PERSONAL EXPENSE TRACKER APPLICATION

NALAIYA THIRAN PROJECT BASED LEARNING

on

PROFESSIONAL READINESS FOR INNOVATION, EMPLOYABILITY AND ENTREPRENEURSHIP

(IBM-Project-41745-1660644515)

Project Report Submitted by

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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

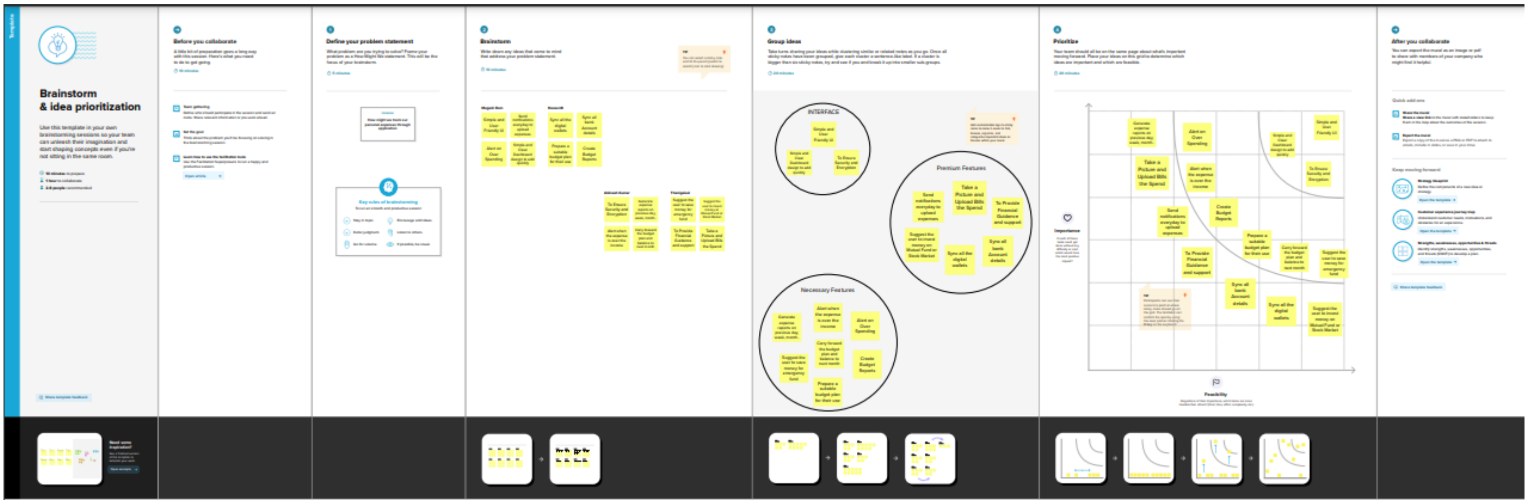
- https://nevonprojects.com/daily-expense-tracker-system/
- https://data-flair.training/blogs/expense-tracker-python/
- https://phpgurukul.com/daily-expense-tracker-using-php-and-mysql/
- https://ijarsct.co.in/Paper391.pdf
- https://kandi.openweaver.com/?landingpage=python_all_projects&utm_source=google&utm_medium=cpc&utm_campaign=promo_kandi_ie&utm_content=kandi_ie_search&utm_term=python_devs&gclid=Cj0KCQiAgribBhDkARIsAASA5bukrZgbI9UZxzpoyf0P-ofB1mZNxzc-okUP- 3TchpYMclHTYFYiqP8aAmmwEALw_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 PHASE

3.1 Ideation & Brainstorming


Template

Brainstorm
& idea prioritization

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.

Before you collaborate

Define your problem statement

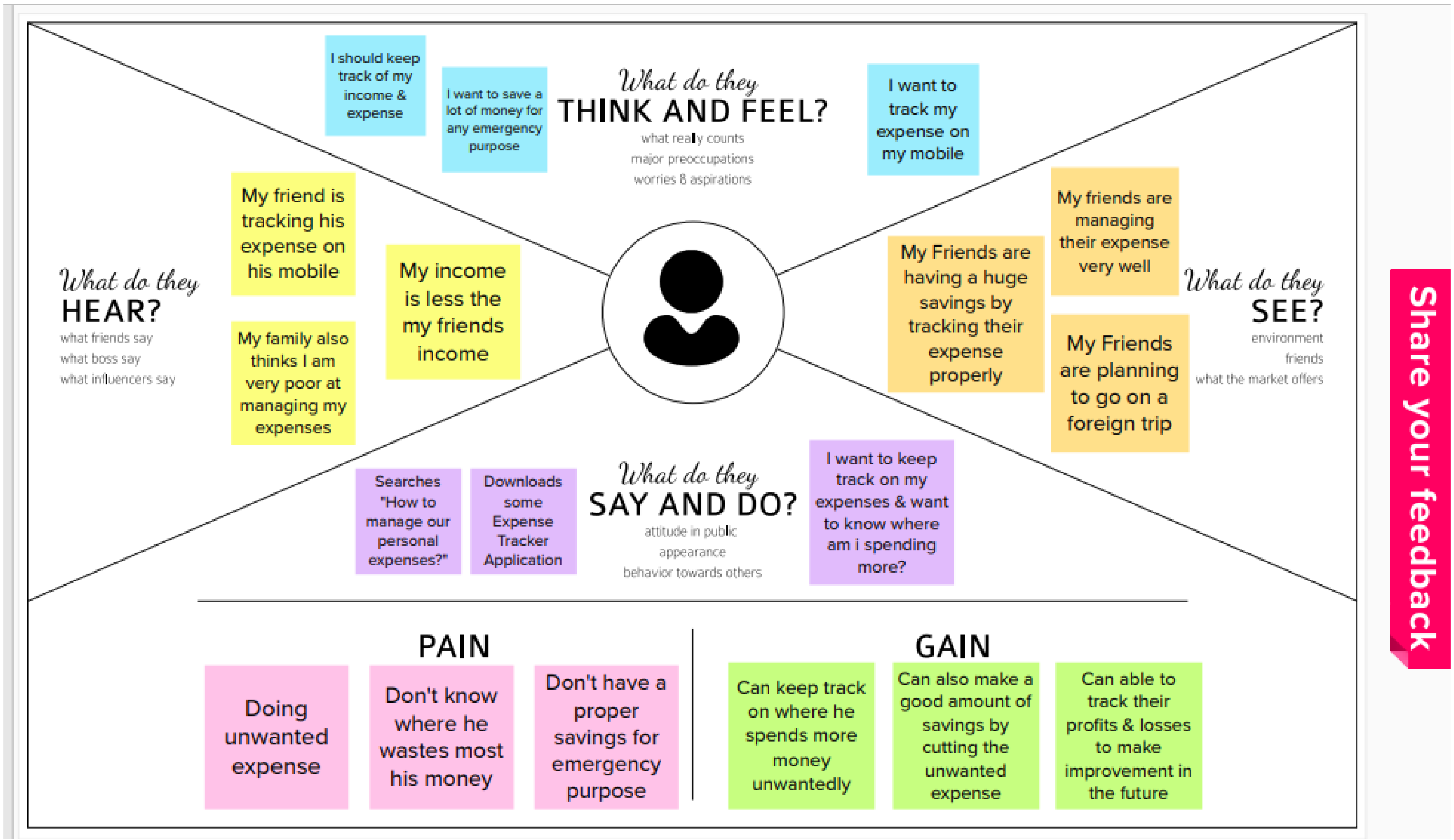
Brainstorm

Group ideas

Prioritize

After you collaborate

3.2 Prepare Empathy Map


What do they THINK AND FEEL?

what really counts
major preoccupations
worries & aspirations

I should keep track of my income & expense

I want to save a lot of money for any emergency purpose

I want to track my expense on my mobile

What do they HEAR?

what friends say
what boss say
what influencers say

My friend is tracking his expense on his mobile

My family also thinks I am very poor at managing my expenses

My income is less the my friends income

What do they SEE?

environment
friends
what the market offers

My Friends are having a huge savings by tracking their expense properly

My friends are managing their expense very well

My Friends are planning to go on a foreign trip

What do they SAY AND DO?

attitude in public
appearance
behavior towards others

Searches "How to manage our personal expenses?"

Downloads some Expense Tracker Application

I want to keep track on my expenses & want to know where am i spending more?

PAIN

Doing unwanted expense

Don't know where he wastes most his money

Don't have a proper savings for emergency purpose

GAIN

Can keep track on where he spends more money unwantedly

Can also make a good amount of savings by cutting the unwanted expense

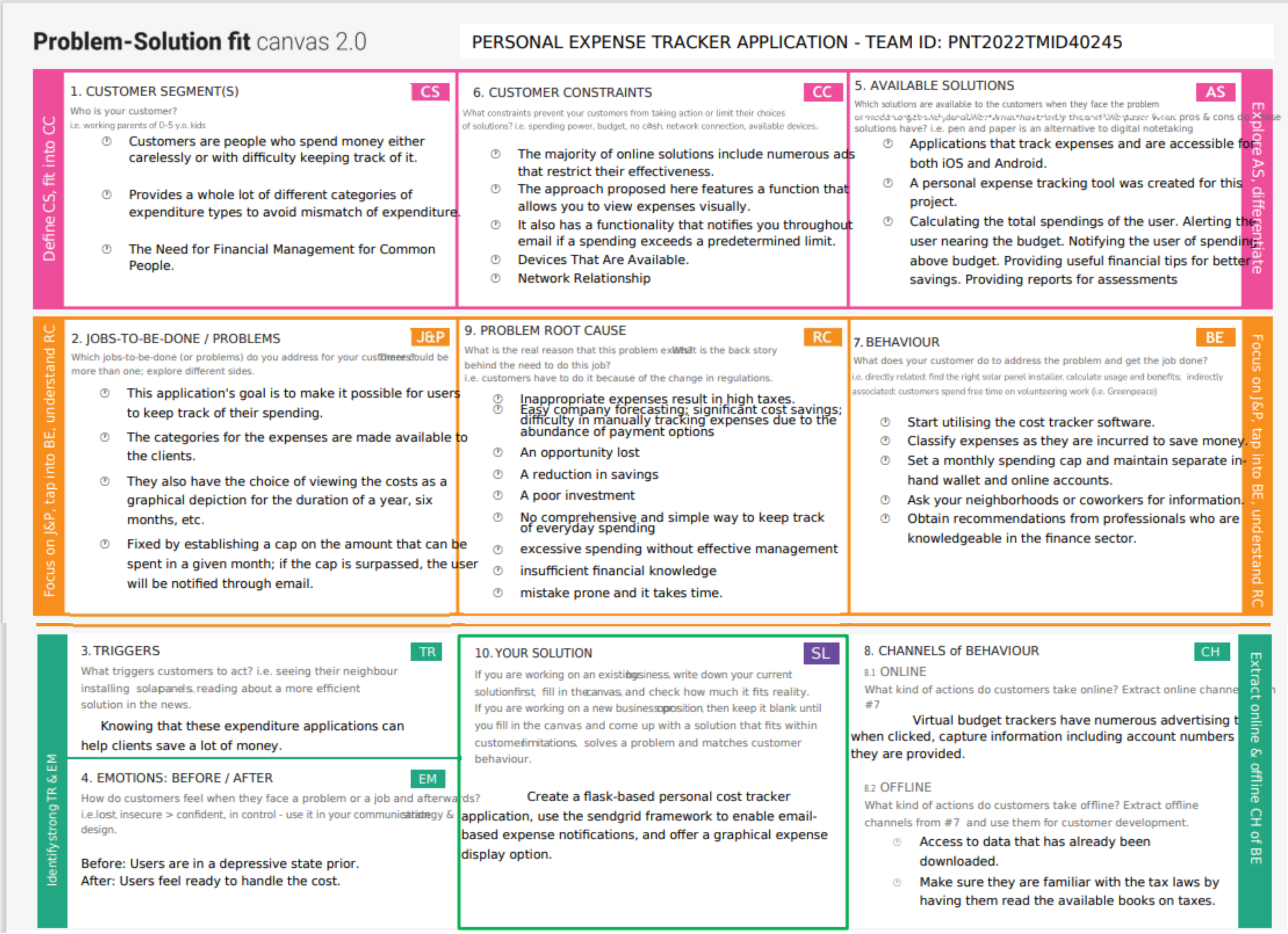
Can able to track their profits & losses to make improvement in the future

Share your feedback

3.3 Proposed Solution

S. No	**Parameter**	**Description**
1	Problem Statement (Problem tobe solved)	The problem is that people find it difficult to maintain track of their monthly expenses and to avoid obsessive spending.
2	Idea / Solution description	The user can enter income and expenses into the personal cost tracker program. As a result, the expense wallet is updated. A graphical breakdown of the expense could be obtained. The user is also notified if the budget's monthly maximum is Surpassed.
3	Novelty / Uniqueness	The personal expense tracker application helps the user not only in budgeting and accounting; it also provides the insights about money management through the analysis. The user also gets notified if the monthly limit is exceeded.
4	Social Impact / CustomerSatisfaction	The personal spending tracker program not only assists the user in budgeting and accounting, but it also provides insights into money management through analysis. If the monthly limit is surpassed, the user is also notified.
5	Business Model (Revenue Model)	The application may have a free and premium version, with the user having the option to upgrade to the premium version to gain access to additional features. Furthermore, the premium version may be ad-free.
6	Scalability of the Solution	This application is not only for personal use, but it can also be extended to business organizations.

3.4 Problem Solution Fit



Problem-Solution fit canvas 2.0

PERSONAL EXPENSE TRACKER APPLICATION - TEAM ID: PNT2022TMID40245

1. CUSTOMER SEGMENT(S) CS

Who is your customer?
i.e. working parents of 0-5 y.o. kids

- Customers are people who spend money either carelessly or with difficulty keeping track of it.
- Provides a whole lot of different categories of expenditure types to avoid mismatch of expenditure.
- The Need for Financial Management for Common People.

6. CUSTOMER CONSTRAINTS CC

What constraints prevent your customers from taking action or limit their choices of solutions? i.e. spending power, budget, no cash, network connection, available devices.

- The majority of online solutions include numerous ads that restrict their effectiveness.
- The approach proposed here features a function that allows you to view expenses visually.
- It also has a functionality that notifies you throughout email if a spending exceeds a predetermined limit.
- Devices That Are Available.
- Network Relationship

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 notetaking

- Applications that track expenses and are accessible for both iOS and Android.
- A personal expense tracking tool was created for this project.
- Calculating the total spendings of the user. Alerting the user nearing the budget. Notifying the user of spending above budget. Providing useful financial tips for better savings. Providing reports for assessments

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.

- This application's goal is to make it possible for users to keep track of their spending.
- The categories for the expenses are made available to the clients.
- They also have the choice of viewing the costs as a graphical depiction for the duration of a year, six months, etc.
- Fixed by establishing a cap on the amount that can be spent in a given month; if the cap is surpassed, the user will be notified through email.

9. PROBLEM ROOT CAUSE RC

What is the real reason that this problem exists? What is the back story behind the need to do this job?
i.e. customers have to do it because of the change in regulations.

- Inappropriate expenses result in high taxes.
- Easy company forecasting; significant cost savings; difficulty in manually tracking expenses due to the abundance of payment options
- An opportunity lost
- A reduction in savings
- A poor investment
- No comprehensive and simple way to keep track of everyday spending
- excessive spending without effective management
- insufficient financial knowledge
- mistake prone and it takes time.

7. BEHAVIOUR BE

What does your customer do to address the problem and get the job done?
i.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)

- Start utilising the cost tracker software.
- Classify expenses as they are incurred to save money.
- Set a monthly spending cap and maintain separate in-hand wallet and online accounts.
- Ask your neighborhoods or coworkers for information.
- Obtain recommendations from professionals who are knowledgeable in the finance sector.

3. TRIGGERS TR

What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.

Knowing that these expenditure applications can help clients save a lot of money.

4. EMOTIONS: BEFORE / AFTER EM

How do customers feel when they face a problem or a job and afterwards?
i.e. lost, insecure > confident, in control - use it in your communication strategy & design.

Before: Users are in a depressive state prior.
After: Users feel ready to handle the cost.

10. YOUR SOLUTION SL

If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality.
If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.

Create a flask-based personal cost tracker application, use the sendgrid framework to enable email-based expense notifications, and offer a graphical expense display option.

8. CHANNELS of BEHAVIOUR CH

8.1 ONLINE

What kind of actions do customers take online? Extract online channe #7

Virtual budget trackers have numerous advertising t when clicked, capture information including account numbers they are provided.

8.2 OFFLINE

What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.

- Access to data that has already been downloaded.
- Make sure they are familiar with the tax laws by having them read the available books on taxes.

Define CS, fit into CC
Explore AS, differentiate
Focus on J&P, tap into BE, understand RC
Focus on J&P, tap into BE, understand RC
Identify strong TR & EM
Extract online & offline CH of BE

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 Form Registration through Gmail Registration through Linked IN
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User Access / Login	Login through email id & password
FR-4	User Data	Adding user expenses through input field & categories.
FR-5	User Alert	Alerting through their email id.

4.2 Non-functional Requirements:

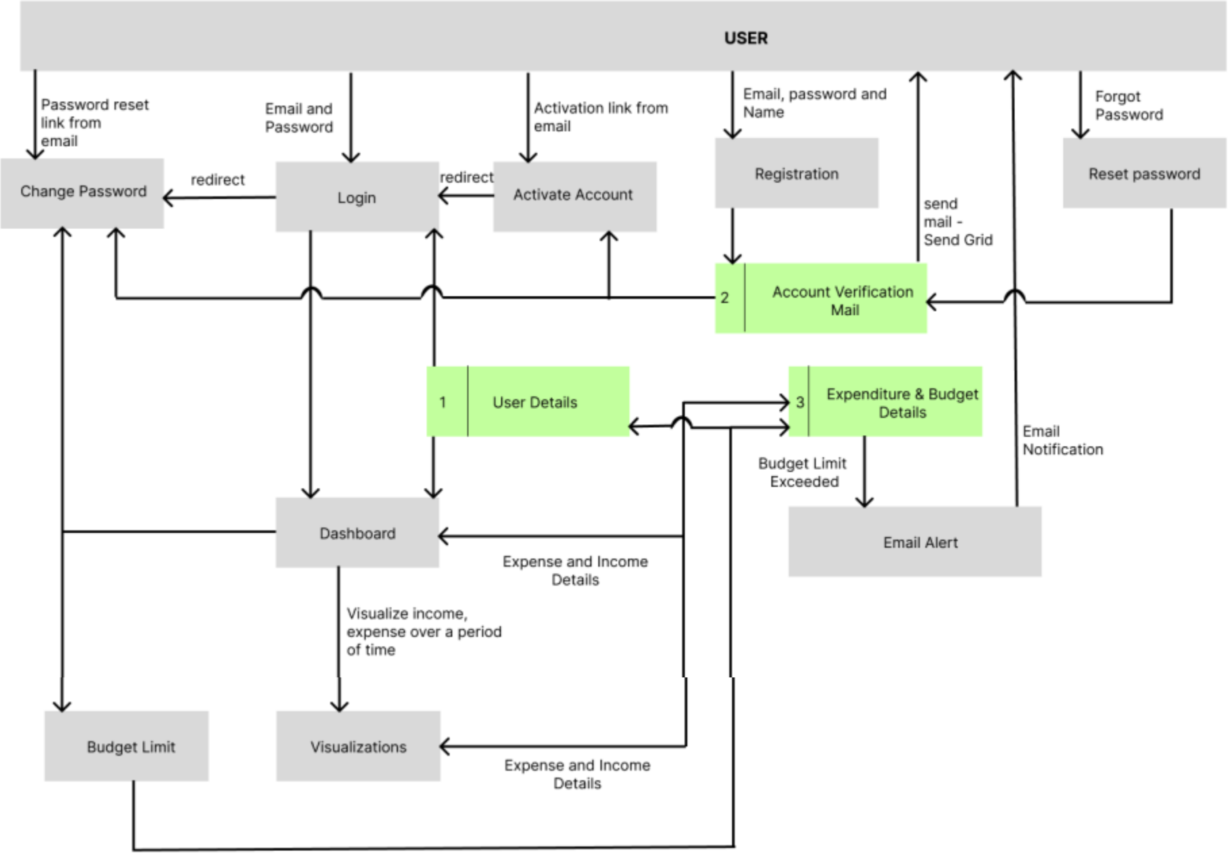
Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Capture and organize your payment receipts to keep track of your expenditure Monitoring the income and tracking all expenditures
NFR-2	**Security**	Increase your team productivity by providing access control to particular users through custom permissions.
NFR-3	**Reliability**	Increase efficiency and customer satisfaction with an app aligned to their needs. Seamlessly integrate with existing infrastructure
NFR-4	**Performance**	Deliver an outstanding customer experience through additional control over the app.
NFR-5	**Availability**	Website, Android App.
NFR-6	**Scalability**	Available anytime at anywhere. It have an ability of computing process to be used in the range of capabilities.

5. Project Design

5.1 Data Flow Diagrams

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


USER
Password reset link from email
Email and Password
Activation link from email
Email, password and Name
Forgot Password
Change Password
redirect
Login
redirect
Activate Account
Registration
Reset password
send mail - Send Grid
2
Account Verification Mail
1
User Details
3
Expenditure & Budget Details
Email Notification
Budget Limit Exceeded
Dashboard
Email Alert
Expense and Income Details
Visualize income, expense over a period of time
Budget Limit
Visualizations
Expense and Income Details

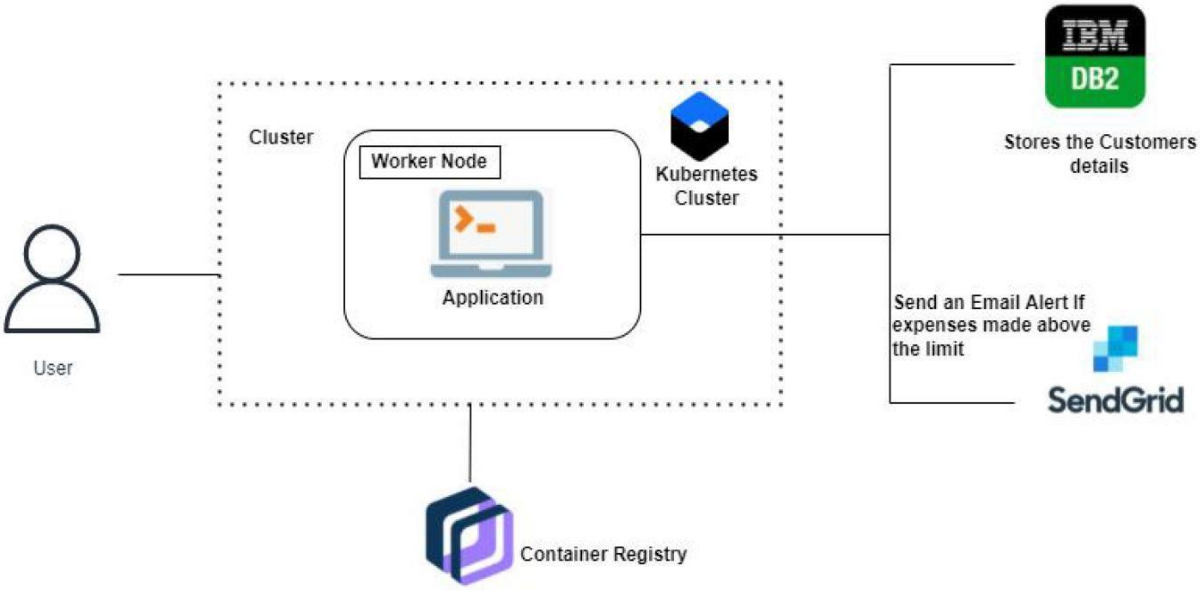
5.2 Solution Architecture

Solution architecture is a complex process – with many sub-processes – that bridges the gap between businessproblems and technology solutions. Its goals are to: Find the best tech solution to solve existing business problems.

Describe the structure, characteristics, behavior, and other aspects of thesoftware to project stakeholders.

Define features, development phases, and solution requirements.

Provide specifications according to which the solution is defined, managed,and delivered.



Technical Architecture

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table2

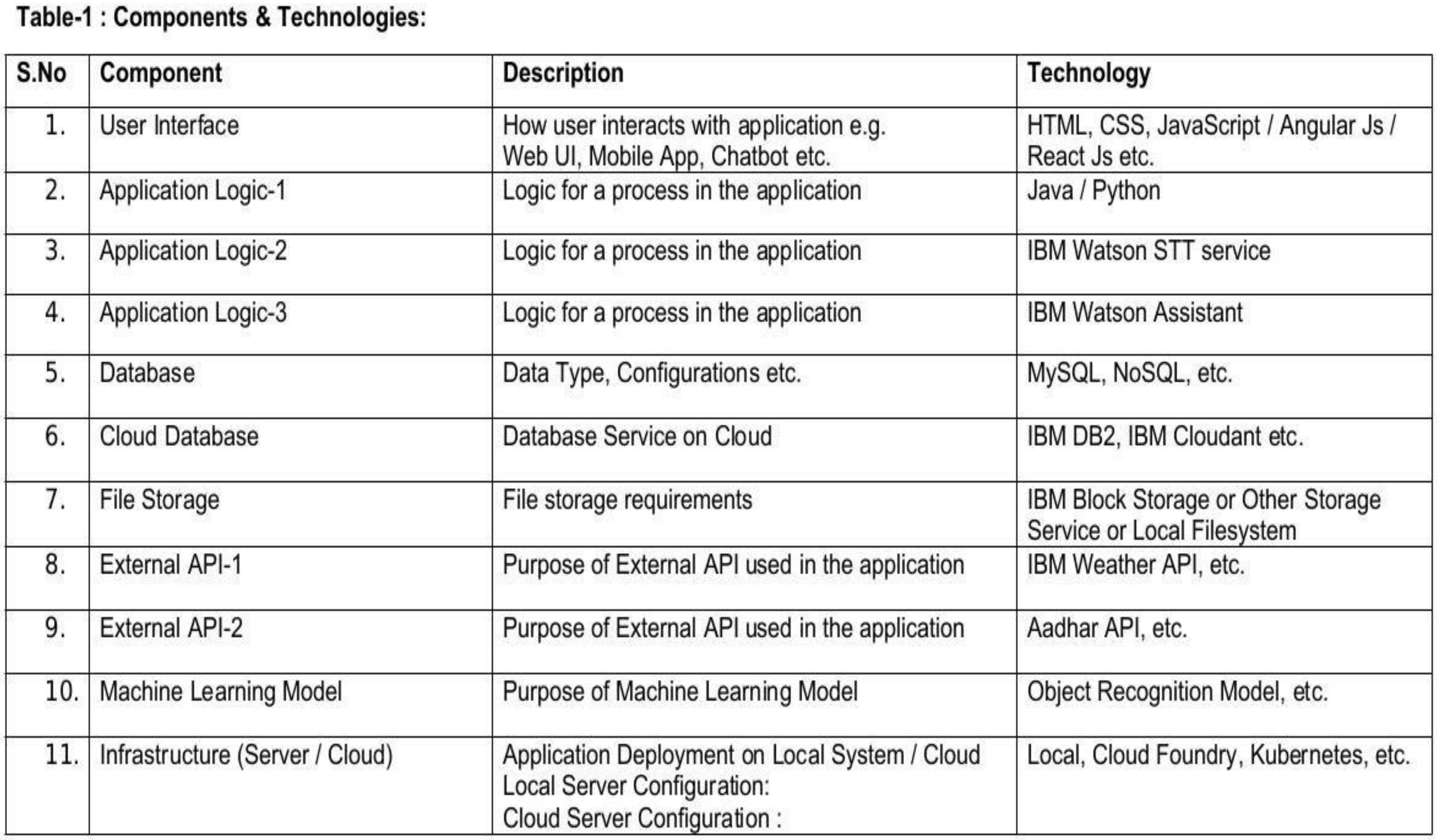


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	Logic for a process in the application	Java / Python
3.	Application Logic-2	Logic for a process in the application	IBM Watson STT service
4.	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
5.	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	Purpose of External API used in the application	IBM Weather API, etc.
9.	External API-2	Purpose of External API used in the application	Aadhar API, etc.
10.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local, Cloud Foundry, Kubernetes, etc.

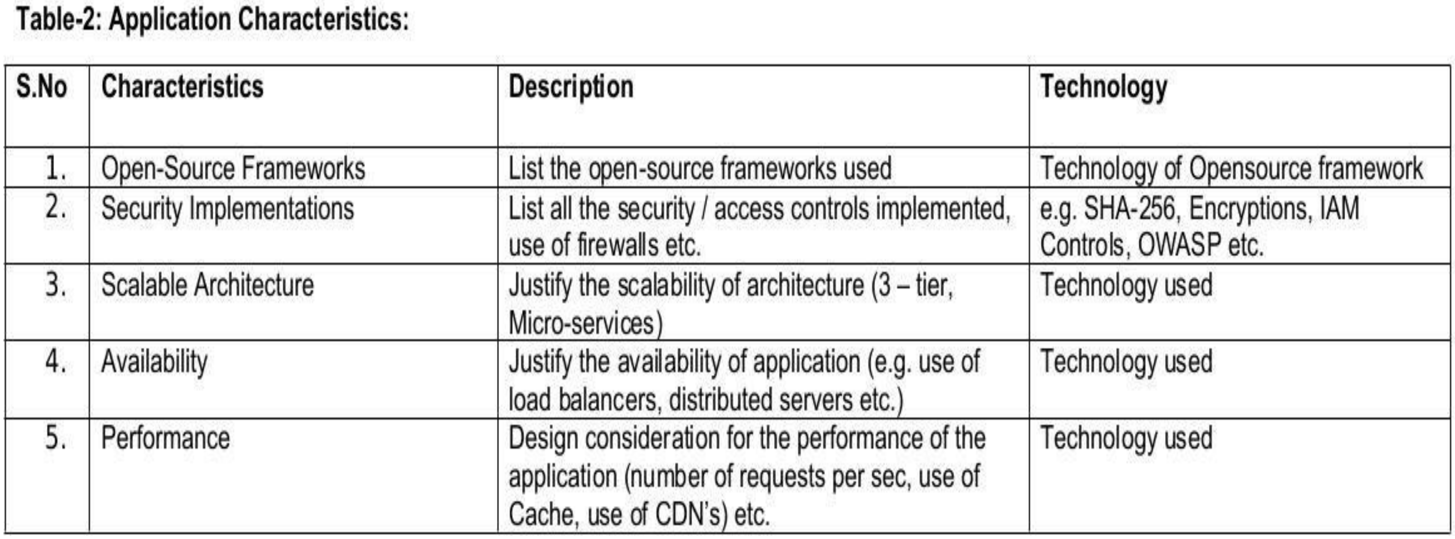
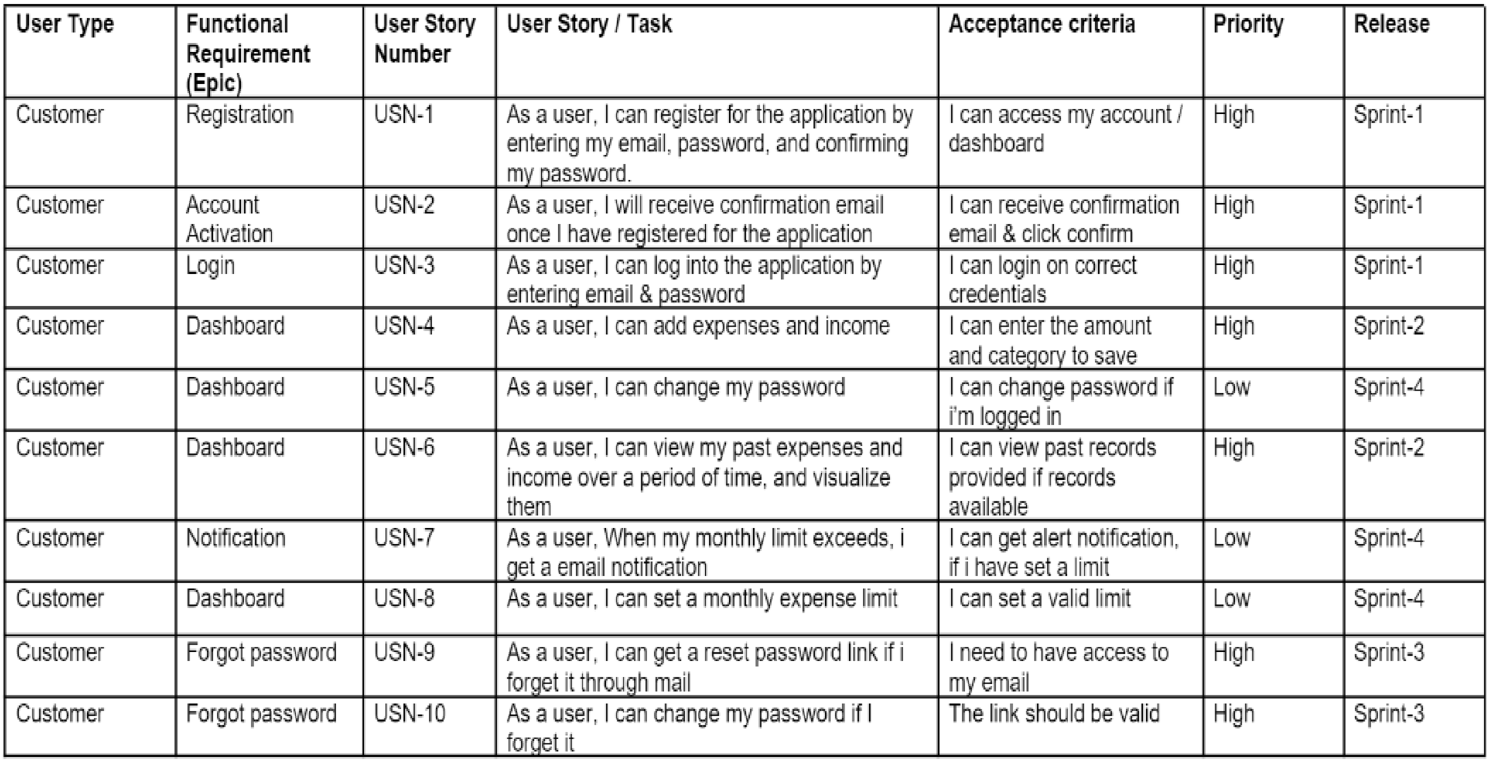


Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Technology of Opensource framework
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Technology used
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Technology used
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Technology used

5.3User Stories

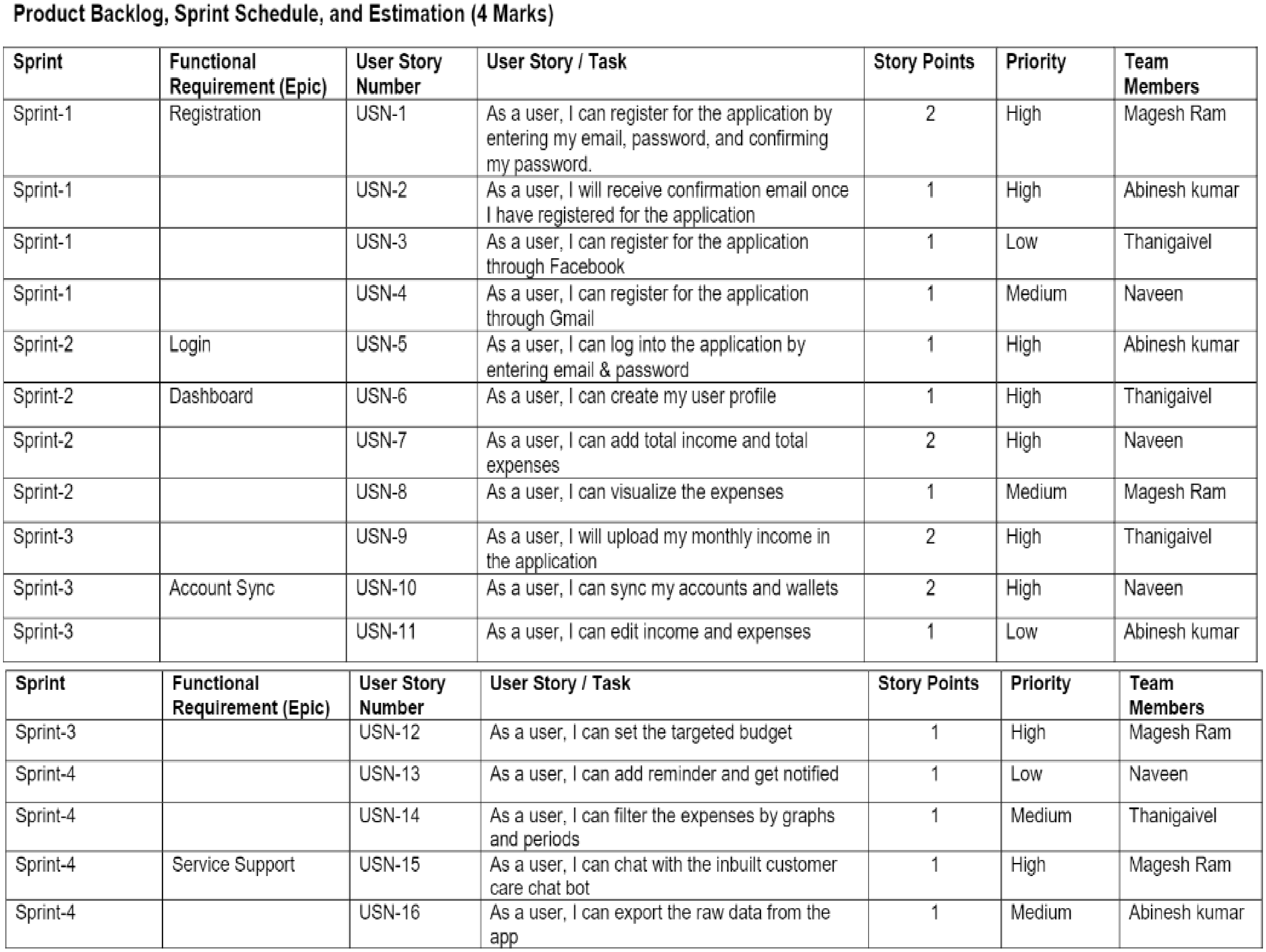
Use the below template to list all the user stories for the product.



User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer	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
Customer	Account Activation	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
Customer	Login	USN-3	As a user, I can log into the application by entering email & password	I can login on correct credentials	High	Sprint-1
Customer	Dashboard	USN-4	As a user, I can add expenses and income	I can enter the amount and category to save	High	Sprint-2
Customer	Dashboard	USN-5	As a user, I can change my password	I can change password if i'm logged in	Low	Sprint-4
Customer	Dashboard	USN-6	As a user, I can view my past expenses and income over a period of time, and visualize them	I can view past records provided if records available	High	Sprint-2
Customer	Notification	USN-7	As a user, When my monthly limit exceeds, i get a email notification	I can get alert notification, if i have set a limit	Low	Sprint-4
Customer	Dashboard	USN-8	As a user, I can set a monthly expense limit	I can set a valid limit	Low	Sprint-4
Customer	Forgot password	USN-9	As a user, I can get a reset password link if i forget it through mail	I need to have access to my email	High	Sprint-3
Customer	Forgot password	USN-10	As a user, I can change my password if I forget it	The link should be valid	High	Sprint-3

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	Magesh Ram
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Abinesh kumar
Sprint-1		USN-3	As a user, I can register for the application through Facebook	1	Low	Thanigaivel
Sprint-1		USN-4	As a user, I can register for the application through Gmail	1	Medium	Naveen
Sprint-2	Login	USN-5	As a user, I can log into the application by entering email & password	1	High	Abinesh kumar
Sprint-2	Dashboard	USN-6	As a user, I can create my user profile	1	High	Thanigaivel
Sprint-2		USN-7	As a user, I can add total income and total expenses	2	High	Naveen
Sprint-2		USN-8	As a user, I can visualize the expenses	1	Medium	Magesh Ram
Sprint-3		USN-9	As a user, I will upload my monthly income in the application	2	High	Thanigaivel
Sprint-3	Account Sync	USN-10	As a user, I can sync my accounts and wallets	2	High	Naveen
Sprint-3		USN-11	As a user, I can edit income and expenses	1	Low	Abinesh kumar
Sprint-3		USN-12	As a user, I can set the targeted budget	1	High	Magesh Ram
Sprint-4		USN-13	As a user, I can add reminder and get notified	1	Low	Naveen
Sprint-4		USN-14	As a user, I can filter the expenses by graphs and periods	1	Medium	Thanigaivel
Sprint-4	Service Support	USN-15	As a user, I can chat with the inbuilt customer care chat bot	1	High	Magesh Ram
Sprint-4		USN-16	As a user, I can export the raw data from the app	1	Medium	Abinesh kumar

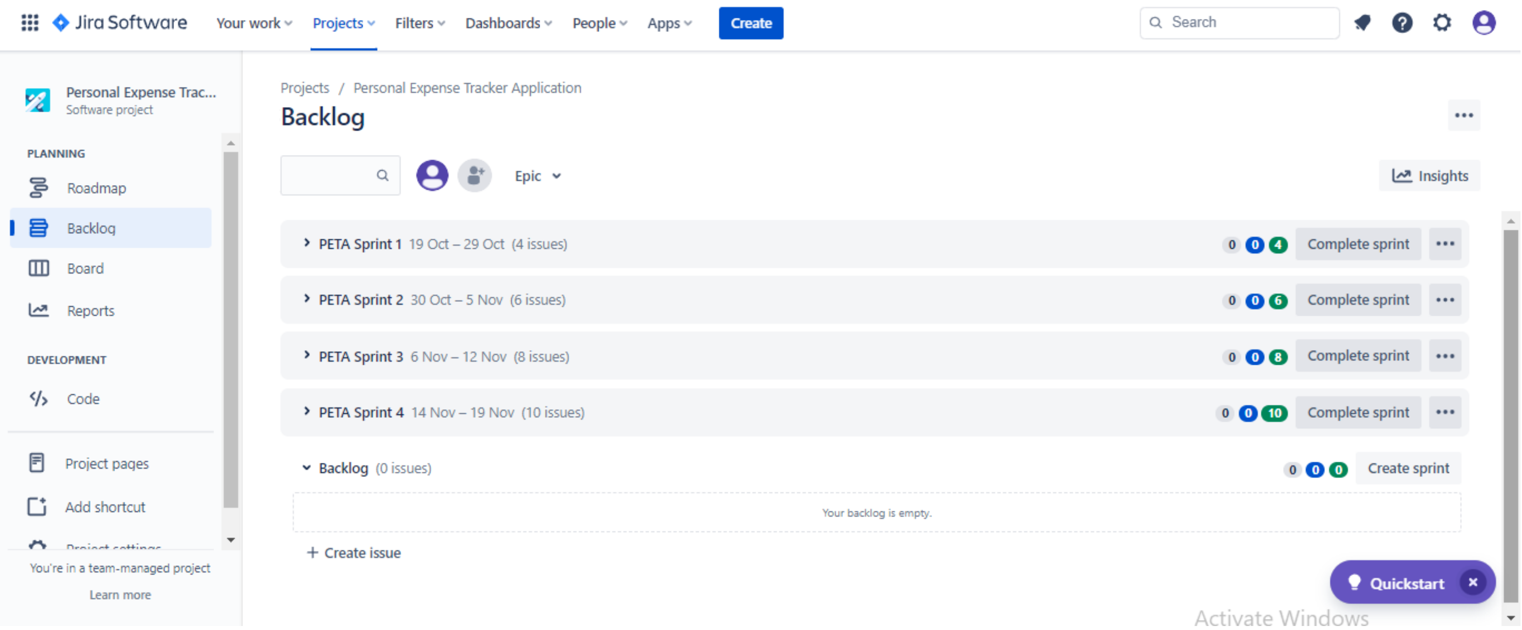
6.2 Sprint Delivery Schedule

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	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

6.3 Reports from JIRA

JIRA Backlog Tab showing the sprint wise schedule and progress of task



Projects / Personal Expense Tracker Application

Backlog

PETA Sprint 1 19 Oct – 29 Oct (4 issues) 0 0 4

PETA Sprint 2 30 Oct – 5 Nov (6 issues) 0 0 6

PETA Sprint 3 6 Nov – 12 Nov (8 issues) 0 0 8

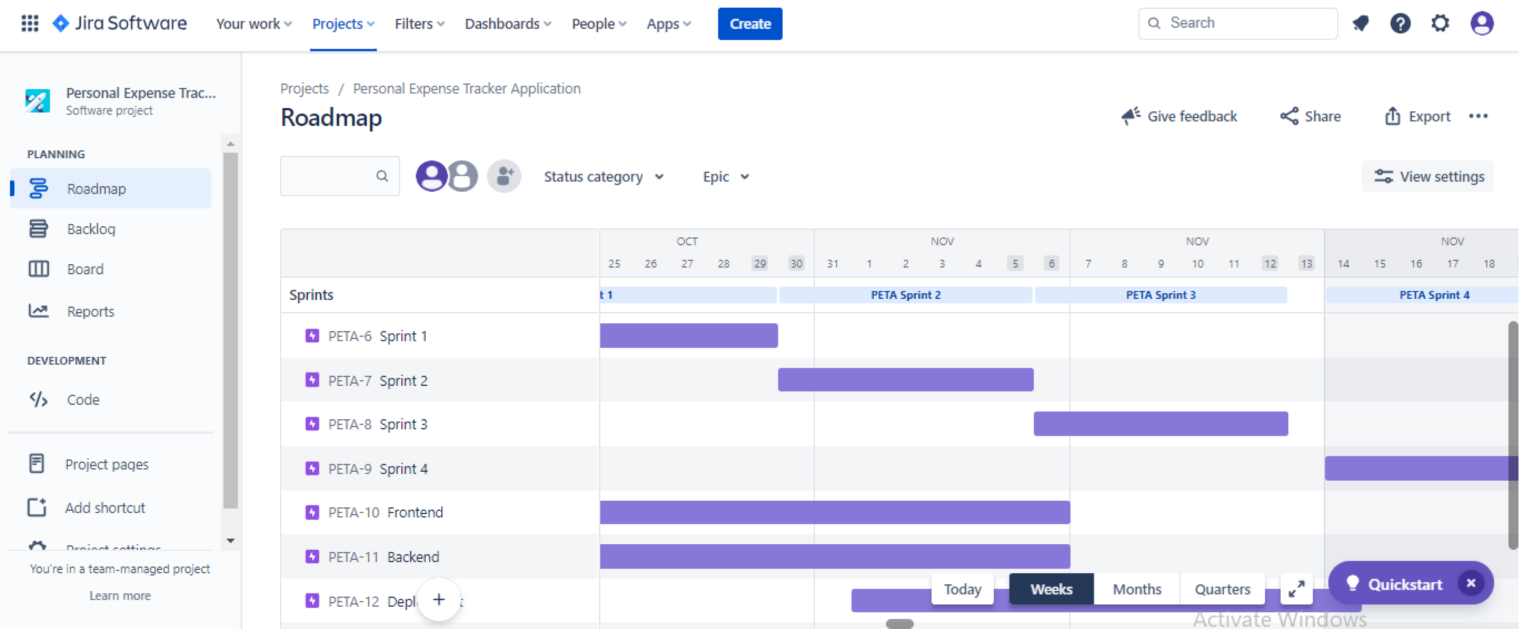
PETA Sprint 4 14 Nov – 19 Nov (10 issues) 0 0 10

Backlog (0 issues) 0 0 0

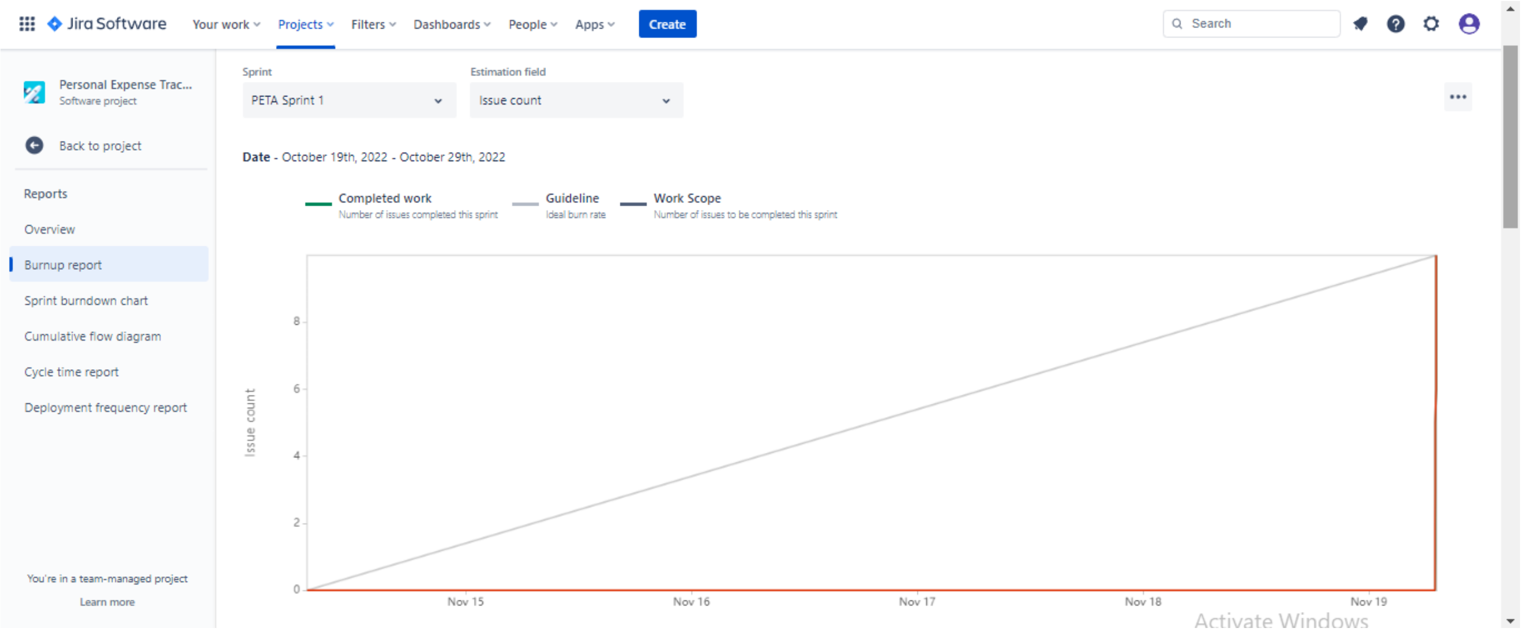
Your backlog is empty.

+ Create issue

JIRA Roadmap that shows the completion of the tasks within time



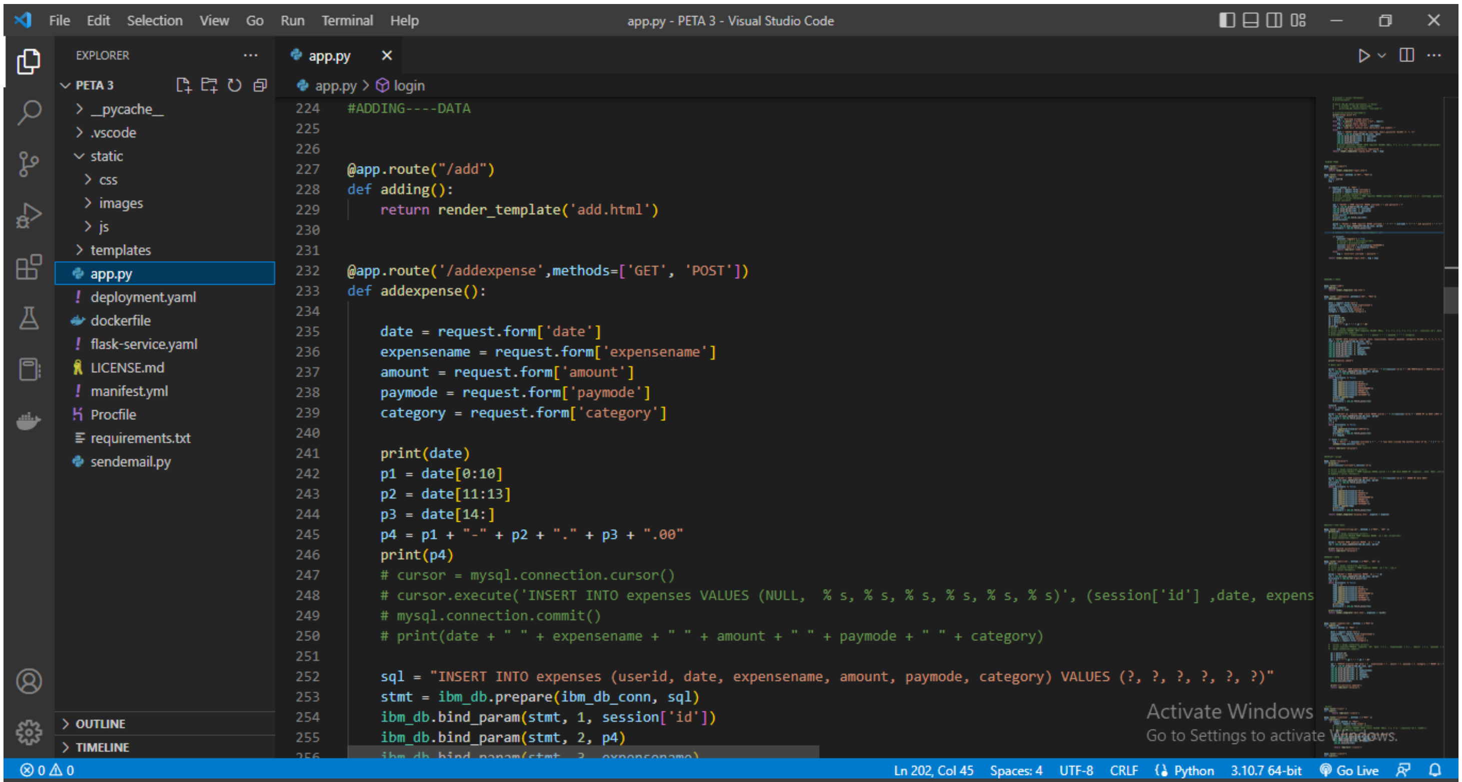
JIRA Showing the Burnup Report for the Sprint 1



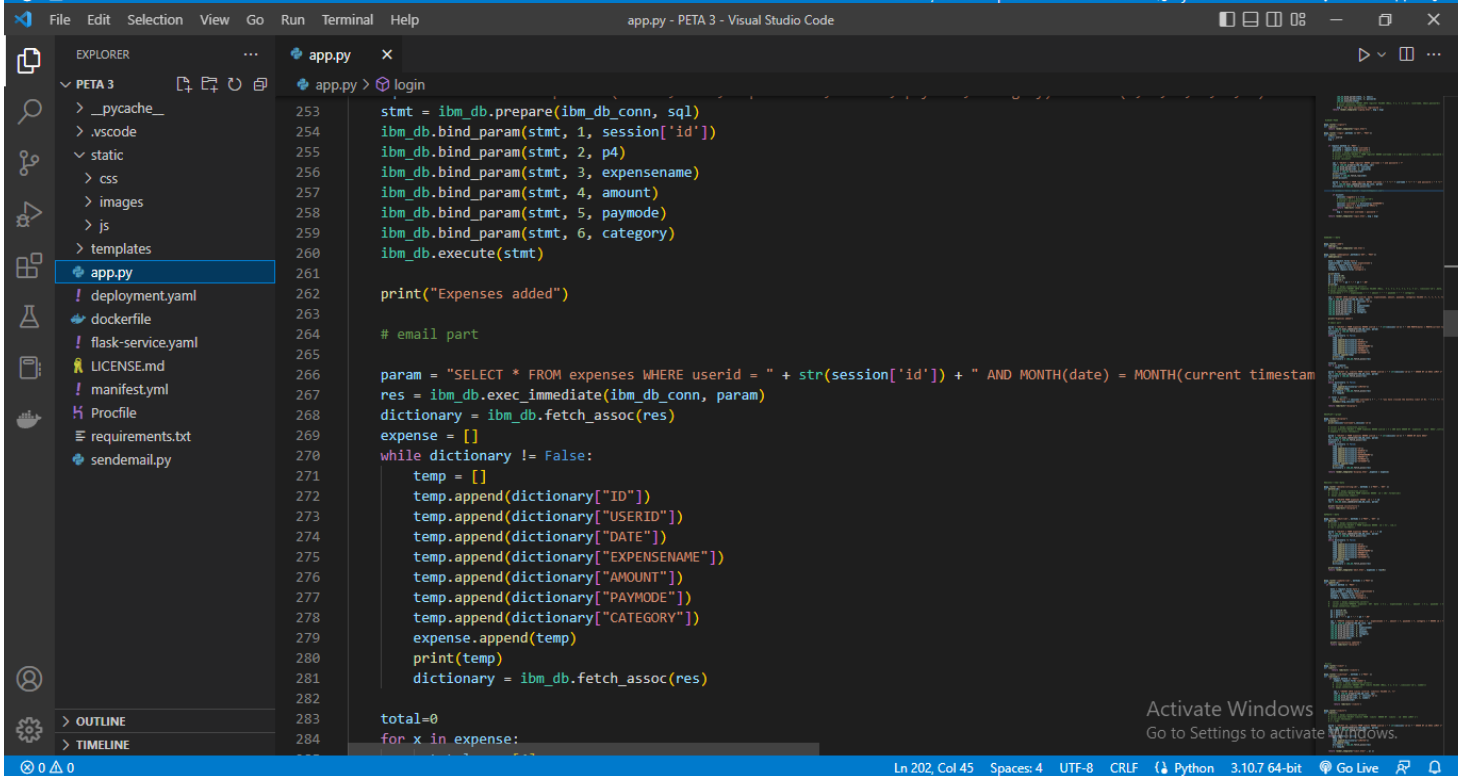
7. Coding and Solutioning:

Features

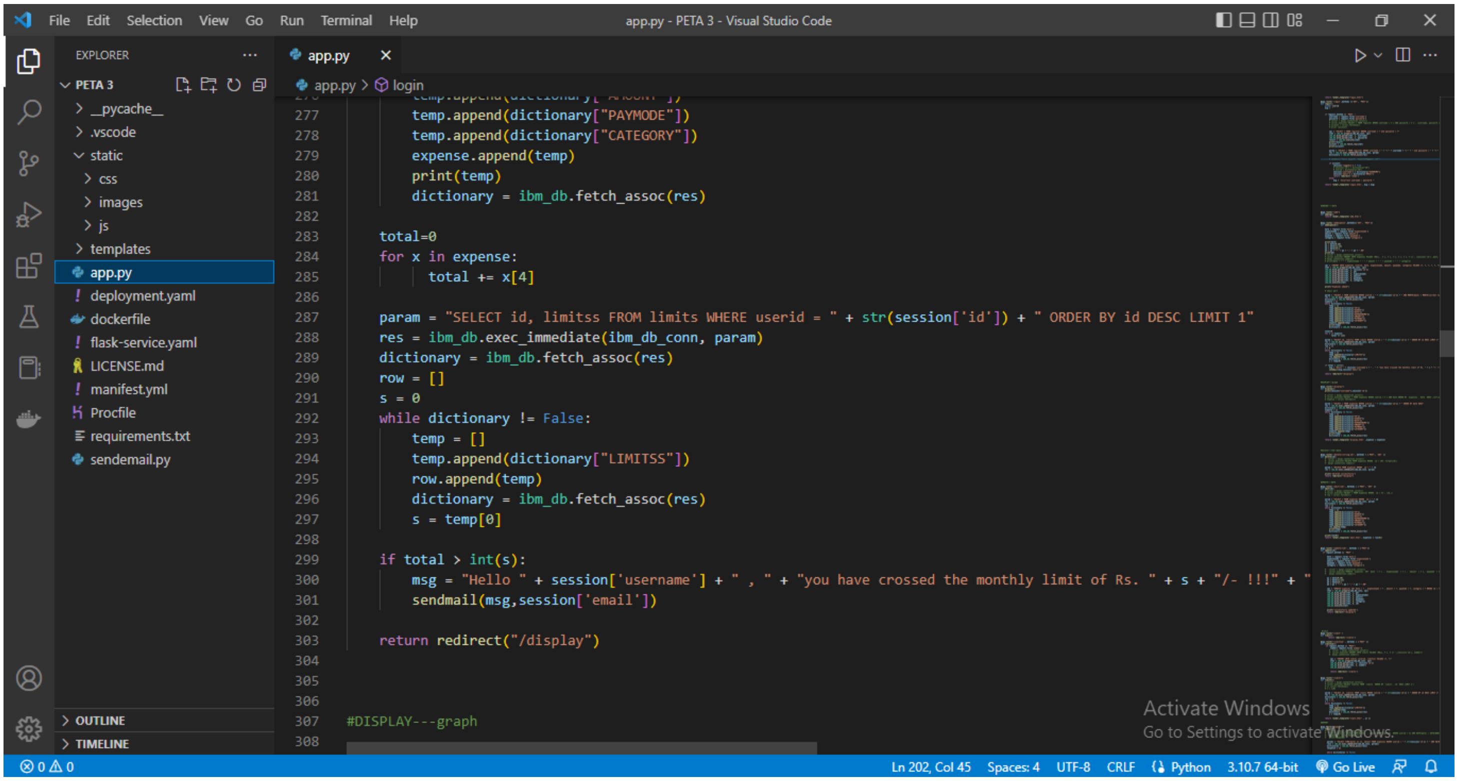
Feature 1: Add Expense



```python
#ADDING----DATA


@app.route("/add")
def adding():
    return render_template('add.html')


@app.route('/addexpense',methods=['GET', 'POST'])
def addexpense():

    date = request.form['date']
    expensename = request.form['expensename']
    amount = request.form['amount']
    paymode = request.form['paymode']
    category = request.form['category']

    print(date)
    p1 = date[0:10]
    p2 = date[11:13]
    p3 = date[14:]
    p4 = p1 + "-" + p2 + "." + p3 + ".00"
    print(p4)
    # cursor = mysql.connection.cursor()
    # cursor.execute('INSERT INTO expenses VALUES (NULL,  % s, % s, % s, % s, % s, % s)', (session['id'] ,date, expens
    # mysql.connection.commit()
    # print(date + " " + expensename + " " + amount + " " + paymode + " " + category)

    sql = "INSERT INTO expenses (userid, date, expensename, amount, paymode, category) VALUES (?, ?, ?, ?, ?, ?)"
    stmt = ibm_db.prepare(ibm_db_conn, sql)
    ibm_db.bind_param(stmt, 1, session['id'])
    ibm_db.bind_param(stmt, 2, p4)
    ibm_db.bind_param(stmt, 3, expensename)
```

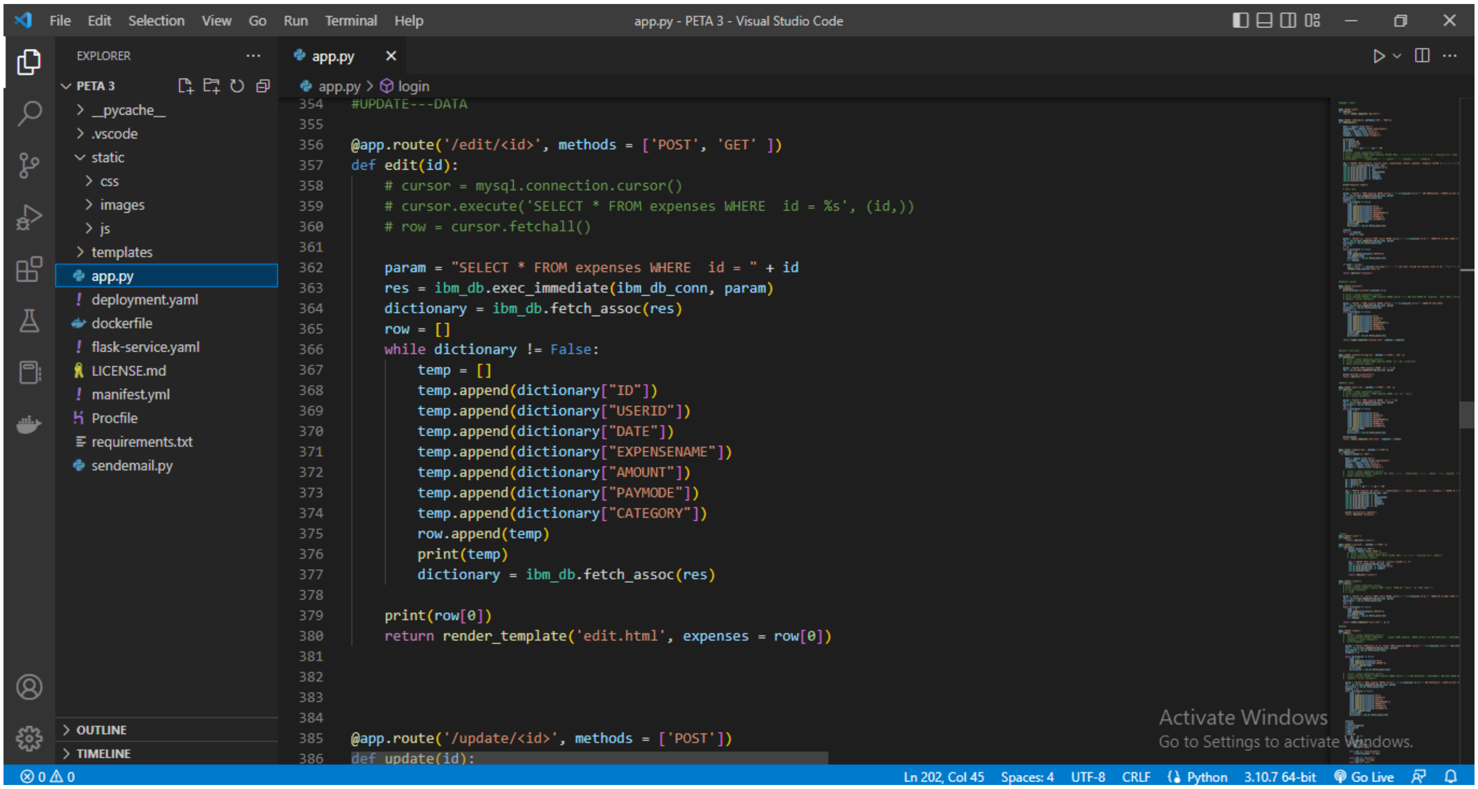


```python
    stmt = ibm_db.prepare(ibm_db_conn, sql)
    ibm_db.bind_param(stmt, 1, session['id'])
    ibm_db.bind_param(stmt, 2, p4)
    ibm_db.bind_param(stmt, 3, expensename)
    ibm_db.bind_param(stmt, 4, amount)
    ibm_db.bind_param(stmt, 5, paymode)
    ibm_db.bind_param(stmt, 6, category)
    ibm_db.execute(stmt)

    print("Expenses added")

    # email part

    param = "SELECT * FROM expenses WHERE userid = " + str(session['id']) + " AND MONTH(date) = MONTH(current timestam
    res = ibm_db.exec_immediate(ibm_db_conn, param)
    dictionary = ibm_db.fetch_assoc(res)
    expense = []
    while dictionary != False:
        temp = []
        temp.append(dictionary["ID"])
        temp.append(dictionary["USERID"])
        temp.append(dictionary["DATE"])
        temp.append(dictionary["EXPENSENAME"])
        temp.append(dictionary["AMOUNT"])
        temp.append(dictionary["PAYMODE"])
        temp.append(dictionary["CATEGORY"])
        expense.append(temp)
        print(temp)
        dictionary = ibm_db.fetch_assoc(res)

    total=0
    for x in expense:
```

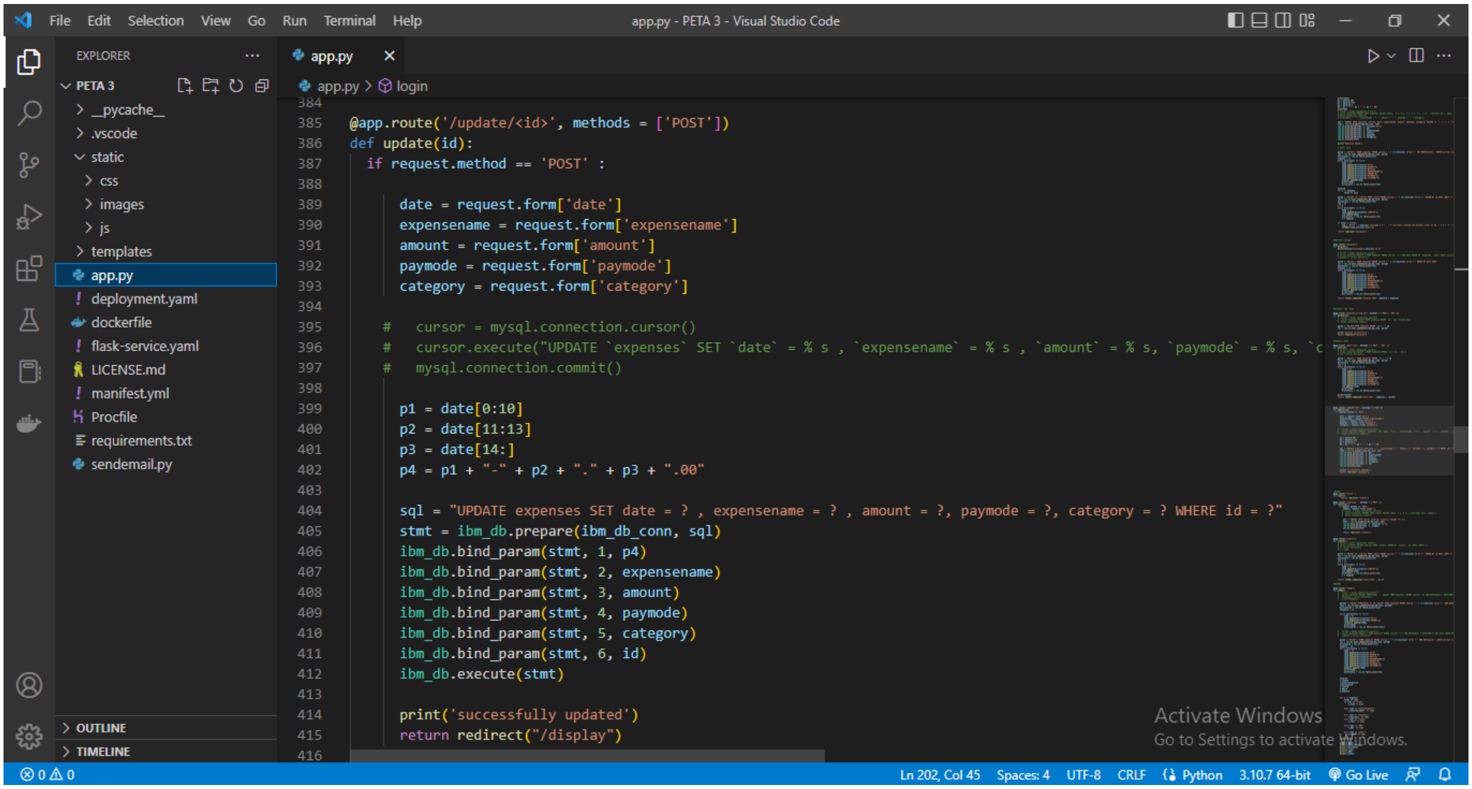


```
        temp.append(dictionary["AMOUNT"])
        temp.append(dictionary["PAYMODE"])
        temp.append(dictionary["CATEGORY"])
        expense.append(temp)
        print(temp)
        dictionary = ibm_db.fetch_assoc(res)

    total=0
    for x in expense:
        total += x[4]

    param = "SELECT id, limitss FROM limits WHERE userid = " + str(session['id']) + " ORDER BY id DESC LIMIT 1"
    res = ibm_db.exec_immediate(ibm_db_conn, param)
    dictionary = ibm_db.fetch_assoc(res)
    row = []
    s = 0
    while dictionary != False:
        temp = []
        temp.append(dictionary["LIMITSS"])
        row.append(temp)
        dictionary = ibm_db.fetch_assoc(res)
        s = temp[0]

    if total > int(s):
        msg = "Hello " + session['username'] + " , " + "you have crossed the monthly limit of Rs. " + s + "/- !!!" + "
        sendmail(msg,session['email'])

    return redirect("/display")



#DISPLAY---graph
```

Feature 2: Update Expense

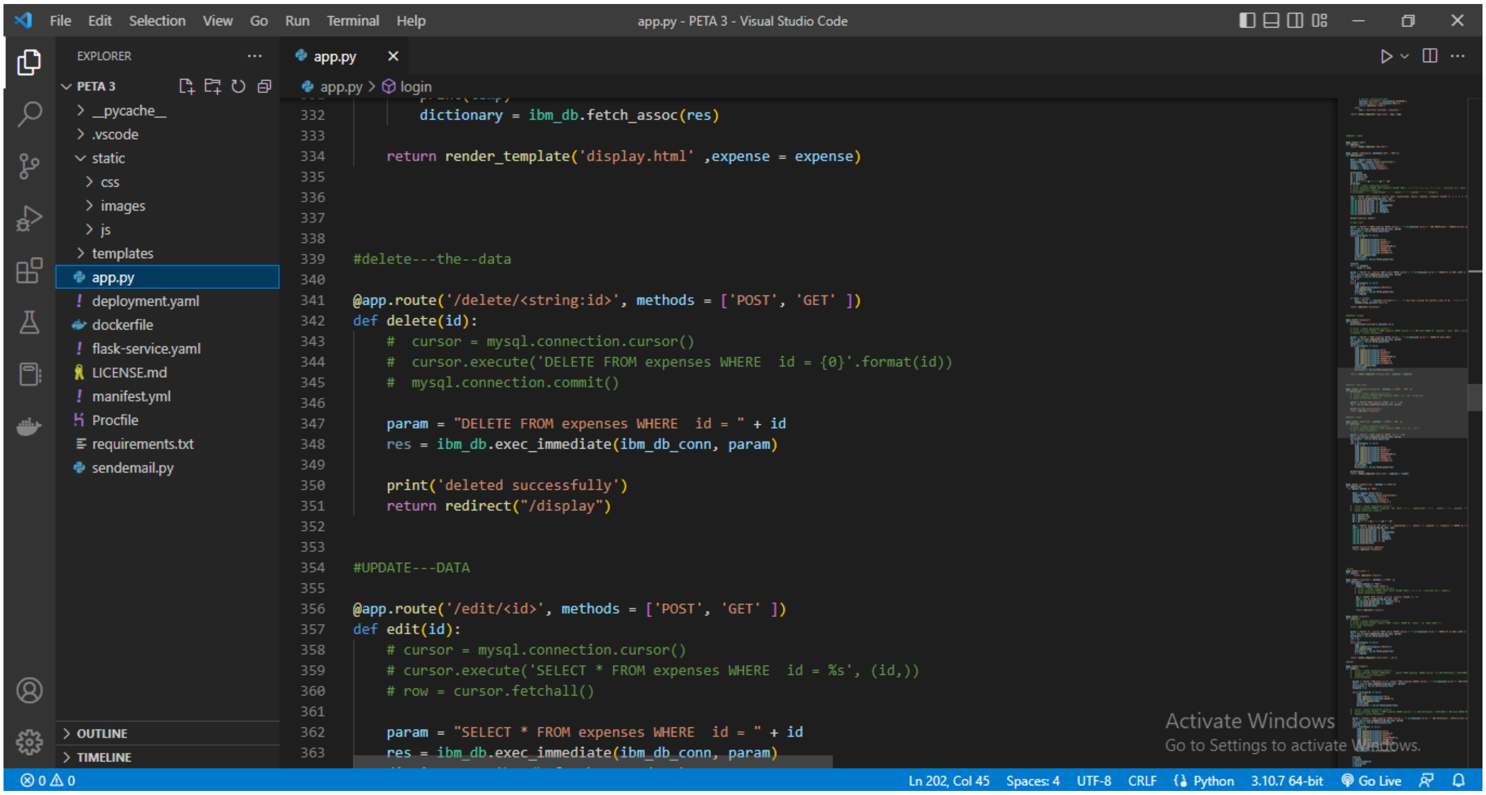


```
#UPDATE---DATA

@app.route('/edit/<id>', methods = ['POST', 'GET' ])
def edit(id):
    # cursor = mysql.connection.cursor()
    # cursor.execute('SELECT * FROM expenses WHERE  id = %s', (id,))
    # row = cursor.fetchall()

    param = "SELECT * FROM expenses WHERE  id = " + id
    res = ibm_db.exec_immediate(ibm_db_conn, param)
    dictionary = ibm_db.fetch_assoc(res)
    row = []
    while dictionary != False:
        temp = []
        temp.append(dictionary["ID"])
        temp.append(dictionary["USERID"])
        temp.append(dictionary["DATE"])
        temp.append(dictionary["EXPENSENAME"])
        temp.append(dictionary["AMOUNT"])
        temp.append(dictionary["PAYMODE"])
        temp.append(dictionary["CATEGORY"])
        row.append(temp)
        print(temp)
        dictionary = ibm_db.fetch_assoc(res)

    print(row[0])
    return render_template('edit.html', expenses = row[0])




@app.route('/update/<id>', methods = ['POST'])
def update(id):
```



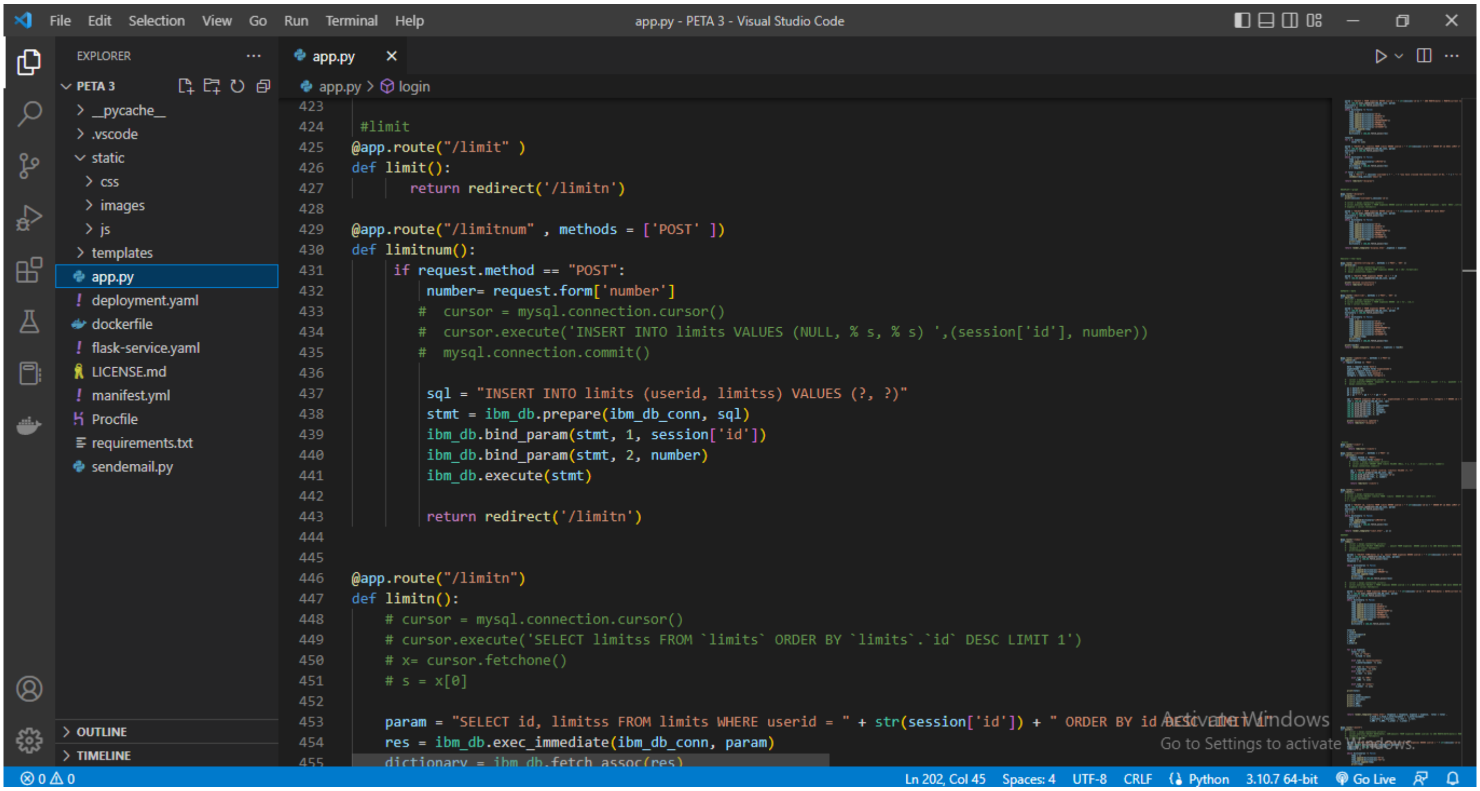
```
@app.route('/update/<id>', methods = ['POST'])
def update(id):
  if request.method == 'POST' :

     date = request.form['date']
     expensename = request.form['expensename']
     amount = request.form['amount']
     paymode = request.form['paymode']
     category = request.form['category']

  #   cursor = mysql.connection.cursor()
  #   cursor.execute("UPDATE `expenses` SET `date` = % s , `expensename` = % s , `amount` = % s, `paymode` = % s, `c
  #   mysql.connection.commit()

     p1 = date[0:10]
     p2 = date[11:13]
     p3 = date[14:]
     p4 = p1 + "-" + p2 + "." + p3 + ".00"

     sql = "UPDATE expenses SET date = ? , expensename = ? , amount = ?, paymode = ?, category = ? WHERE id = ?"
     stmt = ibm_db.prepare(ibm_db_conn, sql)
     ibm_db.bind_param(stmt, 1, p4)
     ibm_db.bind_param(stmt, 2, expensename)
     ibm_db.bind_param(stmt, 3, amount)
     ibm_db.bind_param(stmt, 4, paymode)
     ibm_db.bind_param(stmt, 5, category)
     ibm_db.bind_param(stmt, 6, id)
     ibm_db.execute(stmt)

     print('successfully updated')
     return redirect("/display")
```

Feature 3: Delete Expense

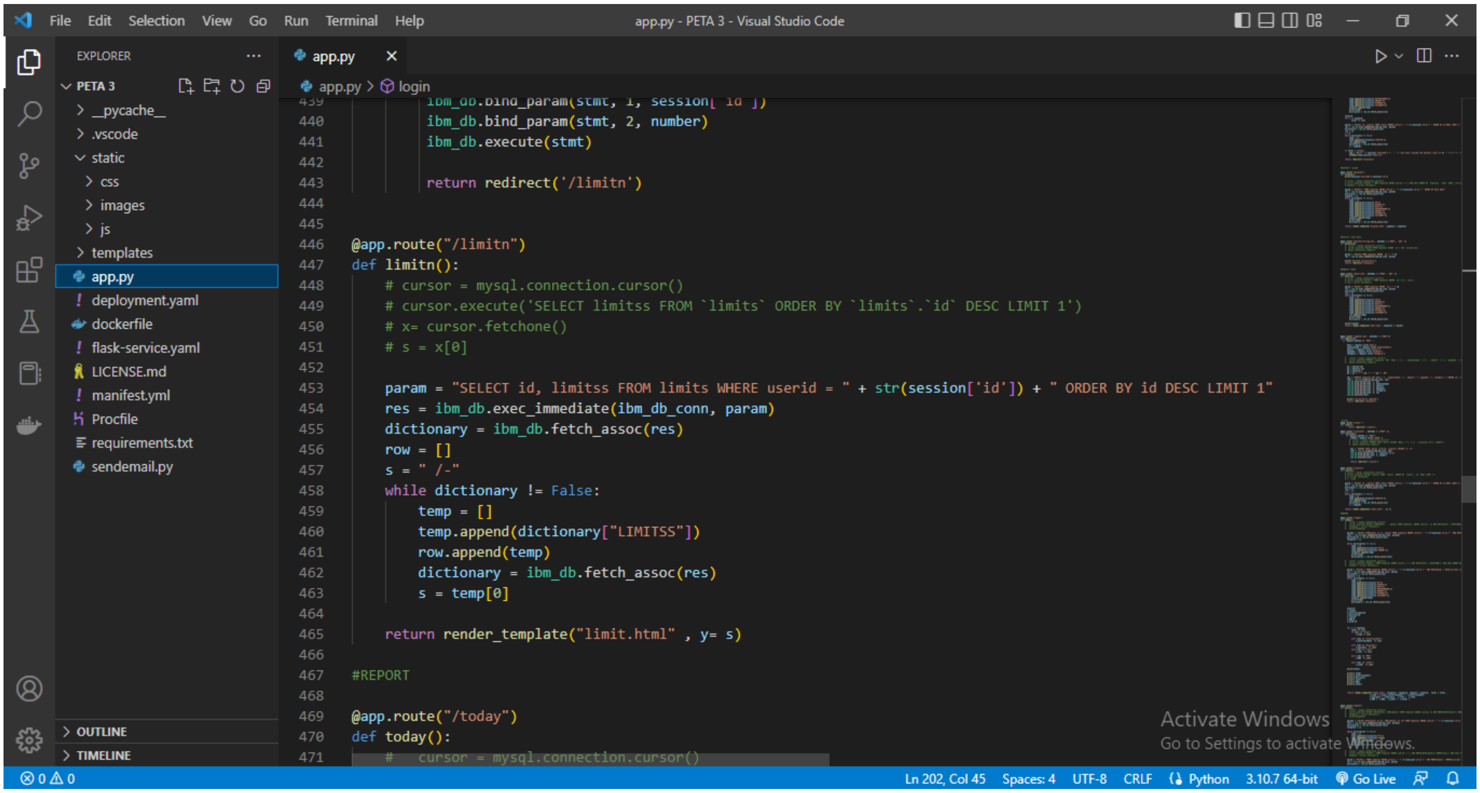


```
        dictionary = ibm_db.fetch_assoc(res)

    return render_template('display.html' ,expense = expense)



#delete---the--data

@app.route('/delete/<string:id>', methods = ['POST', 'GET' ])
def delete(id):
    #  cursor = mysql.connection.cursor()
    #  cursor.execute('DELETE FROM expenses WHERE  id = {0}'.format(id))
    #  mysql.connection.commit()

    param = "DELETE FROM expenses WHERE  id = " + id
    res = ibm_db.exec_immediate(ibm_db_conn, param)

    print('deleted successfully')
    return redirect("/display")


#UPDATE---DATA

@app.route('/edit/<id>', methods = ['POST', 'GET' ])
def edit(id):
    # cursor = mysql.connection.cursor()
    # cursor.execute('SELECT * FROM expenses WHERE  id = %s', (id,))
    # row = cursor.fetchall()

    param = "SELECT * FROM expenses WHERE  id = " + id
    res = ibm_db.exec_immediate(ibm_db_conn, param)
```

Feature 4: Set Limit

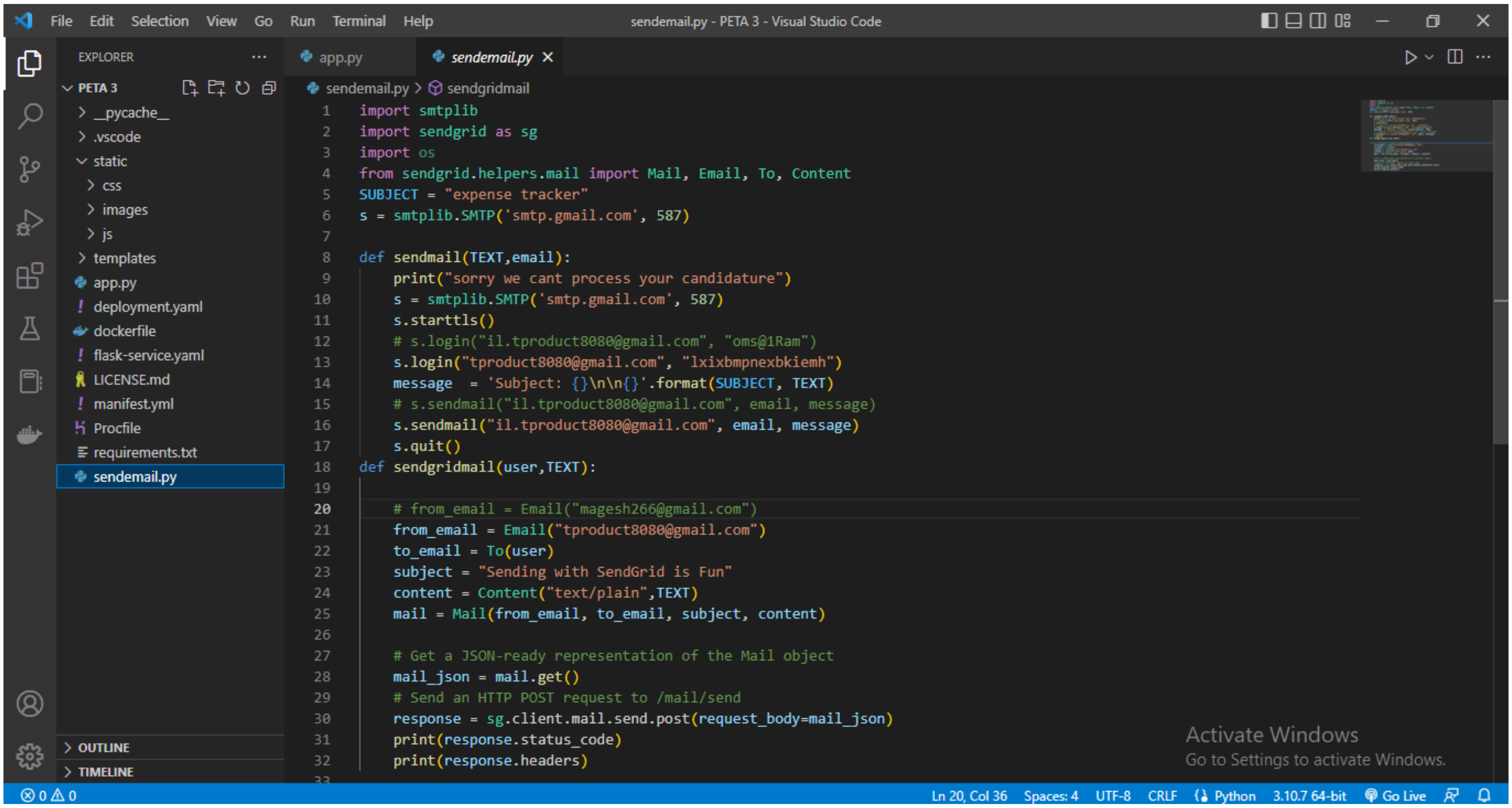


```

 #limit
@app.route("/limit" )
def limit():
       return redirect('/limitn')

@app.route("/limitnum" , methods = ['POST' ])
def limitnum():
     if request.method == "POST":
         number= request.form['number']
        #  cursor = mysql.connection.cursor()
        #  cursor.execute('INSERT INTO limits VALUES (NULL, % s, % s) ',(session['id'], number))
        #  mysql.connection.commit()

         sql = "INSERT INTO limits (userid, limitss) VALUES (?, ?)"
         stmt = ibm_db.prepare(ibm_db_conn, sql)
         ibm_db.bind_param(stmt, 1, session['id'])
         ibm_db.bind_param(stmt, 2, number)
         ibm_db.execute(stmt)

         return redirect('/limitn')


@app.route("/limitn")
def limitn():
    # cursor = mysql.connection.cursor()
    # cursor.execute('SELECT limitss FROM `limits` ORDER BY `limits`.`id` DESC LIMIT 1')
    # x= cursor.fetchone()
    # s = x[0]

    param = "SELECT id, limitss FROM limits WHERE userid = " + str(session['id']) + " ORDER BY id DESC LIMIT 1"
    res = ibm_db.exec_immediate(ibm_db_conn, param)
    dictionary = ibm_db.fetch_assoc(res)
```



```
         ibm_db.bind_param(stmt, 1, session['id'])
         ibm_db.bind_param(stmt, 2, number)
         ibm_db.execute(stmt)

         return redirect('/limitn')


@app.route("/limitn")
def limitn():
    # cursor = mysql.connection.cursor()
    # cursor.execute('SELECT limitss FROM `limits` ORDER BY `limits`.`id` DESC LIMIT 1')
    # x= cursor.fetchone()
    # s = x[0]

    param = "SELECT id, limitss FROM limits WHERE userid = " + str(session['id']) + " ORDER BY id DESC LIMIT 1"
    res = ibm_db.exec_immediate(ibm_db_conn, param)
    dictionary = ibm_db.fetch_assoc(res)
    row = []
    s = " /-"
    while dictionary != False:
        temp = []
        temp.append(dictionary["LIMITSS"])
        row.append(temp)
        dictionary = ibm_db.fetch_assoc(res)
        s = temp[0]

    return render_template("limit.html" , y= s)

#REPORT

@app.route("/today")
def today():
    #   cursor = mysql.connection.cursor()
```

Feature 5: Send Alert Emails to users



```python
import smtplib
import sendgrid as sg
import os
from sendgrid.helpers.mail import Mail, Email, To, Content
SUBJECT = "expense tracker"
s = smtplib.SMTP('smtp.gmail.com', 587)

def sendmail(TEXT,email):
    print("sorry we cant process your candidature")
    s = smtplib.SMTP('smtp.gmail.com', 587)
    s.starttls()
    # s.login("il.tproduct8080@gmail.com", "oms@1Ram")
    s.login("tproduct8080@gmail.com", "lxixbmpnexbkiemh")
    message  = 'Subject: {}\n\n{}'.format(SUBJECT, TEXT)
    # s.sendmail("il.tproduct8080@gmail.com", email, message)
    s.sendmail("il.tproduct8080@gmail.com", email, message)
    s.quit()
def sendgridmail(user,TEXT):

    # from_email = Email("magesh266@gmail.com")
    from_email = Email("tproduct8080@gmail.com")
    to_email = To(user)
    subject = "Sending with SendGrid is Fun"
    content = Content("text/plain",TEXT)
    mail = Mail(from_email, to_email, subject, content)

    # Get a JSON-ready representation of the Mail object
    mail_json = mail.get()
    # Send an HTTP POST request to /mail/send
    response = sg.client.mail.send.post(request_body=mail_json)
    print(response.status_code)
    print(response.headers)
```

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.

8.TESTING

TESTING:

•Login Page (Functional)

•Login Page (UI)

•Add Expense Page (Functional)

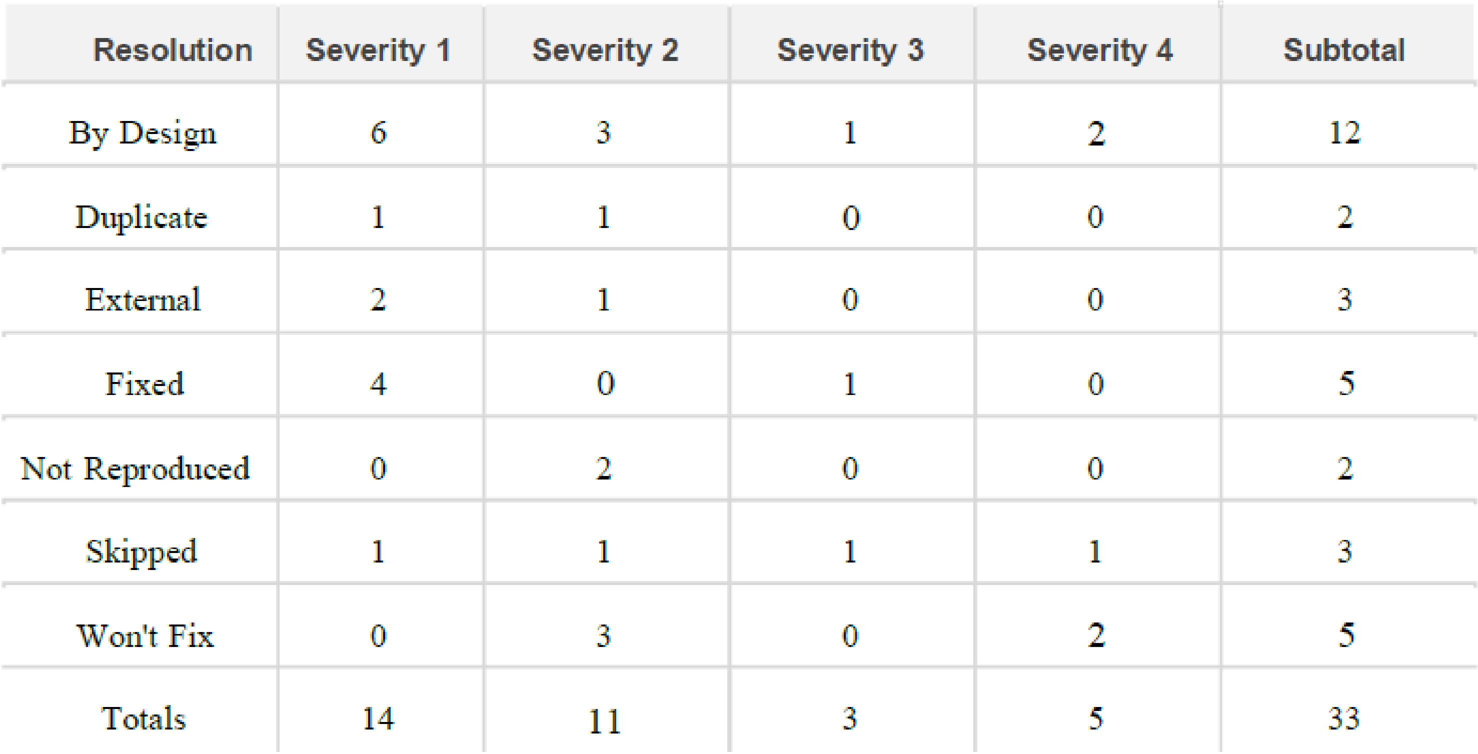
User Acceptance Testing:

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)

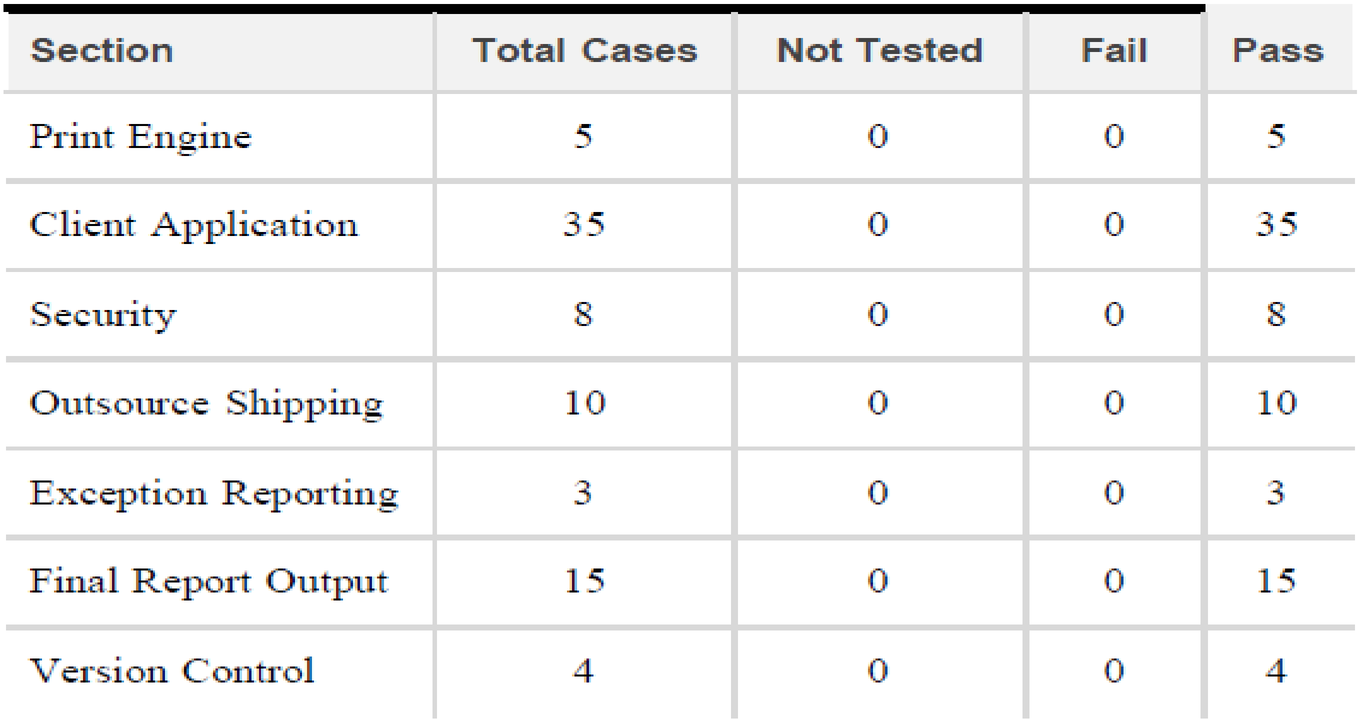
2. Defect Analysis

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	6	3	1	2	12
Duplicate	1	1	0	0	2
External	2	1	0	0	3
Fixed	4	0	1	0	5
Not Reproduced	0	2	0	0	2
Skipped	1	1	1	1	3
Won't Fix	0	3	0	2	5
Totals	14	11	3	5	33

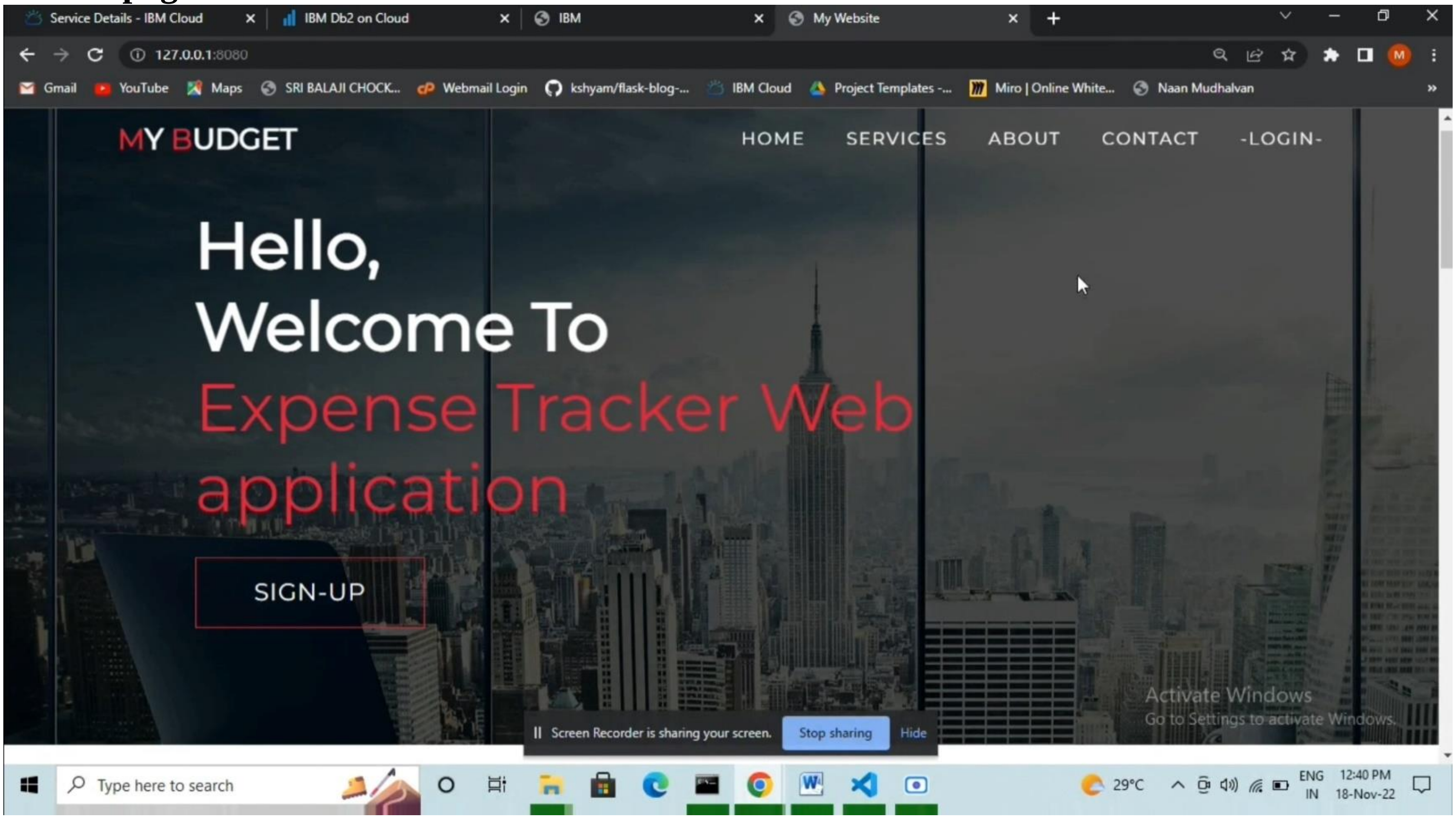
3. Test Case Analysis



Section	Total Cases	Not Tested	Fail	Pass
Print Engine	5	0	0	5
Client Application	35	0	0	35
Security	8	0	0	8
Outsource Shipping	10	0	0	10
Exception Reporting	3	0	0	3
Final Report Output	15	0	0	15
Version Control	4	0	0	4

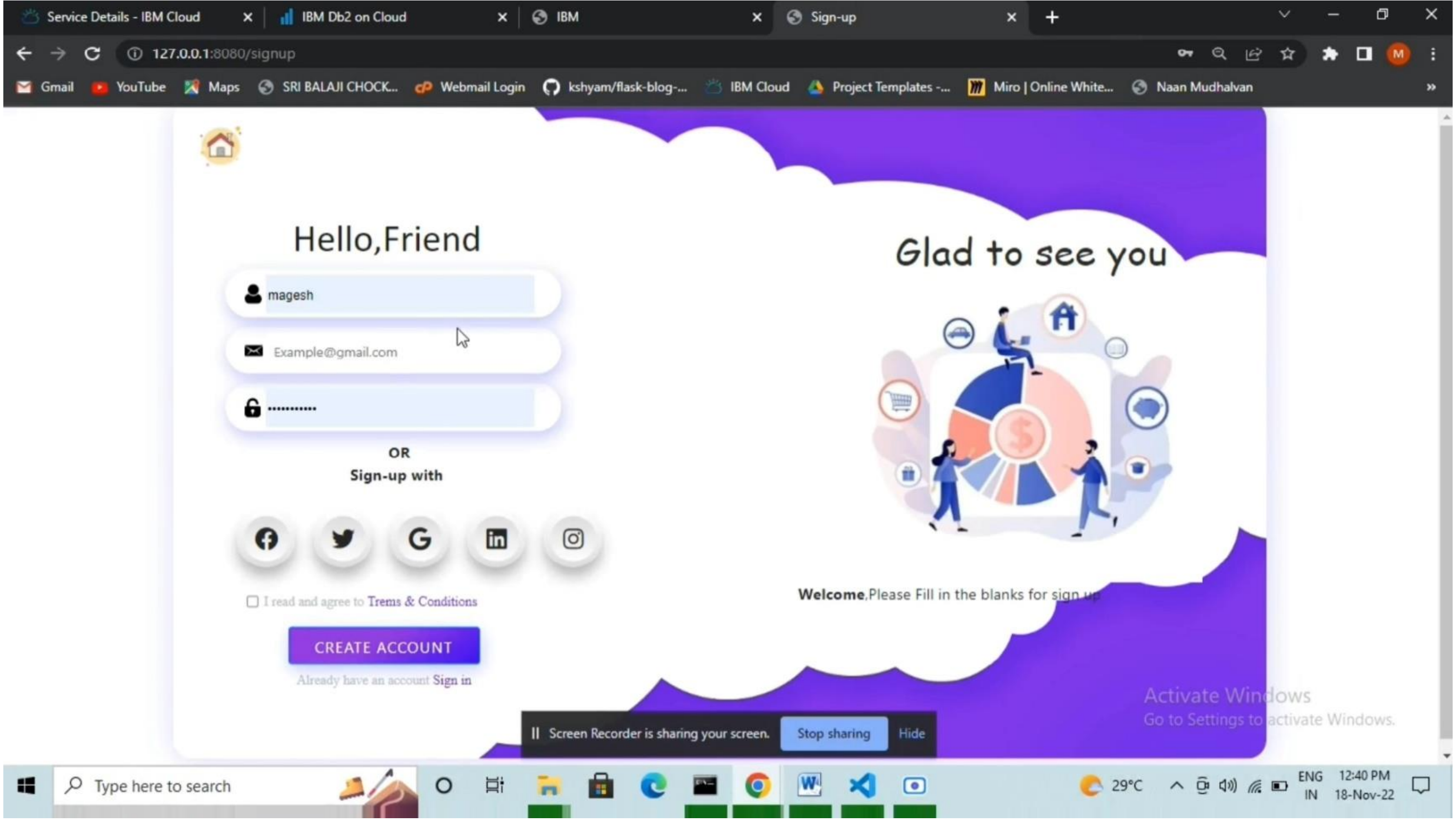
9. RESULTS

Homepage



Hello,
Welcome To
Expense Tracker Web application

Signup



Hello,Friend

magesh

Example@gmail.com

OR

Sign-up with

□ I read and agree to Trems & Conditions

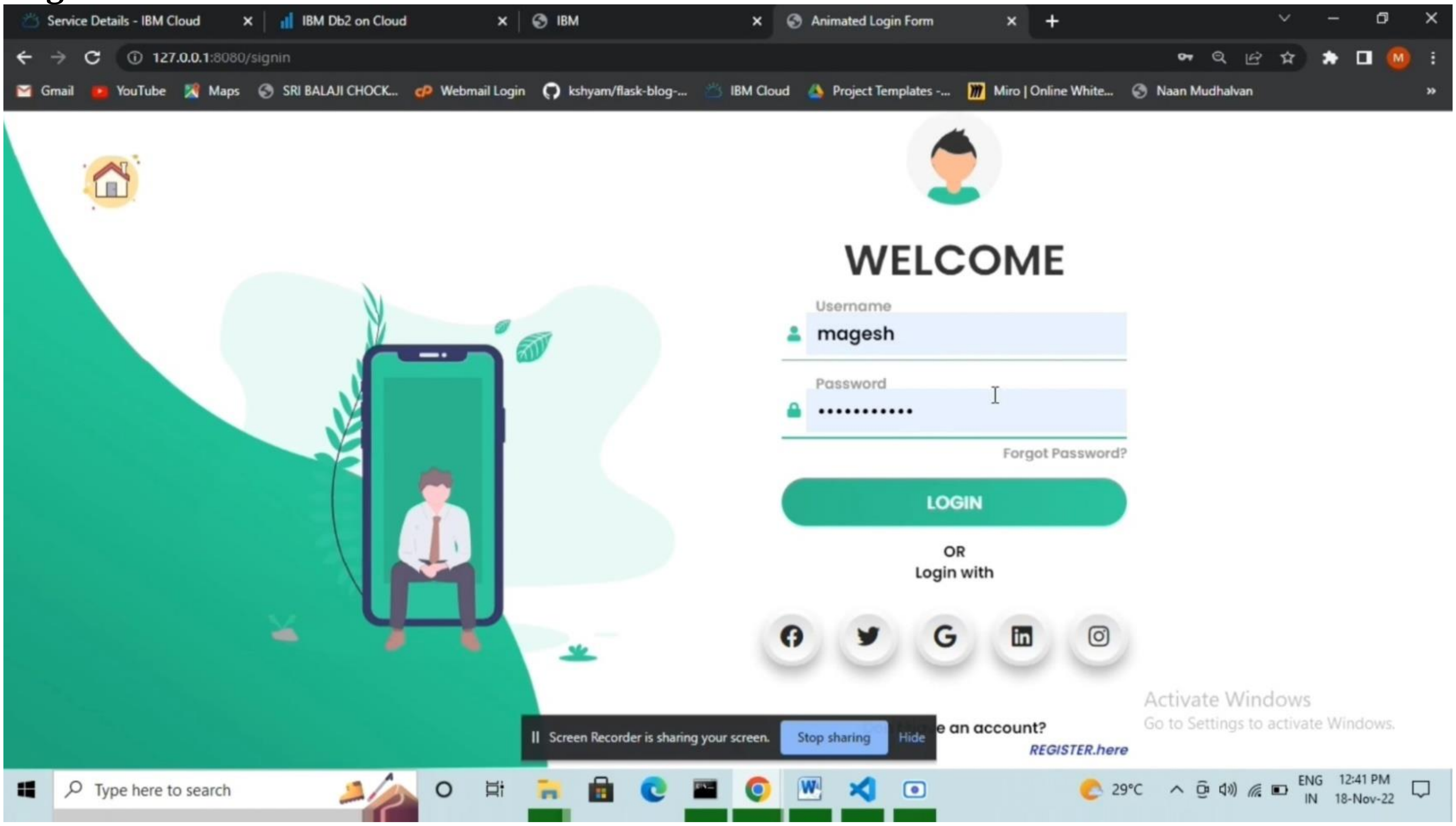
CREATE ACCOUNT

Already have an account Sign in

Glad to see you

Welcome,Please Fill in the blanks for sign up

Login



WELCOME

Username

magesh

Password

Forgot Password?

LOGIN

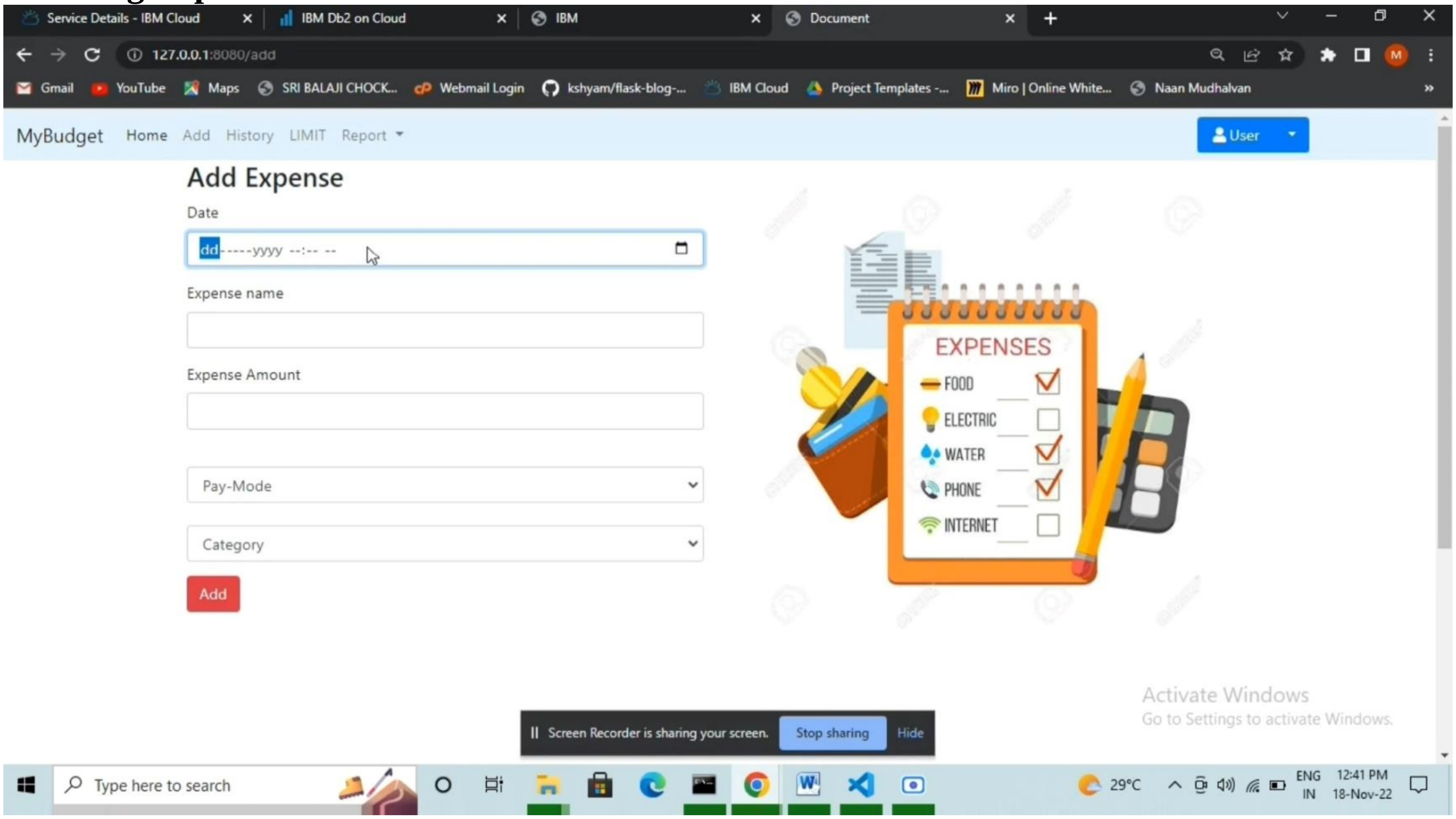
OR

Login with

Don't have an account?

REGISTER.here

Adding Expense



Add Expense

Date

dd-----yyyy --:-- --

Expense name

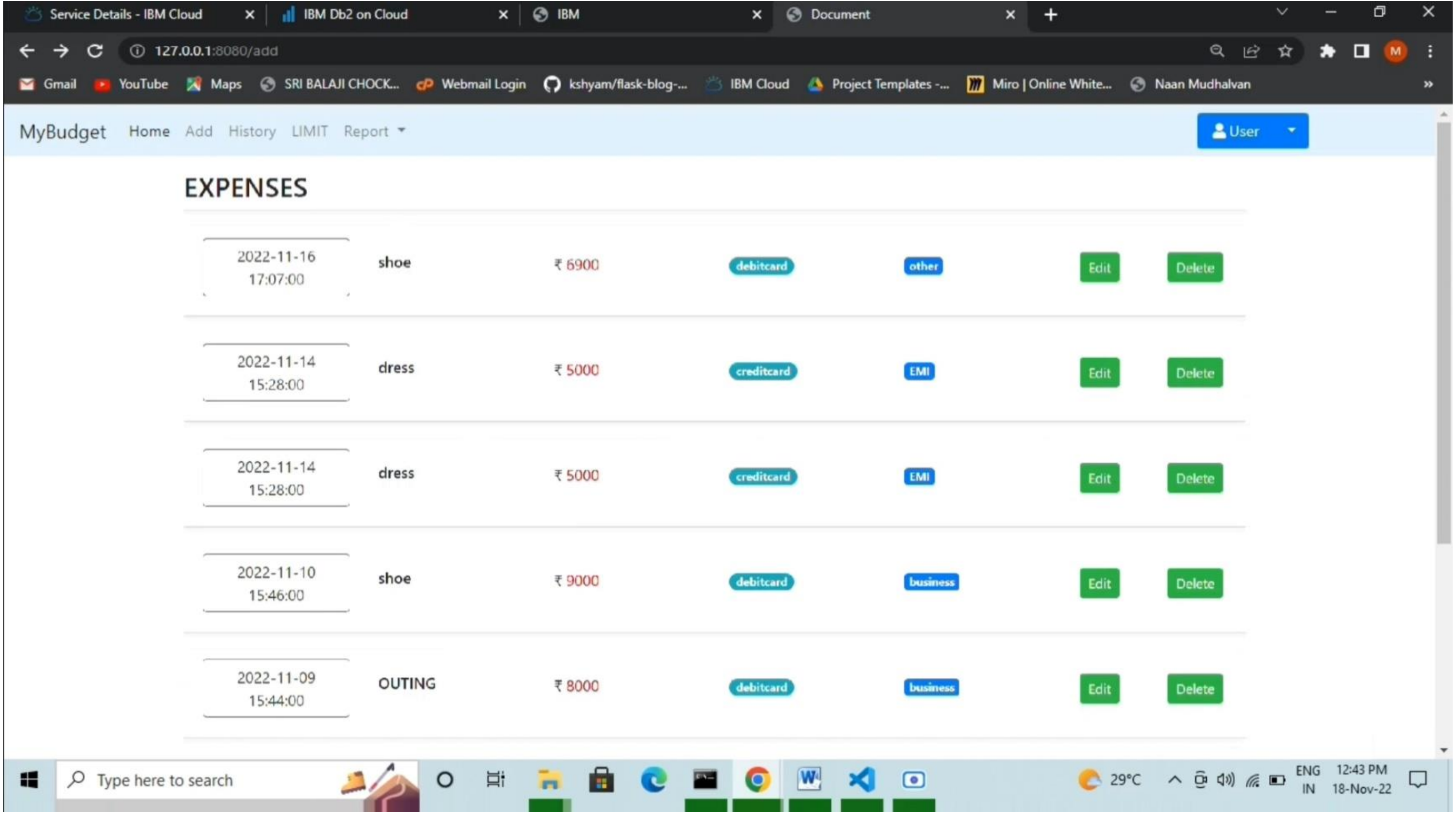
Expense Amount

Pay-Mode

Category

Add

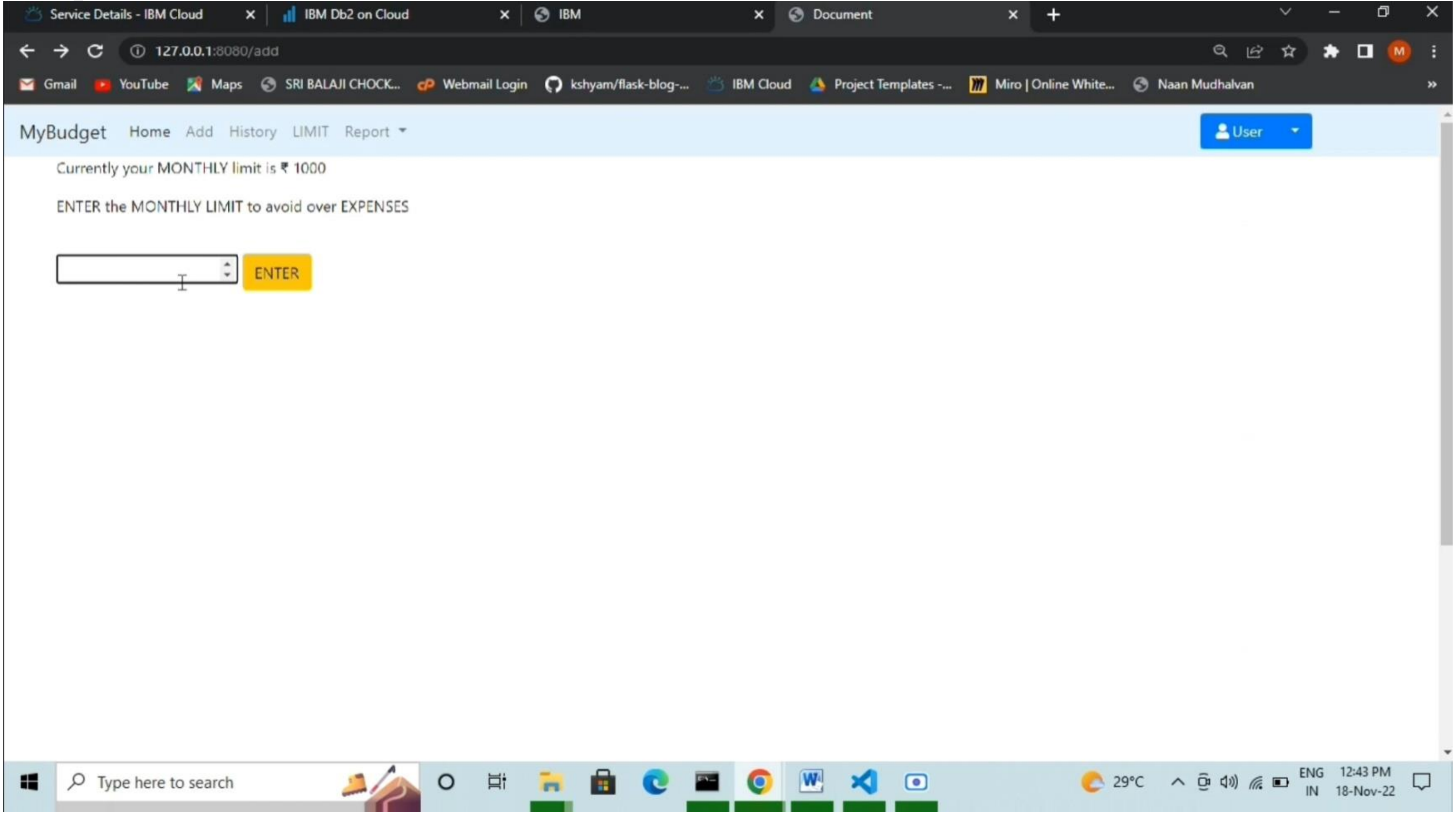
Expense History



EXPENSES

2022-11-16 17:07:00	shoe	₹ 6900	debitcard	other	Edit	Delete
2022-11-14 15:28:00	dress	₹ 5000	creditcard	EMI	Edit	Delete
2022-11-14 15:28:00	dress	₹ 5000	creditcard	EMI	Edit	Delete
2022-11-10 15:46:00	shoe	₹ 9000	debitcard	business	Edit	Delete
2022-11-09 15:44:00	OUTING	₹ 8000	debitcard	business	Edit	Delete

Expense Limit

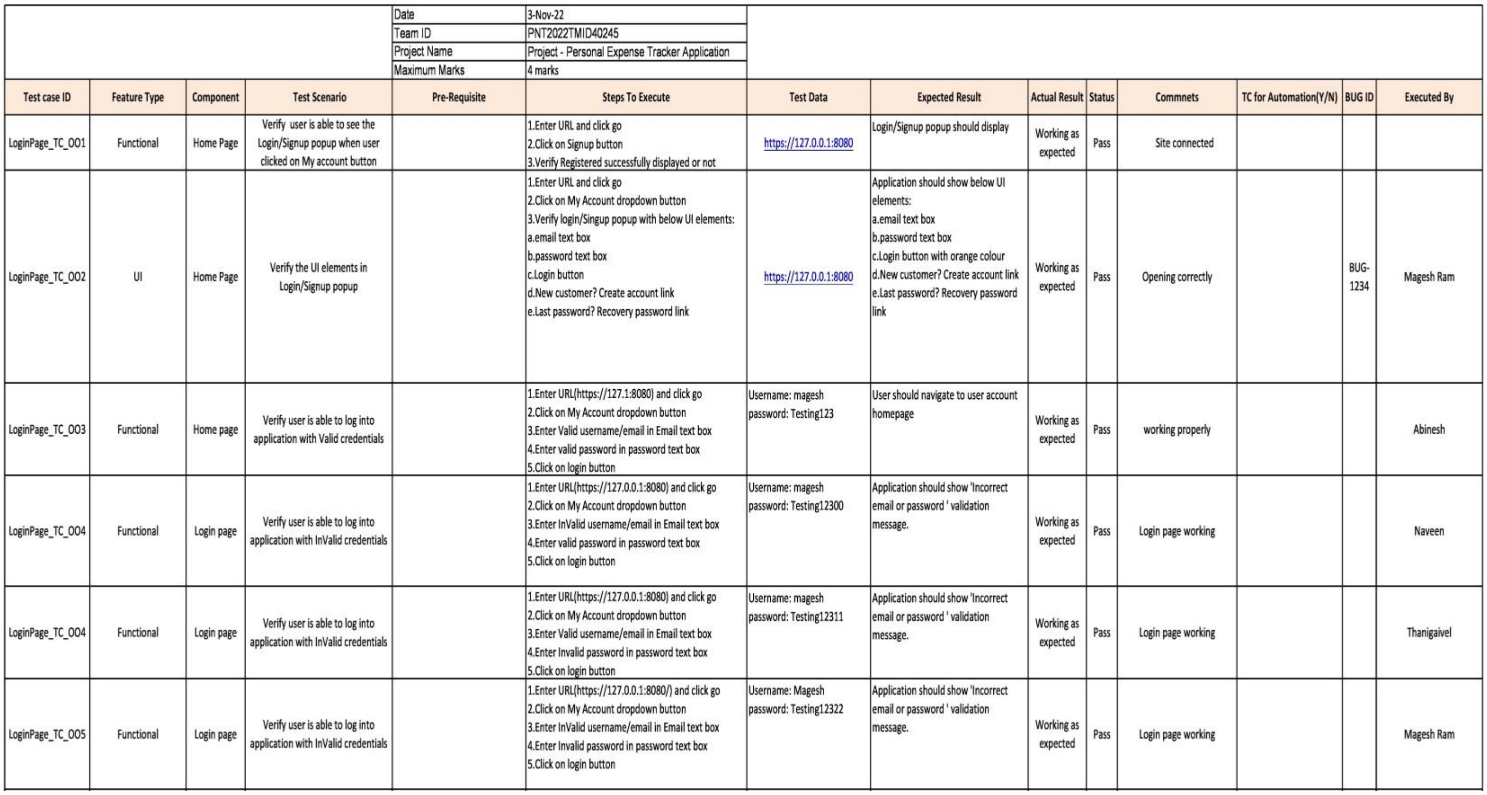


Currently your MONTHLY limit is ₹ 1000

ENTER the MONTHLY LIMIT to avoid over EXPENSES

ENTER

9.1 Performance Metrics



				Date	3-Nov-22								
				Team ID	PNT2022TMID40245								
				Project Name	Project - Personal Expense Tracker Application								
				Maximum Marks	4 marks								
Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Commnets	TC for Automation(Y/N)	BUG ID	Executed By
LoginPage_TC_OO1	Functional	Home Page	Verify user is able to see the Login/Signup popup when user clicked on My account button		1.Enter URL and click go 2.Click on Signup button 3.Verify Registered successfully displayed or not	https://127.0.0.1:8080	Login/Signup popup should display	Working as expected	Pass	Site connected			
LoginPage_TC_OO2	UI	Home Page	Verify the UI elements in Login/Signup popup		1.Enter URL and click go 2.Click on My Account dropdown button 3.Verify login/Singup popup with below UI elements: a.email text box b.password text box c.Login button d.New customer? Create account link e.Last password? Recovery password link	https://127.0.0.1:8080	Application should show below UI elements: a.email text box b.password text box c.Login button with orange colour d.New customer? Create account link e.Last password? Recovery password link	Working as expected	Pass	Opening correctly		BUG-1234	Magesh Ram
LoginPage_TC_OO3	Functional	Home page	Verify user is able to log into application with Valid credentials		1.Enter URL(https://127.1:8080) and click go 2.Click on My Account dropdown button 3.Enter Valid username/email in Email text box 4.Enter valid password in password text box 5.Click on login button	Username: magesh password: Testing123	User should navigate to user account homepage	Working as expected	Pass	working properly			Abinesh
LoginPage_TC_OO4	Functional	Login page	Verify user is able to log into application with InValid credentials		1.Enter URL(https://127.0.0.1:8080) and click go 2.Click on My Account dropdown button 3.Enter InValid username/email in Email text box 4.Enter valid password in password text box 5.Click on login button	Username: magesh password: Testing12300	Application should show 'Incorrect email or password ' validation message.	Working as expected	Pass	Login page working			Naveen
LoginPage_TC_OO4	Functional	Login page	Verify user is able to log into application with InValid credentials		1.Enter URL(https://127.0.0.1:8080) and click go 2.Click on My Account dropdown button 3.Enter Valid username/email in Email text box 4.Enter Invalid password in password text box 5.Click on login button	Username: magesh password: Testing12311	Application should show 'Incorrect email or password ' validation message.	Working as expected	Pass	Login page working			Thanigaivel
LoginPage_TC_OO5	Functional	Login page	Verify user is able to log into application with InValid credentials		1.Enter URL(https://127.0.0.1:8080/) and click go 2.Click on My Account dropdown button 3.Enter InValid username/email in Email text box 4.Enter Invalid password in password text box 5.Click on login button	Username: Magesh password: Testing12322	Application should show 'Incorrect email or password ' validation message.	Working as expected	Pass	Login page working			Magesh Ram

10. ADVANTAGES AND DISADVANTAGES

ADVANTAGES:

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

DISADVANTAGES:

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

11. CONCLUSION

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 andplan 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 provideunique insights on saving money. It brings out the factors causing fluctuations in your expenses.

13. APPENDIX:

SOURCE CODE

Link: https://github.com/IBM-EPBL/IBM-Project-41745-1660644515/tree/main/Final%20Deliverables/Code

GITHUB AND PROJECT DEMO LINK

GitHub link: https://github.com/IBM-EPBL/IBM-Project-41745-1660644515

Video Demo Link: https://youtu.be/7Zdd_9GLBDs