

A PROJECT REPORT ON

Personal Expense Tracker Application

Domain : Cloud App Development
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CHAPTER 1

1.INTRODUCTION

A Personal Expense Tracker Application is a particular form of digital diary that aids in keeping track of all of our cash transitions and moreover offers daily, weekly, monthly, and yearly reports on all financial activities.

User receives alerts to keep track of income and expenses that can system for tracking the application. All data is kept in offline mode for easy access at any time and from any location. The Daily Expense Tracker's user interface is incredibly straightforward and appealing, making it simple to grasp and the finest approach to record our financial data.

1.1. PROJECT OVERVIEW

Simply put, personal finance includes all of the financial decisions and actions that a finance software facilitates by assisting you in effectively managing your finances. A personal finance software will not only assist you with accounting and budgeting, but it will also provide you with valuable advice on money management.

Users of personal finance applications will be prompted to enter their costs, after which their wallet balance will be updated and displayed to them. Users can also receive a graphical analysis of their expenses. They can choose to establish a cap on how much can be used in that month, and if the cap is surpassed, the user will receive an email alert.

1.2. PURPOSE

When you keep track of your spending, you can make sure your money is being utilised wisely and you will know where it goes. You can learn why you're in debt and how you got there by keeping track of your spending. You can then use this information to create a debt relief plan that works for you.

You may plan for both short-term and long-term expenses by using a budget to make sure you're not spending more than you're earning. It's a simple, practical solution for folks with all types of income and expenses to maintain order in their finances.

CHAPTER 2

2. LITERATURE SURVEY

A literature review is a piece of academic writing that places the academic literature on a particular topic in perspective to show knowledge of and understanding of it. This chapter shows the different techniques that have been implemented.

2.1. EXISTING PROBLEM

The expense tracker existing system does not offer the user portable device management level, is only used on desktop software, and is therefore impossible to update anywhere expenses are done and is unable to update the location of the expense details disrupting that the proposed system provides. The user's daily, weekly, and monthly spending must be maintained in Excel sheets and CSV files at the moment. The ability to conveniently keep track of one's everyday costs does not now have a fully comprehensive answer. To do this, one must maintain a journal in a diary or computer system, and all calculations must be made by the user, which might occasionally result in errors that cause losses. Due to imperfect data maintenance, the current system is not user friendly. The sole negative where the rest are absent from this endeavor is that there will be no reminder to stay a human on a specified date. This project won't have any information because it doesn't remind people to do anything each month, which has some drawbacks. However, it can be used to calculate income and expenses, so we suggest a new project to solve this issue.

2.2 REFERENCE

- [1] Expense Tracker ATIYA KAZI, PRAPHULLA S. KHERADE, RAJ S. VILANKAR, PARAG M. SAWANT May 2021
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- [5] A Novel Expense Tracker using Statistical Analysis Muskaan Sharma, Ayush Bansal, Dr. Raju Ranjan, Shivam Sethi June 2021
- [6] Expense Tracker Hrithik Gupta, Anant Prakash Singh, Navneet Kumar and J. Angelin Blessy December 2020
- [7] Expense Manager: An Expense Tracking Application using Image Processing Nupur Sawarkar, Pranay Yenagandula, Devang Shetye, Prof. Shruti Agrawal April 2022

- [8] D2D Expense Tracker Application Anjali Kumar, Utkarsh Ra, Aman Kumar 2021
- [9] Daily Expense Tracker Mobile Application Nuura Najati Binti Mustafa 2021
- [10] Daily Expense Tracker Shivam Mehra, Prabhat Parashar 2021

2.3 PROBLEM STATEMENT DEFINITION

In our daily life money is the most important portion and without it we cannot last one day on earth but if we keep on track all financial data then we can overcome this problem. Most of the people cannot track their expenses and income one way they face the money crisis and depression. This situation motivates us to make an android app to track all financial activities. Using the Personal Expense Tracker Application user can be tracking expenses day to day and making life tension free.

CHAPTER 3

3. IDEATION & PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS

Empathy Map

Personal Expense Tracker Application

- Analysing the mindset of a typical target audience of this solution



3.2. IDEATION & BRAINSTORMING

Brainstorm & idea prioritization

Use this template in your next brainstorming session so your team can unleash their imagination and develop creative ideas that are not acting in the same room.

1. Brainstorm in pairs
2. Share ideas
3. Evaluate ideas

1 Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

5 minutes

Modern education does not focus on finance management. This is primarily due to lack of resources and the Indian value system on giving money to children. Failing to teach this valuable knowledge had left many Indians to recklessly spend their income and fall into vicious cycles of EMI and debt. Many of them are just a month's salary away from bankruptcy.

This issue is tackled by providing a web application for where people can plan their monthly expenses into categories, set alerts and get visual insights from their spending patterns.

2 Brainstorm

Write down every idea that comes to mind that address your problem statement.

15 minutes

Abstract

- Build Expense Management App
- Generate expense report
- Track category for expenses

Concrete

- Calculate bank charges
- Light weight web app
- AI powered expense management app
- Mobile app with offline mode

Desirable

- Allow one person to expense
- Provide push notifications
- Send alerts
- Expense tracking for user

3 Group ideas

Now group your ideas into 3-4 clusters or group related ideas into 3-4 clusters. This will help you to see the big picture and identify the most important ideas.

10 minutes

4 Prioritize

Now rank each idea on a scale of 1-5 based on its impact and feasibility. This will help you to see the most important ideas and identify the most feasible ideas.

10 minutes

3.3. PROPOSED SOLUTION

S.NO.	Parameter	Description
1.	Problem Statement	In a paper-based expense tracker system it is difficult to track our monthly expenses manually. In a 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, floods etc.
2.	Scalability of the Solution	This application can handle large numbers of users and data with high performance and security. This application can adapt for both large-scale and small-scale purposes. Easily available in all kinds of devices.

3.	Idea / Solution description	Daily expense management system which is specially designed for non-salaried and salaried personnel for keeping track of their daily expenditure in an easy and effective way through a computerized system which tends to eliminate manual paperwork. 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. 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.
4.	Novelty / Uniqueness	The user gets notified when their expense exceeds the limit and also it reminds the user when they forgot to make an entry. Tracking expenses through SMS. Data analytics on expenses. Future expense prediction

5.	Social Impact / Customer Satisfaction	The application should be able to generate reports of their spending and notify users if they have exceeded their budget. It is designed to be dynamic to produce the prediction. It also provides users' personal information, their income as well as their expenses. This application can create awareness among common people about finance and stuff. This application also helps users to be financially responsible. It Reduces time rather than entering
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		details manually.
6.	Business Model (Revenue Model)	This Application is provided for free of cost. But It will have some advertisements. In premium version there is no advertisement and contains some additional features.

3.4. PROBLEM SOLUTION FIT

Define CS, fit into CC	1. CUSTOMER SEGMENT(S) CS Who is your customer? i.e. working parents of 0 to 5 y. kids An individual who needs to track their daily expense.	6. CUSTOMER CONSTRAINTS CC Other constraints prevent your customers from taking action or limit their choices of solutions? i.e. spending power, budget, no cash, network connection, available devices. It Helps You Stick to Your Budget. Tracking Your Expenses Can Reveal Spending Issues. It Helps You Meet Your Financial Objectives.	5. AVAILABLE SOLUTIONS AS Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? i.e. pen and paper is an alternative to digital notebook. An expense tracker is a software or application that helps to keep an accurate record of your money inflow and outflow. One of the available solutions is tracking the expenses manually using a note and a pen, a traditional way to keep track of your expenses. But this solution is not efficient since it is a time consuming process.	Explore AS, differentiate
	2. JOBS-TO-BE-DONE / PROBLEMS J&P Which jobs to be done (or problems) do you address for your customers? There could be more than one, explore different sides. The main problem is to provide an optimized and efficient personal expense tracking application to the users for better management of their expenses and savings. To do so a person has to keep a log in daily or in a computer, also all the calculations needs to be done by the user which may sometimes results in errors leading to losses.	9. PROBLEM ROOT CAUSE RC What is the real reason that the problem exists? What is the back story behind the need to do this job? i.e. customers have to do it because of the changes in requirements. Helps you see your money situation and figure out possible money problems before they occur.	7. BEHAVIOUR BE What does your customer do to address the problem and get the job done? i.e. identify related, find the right solution, install, calculate usage and benefits, indirectly associated: customers spend time on researching work (i.e. Google) etc. Use software to categorize and keep your expenses all in one place. Connect your bank account to your accounting software to automatically import transactions.	
Focus on AS, tap into BE, understand RC	3. TRIGGERS TR What triggers customers to act? i.e. seeing their neighbor installing solar panels, reading about a new efficient solution in the news. User engagement. By seeing their friends who save money will trigger them to use	10. YOUR SOLUTION SU If you are working on an existing business, write down your current solution for ALL in the canvas, and check how much it fits reality. If you are working on some business proposition, then keep it short and powerful (a few sentences) and come up with a solution that fits within customer limitations, solves a problem and matches customer behavior. Daily Expense Tracker System is a system which will keep a track of Income-Expense of a House-Wife on a day to day basis. And it saves money and gives alert message for over usage of money	8. CHANNELS of BEHAVIOUR CH ONLINE: What kind of actions do customers take online? Extract online channels from it? The actions taken by the user is that storing the details of the expenses immediately after spending OFFLINE: What kind of actions do customers take offline? Extract offline channels from it/Find one them for customer development. The user can save their expense entries in the local storage when the device connected to internet the data will be sent to the cloud	Identify strong TR & EM
	4. EMOTIONS: BEFORE / AFTER EM How do customers feel when they face a problem or a job that afterwards? i.e. first, nervous / confident, uncertain - see it in your communication strategy & design. Low interest Slow response time			

CHAPTER 4

4. REQUIREMENT ANALYSIS

4.1 Functional Requirements

Following are the functional requirements of the Proposed solution

FR NO.	Functional Requirement (Epic)	Sub Requirement (story/sub task)
FR-1	User Registration	Registration through application registration through Gmail
FR-2	User Confirmation	Confirmation via email confirmation via OTP
FR-3	User monthly expense tentative data	Data to be registered in the app
FR-4	User monthly income data	Data to be registered in the app
FR-5	Alert/Notification	Alert through email alert via SMS
FR-6	User Budget Plan	Planning and Tracking of user expense and budget limit

4.2 Non Functional Requirements

Following are the non functional requirements of the Proposed solution

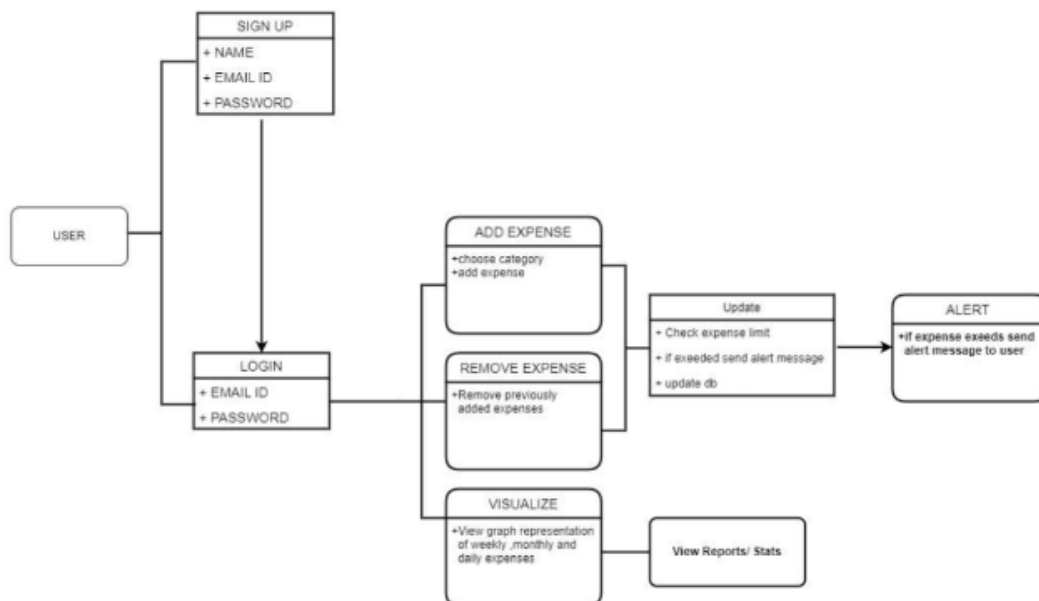
FR NO.	Non Functional Requirement	Description
NFR-1	Usability	Effectiveness, efficiency and overall satisfaction of the user
NFR-2	Security	Authentication,authorisation and encryption of the application
NFR-3	Reliability	Probability of failure free operations in a specified environment for a specified time
NFR-4	Performance	How the application is functioning and how responsive the application is to the end users
NFR-5	Availability	Without near 100% availability,application reliability and the user satisfaction will affect the solution
NFR-6	Scalability	Capacity of the application to handle growth,especially in handling more users

CHAPTER 5

5. PRODUCT DESIGN

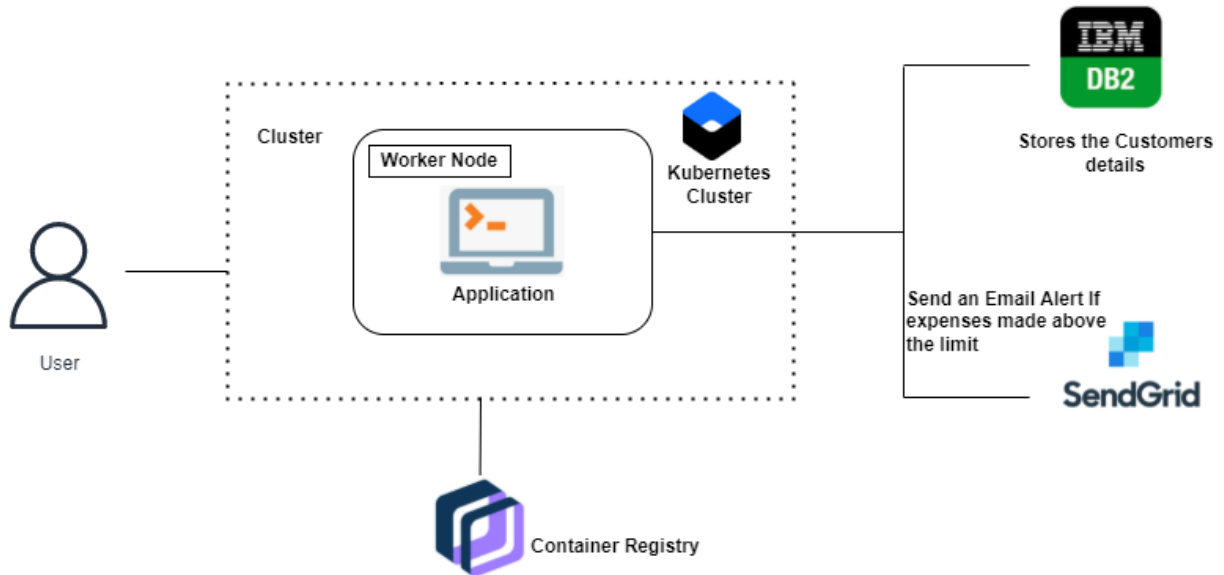
5.1 Data Flow Diagrams

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 stored.



5.2 Technical Architecture

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2



5.3 User Stories

Use the below template to list all the user stories of the product

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, password, and confirming my password.	I can access my account / dashboard	High	
		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	
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	
	Login	USN-4	As a user, I can log into the application by entering email & password	I can access the application	High	
	Dashboard	USN-5	As a user I can enter my income and expenditure details.	I can view my daily expenses	High	
Customer Care Executive		USN-6	As a customer care executive I can solve the log in issues and other issues of the application.	I can provide support or solution at any time 24*7	Medium	
Administrator	Application	USN-7	As an administrator I can upgrade or update the application.	I can fix the bug which arises for the customers and users of the application	Medium	

CHAPTER 6

6. PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning and 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.	3	High	Aiswarya. S Danujaa. R
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	3	High	Aiswarya. S Danujaa. R
Sprint-1	Login	USN-3	As a user, I can log into the application by entering email & password	5	High	Aiswarya. S Danujaa. R

Sprint-1	Dashboard & Logout	USN-4	As a user, once I logged in I can access all the features of the web app and Logout once I completed all the work.	5	High	Aiswarya. S Danujaa. R
Sprint-1		USN-5	Once logged In, Keep me logged for few hours to avoid repeated login if the page is refreshed	4	Medium	Aiswarya. S Danujaa. R
Sprint-2	Expense	USN-6	Add total income for the month and Allow for edit option	6	High	Sharmitha. S Sneha ganesh
Sprint-2		USN-7	Split the total income based on usage like entertainment, food, shopping etc.	2	Low	Sharmitha. S Sneha ganesh
Sprint-2		USN-8	Add the day to day expense.	6	High	Sharmitha. S Sneha ganesh
Sprint-2		USN-9	Display the user added expense	6	High	Sharmitha. S Sneha ganesh

Sprint-3		USN-10	Filter the expense data based on criteria	6	Medium	Aiswarya. S Danujaa. R
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Sprint-3	Charts	USN-11	As a user I can display it in graphs		Low	Aiswarya.S Danujaa. R
Sprint-3	Alerts	USN-12	As a user I create custom alert for the balance		High	Aiswarya. S Danujaa. R
Sprint-4	Deployment	USN-13	As a user I should able to access it anywhere in the net		High	Sharmitha. S Sneha ganesh

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	6	6 Days	15 Oct 2022	30 Oct 2022	6	30 Oct 2022
Sprint-2	2	6 Days	30 Oct 2022	05 Nov 2022	2	05 Nov 2022
Sprint-3	7	6 Days	05 Nov 2022	12 Nov 2022	7	12 Nov 2022
Sprint-4	5	6 Days	12 Nov 2022	19 Nov 2022	5	19 Nov 2022

6.3 Reports from JIRA

The screenshot shows the Jira Software interface for the 'Personal Expense Tracker Application' project. The 'Backlog' view is active, displaying a list of issues for 'PETA Sprint 1' (30 Oct - 14 Nov) with 4 issues. The issues are:

- PETA-1: register for the application by entering email, password, and confirming password (IN PROGRESS)
- PETA-3: Register for the application through Facebook (TO DO)
- PETA-8: Expenditure details on the application (TO DO)
- PETA-9: View the graphical form of expenses category wise (TO DO)

The backlog is currently empty, and the interface includes a sidebar with navigation options like Roadmap, Backlog, Board, and Code.

CHAPTER 7

7.1 Feature 1

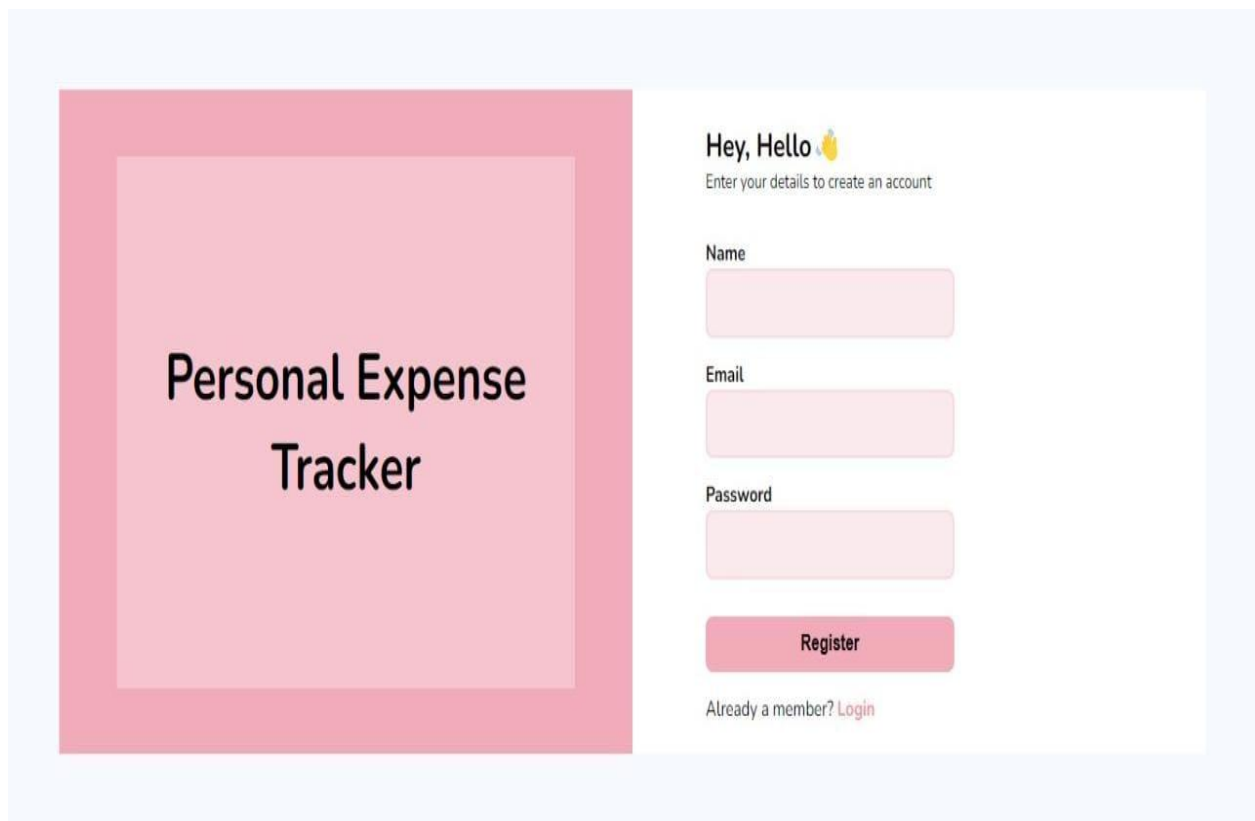
1. Track revenues & expenses.
2. Managing transaction receipts and records.
3. Record & arrange receipts
4. Paying taxes in time.
5. Processing payment and invoices.
6. Create in-depth reports.

CHAPTER 8

TESTING

8.1 Test Cases

Registration Page



The image shows a registration page for a 'Personal Expense Tracker' application. On the left, there is a large pink square with the text 'Personal Expense Tracker' in the center. On the right, there is a white registration form. The form starts with a greeting 'Hey, Hello 🍌' and a subtext 'Enter your details to create an account'. Below this, there are three input fields labeled 'Name', 'Email', and 'Password'. A pink 'Register' button is positioned below the password field. At the bottom of the form, there is a link that says 'Already a member? Login'.

Personal Expense Tracker

Hey, Hello 🍌
Enter your details to create an account

Name

Email

Password

Register

Already a member? [Login](#)

LOGIN

Personal Expense Tracker

Hey, Hello 🍌

Enter the information you entered while registering

Email


Password

Login

Don't have an account? [Register](#)

ADD EXPENSE

Expense Tracker



Manage your expenses easily with

Expense Tracker

Expense Type

Select a Type

Date

dd-mm-yyyy

Expense

Amount

Add Expense

Home	Personal	Entertainment	Health Care	Others
₹300	₹300	₹300	₹300	₹300

Last Transactions

Date	Transaction	Type	Amount
12-05-2022	Groceries	Home	₹3500
18-02-2022	Laptop EMI	Personal	₹5500
02-11-2022	Medicines	Health Care	₹700
05-11-2022	Movie	Entertainment	₹800
05-11-2022	Shopping	Home	₹4500
29-10-2022	Bike Repair	Others	₹750

CHAPTER 9

RESULTS

9.1 Performance Metrics

An application can be a very powerful tool for businesses if once the app becomes a success.

However, the success of an app is measured through numbers, metrics, and analytics.

Developing an app takes quite a lot, so once you've dedicated much time, money, and effort to the process, it's mandatory to measure mobile app performance.

CHAPTER 10

ADVANTAGES & DISADVANTAGES

10.1 Advantages

- Improved customer service
- Cloud-based solution
- Order Fulfillment
- Harness Customer Loyalty and Retention

10.2 Disadvantages

- System Clash
- Reduced Physical Audits
- No solution to improve or eliminate bottlenecks in the service cycle

CHAPTER 11

11. CONCLUSION

Taking proper care of our record is crucial in every business, no matter how big or little, we must understand. We must educate ourselves about the idea of effective inventory management and its applications because we can see that managers do not fully grasp it. A company's inventory management system is one of the reasons for its failure. Many customs to combat failure are present, and we can start from this point. Modern technologies can support us in managing and keeping an eye on our inventory. We may learn, put new ideas into practice, and assess our company.

CHAPTER 12

12. FUTURE SCOPE

- 1) It will have a variety of record-keeping choices (such as food, travel expenses, salary, etc.).
- 2) It will continue to give updates about our daily spending automatically.
- 3) Despite being in a haste to make money in today's hectic and expensive world, we eventually gave up. As we naively waste money on unnecessary items and titles. We came over with the intention of following our profit.
- 4) The user can specify their own expense categories here, such as those for food, clothing, rent, and bills, where they must input the money that has been spent.

CHAPTER 13

13. APPENDIX

13.1. SOURCE CODE

```
from flask import Flask, session, redirect, render_template, request, url_for
import ibm_db, re

app = Flask(__name__)
app.secret_key = "sss"

connection =
ibm_db.connect("DATABASE=bludb;HOSTNAME=6667d8e9-9d4d-4ccb-ba32-21da3bb5aafc.c1
ogj3sd0tgtu0lqde00.databases.appdomain.cloud;PORT=30376;SECURITY=SSL;SSLServerCer
tificate=DigiCert.crt;UID=zbx23177;PWD=0609PXFDuWyfoBIJ",",")

info = ""

@app.route('/')
def main():
    if session and session['active']:
        return redirect(url_for("expenses"))
    else:
        page = "login"
        if request.values.get('query') == "register":
            page = "register"

        return render_template('index.html', info=info, page=page)

@app.route('/create-account', methods=['POST'])
def create():
    global info
    if request.method == 'POST':
        name = request.form["name"]
        email = request.form["email"]
        pwd = request.form["password"]

        stmt = ibm_db.prepare(connection, "SELECT * FROM account WHERE email=?")
        ibm_db.bind_param(stmt, 1, email)
        ibm_db.execute(stmt)
```

```

acc = ibm_db.fetch_assoc(stmt)

if acc:
    info = "Email Already exists"
    return redirect(url_for('main', query="register"))
elif not re.match(r'^@]+@^[^@]+\.[^@]+', email):
    info = "Enter a valid Email"
    return redirect(url_for('main', query="register"))
else:
    info = ""

    stmt1 = ibm_db.prepare(connection, "INSERT INTO account VALUES (?, ?, ?)")
    ibm_db.bind_param(stmt1, 1, name)
    ibm_db.bind_param(stmt1, 2, pwd)
    ibm_db.bind_param(stmt1, 3, email)
    ibm_db.execute(stmt1)

    session['active'] = True
    session['email'] = email

    return redirect(url_for("expenses"))

```

```

@app.route('/login', methods=['POST'])
def login():
    global info
    if request.method == "POST":
        email = request.form["email"]
        pwd = request.form["password"]

        stmt = ibm_db.prepare(connection, "SELECT * FROM account WHERE email=? AND
password=?")
        ibm_db.bind_param(stmt, 1, email)
        ibm_db.bind_param(stmt, 2, pwd)
        ibm_db.execute(stmt)
        acc = ibm_db.fetch_assoc(stmt)
        print(acc)

        if acc:
            info = ""
            session['active'] = True
            session['email'] = acc['EMAIL']
            return redirect(url_for('expenses'))

```

```

else:
    info = "Email and Password doesn't match"
    return redirect(url_for('main'))

@app.route('/logout')
def logout():
    session.clear()
    return redirect(url_for('main'))

@app.route('/expenses', methods=['GET', 'POST'])
def expenses():
    global info
    expenses_amount = [0, 0, 0, 0, 0]
    expenses_list = []

    if session and session['active']:
        email = session['email']
        stmt = ibm_db.prepare(connection, "SELECT expense, date, expense_type, amount
FROM expenses WHERE email=?")
        ibm_db.bind_param(stmt, 1, email)
        ibm_db.execute(stmt)
        val = ibm_db.fetch_assoc(stmt)
        while val:
            expenses_list.append(val)
            if val['EXPENSE_TYPE'] == "Home":
                amount_index = 0
            elif val['EXPENSE_TYPE'] == "Personal":
                amount_index = 1
            elif val['EXPENSE_TYPE'] == "Entertainment":
                amount_index = 2
            elif val['EXPENSE_TYPE'] == "Health Care":
                amount_index = 3
            else:
                amount_index = 4
            expenses_amount[amount_index] += val['AMOUNT']

            val = ibm_db.fetch_assoc(stmt)

    print(expenses_amount)
    print(expenses_list)

    info = ""

```

```

        expenses_list = expenses_list[::-1]

        return render_template("expenses.html", expenses_list=expenses_list,
                               expenses_amount=expenses_amount)
    else:
        info = "Your session is expired"

        return redirect(url_for('main'))

@app.route('/add', methods=['POST'])
def add():
    if request.method == 'POST':
        expense_type = request.form["type"]
        date = format_date(request.form["date"])
        expense = request.form["expense"]
        amount = request.form["amount"]
        email = session['email']

        stmt = ibm_db.prepare(connection, "INSERT INTO expenses VALUES (?, ?, ?, ?, ?)")
        ibm_db.bind_param(stmt, 1, email)
        ibm_db.bind_param(stmt, 2, expense)
        ibm_db.bind_param(stmt, 3, date)
        ibm_db.bind_param(stmt, 4, expense_type)
        ibm_db.bind_param(stmt, 5, amount)
        ibm_db.execute(stmt)

        return redirect(url_for("expenses"))

def format_date(date):
    return date[-2:] + "-" + date[5:7] + "-" + date[:4]

if __name__ == '__main__':
    app.run(debug=True)

```

13.2. GITHUB AND PROJECT DEMO LINK

GitHub Link : <https://github.com/IBM-EPBL/IBM-Project-13179-1659513044>

Project Demo Link :

<https://drive.google.com/drive/folders/1R32GIMVKZLOpQCOH13Go9IUOfVgFleG>