PERSONAL EXPENSE TRACKER APPLICATION

FINAL REPORT

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1. INTRODUCTION
1.1 Project Overview

Personal finance entails all the financial decisions and activities that a Finance app makes your life easier by helping you to manage your finances efficiently. A personal finance app will not only help you with budgeting and accounting but also give you helpful insights about money management. Personal finance applications will ask users to add their expenses and based on their expenses wallet balance will be updated which will be visible to the user. Also, users can get an analysis of their expenditure in graphical forms. They have an option to set a limit for the amount to be used for that particular month if the limit is exceeded the user will be notified with an email alert.

1.2 PURPOSE

Expense tracker apps are a great way to maintain a budget and stick to it. The following are some of the purposes,
1. Categorize Your Expenses
2. Set Spending Limits
3. View Charts And Graphs
4. Never Miss A Payment

2. LITERATURE SURVEY

1. Categories:

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To choose the categories either income or expenses. Each category is provided with more sub-categories. For every transaction, the sub-category transaction count will get incremented and expenses will be added to the respective wallet.

- Advantage: Gives more clarity on the user's daily expenses by separating income and our expenditure.
- Disadvantage: User can't create a custom tab for savings.

2. Label:

This section allows user to add custom labels to keep track of regular expenses and also if the user wants the application supports merging of two or more labels into a single label. It also displays the transaction count and wallet balance.

- Advantage: User can see their expenses on a particular label without seeing their previous transaction history.
- Disadvantage: More the number of labels created causes more confusion.

3. Manual wallet:

The user can manually update their hard cash balance and can also share their wallet with other people. The user can have more than one manual wallet.

- Advantage: Manual entries help the user to keep in track of casual expenses.
- Disadvantage: User feels lazy or sometimes forget to do manual entries.

4. E-Wallet:

The user can add their bank account to the application to keep track on expenses and all other expenditure. E-wallet like PayPal can be attached to

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this application.

- Advantage: The app can easily get the expense intel form the user's E-wallet notifications.
- Disadvantage: This link cause highly reliability on E-wallet notification.

5. Budget plan:

This feature helps the user to set a budget limit on a set of sub-category expenses on a limited period of time. Suppose if the user crosses the limit the application will generate an Email alert.

- Advantage: Helps the user to maintain their expenses
- Disadvantage: Unwanted alert notification when the user crosses their budget limit under critical circumstances.

6. Expenditure graph:

Based on daily expenses the application will generate an expense – time graph. So that the user can analyses their expenditure over a period of time. This helps the user to avoid unnecessary expenses and they can also keep in track of their budget.

- Advantage: Gives a clear pictorial representation of the user's expenditure on a particular time period.

TECHNOLOGIES:

- Python
- Flask
- Docker
- Angular
- Redis
- MySql

2.1 Existing problem

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- The application does not accepts the other country money.
- It doesn't balance the expense(if other country money).
- A small expenses that should be enter by manully may missed.

2.2 References

1.	Palestinian Ministry of Education and Higher Education. Palestinian Higher Education Statistics.

2.	Accreditation and Quality Assurance Committee (AQAC) in Palestine. General Report of Information Technology and Engineering Higher Education in Palestine. Accreditation and Quality Assurance Commission (AQAC). Ramallah, Palestine: Palestinian Ministry of Education and Higher Education; 2007 Apr.

3.	Engineering Association of Palestine. Current Engineering Statistics Book. Ramallah; 2005.

4.	Prados J, Peterson G, Lattuca L. Quality Assurance of Engineering Education Through Accreditation: The Impact of Engineering Criteria 2000 and Its Global Influence. Journal of Engineering Education. 2005 Jan; 94(1):165–84.

5.	Chen JW, Yen M. Engineering Accreditation: A Foundation for Continuing Quality Improvement. 2005 Mar 1–5; Tainan. Exploring Innovation in Education and Research,

6.	Homma H. Accreditation System in Indonesia. JSME news. 2004 May; 15(1)

7.	Oberst B, Jones R. International Trends in Engineering Accreditation and Quality Assurance. World Expertise L.L.C.

2.3 Problem Statement Definition

Developing a cloud application not only for personal expense tracking but also providing various strategies to save money. This application take input from manual entries by user, scanning bills, auto generated messages from banks. Monthly mandatory expenditures such electricity bill, gas bill, personal loans, etc are detected which helps in creating an expenditure graph. Also whenever the user cross the expenditure limit the application will generates an email alert. The user can also set the expenditure limit

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manually or the application can set the expenditure limit based on the average monthly expense.

3. IDEATION & PROBLEM SOLUTION

3.1 Empathy Map Canvas

3.2 Ideation & Brainstorming

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3.3 Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	The application doesn't make a precise and fast analytics of the user data.
2.	Idea / Solution description	By avoiding duplicate entries and allowing user to set a customized budget limit so that the application will avoid calculation errors.
3.	Novelty / Uniqueness	The application have a separate section for savings apart from normal expenditure and also generates a expense-time graph.
4.	Social Impact / Customer Satisfaction	Some of the features such as scanning bills, taking data from transaction message, auto generated alert, customize the budget limit, expense-time graph makes the application more interactive.

5.	Business Model (Revenue Model)	For 3 months the user can access each and every features of the application for free. After that the user need to subscribe premium plan to access some features like having a savings section, extended expense-time graph for accounting, scheduled transaction, etc.
6.	Scalability of the Solution	This application can also be used by accountants and auditors by making separate database for accounting purposes and each database will have an separate expense-time graph attached to it.

3.4 Problem Solution fit:

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Project Title: Personal expense tracker application   Project Design Phase-I - Solution Fit Template   Team ID: PNT2022TMID27307

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 Registration through LinkedIN
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User Login	Enter user name and password

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FR-4	Adding User essential data	Link Bank account Enter Hard cash expenses Set budget limit
FR-5	Alerts	Email Alert

4.2 Non-Functional requirements

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	Fast and PreciseBudget Planning
NFR-2	Security	Resilient and data are immutable
NFR-3	Reliability	Failure-free operations and proper alerts are generated.
NFR-4	Performance	Instant e-mail alerts and generation of accurate expense-time graph.
NFR-5	Availability	User can access all the functionality of the application for 3 months after that they need to pay for premium account with all facility.
NFR-6	Scalability	This application can be furtherance by having a separate section for Auditing/Accounting.

5. PROJECT DESIGN
5.1 Data Flow Diagrams

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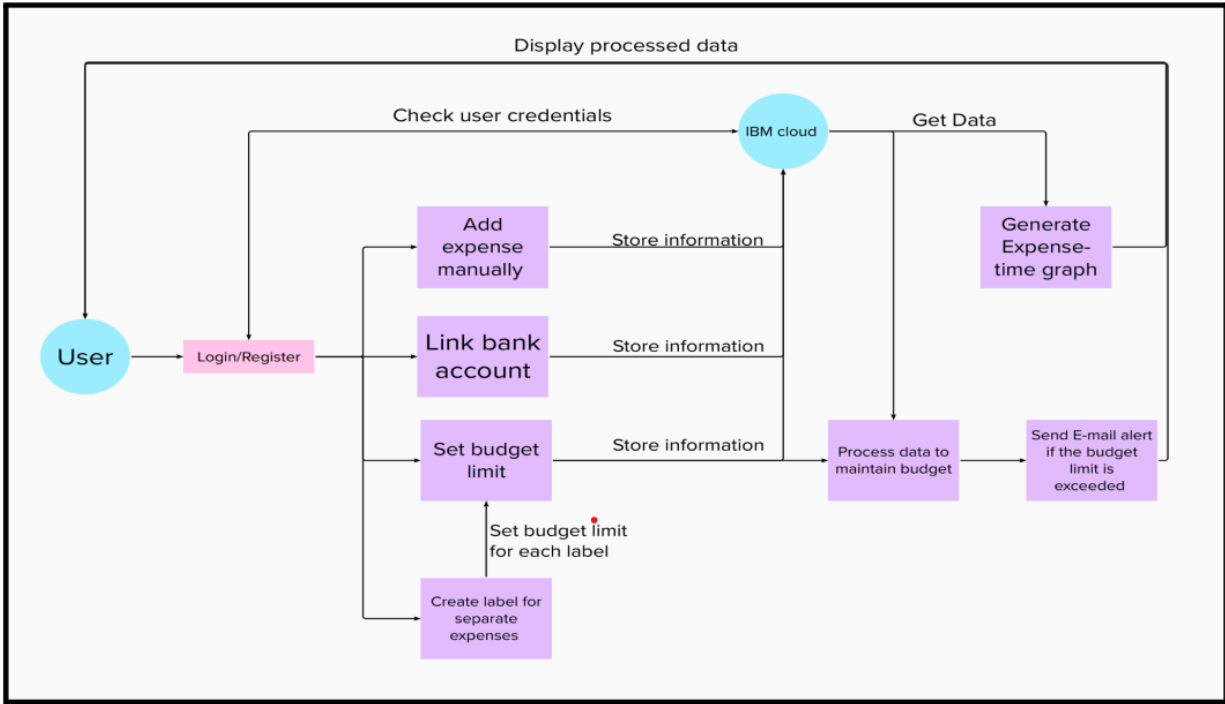
5.2 Solution & Technical Architecture
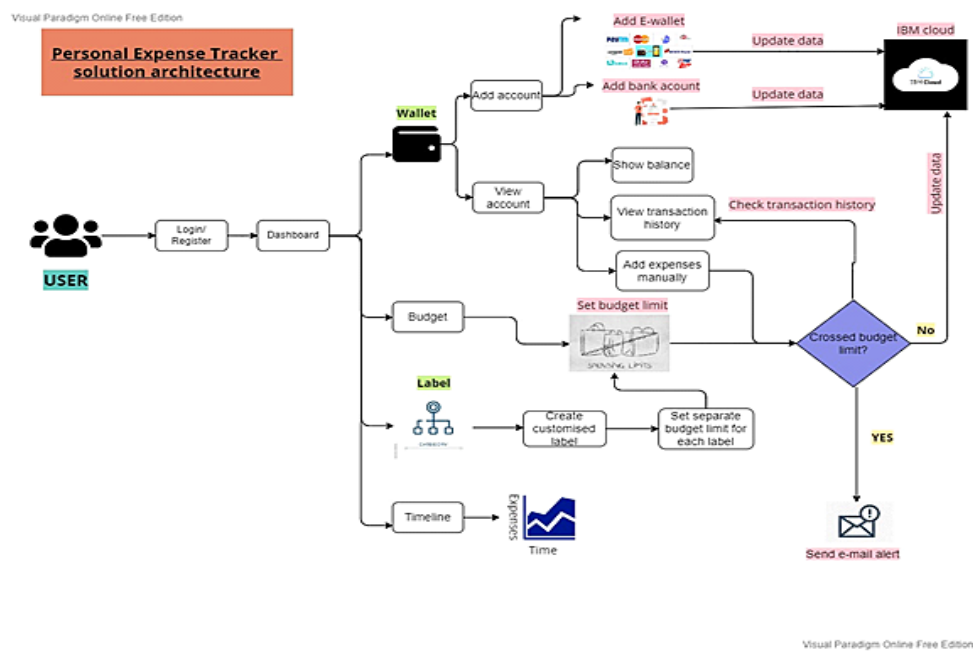
TECHNICAL ARCHITECTURE

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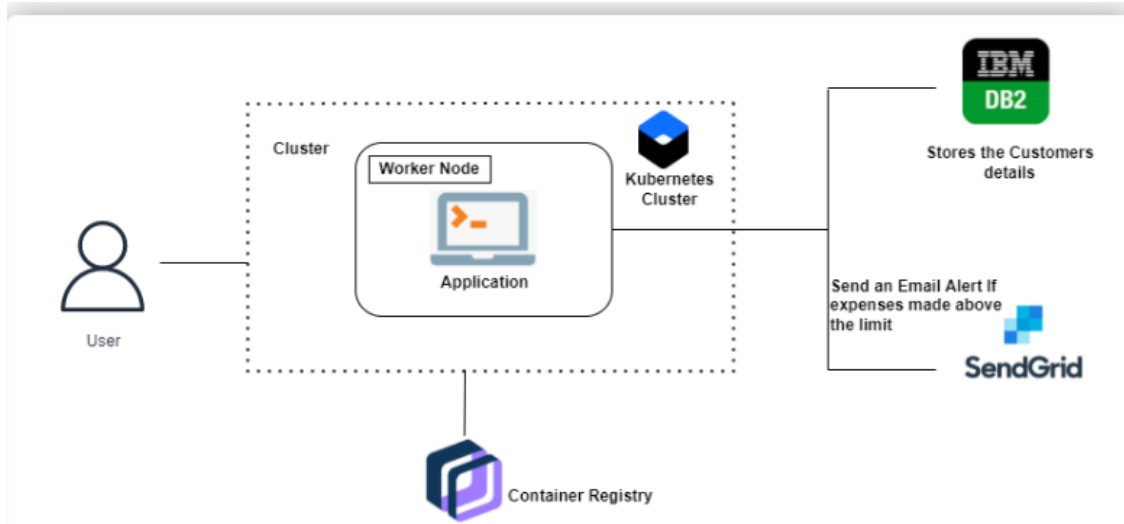
5.3 User Stories

User Type	Functional Requireme nt (Epic)	User Story Numb er	User Story / Task	Acceptance criteria	Priori ty	Relea se
Customer (Mobileuse r)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a user,I will receive confirmation email once I have registered for the application	I can receive confirmation email & Click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through gmail	I can register &access the dashboard with gmail Login	High	Sprint-1

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	Login	USN-4	As a user,I can log into the application by entering email &password	I can access the application	High	Sprint-1
	Dashboard	USN-5	As a user I can enter expense manually or link the bank account to access transaction history.	I can outlook my daily expenses	High	Sprint-2
		USN-6	As a userI can set a budget limit for monthly expenses	I can reduce my unwanted monthly expenses	High	Sprint-1
		USN-7	As a user I can create separate label and set budget limit for each and every label	I can maintain separate budget limits	Medium	Sprint-2
Customer Care Executive	Chatbot	USN-8	As a customer care representative I can solveissues related to application through getting proper report from user	I can provide 24/7support for the application	Low	Sprint-3
Administrator	Application	USN-9	As a admin I can update and optimize the application for betterment.	I can fix bugs and provide better experience for the user	High	Sprint-2

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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	Swetha V
Sprint-1		USN-2	As a user,I will receive confirmation email once I have registered for the application	1	High	Sanjay Aravindh M
Sprint-1		USN-3	As a user ,I can register for the application through gmail	2	High	Subash G
Sprint-2	Login	USN-4	As a user,I can log into the application by entering email &password	2	High	Sakthi sri P
Sprint-2	Dashboard	USN-5	As a user I can link the bank account to access transaction history	2	High	Subash G
Sprint-2		USN-6	As a userI can access the labels to update for each transaction.	1	High	Swetha V
Sprint-3		USN-7	As a user I can set Budget limit for monthly expenses	2	Medium	Sakthi sri P
Sprint-3		USN-8	As a userI can create separate label and set budget limit for each and every label	2	Medium	Sanjay Aravindh M
Sprint-3		USN-9	As a user I can add expenses manually	2	Low	Subash G
Sprint-4	Alerts	USN-10	As a user I can customize the notification alerts for budget limits.	1	Medium	Swetha V

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Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-4		USN-11	As a user I can only change the budget limit with a limited time period.	1	Medium	Sakthi sri P
Sprint-4	Graph	USN-12	As a user I can view the Expense-Time graph	3	High	Sanjay Aravindh M

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 Oct2022	05 Nov 2022	10	07 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	10	07 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	10	14 Nov 2022

6.3 Reports from JIRA
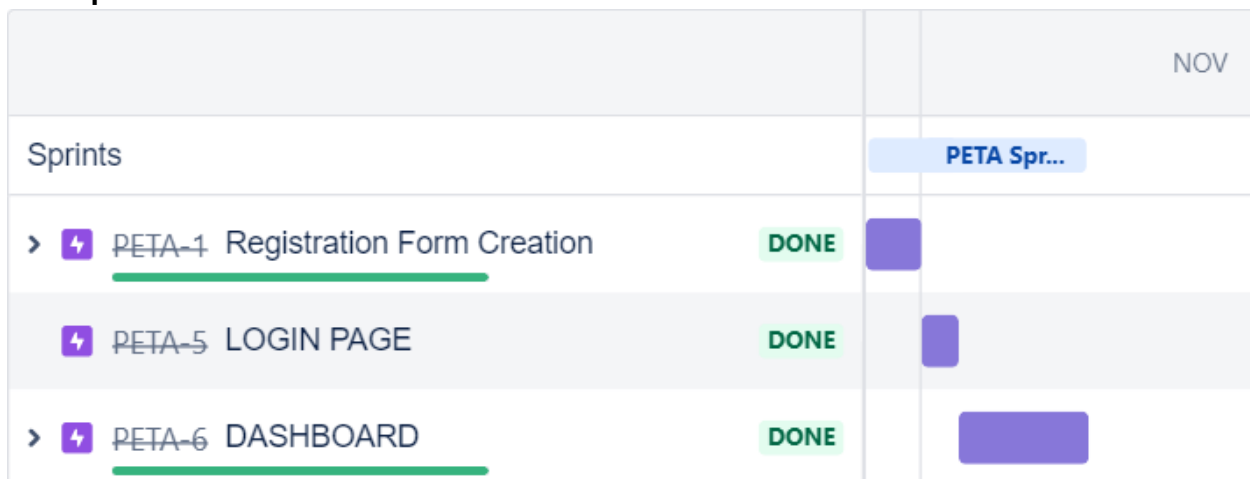
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7. CODING & SOLUTIONING
7.1 Feature 1

```html
<html>
    <head>
        <link rel="stylesheet" href="{{ url_for('static',
filename='budgetStyle.css')}}"/>
    </head>

    <body>
        <center>
        <div class="budget">
            <h1>BUDGET</h1><br>
            Your current budget:{{bd}}<br><br>
          <form action="/set_budget" method="POST">
            SET BUDGET<br>
            <input type="number" name="bd">
            <input type="submit" value="SET"><br><br>
            {{msg}}
            </form>
            <form action="/dashboard" method="POST">
            <input type="submit" value="Go back">
            </form>
            </div>
            </center>
    </body>

</html>>
```
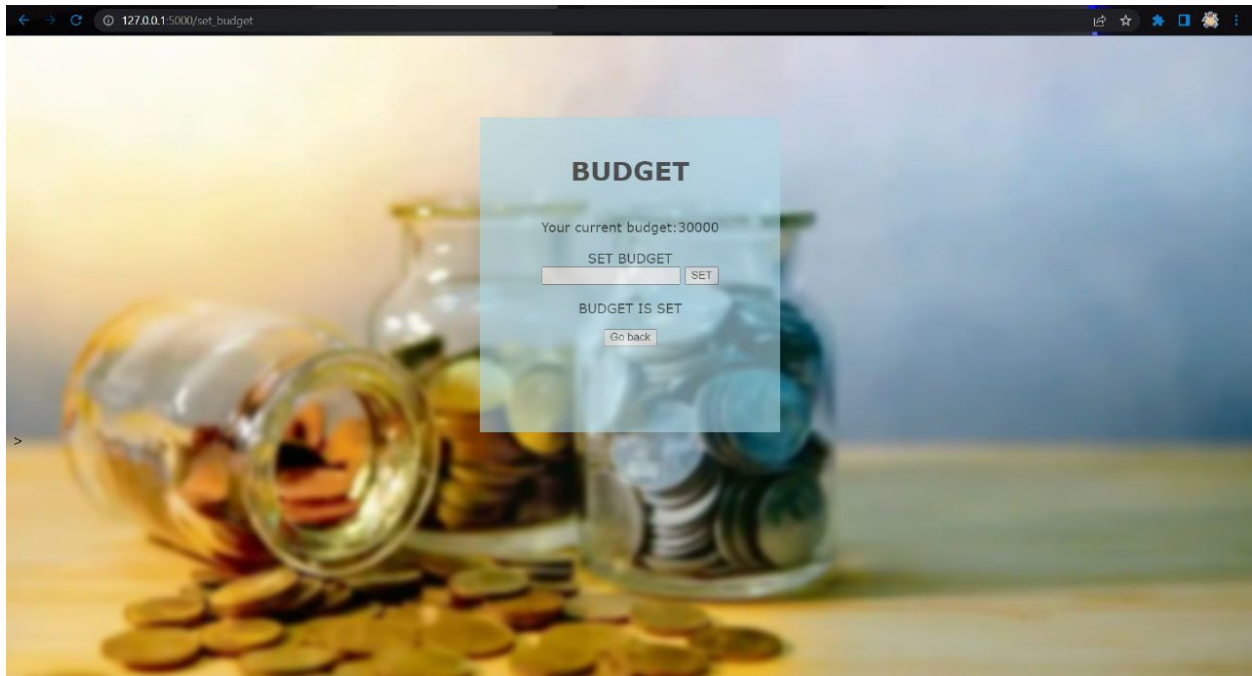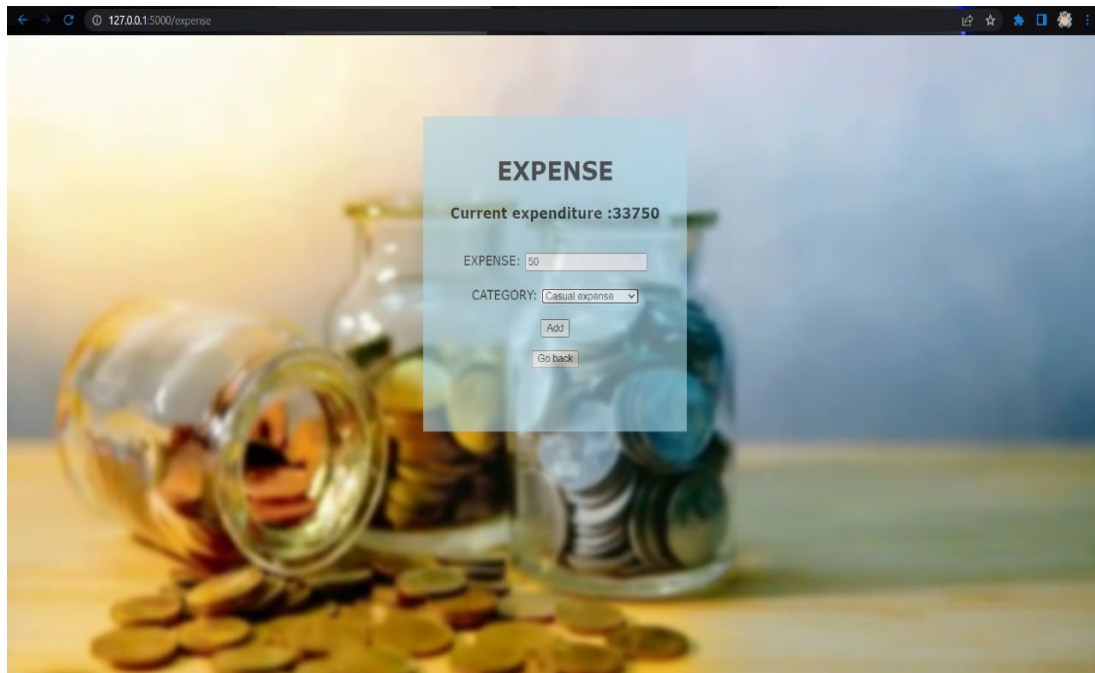
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7.2 Feature 2

```html
<html>
    <head>
        <link rel="stylesheet" href="{{ url_for('static',
filename='budgetStyle.css')}}"/>
    </head>
    <body>
        <center>
            <div class="budget">
            <h1>EXPENSE</h1>
            <h3>Current expenditure :{{ex}}</h3><br>
            <form action="/add_expense" method="POST">
                EXPENSE:
                <input type="number" name="ex">
                <br><br>
                CATEGORY:
                <select name="cat" id="cars">
                    <option value="" disabled selected hidden>Choose a
category</option>
                    <option value="Rent">Rent</option>
```

```html
            <option value="Food">Food</option>

            <option value="Casual expense">Casual expense</option>

            <option value="Groceries">Groceries</option>

            <option value="Others">Others</option>

          </select>

       <br>

       <br>

       <input type="submit" value="Add"><br>

       {{msg}}

    </form>

    <form action="/dashboard" method="POST">

       <input type="submit" value="Go back">

    </form>

   </div>

   </center>

  </body>

</html>
```

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7.3 Database Schema (if Applicable)

```python
sql="SELECT * FROM REG WHERE CONTACT=?"
            stmt= ibm_db.prepare(conn,sql)
            ibm_db.bind_param(stmt,1,ph)
            ibm_db.execute(stmt)
            account = ibm_db.fetch_assoc(stmt)
            #account = ibm_db.fetch(stmt)
            print(account[1])
            if account:
                return render_template("register.html",msg="ALREADY
EXISTS")
            else:
                insert_sql="Insert INTO REG VALUES(?,?,?,?)"
                prep_stmt=ibm_db.prepare(conn,insert_sql)
                ibm_db.bind_param(prep_stmt,1,un)
                ibm_db.bind_param(prep_stmt,2,ps)
                ibm_db.bind_param(prep_stmt,3,mail)
                ibm_db.bind_param(prep_stmt,4,ph)
                ibm_db.execute(prep_stmt)
```
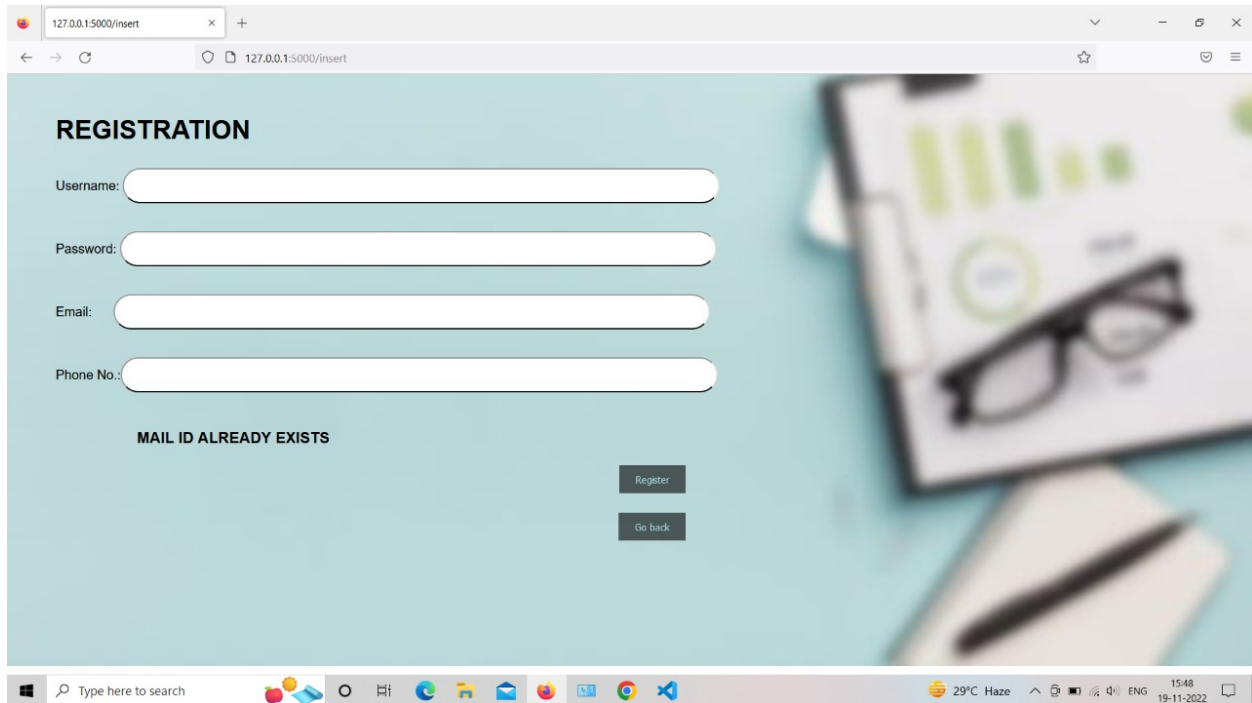
8. TESTING

8.1 Test Cases

Setting a budget limit and tracking the expense so that the expense should not exceed the limit. So, if the application make an alert if it exceeds the test case will be passed.

In this below picture it shows an **alert that the user exceeded the budget limit**.

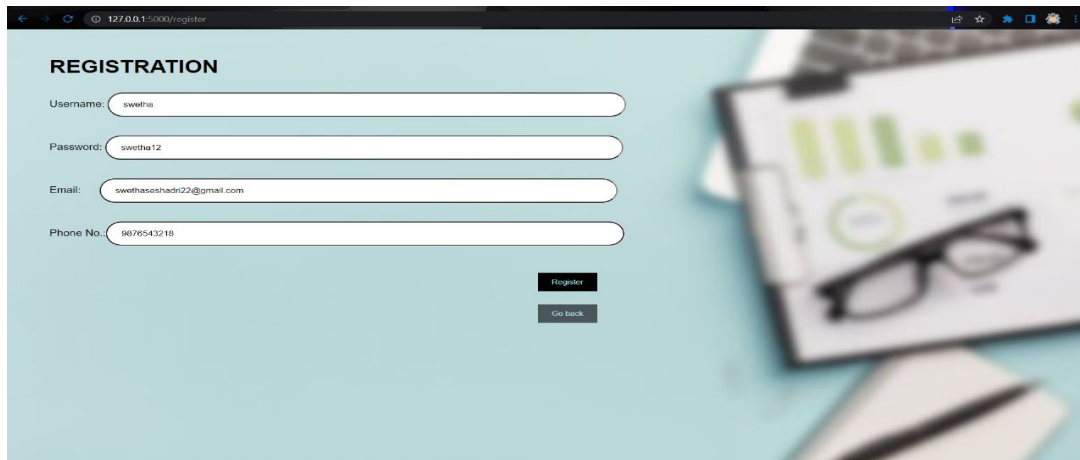# PERSONAL EXPENSE TRACKER APPLICATION
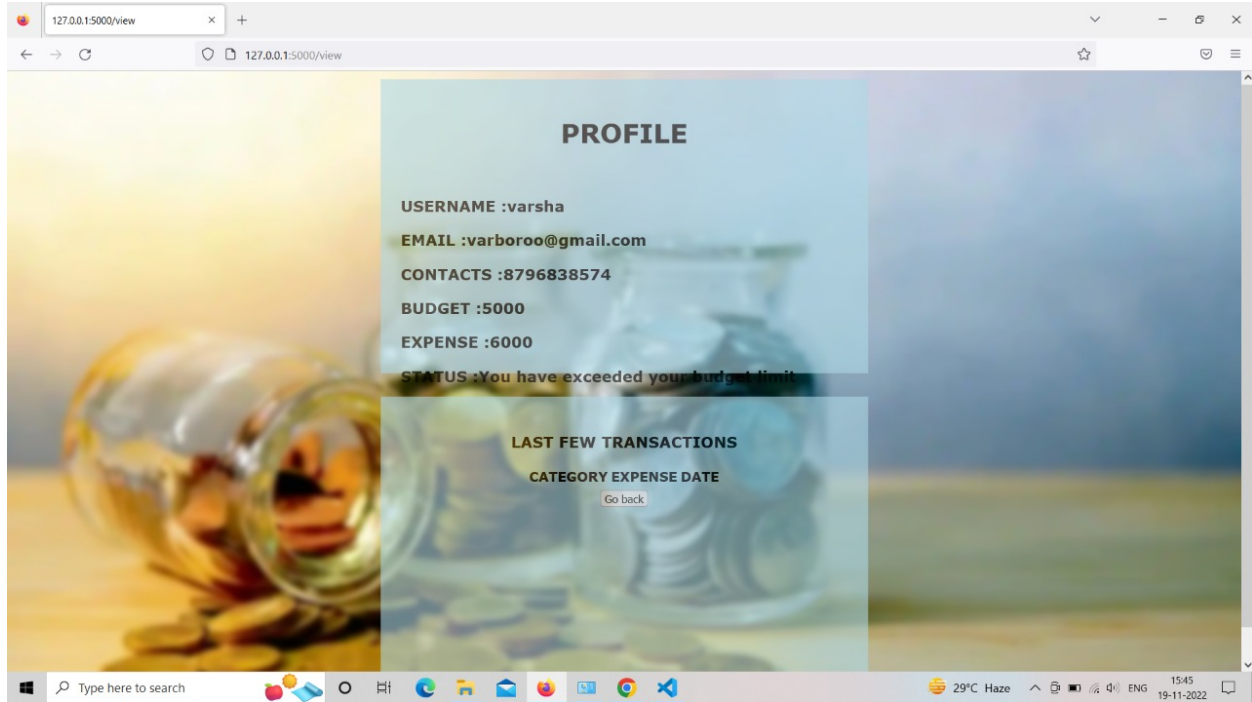
8.2 User Acceptance Testing
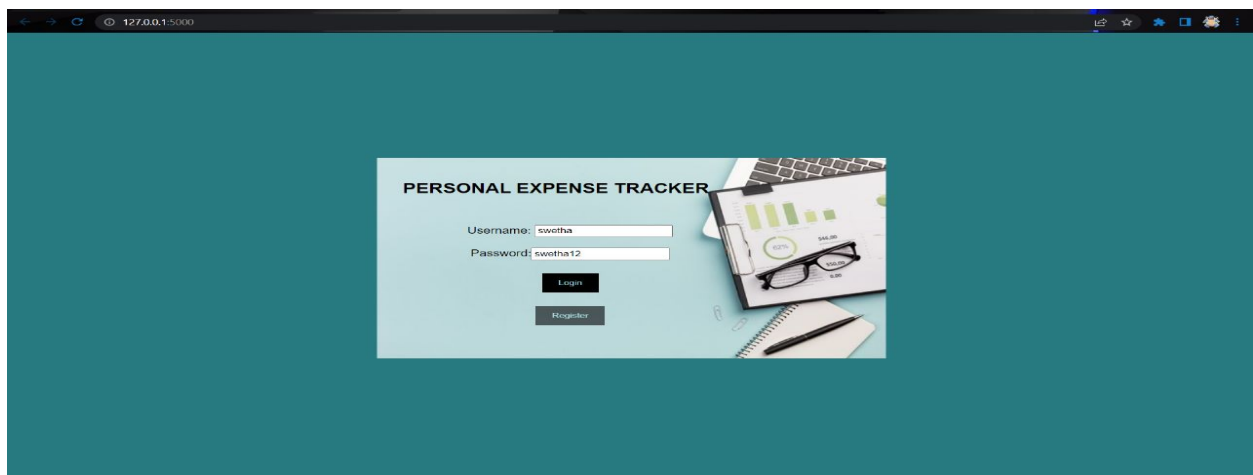

9. RESULTS

PERSONAL EXPENSE TRACKER APPLICATION
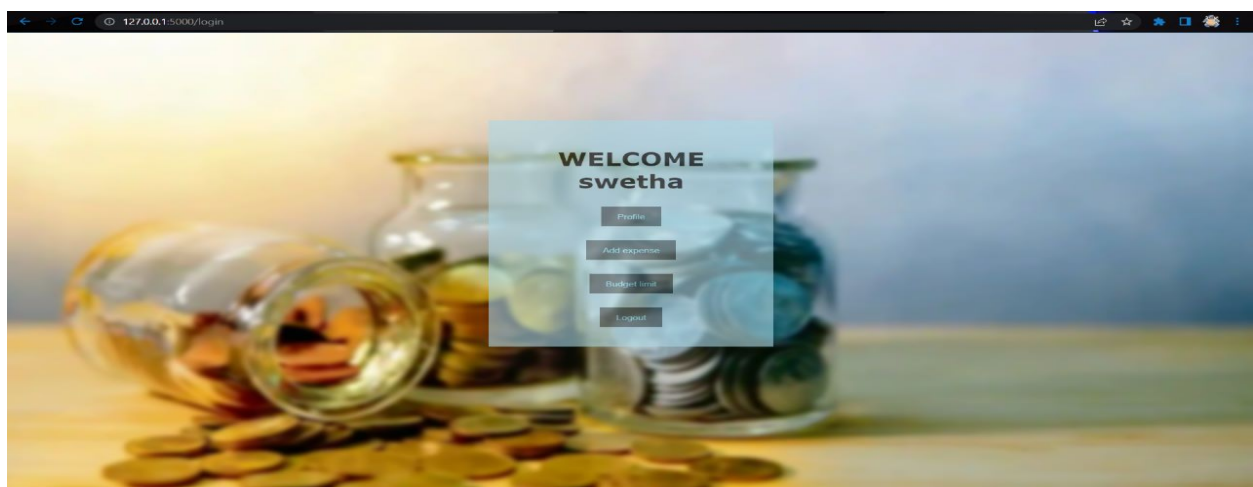
9.1 Performance Metrics

REGISTER:

LOGIN:

DASHBOARD:

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ADD EXPENSE:

User can add their expenses manually with selecting the required category.
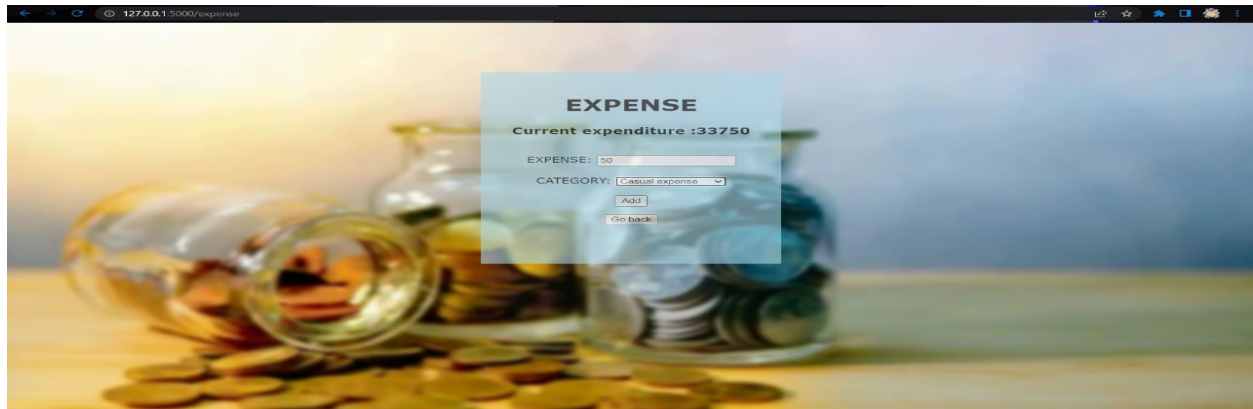
SET BUDGET LIMIT:

User can set the budget limit as per they requirements.

PROFILE:

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10. ADVANTAGES & DISADVANTAGES
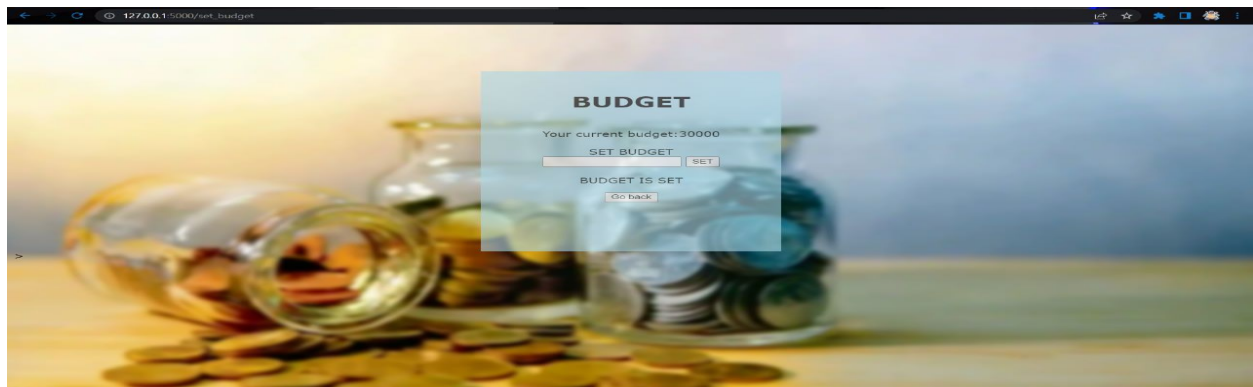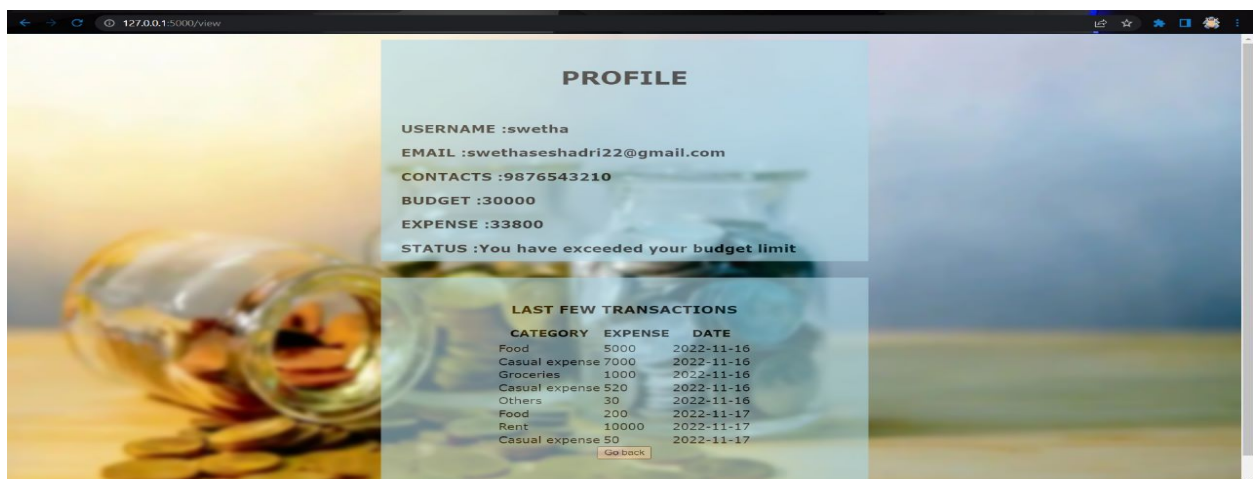**Advantages:**
   1. The user will spend mindfully
           When you write down every expense it helps you spend more mindfully and prevents you from splurging. It makes you responsible with your spending.
   2. Making Financial Control
           When you track your expenses, you take complete control 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 while spending
            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 out how 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 purpose
           Tracking your expenses on a day-to-day basis helps you to see your progress on the road to your financial goals**.**
   6. Improving financial security
           Disorganized finances lead to financial problems. It is easier to stay organized than it is to organize a messy financial situation.
Disadvantages:
   1. They're time-consuming, inefficient, and wasteful
   2. They cast doubt on your business data
   3. They put an unnecessary financial burden on employees

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11. CONCLUSION

      This application is entirely user control.And this application helps the user to keep their expense in track. Many of the features are customized. User can change or edit the budget limit, adding the expenses with category and so on. It has a secured database of the user.

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 bills where 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

    Source Code
   GitHub : https://github.com/IBM-EPBL/IBM-Project-20270-1659716237
   Project Demo Link : https://youtu.be/gMQBePHw5OA

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