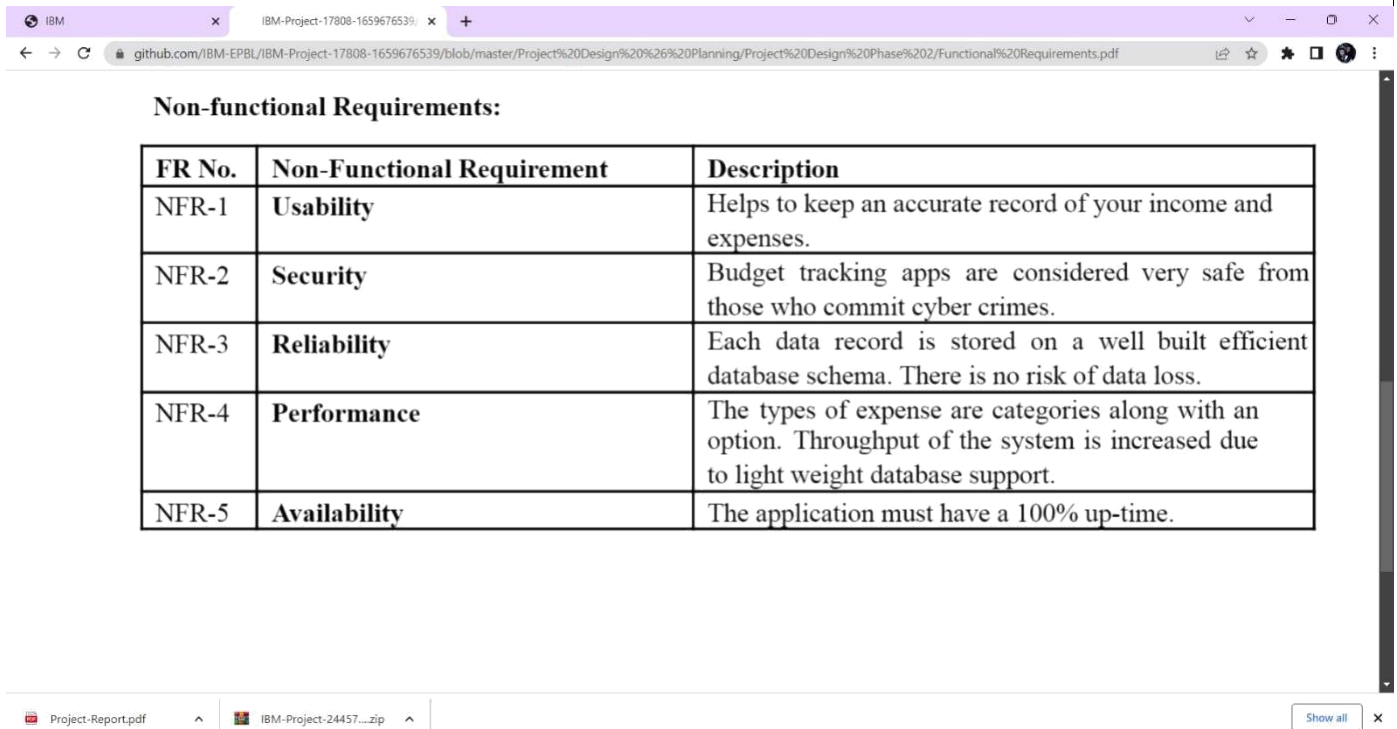


#### Functional Requirements:

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 add the data to their expenses.
FR-4	Expense Tracker	This application should graphically represent the expense in the form of report.
FR-5	Report generation	Graphical representation of report must be generated.
FR-6	Category	This application shall allow users to add categories of their expenses.



## 4.2 Non-Functional requirement



The screenshot shows a web browser window with a purple header bar. The address bar displays the URL: [github.com/IBM-EPBL/IBM-Project-17808-1659676539/blob/master/Project%20Design%20%26%20Planning/Project%20Design%20Phase%202/Functional%20Requirements.pdf](https://github.com/IBM-EPBL/IBM-Project-17808-1659676539/blob/master/Project%20Design%20%26%20Planning/Project%20Design%20Phase%202/Functional%20Requirements.pdf). The main content area displays the title 'Non-functional Requirements:' followed by a table.

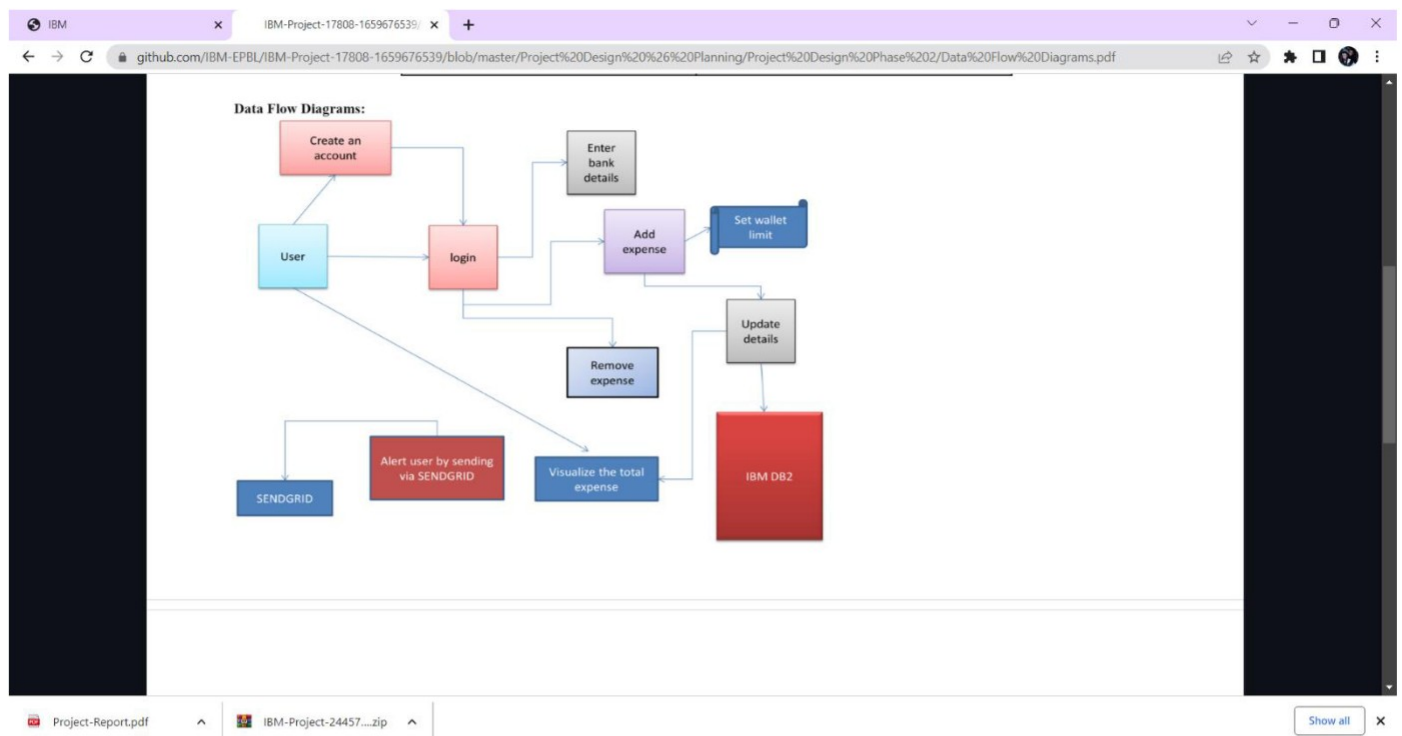
FR No.	Non-Functional Requirement	Description
NFR-1	Usability	Helps to keep an accurate record of your income and expenses.
NFR-2	Security	Budget tracking apps are considered very safe from those who commit cyber crimes.
NFR-3	Reliability	Each data record is stored on a well built efficient database schema. There is no risk of data loss.
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.

At the bottom of the browser window, there is a taskbar showing two open files: 'Project-Report.pdf' and 'IBM-Project-24457...zip'. A 'Show all' button is visible on the right side of the taskbar.

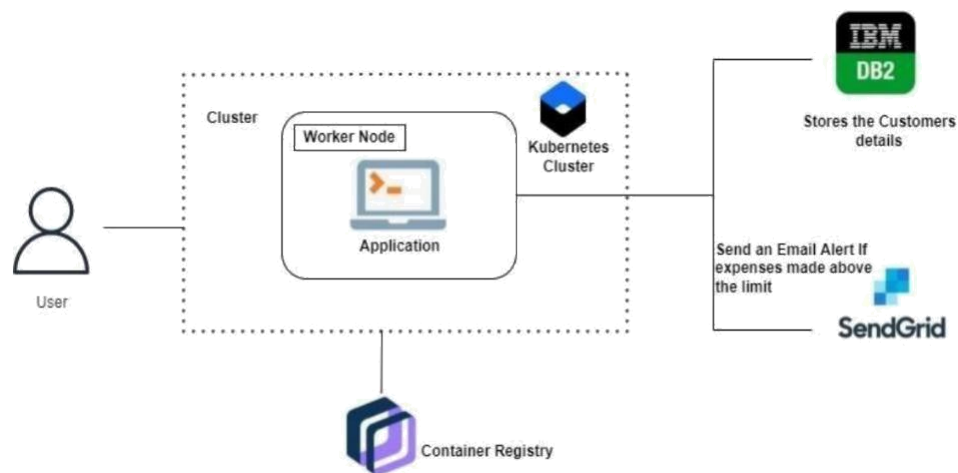
## 5. PROJECTDESIGN

### 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/dash board	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
Administrator	Application	USN-8	As an administrator, I can upgrade or update the application.	I can fix any bugs raised by customers and upgrade the application.	Medium	Sprint-1

## 6.PROJECT PLANNING & SCHEDULING

### 6.1 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	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High	Ashmathullah
		USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Mathew
	Login	USN-3	As a user, I can log into the application by entering email & password	1	High	Gokul Raj
	Dashboard	USN-4	Logging in takes to the dashboard for the logged user.	2	High	Mohamed Imam
<i>Bug fixes, routine checks and improvisation by everyone in the team *Intended bugs only</i>						
Sprint 2	Workspace	USN-1	Workspace for personal expense tracking	2	High	Ashmathullah
	Charts	USN-2	Creating various graphs and statistics of customer's data	1	Medium	Mohamed Imam
	Connecting to IBM DB2	USN-3	Linking database with dashboard	2	High	Mathew
		USN-4	Making dashboard interactive with JS	2	High	Gokul Raj

Sprint-3		USN-1	Wrapping up the server side works of frontend	1	Medium	Gokul Raj
	Watson Assistant	USN-2	Creating Chatbot for expense tracking and for clarifying user's query	1	Medium	Mathew
	SendGrid	USN-3	Using SendGrid to send mail to the user about their expenses	1	Low	Mohamed Imam
		USN-4	Integrating both frontend and backend	2		Ashmathullah
<i>Bug fixes, routine checks and improvisation by everyone in the team *Intended bugs only</i>						
Sprint-4	Docker	USN-1	Creating image of website using docker/	2	High	Mathew
	Cloud Registry	USN-2	Uploading docker image to IBM Cloud registry	2	High	Mohamed Imam
	Kubernetes	USN-3	Create container using the docker image and hosting the site	2	High	Gokul Raj
	Exposing	USN-4	Exposing IP/Ports for the site	2	High	Ashmathullah

## 6.2Sprint Delivery Schedule

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	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

### Velocity

We have a 6-day sprint duration, and the velocity of the team is 20 (points per sprint). Calculating the team's average velocity (AV).

$$AV = \frac{\text{sprint duration}}{\text{velocity}} = \frac{20}{6} = 3.33$$

## **7. Coding and Solutioning:**

### **7.1 Features**

Feature 1: Add Expense

Feature 2: Update Expense

Feature 3: Delete Expense

Feature 4: Set Limit

Feature 5: Send Alert Emails to users

### **7.2 Other Features**

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

## Code

```
import os
import re
import expenze_categories
from flask import request, session from
flask_session import Session from sqlalchemy
import create_engine
from sqlalchemy.orm import scoped_session, sessionmaker from
datetime import datetime
from helpers import convertSQLToDict

# Create engine object to manage connections to DB, and scoped
session to separate user interactions with DB engine =
create_engine(os.getenv("DATABASE_URL")) db =
scoped_session(sessionmaker(bind=engine))

# Get the users budgets
def getBudgets(userID):
    results = db.execute(
        "SELECT id, name, year, amount FROM budgets WHERE
user_id = :userID ORDER BY name ASC", {"userID":
userID}).fetchall()

    budgets_query = convertSQLToDict(results)

    if budgets_query:
        # Create a dict with budget year as key and empty list as value
        which will store all budgets for that year
```



```
        budgets = {budget['year']: [] for budget in  
budgets_query}
```

```
        # Update the dict by inserting budget info as values for  
        budget in budgets_query:  
            budgets[budget['year']].append(  
                {'amount': budget['amount'], 'id': budget['id'],  
'name': budget['name']})
```

```
        return budgets  
    else:  
        return None
```

```
# Get a users budget by the budget ID def
```

```
getBudgetByID(budgetID, userID):
```

```
    results = db.execute(  
        "SELECT name, amount, year, id FROM budgets WHERE  
user_id = :userID AND id = :budgetID", {"userID": userID,  
"budgetID": budgetID}).fetchall()
```

```
    budget = convertSQLToDict(results)
```

```
    return budget[0]
```

```
# Get total amount budgeted by year
def getTotalBudgetedByYear(userID, year=None):

    # Default to getting current years budgets if not
    year:
        year = datetime.now().year

    amount = db.execute(
        "SELECT SUM(amount) AS amount FROM budgets
        WHERE user_id = :userID AND year = :year", {"userID":
        userID, "year": year}).fetchone()[0]

    if amount is None:
        return 0
    else:
        return amount

# Generates a budget data structure from the users input when
submitting a new or updated budget
def generateBudgetFromForm(formData):
    budget = {"name": None, "year": None, "amount": None,
    "categories": []}
    counter = 0
```

```
# Loop through all of the form data to extract budgets details
and store in the budget dict
for key, value in formData:
    counter += 1
    # First 3 keys represent the name/year/amount from the form, all
    other keys represent dynamically loaded categories from the form
    if counter <= 3:
        # Check name for invalid chars and uniqueness if key
        == "name":
            # Invalid chars are all special chars except underscores,
            spaces, and hyphens (uses same regex as what's on the HTML page)
            validBudgetName = re.search("^[a-zA-Z0-9_\\s\\-]*$",
value)
            if validBudgetName: budget[key]
                = value.strip()
            else:
                return {"apology": "Please enter a budget name without
special characters except underscores, spaces, and hyphens"}
        # Check if year is valid
        elif key == "year":
            budgetYear = int(value)
            currentYear = datetime.now().year
```

```
        if 2020 <= budgetYear <= currentYear:
            budget[key] = budgetYear
        else:
            return {"apology": f"Please select a valid budget
year: 2020 through {currentYear}"}
        # Convert the amount from string to float else:
        amount = float(value.strip())
        budget[key] = amount
        # All other keys will provide the *category* name /
percent budgeted
        else:
            # Skip iteration if value is empty (empty means the user
doesnt want the category in their budget)
            if value == "":
                continue

        # Need to split the key since the HTML elements are loaded
dynamically and named like 'categories.1', 'categories.2', etc.
        cleanKey = key.split(".")

        # Store the category name and associated % the user wants
budgetd for the category
        category = {"name": None, "percent": None} if
cleanKey[0] == "categories":
```

---

```
category["name"] = value.strip()

# Get the percent value and convert to decimal percent =
(int(formData[counter][1].strip()) / 100)
category["percent"] = percent

# Add the category to the list of categories within
the dict
budget[cleanKey[0]].append(category)
# Pass on this field because we grab the percent above
(Why? It's easier to keep these 2 lines than rewrite many lines.
This is the lowest of low pri TODOs)
elif cleanKey[0] == "categoryPercent": pass
else:
    return {"apology": "Only categories and their percentage of
the overall budget are allowed to be stored"}

return budget

# Create a new budget
# Note: due to DB design, this is a 2 step process: 1) create a budget
(name/year/amount) in budgets table, 2) create 1:M records in
budgetCategories (budgetID + categoryID + percentAmount)
```

```
def createBudget(budget, userID):
    # Verify the budget name is not a duplicate of an existing budget
    uniqueBudgetName =
isUniqueBudgetName(budget["name"], None, userID)
    if not uniqueBudgetName:
        return {"apology": "Please enter a unique budget name, not a
duplicate."}

    # Insert new budget into DB
    newBudgetID = db.execute("INSERT INTO budgets (name, year, amount,
user_id) VALUES (:budgetName, :budgetYear, :budgetAmount, :usersID)
RETURNING id",
                            {"budgetName": budget["name"],
"budgetYear": budget["year"], "budgetAmount":
budget["amount"], "usersID": userID}).fetchone()[0]
    db.commit()

    # Get category IDs from DB for the new budget
    categoryIDS =
getBudgetCategoryIDS(budget["categories"], userID)

    # Insert a record for each category in the new budget
    addCategory(newBudgetID, categoryIDS)

    return budget
```

# When creating or updating a budget, add the spending categories and  
% budgeted per category to a budgets record in the DB

```
def addCategory(budgetID, categoryIDS):
```

```
    # Insert a record for each category in the new budget
```

```
    for categoryID in categoryIDS:
```

```
        db.execute("INSERT INTO budgetCategories  
(budgets_id, category_id, amount) VALUES
```

```
(:budgetID, :categoryID, :percentAmount)",
```

```
        {"budgetID": budgetID, "categoryID":
```

```
        categoryID["id"], "percentAmount": categoryID["amount"]}})
```

```
    db.commit()
```

# Update an existing budget

# Note: due to DB design, this is a 3 step process: 1) update a budget  
(name/year/amount) in budgets table, 2) delete the existing spending  
categories for the budget, 3) create 1:M records in budgetCategories  
(budgetID + categoryID + percentAmount)

```
def updateBudget(oldBudgetName, budget, userID):
```

```
    # Query the DB for the budget ID
```

```
    oldBudgetID = getBudgetID(oldBudgetName, userID)
```

```
# Verify the budget name is not a duplicate of an existing budget
uniqueBudgetName = isUniqueBudgetName( budget["name"],
    oldBudgetID, userID)

if not uniqueBudgetName:
    return {"apology": "Please enter a unique budget name, not a
duplicate."}

# Update the budget name, year, and amount in DB
db.execute("UPDATE budgets SET name = :budgetName,
year = :budgetYear, amount = :budgetAmount WHERE id
= :oldBudgetID AND user_id = :usersID",
    {"budgetName": budget["name"], "budgetYear":
budget["year"], "budgetAmount": budget["amount"],
"oldBudgetID": oldBudgetID, "usersID": userID})
db.commit()

# Delete existing category records for the budget
db.execute("DELETE FROM budgetCategories WHERE
budgets_id = :oldBudgetID", {"oldBudgetID":
oldBudgetID})
db.commit()

# Get category IDs from DB for the new budget
categoryIDS =
getBudgetCategoryIDS(budget["categories"], userID)
```



```
# Insert a record for each category in the new budget
addCategory(oldBudgetID, categoryIDS)
```

```
return budget
```

```
# Get a budgets associated category ids
```

```
def getBudgetCategoryIDS(categories, userID):
```

```
    # Get the category IDs from the DB for the updated budget
```

```
    categoryIDS = []
```

```
    for category in categories:
```

```
        # Get the category ID
```

```
        categoryID = db.execute("SELECT categories.id FROM
userCategories INNER JOIN categories ON
userCategories.category_id = categories.id WHERE
userCategories.user_id = :userID AND categories.name
= :categoryName",
```

```
                                {"userID": userID, "categoryName":
category["name"]}).fetchone()[0]
```

```
    # Store the category ID and associated percent amount into a
dict
```

```
    id_amount = {"id": None, "amount": None}
```

```
    id_amount["id"] = categoryID
```

```
id_amount["amount"] = category["percent"]
```

```
# Add the dictionary to the list of categoryIDs  
categoryIDS.append(id_amount)
```

```
return categoryIDS
```

```
# Delete an existing budget
```

```
def deleteBudget(budgetName, userID):
```

```
    # Query the DB for the budget ID
```

```
    budgetID = getBudgetID(budgetName, userID)
```

```
    if budgetID:
```

```
        # Delete the records for budgetCategories
```

```
        db.execute("DELETE FROM budgetCategories WHERE  
budgets_id = :budgetID", {"budgetID":  
                            budgetID})
```

```
        db.commit()
```

```
        # Delete the budget
```

```
        db.execute("DELETE FROM budgets WHERE id  
= :budgetID",  
                  {"budgetID": budgetID})
```

```
        db.commit()
```

```
        return budgetName
    else:
        return None
```

```
# Get budget ID from DB
```

```
def getBudgetID(budgetName, userID):
```

```
    # Query the DB for a budget ID based on the user and the supplied
    budget name
```

```
    budgetID = db.execute("SELECT id FROM budgets WHERE
user_id = :userID AND name = :budgetName",
                           {"userID": userID, "budgetName":
budgetName}).fetchone()[0]
```

```
    if not budgetID:
```

```
        return None
```

```
    else:
```

```
        return budgetID
```

```
# Get and return a bool based on whether or not a new/updated
budget name already exists for the user def
```

```
isUniqueBudgetName(budgetName, budgetID, userID):
```

```
    if budgetID == None:
```

```
        # Verify the net-new created budget name is not already existing
        in the users existing budgets
```

```
        results = db.execute(
            "SELECT name FROM budgets WHERE user_id
= :userID", {"userID": userID}).fetchall()
        existingBudgets = convertSQLToDict(results)
    else:
        # Verify the updated budget name is not already existing
        in the users existing budgets
        results = db.execute(
            "SELECT name FROM budgets WHERE user_id
= :userID AND NOT id = :oldBudgetID", {"userID": userID,
"oldBudgetID": budgetID}).fetchall()
        existingBudgets = convertSQLToDict(results)

# Loop through all budgets and compare names
isUniqueName = True
for budget in existingBudgets:
    if budgetName.lower() == budget["name"].lower():
        isUniqueName = False
        break

if isUniqueName:
    return True
else:
    return False
```

# Generate a complete, updatable budget that includes the budget name, amount, and all categories (selected/unselected categories and % budgeted for)

def getUpdatableBudget(budget, userID):

    # Get the users library of spend categories  
    categories =  
    expenze\_categories.getSpendCategories(userID)

    # Get the budget's spend categories and % amount for each category

        results = db.execute("SELECT DISTINCT categories.name,  
budgetCategories.amount FROM budgetCategories INNER JOIN  
categories ON budgetCategories.category\_id = categories.id INNER  
JOIN budgets ON budgetCategories.budgets\_id = budgets.id  
WHERE budgets.id = :budgetsID",  
                              {"budgetsID": budget["id"]}).fetchall()  
        budgetCategories = convertSQLToDict(results)

    # Add 'categories' as a new key/value pair to the existing budget dict

        budget["categories"] = []

    # Populate the categories by looping through and adding all their categories

```
for category in categories:
    for budgetCategory in budgetCategories:
        # Mark the category as checked/True if it exists in the budget
        that the user wants to update
        if category["name"] == budgetCategory["name"]:
            # Convert the percentage (decimal) into a whole integer
            to be consistent with UX
            amount = round(budgetCategory["amount"] * 100)
            budget["categories"].append(
                {"name": category["name"], "amount": amount,
"checked": True})
            break
        else:
            budget["categories"].append(
                {"name": category["name"], "amount": None,
"checked": False})

return budget
```

## **8.TESTING:**

### **8.1 TESTING:**

- Login Page (Functional)
- Login Page (UI)
- Add Expense Page (Functional)

## **8.2 User Acceptance Testing:**

### **1. Purpose of Document**

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

### **2. Defect Analysis**

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

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

Outsource Shipping				6	0	0	6
Exception Reporting				7	0	0	2
Final Report Output				5	0	0	5
Version Control				1	0	0	1
Won't Fix	0	5	2	1	8		
Totals	24	14	13	26	75		

3.Test Case Analysis

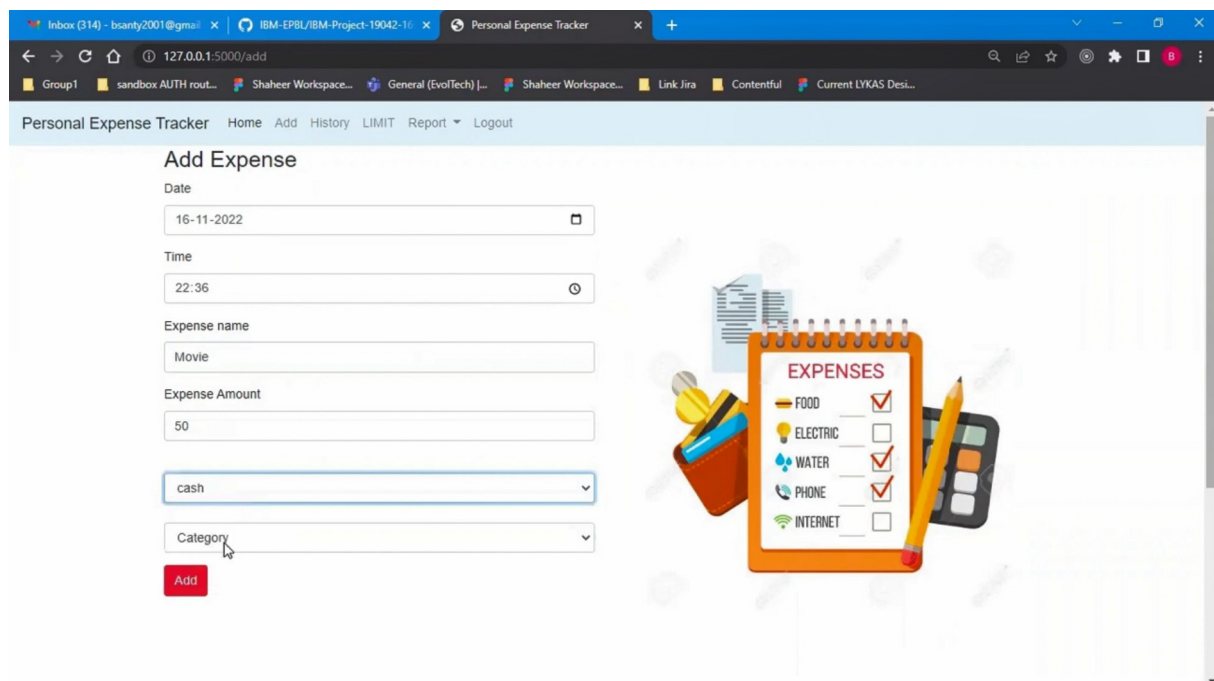
This report shows the number of test cases that have passed, failed, and untested.

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	7	0	0	7
Client Application	29	0	0	29
Security	4	0	0	4



## 9.2 Sign Up and Login Page:

## Break down of Expense Page:



The screenshot displays the 'Personal Expense Tracker' web application interface. The browser's address bar shows the URL '127.0.0.1:5000/add'. The application's navigation bar includes links for 'Home', 'Add', 'History', 'LIMIT', 'Report', and 'Logout'. The main content area is titled 'Add Expense' and contains the following form fields:

- Date:** A date picker showing '16-11-2022'.
- Time:** A time picker showing '22:36'.
- Expense name:** A text input field containing 'Movie'.
- Expense Amount:** A text input field containing '50'.
- Category:** A dropdown menu with 'cash' selected.

Below the form fields is a red 'Add' button. To the right of the form is a decorative illustration featuring a notepad with the title 'EXPENSES' and a checklist:

EXPENSES	
FOOD	<input checked="" type="checkbox"/>
ELECTRIC	<input type="checkbox"/>
WATER	<input checked="" type="checkbox"/>
PHONE	<input checked="" type="checkbox"/>
INTERNET	<input type="checkbox"/>

The illustration also includes a pencil, a calculator, and a pen.

Welcome, testtesting080@gmail.com ❤️

**Income**  
Your income is ₹50,000.00.  
[Update Income](#)

**Income**  
Your income is ₹50,000.00.  
[Update Income](#)

**Payers**  
Add your partner / roommates to track expenses together 🍌  
[Add Payer](#)

**Statistics**

- Member since: 11/15/2022
- # of expenses: 2
- # of budgets: 0
- # of spend categories: 8
- # of payers: 0

**Password**  
Update your password 🍌  
[Change Password](#)

Created for IBM-Project-17808-1659676539

## 10.ADVANTAGES AND DISADVANTAGES

### Dashboard

[🍌 Quick Expense 🍌](#)

#### Your Expenses

Remaining Income	2022 Expenses	Monthly Expenses	Weekly Expenses
₹0	₹55,000.00	₹55,000.00	₹55,000.00

#### Last 5 Expenses

[\(view all expense history\)](#)

Description	Category	Date	Payer	Amount
mobile phone buy	Shopping	2022-11-17	Self	₹15,000.00
laptop buy	Shopping	2022-11-17	Self	₹40,000.00

#### Your Budgets

You have no budgets yet.

#### Weekly Spending



### 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**

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

## **12. FUTURE SCOPE**

- Achieve your business goals with a tailored mobile app that perfectly fits your business.
- Scale-up at the pace your business is growing.
- Deliver an outstanding customer experience through additional control over the app.
- Control the security of your business and customer data.
- Open direct marketing channels with no extra costs with methods such as push notifications.
- Boost the productivity of all the processes within the organization.
- Increase efficiency and customer satisfaction with an app aligned to their needs.
- Seamlessly integrate with existing infrastructure.
- Ability to provide valuable insights.
- Optimize sales processes to generate more revenue through enhanced data collection.
- Chats: Equip your expense tracking app with a bot that can understand and answer all user queries and address their needs such as account balance, credit score, etc.
- Prediction: With the help of AI, your mobile app can predict your next purchase, according to your spending behavior. Moreover, it can recommend products and provide unique insights on saving money. It brings out the factors causing fluctuations in your expenses.