

PROJECT REPORT

PERSONAL EXPENSE TRACKER

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INTRODUCTION

1. Project Overview:

Personal Expense Tracker is a daily expense management system which is specially designed for non-salaried and salaried personnel for keeping track of their daily expenditure with easy and effective way through computerized system which tends to eliminate manual paper works. It will also manage records in systematic way and user can access the stored data conveniently. We have tried to design the project in such way that user may not have any difficulty in using this application without much effort. This software can be really used by end user who have Android running devices with them. The language that we use to develop this system is and MYSQL for database.

2. Purpose:

The idea of developing this project for user convenience. Because whenever they make expenses immediately, they add in the application. Some of the concerns maintaining a personal expense is a BIG problem, in daily expenses many times we don't know where the money goes. Some of the conventional methods used to tackle this problem in normal circumstances are like making use of a sticky notes by common users, Proficient people deals with this kind of problems by using spreadsheets to record expense and using a ledger to maintain the large amounts data by especially by expert people. We believe a handy design and a handy mobile application which handles these troubles. Such that app is capable of recording the expenditure and giving broad view with easy to use the user interface and this application is intelligent enough to show the history of expenses.

LITERATURE SURVEY

1. Existing Problem:

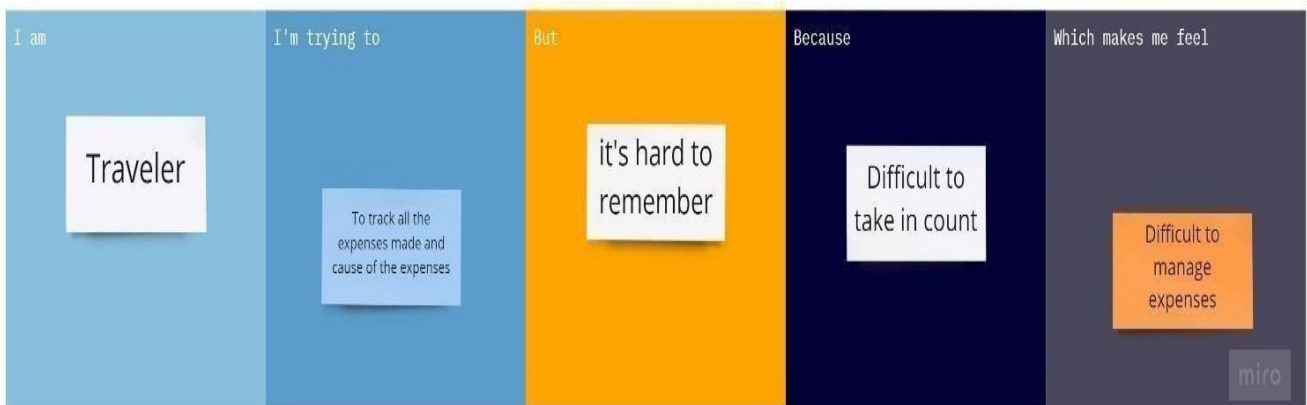
The Expense tracker existing system does not provide the user portable device management level, existing system only used on desktop software so unable to update anywhere expenses done and unable to update the location of the expense details disruptive that the proposed system provides. In existing, we need to maintain the Excel sheets, CSV files for the user daily, weekly and monthly expenses. In existing, there is no as such complete solution to keep a track of its daily expenses easily. To do so a person as to keep a log in a diary or in a computer system, also all the calculations need to be done by the user which may sometimes results in mistakes leading to losses. The existing system is not user friendly because data is not maintained perfectly. But this project will not have any reminder to remain a person in a specific date, so that is the only drawback in which the remainder is not present. This project will be an unpopulated information because it has some disadvantages by not remind a person for each and every month. But it can used to perform calculation on income and expenses to overcome this problem we propose the new project.

2. References:

1. <http://expense-manager.com/how-expense software/>
2. <https://www.splitwise.com/terms>
3. <http://code.google.com/p/socialauth-android/wiki/Facebook>

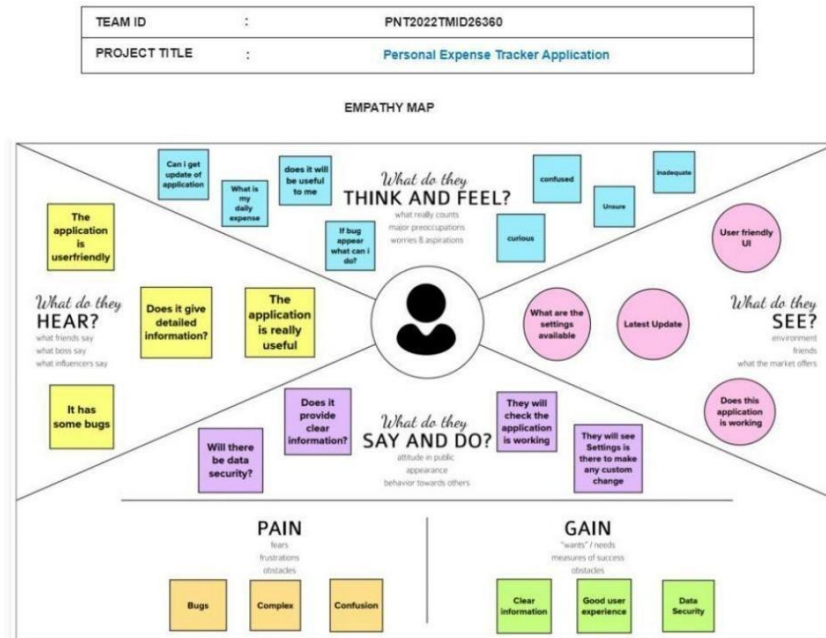
4. <http://code.google.com/p/socialauth-android>
5. Developer.android.com
6. <http://www.appbrain.com/app/expensemanager/com.expensemanager>

3. Problem Statement:



IDEATION & PROPOSED SOLUTION

1. Empathy map canvas:



2. Ideation & Brainstorming:

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving.

Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

3. Proposed Solution:

Problem Statement : There are many budgeting tools online, but not all of them are effective in assisting users in actually creating and adhering to a budget. The ongoing maintenance, the consolidation of all user financial accounts and activity into a single dashboard are some of the negatives. However, a lot of this current software includes convoluted features that are difficult to use. The major problem is to take count paper receipts and calculate the expense statistics.

Idea / Solution description: People tend to neglect their budgets due to their busy and chaotic lifestyles, which results in them spending more than they planned. Future costs cannot be foreseen by the user. Their carelessness with money management will be a concern even though they can record their expense.

Novelty / Uniqueness: Including all the expense including money spend using cash, Bank-cheques, etc. This application keeps track of all of your spending. To enter your expense, simply click. To decrease human error, prevent data loss, and expedite settlements. In this program to display the pie chart or graph lines.

Social Impact / Customer Satisfaction: One can keep track of their own costs and create a monthly or annual budget with this tool. The application will display the statistics and send alert message, if your spending exceeds the specified limit.

Business Model (Revenue Model): The subscription/ premium to access extra features of this application can be used by business people, and also adding advertisement to generate revenue.

Scalability of the Solution: Using IBM-cloud statistics can be shown to the user with high scalability, and with high accuracy.

4. Proposed Solution fit:

Define CS, fit into CC	1. CUSTOMER SEGMENT(S) CS <ul style="list-style-type: none"> Customers those who spend money unwontedly and to track their expenses. Customer those who can't remember their expense. Those who expecting to track their expense via statistics. 	6. CUSTOMER CONSTRAINTS CC <ul style="list-style-type: none"> Customer should use UPI or Net-Banking to track the expense. If the money is spend through cash customer must add the expense in the application. 	5. AVAILABLE SOLUTIONS AS <ul style="list-style-type: none"> SPENDEE Application available both android and the ios.
	2. JOBS-TO-BE-DONE / PROBLEMS J&P <ul style="list-style-type: none"> The main Intention of the application is to track the expense and provide statistics of expenses It provides statistics based on categories of expenses. To include money spend through cash, bank cheque's etc. 	9. PROBLEM ROOT CAUSE RC <ul style="list-style-type: none"> The Main problem is gathering the data from the UPI apps or Nat-Banking application. This will act as the main problem of the application. Laziness of the customer to add the expense done through cash in the application. 	7. BEHAVIOUR BE <ul style="list-style-type: none"> Customer should responsibly add the expenses done through off-line mode. To assure the data safety to the user.
	3. TRIGGERS TR <ul style="list-style-type: none"> Customer may think , they spend more money and no saving. 	10. YOUR SOLUTION SL <ul style="list-style-type: none"> Design a cloud based web Application of the expense tracker. Provide statistic of the expense done by the user through the graphs or charts. 	8. CHANNELS of BEHAVIOUR H <ul style="list-style-type: none"> In Online mode user don't have more work user need to set the maximum expense limit. In Off-line mode user should responsibly
Identify strong TR & EM	4. EMOTIONS: BEFORE / AFTER EM <ul style="list-style-type: none"> BEFORE: No Savings. AFTER: Few saving due to expense tracking application. 	<ul style="list-style-type: none"> Providing email alerts if the total expense exceed the limit. 	<ul style="list-style-type: none"> add the expenses done through cash

REQUIREMENT ANALYSIS

FUNCTIONAL REQUIREMENTS

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 Data	Data gathered in the application server is saved in the high security cloud server.
FR-4	Alert Notification	Alert messages through the Email or SMS.
FR-5	User Monthly Budget Plan	Setting Monthly budget to manage their expenses.
FR-6	Cloud Data Storage	To save the user valuable data high security cloud storage are used (AWS, IBM, GOOGLE, etc)

NON-FUNCTIONAL REQUIREMENTS

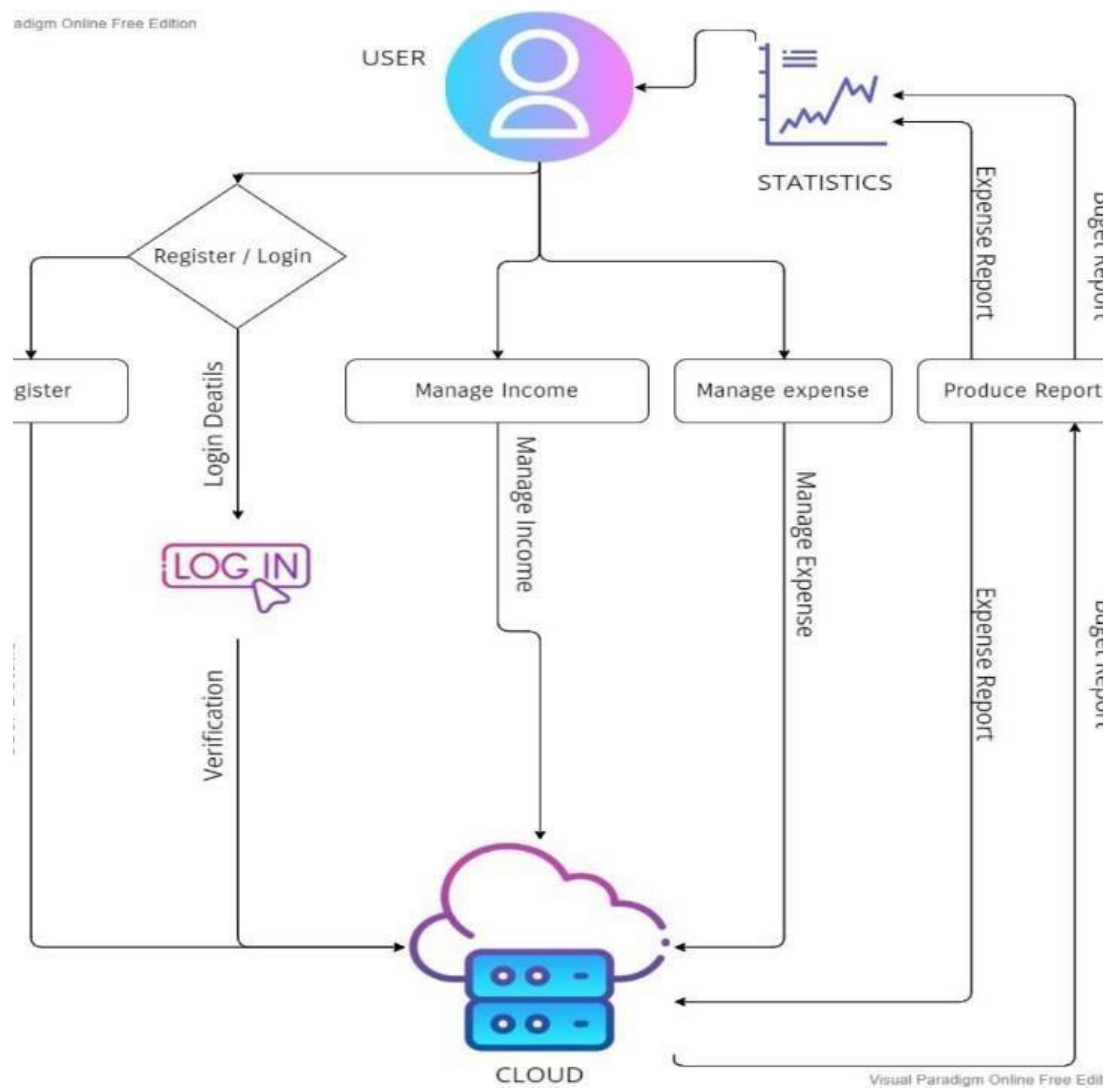
Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

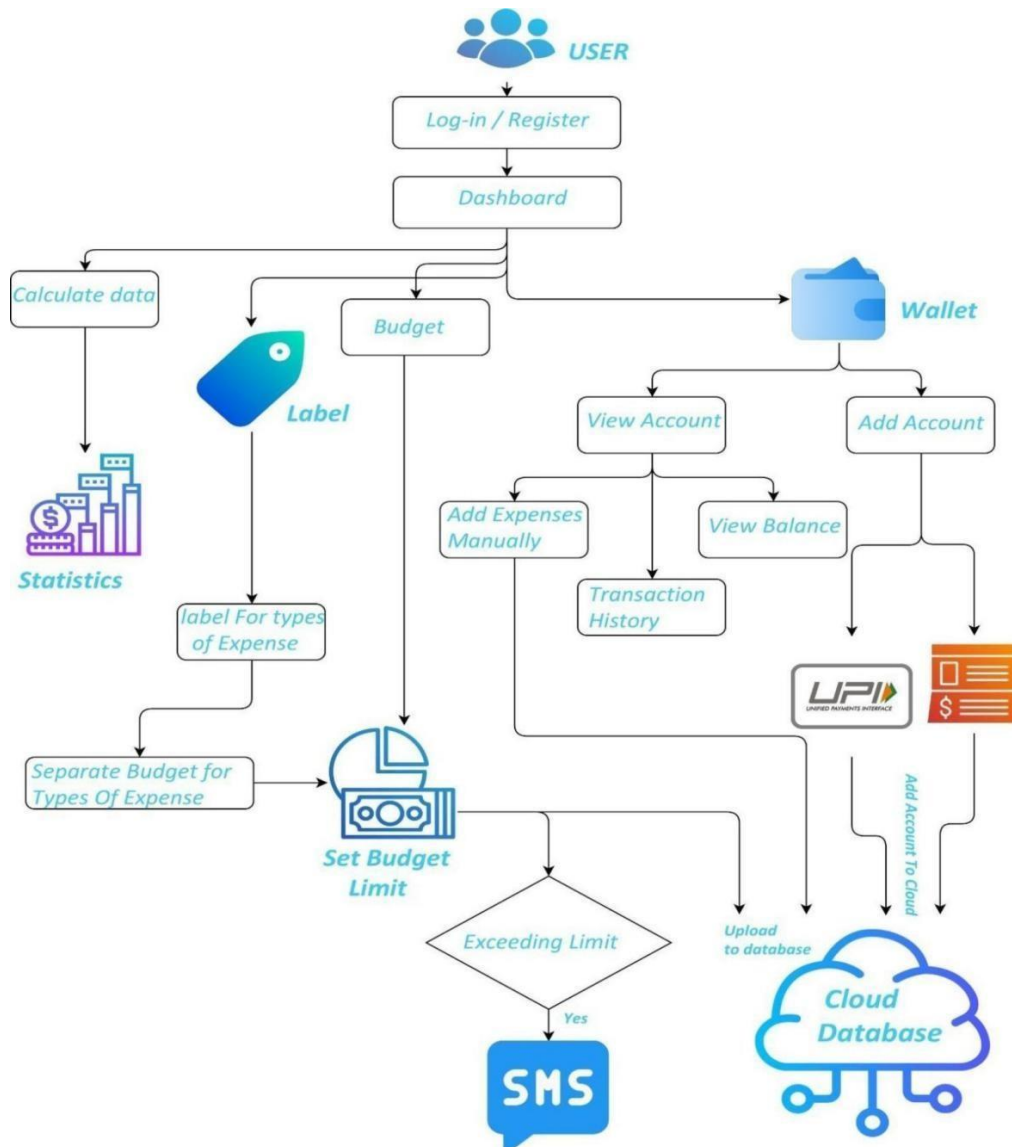
FR No.	Non-Functional Requirement	Description
NFR-1	Usability	Effectiveness, efficiency, and overall experience of the user interacting with our application should be maximised.
NFR-2	Security	Authentication, authorization, encryption of the data must be done in the application.
NFR-3	Reliability	Probability of error in the operations in a specified environment for a specified time should be minimised.
NFR-4	Performance	How the application is functioning accurately and effectively the application is to the end-users.
NFR-5	Availability	Using Cloud Storage and database, 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.

PROJECT DESIGN

1. Data Flow Diagram:



2. Solution & Technical Architecture:



3. User Stories:

User Stories

Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile 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	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-2	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 Gmail		Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password		High	Sprint-1
	Dashboard		As a user, I can access my detail, manage the expense, add budget, expense report from the app etc..		High	Sprint-1
Customer (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	Sprint-1
	Login	USN-2	As a user, I can log into the application by entering email & password		High	Sprint-1
	Dashboard	USN-3	As a user, I can access my detail, manage the expense, add budget, expense report from the app etc..		High	Sprint-1
Customer Care Executive	Email or Customer Care no		As a user, I can contact the service administration for the support.	I can solve the Issue.	High	Sprint-3
Administrator	Email or Customer Care no		As a user, I can contact the service administration for the support.	I can solve the Issue.	High	Sprint-1

PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Use the below template to create product backlog and sprint schedule

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	Jayanthi Prasad B
Sprint-2		USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Ajith SP
Sprint-3		USN-3	As a user, I can register for the application through Facebook	2	Low	Hayath Basha A
Sprint-1		USN-4	As a user, I can register for the application through Gmail	2	Medium	Abishek Raj E
Sprint-1	Login	USN-5	As a user, I can log into the application by entering email & password	1	High	Ajith SP
	Dashboard	USN-6	As a user, I access my detail, manage my expense, add budget, expense report from the app etc..	2	High	Hayath Basha A

6.2 Sprint 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	25 Oct 2022	30 Oct 2022	20	30 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	18	06 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	15	14 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	19	21 Nov 2022

Velocity:

Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

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

$$Av = 1.8$$

6.3 Reports from JIRA

Sprint planning is an event in scrum that kicks off the sprint. The purpose of sprint planning is to define what can be delivered in the sprint and how that work will be achieved. Sprint planning is done in collaboration with the whole scrum team. Sprint is one time-boxed iteration of a continuous development cycle. Within a Sprint, planned amount of work has to be completed by the team and made ready for review. The term is mainly used in Scrum Agile methodology but somewhat basic idea of Kanban continuous delivery is also essence of Sprint Scrum.

7.5 CODING AND SOLUTIONING

7.1 Feature 1:

PYTHON It is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation. [33] Python is dynamically-typed and garbage-collected. It supports multiple programming paradigms, including structured (particularly procedural), object oriented and functional programming. It is often described as a "batteries included" language due to its comprehensive standard library. [34][35] Guido van Rossum began working on Python in the late 1980s as a successor to the ABC programming language and first released it in 1991 as Python 0.9.0.[36] Python 2.0 was released in 2000 and introduced new features such as list comprehensions, cycle-detecting garbage collection, reference counting, and Unicode support. Python3.0, released in 2008, was a major revision that is not completely backward-compatible with earlier versions. Python 2 was discontinued with version 2.7.18 in 2020.[37] Python consistently ranks as one of the most popular programming languages.

OUTPUT

```

135 @app.route('/tracker')
136 def tracker():
137     global message
138     data = []
139     expenses = {"Medical Expenses": 0, "House Expenses": 0, "Education": 0, "Savings": 0, "Others": 0}
140     fixlimit=0
141
142
143
144     if session:
145         if session["loggedin"]:
146             sql = "SELECT date, transaction, type, amount FROM TRANSACTIONS WHERE email = ?"
147             stat = ibm_db.prepare(conn, sql)
148             ibm_db.bind_param(stat, 1, session["email"])
149             ibm_db.execute(stat)
150
151             row = ibm_db.fetch_assoc(stat)
152             while row:
153                 data.append(row)
154                 expenses[row["TYPE"]] += row["AMOUNT"]
155                 row = ibm_db.fetch_assoc(stat)
156
157             sql1 = "SELECT LIMIT FROM EXPENSELIMIT WHERE email = ?"
158             stat1 = ibm_db.prepare(conn, sql1)
159             ibm_db.bind_param(stat1, 1, session["email"])
160             ibm_db.execute(stat1)
161
162             dic = ibm_db.fetch_assoc(stat1)
163
164             avalimit=0
165             fixlimit=0
166

```

7.2 Feature 2: FLASK

Flask is a micro web framework written in Python. It is classified as a microframework because it does not require particular tools or libraries.[2] It has no database abstraction layer, form validation, or any other components where pre-existing third-party libraries provide common functions. However, Flask supports extensions that can add application features as if they were implemented in Flask itself. Extensions exist for object-relational mappers, form validation, upload handling, various open authentication technologies and several common framework related tools.

OUTPUT

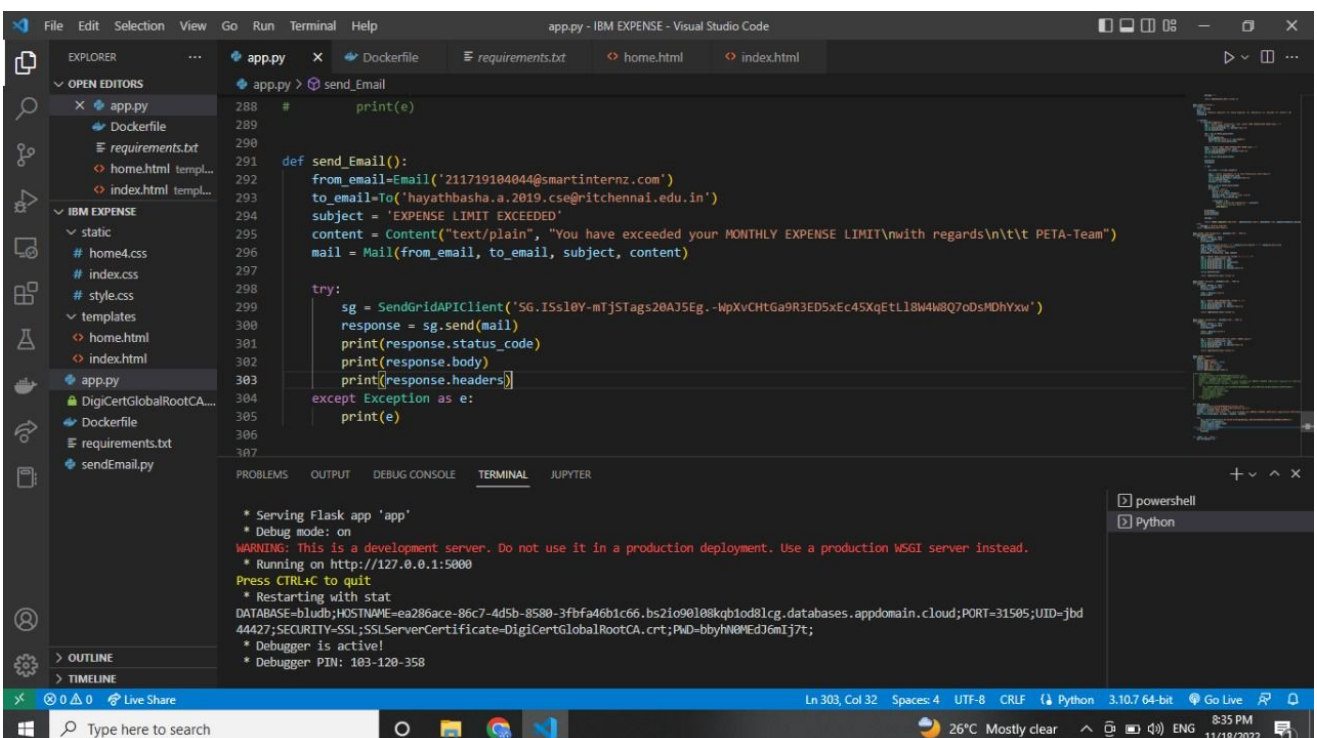
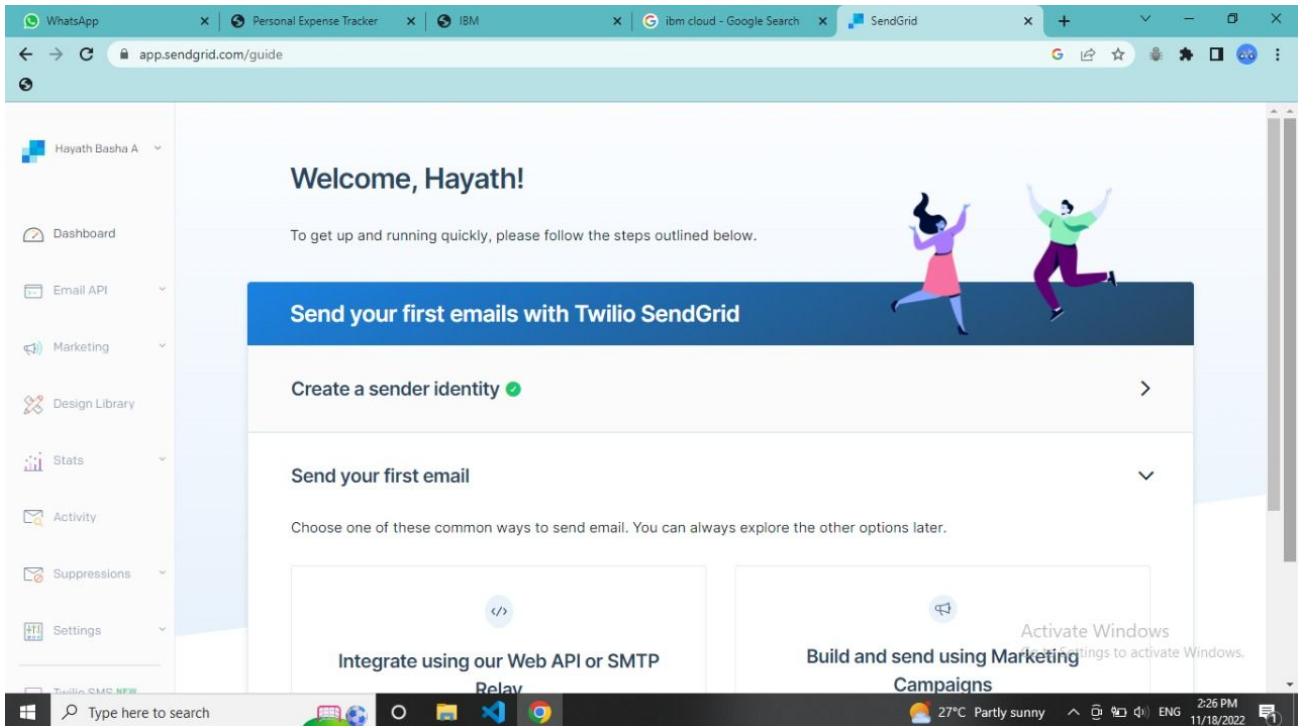
```

1 flask import Flask, render_template, request, redirect, url_for, session
2 rt ibm_db
3 rt re
4 rt os
5 sendgrid import SendGridAPIClient
6 sendgrid.helpers.mail import *
7
8 = Flask(__name__)
9 secret_key = "ibm"
10
11 name = "ea286ace-86c7-4d5b-8580-3fbfa46b1c66.bs2io90108kqb1od81cg.databases.appdomain.cloud"
12 = "jbd44427"
13 = "bbyhN8MedJ6mIj7t"
14 er = "{IBM DB2 ODBC DRIVER}"
15 "bludb"
16 = "31505"
17 ocol = "TCP/IP"
18 = "DigiCertGlobalRootCA.crt"
19
20 = (
21 "DATABASE={0};"
22 "HOSTNAME={1};"
23 "PORT={2};"
24 "UID={3};"
25 "SECURITY=SSL;"
26 "SSLServerCertificate={4};"
27 "PWD={5};"
28 rmat(db, hostname, port, uid, cert, pwd)
29
30 t(dsn)
31
32 = ibm_db.connect(dsn, "", "")
33

```


SENDGRID

SendGrid is a cloud-based SMTP provider that allows you to send email without having to maintain email servers. SendGrid manages all of the technical details, from scaling the infrastructure to ISP outreach and reputation monitoring to whitelist services and real time analytics.



7.3 Database Schema:

IBM Db2 – a hybrid ANSI-compliant data virtualization tool for accessing, querying and summarizing data across the enterprise which:

- Provides a massively parallel processing (MPP) architecture Exploits Hive, HBase and Apache Spark concurrently for best-in-class analytic capabilities
- Requires only a single database connection or query to connect disparate sources such as HDFS, RDMS, NoSQL databases, object stores and Web HDFS
- Provides low latency support for ad-hoc and complex queries, high performance, and federation capabilities
- Understands dialects from other vendors and various products from Oracle, IBM® Db2® and IBM Netezza®
- Enables advanced row and column security.

KUBERNATES:

Kubernetes — also known as “k8s” or “kube” — is a container orchestration platform for scheduling and automating the deployment, management, and scaling of containerized applications.

Kubernetes was first developed by engineers at Google before being open sourced in 2014. It is a descendant of Borg, a container orchestration platform used internally at Google. Kubernetes is Greek for helmsman or pilot, hence the helm in the Kubernetes logo (link resides outside IBM).

Today, Kubernetes and the broader container ecosystem are maturing into a general-purpose computing platform and ecosystem that rivals — if not surpasses — virtual machines (VMs) as the basic building blocks of modern cloud infrastructure and applications. This ecosystem enables organizations to deliver a highproductivity Platform-as-a-Service (PaaS) that addresses multiple infrastructure-related and operations-related tasks and issues surrounding cloud-native development so that development teams can focus solely on coding and innovation.

8. TESTING

8.1 Test Cases:

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functional it your components, subassemblies, assemblies and/or a finished product It is the process of exercising software with the intent of ensuring that the Software system meets its requirements and user expectation and does not fail in an unacceptable manner. There are various types of test. Each test type addresses a specific testing requirement.

8.2 Acceptance Testing:

1. Purpose of Document:

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

2 .Defect Analysis:

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

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	10	4	2	3	20
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	14	13	26	77

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	51	0	0	51
Security	2	0	0	2
Outsource Shipping	3	0	0	3
Exception Reporting	9	0	0	9
Final Report Output	4	0	0	4
Version Control	2	0	0	2

9. RESULTS

9.1 Performance Metrics:

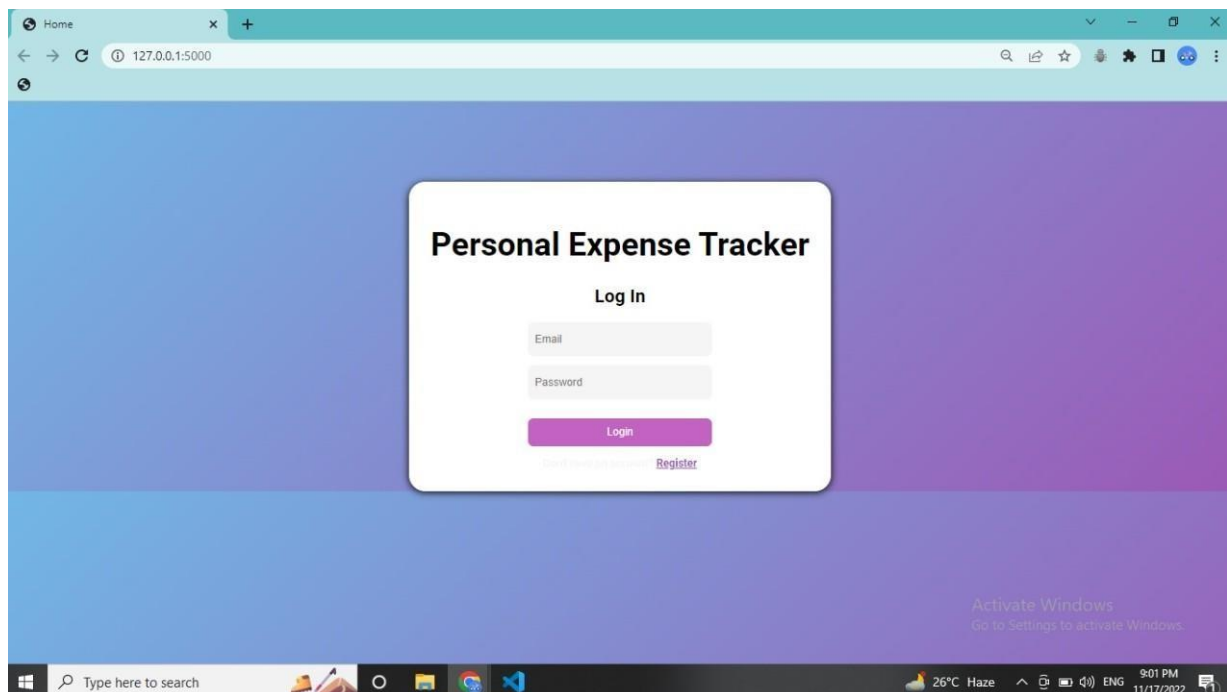
1.) Project Metrics are used to track the progress and performance of a project.

2.) Monitoring the parts of a project like Productivity, Scheduling and scope make it easier for team leaders to see what's on track.

3.) As a project evolves, managers need access to changing deadlines or budgets to meet their client expectations.

OUTPUT SCREEN:

LOGIN PAGE:



REGISTER PAGE:

The screenshot shows a web browser window with the URL `127.0.0.1:5000/?page=register`. The page has a blue and purple gradient background. In the center, there is a white rounded rectangle containing the title "Personal Expense Tracker" and a sub-title "Register". Below the sub-title are three input fields labeled "Name", "Email", and "Password". A purple "Register" button is positioned below these fields. At the bottom of the white box, there is a link that says "Have an account? Login". The Windows taskbar is visible at the bottom of the screen.

DASHBOARD PAGE:

The screenshot shows the dashboard of the Personal Expense Tracker application. The browser window has the URL `127.0.0.1:5000/tracker`. The page features a purple header with the title "Personal Expense Tracker" and navigation links for "Dashboard", "Statistics", and "Logout". Below the header, a blue banner says "Welcome, HAYATH".

On the left side, there is a sidebar with three categories of expenses:

- Medical Expenses: ₹0
- House Expenses: ₹20000
- Education: ₹0

The main content area is divided into two sections:

- Monthly Limit:** Displays "Expense Limit : 100000" and "Available Limit : 80000". It includes two input fields for "Set Amount" and "Change Amount", each with a corresponding "Set Limit" or "Change Limit" button.
- Add Expenditure:** Contains four input fields: "Transaction", "Transaction Type", "Amount", and a date field labeled "mm/dd/yyyy". An "Add" button is at the bottom.

At the bottom, there is a section titled "Recent Transactions" with a table structure showing columns for "Date", "Transaction", "Type", and "Amount". The Windows taskbar is visible at the bottom.

IBM DB 2:

IBM Db2 on Cloud

Load DataLoad HistoryTablesViewsIndexesAliasesMQTsSequencesApplication objects

JBD44427.USERS

Back

Export to CSV

NAME	EMAIL	PASS
ABISHEK	abishekicf@gmail.com	abishek123@
AJITH	ajithsp501@gmail.com	Ajith*19
HAYATH	hayathbasha8888@gmail.com	hayath@8888
JAI	jaiprasad2057@gmail.com	jaiprasad@20

Activate Windows
Go to Settings to activate Windows.

IBM Db2 on Cloud

Load DataLoad HistoryTablesViewsIndexesAliasesMQTsSequencesApplication objects

JBD44427.TRANSACTIONS

Back

Export to CSV

DATE	TRANSACTION	TYPE	AMOUNT	EMAIL
06/11/2022	health	Medical Expenses	30000	ajithsp501@gmail.com
08/11/2022	HOUSE RENT	House Expenses	20000	hayathbasha8888@gmail.com

Activate Windows
Go to Settings to activate Windows.

IBM Db2 on Cloud

Load Data Load History **Tables** Views Indexes Aliases MQTs Sequences Application objects

JBD44427.EXPENSELIMIT

Back

Export to CSV

LIMIT	EMAIL
20000	jaiprasad2057@gmail.com
100000	hayathbasha8888@gmail.com
100000	hayathbasha8888@gmail.com

Activate Windows
Go to Settings to activate Windows.

Type here to search 25°C Partly cloudy 10:47 PM 11/17/2022

10. ADVANTAGES AND DISADVANTAGES

ADVANTAGES:

Speed: This website is fast and offers great accuracy as compared to manual registered keeping.

Maintenance: Less Maintenance is required.

User friendly: It is very easy to use and understand. It is easily workable and accessible for everyone.

Fast Results: It would help you to provide plasma donors easily depending upon the availability of it.

DISADVANTAGES:

Internet: It would require an internet connection for the working of the website.

Auto-Verification: It cannot automatically verify the genuine users.

CONCLUSION

The new system has overcome most of the limitations of the existing system and works according to the design specification given. The project what we have developed is work more efficient than the other income and expense tracker. The project successfully avoids the manual calculation for avoiding calculating the income and expense per month. The modules are developed with efficient and also in an attractive manner. The developed systems dispense the problem and meet the needs of by providing reliable and comprehensive information. All the requirements projected by the user have been met by the system.

12 FUTURE ENHANCEMENTS

Upgrading the UI that is more user-friendly which will help many users to access the website and also ensures that many expenses can be added into the tracker. Using elastic load balancer, it helps to handle multiple requests at the same time which will maintain the uptime of the website with negligible downtime.

13. GITHUB

<https://github.com/IBM-EPBL/IBM-Project-22789-1659858290>

PROJECT DEMO LINK

<https://drive.google.com/file/d/1-QXsx6tN0xKrZ8jgnLZ11NzFhaetAKL6/view?usp=drivesdk>