Personal Expense Tracker Application
IBM-Project-34741-1660275861

PERSONAL EXPENSE TRACKER APPLICATION

NALAIYA THIRAN PROJECT BASED LEARNING ON PROFESSIONAL RADLINESS FOR INNOVATION, EMPLOYNMENT AND ENTERPRENEURSHIP

A PROJECT REPORT

AISHWARYA T (962819104007)

ARUNA K R (962819104018)

ASHIKA S J (962819104019)

JENISHA L (962819104047)

BACHELOR OF ENGINEERING IN COMPUTER SCIENCE AND ENGINEERING

University College of Engineering

Nagercoil – 629 004

Personal Expense Tracker Application
IBM-Project-34741-1660275861

INDEX

Personal Expense Tracker Application
IBM-Project-34741-1660275861

Personal Expense Tracker Application
IBM-Project-34741-1660275861

1. INTRODUCTION

1.1 Project Overview

Category : Cloud App Development

Team ID : PNT2022TMID34843

Skills Required :

IBM Cloud,HTML,Javascript,IBM Cloud Object Storage,Python-Flask,Kubernetes,Docker,IBM DB2,IBM Container Registry

Project Description :

In simple words, personal finance entails all the financial decisions and activities that a Finance app makes your life easier by helping you to manage your finances efficiently. A personal finance app will not only help you with budgeting and accounting but also give you helpful insights about money management.

Personal finance applications will ask users to add their expenses and based on their expenses wallet balance will be updated which will be visible to the user. Also, users can get an analysis of their expenditure in graphical forms. They have an option to set a limit for the amount to be used for that particular month if the limit is exceeded the user will be notified with an email alert.

Personal Expense Tracker Application **IBM-Project-34741-1660275861**

1.2 Purpose

Personal finance management is an important part of people's lives. However, everyone does not have the knowledge or time to manage their finances in a proper manner. And, even if a person has time and knowledge, they do not bother with tracking their expenses as they find it tedious and time-consuming. Now, you don't have to worry about managing your expenses, as you can get access to an expense tracker that will help in the active management of your finances.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. While this problem can arise due to low salary, invariably it is due to poor money management skills.

People tend to overspend without realizing, and this can prove to be disastrous. Using a daily expense manager can help you keep track of how much you spend every day and on what. At the end of the month, you will have a clear picture where your money is going. This is one of the best ways to get your expenses under control and bring some semblance of order to your finances.Today, there are several expense manager applications in the market. Some are paid managers while others are free. Even banks like ICICI offer their customers expense tracker to help them out. Before you decide to

go in for a money manager, it is important to decide the type you want.

Personal Expense Tracker Application

IBM-Project-34741-1660275861

2.LITERATURE SURVEY

2.1 Existing problem

In a study conducted by Forrester in 2016 surveying small and medium businesses (SMBs) across the world, 56% companies reported expense management as being the biggest challenge for their finance departments.

In another survey conducted by Levvel Research in 2018 in North America, respondents reported the following pain points in expense management before adopting automation:

- Manual entry and routing of expense reports (62%)
- Lack of visibility into spend data (42%)
- Inability to enforce travel policies (29%)
- Lost expense reports (24%)
- Lengthy expense approval system and reimbursement cycles (23%)

Personal Expense Tracker Application

IBM-Project-34741-1660275861

2.2 References

1.Expense Tracker Aman Garg , Mukul Goel , Sagar Mittal , Mr. Shekhar Singh International Journal for Research in Applied Science & Engineering Technology (IJRASET) ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429 Volume 9 Issue IV Apr 2021

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. He can see the accurate duration for how long a particular product is being used by him. The monthly, and year-wise comparison of expenditures will be done by the app which will let the user know the area where he is spending the most. The user will be able to see the detailed analyses with the help of graphical visualizations. This project will provide a lot of benefits to the users with the help of which they will be surely able to keep track of each penny. It is time to stop using paper and excel sheets to keep track of your digital as well as cash payments. Using paper is not easy to manage. It is common to delete files accidentally or misplace files. This expense tracker provides a complete digital solution to this problem. Excel sheets do very little to help in tracking expenses. Furthermore, they don't have the advanced

functionality of preparing graphical visuals automatically. Not only it will save the time

Personal Expense Tracker Application

IBM-Project-34741-1660275861

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. The modules are developed efficiently and also in an attractive manner. The application will eliminate sticky notes, spreadsheets, and ledgers that cause confusion, data inconsistency problems while recording and splitting expenses. With our application users can manage their expenses more effectively and they will be better at managing the expenses.

2. EXPENSE TRACKER APPLICATION R.Velmurugan ,Mrs.P.Usha An International Open Access , Peer-reviewed, Refereed Journal Unique Paper ID: 150860 Publication Volume & Issue: Volume 7, Issue 10 ISSN:2349-6002 ESTD Year:2014

Expense tracker is an android based application. This application allows the user to maintain a computerized diary. Expense tracker application which will keep a track of Expenses of a user on a day-to-day basis. This application keeps a record of your expenses and also will give you a category wise distribution of your expenses. With the help of this application user can track their daily/weekly/monthly expenses. This application will also has a feature which will help you stay on budget because you know your expenses. Expense tracker application will generate report at the end of month to show Expense via a graphical representation. We also have added a special feature which will distributes your expenses in different categories suitable for the user. An expense history will also be provided in application.

Personal Expense Tracker Application

IBM-Project-34741-1660275861

3.Expense Manager Application A Velmurugan Albert Mayan J , Niranjana P and Richard Francis et al 2020 J. Phys.: Conf. Ser. 1712 012039 Associate Professor, School of Computing, Sathyabama Institute of Science and Technology, Chennai. U.G Student, Department of CSE, Sathyabama Institute of Science and Technology, Chennai

We have developed a mobile application that Keeps track of all of your daily transactions, keeps track of your money lent or borrowed ,suggests you with the most effective investment options, offers your discounts in popular categories , view exchange and to read latest authenticated financial news. This paper's main aim to eliminate the use of sticky notes, spreadsheets and handling of large chunks of data is successful, the new experience is hasslefree and very handy. Now, with our application user can manage his expenses more effectively. This application can also help digital marketing agencies in rolling out their advertising campaigns more effectively. As a part offurther research, we considered adding certain features to create more enhanced experience to the user .We are also going to link this profile with their mobile number, email account, social networks so that the application offers portability, other features to be added are discussed above below within the future enhancement section. The application delivered efficiently in calculating split expenses and recording the expenses together accurately with date and time.

4.Expense Tracker Author(s): Praphulla S. Kherade ; Raj S. Vilankar ; Parag M. Sawant ; Atiya Kazi Paper ID: 1702687 Published Date: 04-05-2021 Published In: Iconic Research And Engineering Journals Publisher: IRE Journals e-ISSN: 2456-8880 Volume/Issue: Volume 4 Issue 11 May-2021.

Personal Expense Tracker Application
IBM-Project-34741-1660275861

We are building an android application named as "Expense Tracker". As the name suggests, this project is an android app which is used to track the daily expenses of the user. It is like digital record keeping which keeps the records of expenses done by an user. The application keeps the track of the Income and Expenses both of user on a day-to-day basis. This application takes the income of an user and manage its daily expenses so that the user can save money. If you exceed daily expense allowed amount it will give you a warning, so that you don't spend much and that specific day. If you spend less money than the daily expense allowed amount, the money left after spending is added into user's savings. The application generates report of the expenses of each end of the month. The amount saved can be used for celebrating festivals, Birthdays or Anniversary.

2.3 Problem Statement Definition

Customer Problem Statement :

Personal expense tracker application helps the user to keep track of expenses in day- to- day basis and display a graphical representation at the end of week, month and year. So the user can set a financial goal for a future needs.

Personal Expense Tracker Application

IBM-Project-34741-1660275861

3.IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas

Personal Expense Tracker Application
IBM-Project-34741-1660275861

3.2 Ideation & Brainstorming

Step -1 : Team Gathering, Collaboration and Select the Problem Statement

Personal Expense Tracker Application

IBM-Project-34741-1660275861

Step-2 : Brainstorming, Idea Listening and Grouping

Personal Expense Tracker Application

IBM-Project-34741-1660275861

Step-3 Ideation Prioitization

Personal Expense Tracker Application

IBM-Project-34741-1660275861

3.3 Proposed Solution

S.No	Parameter	Description
1.	Problem Statement (Problem to be solved)	Personal expense tracker application helps the user to keep track of expenses in day-to-day basis and display a graphical representation at the end of every week, month and year. So the user can set a financial goal for their future needs.
2.	Idea / Solution description	To manage Personal expenses in a more efficient and manageable way. We decided to find an easier way to get rid of this problem. So, our application attempts to free the user with as much as possible the burden of manual calculation and to keep the track of the expenditure. Instead of keeping a diary or a log of the expenses, this application enables the user to not just keep the control on the expenses but also to generate and save reports. With the help of this application, the user can manage their expenses on a daily, weekly and monthly basis as well as can generate and save their reports.
3.	Novelty / Uniqueness	A new feature of suggestions given based on the user's interest. Budget calculator helps to manage expense effectively and the status is displayed in percentage. User can track their expense by mentioning day, month and year.
4.	Social Impact / Customer Satisfaction	The main reason to track expenses is to identify and eliminate wasteful spending habits in your financial life. Moreover, consistently tracking your expenses will helps to maintain control of finances, and promote better financial habits like saving and investing. An expense tracking app is an exclusive suite of services for people who seek to handle their earnings and plan their expenses and savings efficiently. It helps you track all transactions on a daily, weekly, and monthly basis.

Personal Expense Tracker Application

IBM-Project-34741-1660275861

5.	Business Model (Revenue Model)	Many expense tracker apps are free or low cost, so explore your options and decide if you need a paid app. These apps can help you gain control of your finances, pay down debt, and grow your net worth. Some even allow you to upload receipts, track mileage, and send invoices, which are all helpful if you run a business.
6.	Scalability of the Solution	Additional features can be added. Expenses can be customised in categories. Any country currency is supported.

Personal Expense Tracker Application

IBM-Project-34741-1660275861

3.4 Problem Solution fit

1. CUSTOMER SEGMENT(S) CS	6. CUSTOMER CONSTRAINTS CC	5. AVAILABLE SOLUTIONS AS
Man, who needs to manage finances effectively.	No control over spending, not reviewing financial plan regularly, lack of priorities, not saving enough.	When Expense is out of control, The Personal Expense tracker is the solution to control the Expenses according to their needs as this application track the expense & generate the monthly Expense report.
2. JOBS-TO-BE-DONE / PROBLEMS J&P	**9. PROBLEM ROOT CAUSE** RC	**7. BEHAVIOUR** BE
Expense Tracker system keep a track of Income Expenses on a day to day basis, this need to take income and divide in daily expense, If exceeds cut if from the income and if expense is less it need to add in the savings. This system needs to generate report at the end of every month to show income Expense curve.	Not living on a budget, Not knowing the priorities in spending, Lacking a financial purpose.	Customer should set their budget and spend accordingly. He can make use of management tips given by the system to save his money effectively.
3. TRIGGERS TR Customer finds that at the end of the month they don't have sufficient money to meet their needs which urges them to use Expense tracker. **4. EMOTIONS: BEFORE / AFTER** EM Before: Less financial security, a higher likelihood of going into dept, and more financial stress. After: More financial security, stress free financial control.	**10. YOUR SOLUTION** SL A Personal Expense tracker application, with which will be able to allocate money to different priorities and this will also help to cutdown on unnecessary spending and helps to budget money so that can use it wisely	**8.CHANNELS of BEHAVIOUR** CH Customer needs to input their monthly income and expense to manage their finance. Can view their generated report. Can view their Previous spending.

Left margin labels: Define CS, fit into CC · Focus on J&P, tap into BE, understand RC · Identify strong TR & EM

Right margin labels: Explore AS, differentiate · Focus on J&P, tap into BE, understand RC · Identify strong TR & EM

Personal Expense Tracker Application
IBM-Project-34741-1660275861

4.REQUIREMENTS ANALYSIS

4.1 Functional Requirements

Functional Requirements :

Following are the functional requirements of the proposed solution.

FR NO.	FUNCTIONAL REQUIREMENTS (EPIC)	SUB REQUIREMENT (STORY/SUB-TASK)
FR-1	User Registration	Registration through form. Registration through email.
FR-2	User Confirmation	Confirmation via email. Confirmation via OTP.
FR-3	Monthly budget	Tracking through graphical representation.
FR-4	Input data	Manual filling
FR-5	Notification	Send through email.

Personal Expense Tracker Application

IBM-Project-34741-1660275861

4.2 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	This application is really usable for the user for their budget tracking. It make the user much easier because the can track their expenditures in day, weekly, monthly wise. Expenditure and the savings are show in a graphical representation.
NFR-2	Security	The personal informations of the users are in a secure manner.
NFR-3	Reliability	The performance of the system would be really good. Probability of giving false information is very low. Because everything are set by a algorithm for the budget calculation.
NFR-4	Performance	The performance mostly depends on the user hand because if the user fill the data correctly the application shows the accurate information about the budget tracking.
NFR-5	Availability	The availability of the solution is effective and it should be helpful for the user.

Personal Expense Tracker Application

IBM-Project-34741-1660275861

NFR-6	Scalability	It is scalability which decrease the budget planning of the user.

5.PROJECT DESIGN

5.1 Data Flow Diagrams
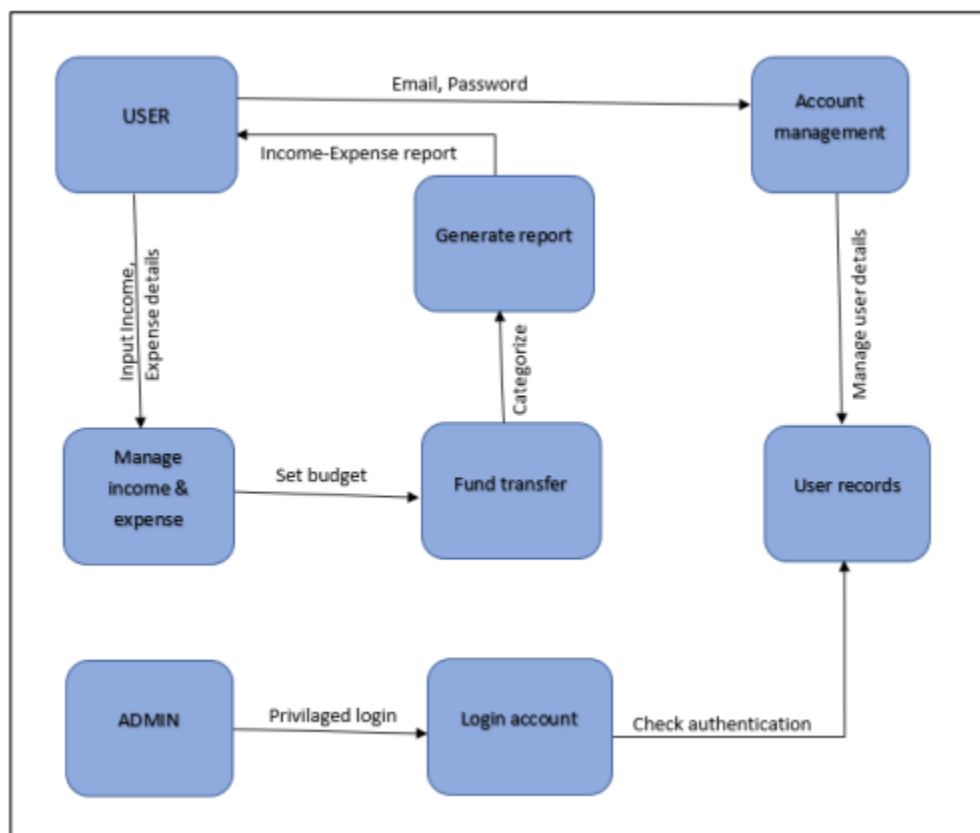
Personal Expense Tracker Application

IBM-Project-34741-1660275861

5.2 Solution & Technical Architecture

Technical Architecture:
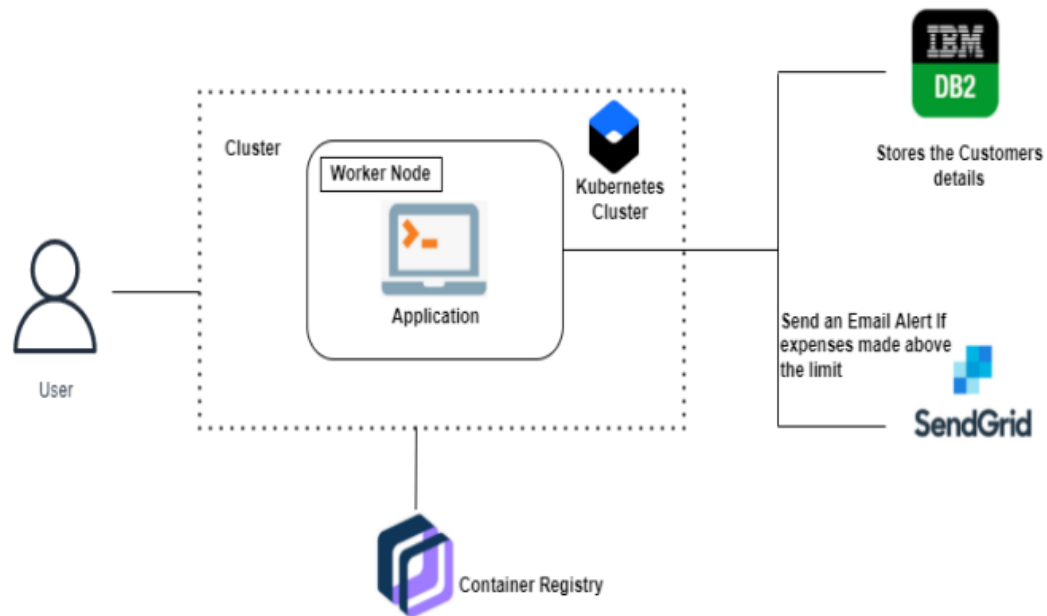
Personal Expense Tracker Application

IBM-Project-34741-1660275861

Solution Architecture
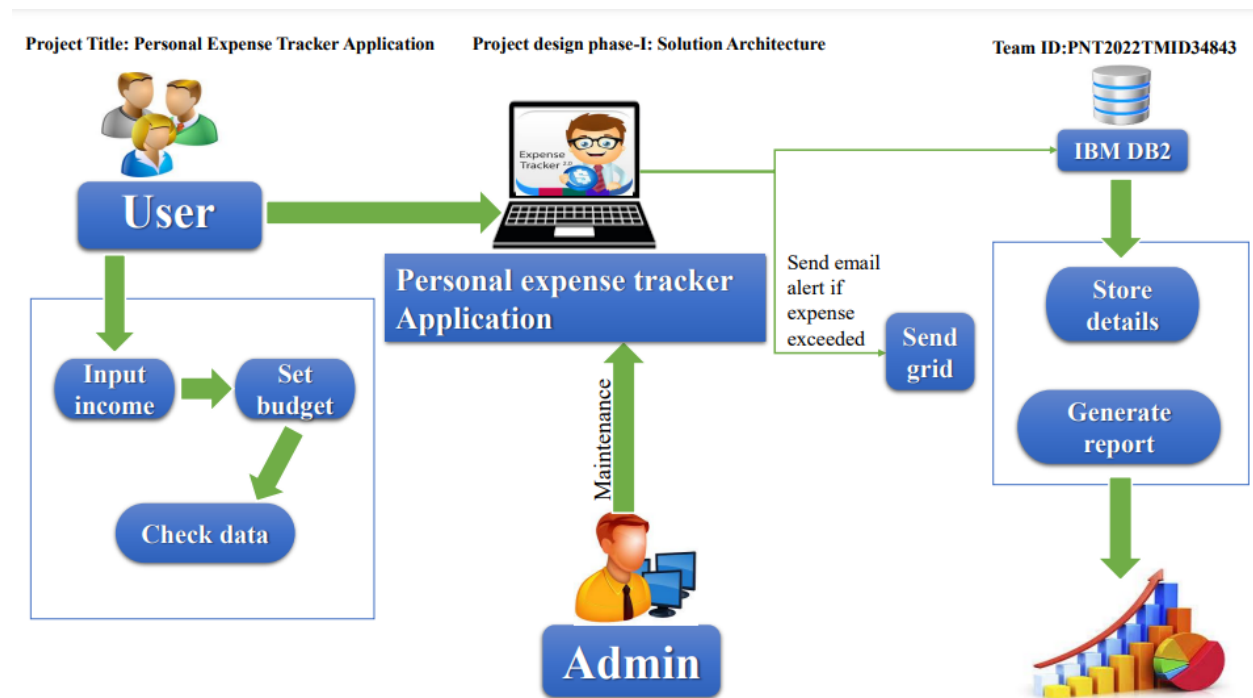
Personal Expense Tracker Application

IBM-Project-34741-1660275861

5.3 Users Stories

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.	I can access my account	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	High	Sprint-1
	Login	USN-3	As a user, I can log into the application by entering email & password.	I can access my account with Login	High	Sprint-2
		USN-4	As a user, I can give forgot password and verify through my email.	I can login even when password is unknown	Medium	Sprint-2
	Input	USN-5	As a user, I can give my Income and expense details regularly.	I can enter my income, expense.	High	Sprint-3
		USN-6	As a user, I can give my budget limit.	I can set budget	High	Sprint-3
		USN-7	As a user, I can enter my bills.	I can input bills.	Low	Sprint-5
	Dashboard	USN-8	As a user, once I logged in Graphical representation of my expenses is achieved.	I can view my updated dashboard	Medium	Sprint-4
		USN-9	As a user, I can track my expenses daily, monthly.	I can track my expenses.	High	Sprint-4
		USN-10	As a user, I can revisit my expenses on a specific day.	I can revisit my expenses	Low	Sprint-5
	Notifications	USN-11	As a user, I can receive alert messages on exceeding my budget.	I can be notified for exceeding budget.	High	Sprint-3
		USN-12	As a user, I can receive suggestion notifications on saving money.	I can be notified on saving tips.	Medium	Sprint-4
Customer Care Executive	Customer Care	USN-13	As an executive, I can solve the queries and issues regarding the application	I can give 24/7 support..	Low	Sprint-5
Administrator	Application	USN-14	As an administrator, I can upgrade or update the application.	I can fix the bugs and improve the application.	High	Sprint-5

Personal Expense Tracker Application

IBM-Project-34741-1660275861

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	Aishwarya T
		USN-2	As a user, I will receive confirmation email once I have registered for the application.	1	High	Ashika S J
Sprint-1	Login	USN-3	As a user, I can log into the application by entering email & password.	1	High	Jenisha L
Sprint-1	Dashboard	USN-4	Login takes to the dashboard of the user.	2	High	Aruna K R

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-2	Workspace	USN-1	As a user, I can track my personal expense in workspace.	2	High	Jenisha L
Sprint-2	Graphs	USN-2	As a user, I can view my monthly expenses in graphs.	1	Medium	Aishwarya T
Sprint-2	Connecting to IBM DB2	USN-3	As an admin, Linking database with dashboard.	2	High	Aruna K R
Sprint-2		USN-4	As an admin, Making dashboard interactive with JS.	2	High	Ashika S J
Sprint-3		USN-1	As an admin, wrapping up the server side works of frontend.	1	Medium	Aishwarya T
Sprint-3	Watson assistant	USN-2	Creating Chatbot for clarifying user's query.	1	Medium	Aruna K R
Sprint-3	SendGrid	USN-3	Sending alert mail to users about their expenses using SendGrid.	1	Low	Ashika S J
Sprint-3		USN-4	Integrating both frontend and backend.	2	High	Jenisha L
Sprint-4	Docker	USN-1	Creating image for website using docker.	2	High	Aruna K R
Sprint-4	Cloud Registry	USN-2	Uploading docker image to IBM Cloud registry.	2	High	Aishwarya T
Sprint-4	Kubernetes	USN-3	Creating container using the docker image and hosting the site.	2	High	Jenisha L
Sprint-4	Exposing	USN-4	Exposing IP/Ports for the site	2	High	Ashika S J

Personal Expense Tracker Application
IBM-Project-34741-1660275861

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	14 Oct 2022	20 Oct 2022	20	21 Oct 2022
Sprint-2	20	6 Days	22 Oct 2022	28 Oct 2022	20	29 Oct 2022
Sprint-3	20	6 Days	30 Oct 2022	05 Nov 2022	20	06 Nov 2022
Sprint-4	20	6 Days	7 Nov 2022	13 Nov 2022	20	14 Nov 2022

Velocity:

Imagine we have a 6-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)

$$AV = sprint\ duration\ /\ velocity = 20/6 = 3.3$$

Burndown Chart:

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.
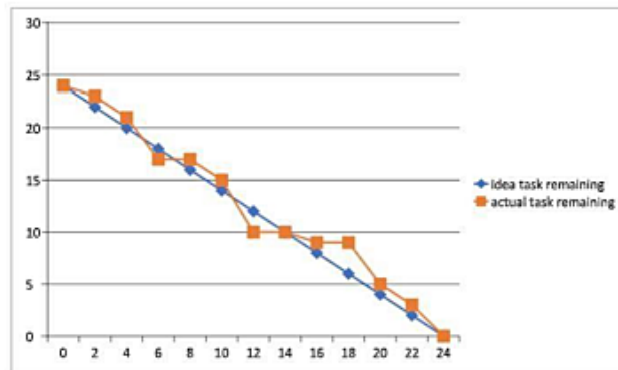
Personal Expense Tracker Application

IBM-Project-34741-1660275861

6.2 Sprint Delivery Schedule

Personal Expense Tracker Application

IBM-Project-34741-1660275861

6.3 Reports from JIRA
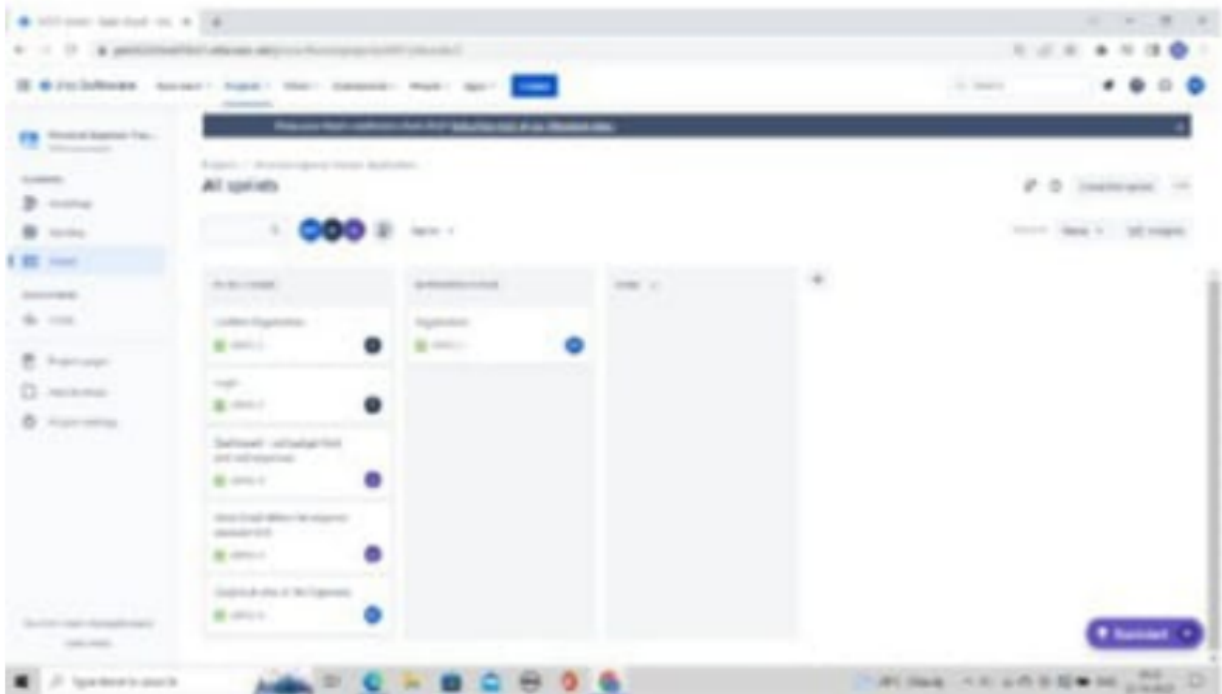
Personal Expense Tracker Application
IBM-Project-34741-1660275861

7.CODING & SOLUTIONING

7.1 Feature 1

We have added the data visualiza on methods for expenditure. The pie chart have been used to represent the monthly expenses. The pie chart is a pictorial representation of data that makes it possible to visualize the relationships between the parts and the whole of a variable. For example, it is possible to understand the industry count or percentage of a variable level from the division by areas or sectors. The recommended use for pie charts is twodimensional, as three-dimensional use can be confusing.

The dimensions form sectors of the measurement values; they can have one or two sizes and up to two measures. The first dimension is used to define the angle of each sector that makes up the chart and the second dimension optionally determines the radius of each sector. Additionally, these plots are useful for comparing data over a fixed period since they do not show changes over time. Therefore, their use should be considered if:

● You are looking to categorize and compare a set of data.

● You only have positive values.

● You have less than seven categories since a larger number can make it difficult to perceive each segment.

CODE :

todayExpenses.html & app.py

Personal Expense Tracker Application

IBM-Project-34741-1660275861

```
1{% extends 'base.html' %}
2{% block body %}
3<div class="container ">
4<div class="row">
5                        <div class="col-md-5">
6                        <h3 class="mt-5">Today Expense
   Breakdown</h3>
7                        <div class="card shadow mb-2 bg-
                        white rounded-pill">
8                        <div class="card-body ">
9                        <div class="row">
10                       <div class="col-md-
   6">TIME</div>
11                       <div class="col-md-6">
   AMOUNT  </div>
12                       </div>
```

Personal Expense Tracker Application

IBM-Project-34741-1660275861

```
13              </div>
14              </div>
15              {% for row in texpense %}
16              <div class="card shadow mb-2
                bg-white rounded-bottom">
17              <div class="card-body ">
18              <div class="row">
19              <div id ="ttime" class="col-md-
                6">{{row [0]}}</div>
20              <div id="tamount" class="col-
                md-6">  {{row[1] }}
</div>
21              </div>
22              </div>
23              </div>
```
```
{% endfor %}
```

```
25</div>
26</div>
```
```
<section>
```

```html
28                                            <div class="row">
29                                            <div class="col-md-6">
30                                            <h3 class="mt-5">Expense
    Breakdown BY Category</h3>
31                                            <div class="card shadow
                                              mb-
    2 bg-white rounded-bottom">
32                                            <div class="card-body ">
33                                            <div class="row">
34                                            <div class="col-md-
    6">Food</div>
35                                            <div id="tfood" class="col-
                                              md-6"> {{ t_food}}
                                              </div>
36                                            </div>
37                                            </div>
38                                            </div>
39                                            <div class="card shadow
                                              mb-
```

```html
40                    <div class="card-body">
41                        <div class="row">
42                            <div class="col-md-
   6">Entertainment</div>
43                            <div id="tentertainment"
                              class="col-md-6">
   {{ t_entertainment}}  </div>
44                            </div>
45                        </div>
46                    </div>
47                    <div class="card shadow mb-2
                      bg-white rounded">
48                        <div class="card-body">
49                        <div class="row">
50                            <div class="col-md-
   6">Business</div>
51                            <div id="tbusiness"
                              class="col-md-6">
                              {{t_business}}
```

Personal Expense Tracker Application

IBM-Project-34741-1660275861

```html
52              </div>
53              </div>
54              </div>
55              <div class="card shadow mb-2
                bg-white rounded">
56              <div class="card-body">
57              <div class="row">
58              <div class="col-md-
6">Rent</div>
59              <div id="trent" class="col-md-
6"> {{ t_rent }} </div>
60              </div>
61              </div>
62              </div>
63              <div class="card shadow mb-2
                bg-white rounded">
64              <div class="card-body">
65              <div class="row">
66              <div class="col-md-
```

```
     6">EMI</div>
67                          <div id="temi"  class="col-md-
                            6">{{ t_EMI }}  </div>
68                          </div>
69                          </div>
70                          </div>
71                          <div class="card shadow mb-2
                            bg-white rounded">
72                          <div class="card-body">
73                          <div class="row">
74                          <div class="col-md-
     6">Other</div>
75                          <div id="tother" class="col-md-
                            6"> {{ t_other}}</div>
76                          </div>
77                          </div>
78                          </div>
79                          <div class="card shadow mb-2
                            btn-outline-danger rounded-
                            pill">
```

Personal Expense Tracker Application

IBM-Project-34741-1660275861

```
80              <div class="card-body">
81              <div class="row">
82              <div class="col-
                md6">Total</div>
83              <div class="col-md-
   6">₹ {{total}}  </div>
84              </div>
85              </div>
86              </div>
87              </div>
88              <div class="col-md-6">
89              <canvas id="myChart"
                width="400"
                height="400"></canvas>
90              <script>
91              let food =
                document.getElementById('tfoo
                d').innerHT ML
```

Personal Expense Tracker Application

IBM-Project-34741-1660275861

```
    ).innerHTML
93                    let business =
                      document.getElementById('tbusi
                      ness').inn erHTML
94                    let rent =
                      document.getElementById('trent'
                      ).innerHT ML
95                    let emi =
                      document.getElementById('temi')
                      .innerHT ML
96                    let other =
                      document.getElementById('tothe
                      r').innerH TML
97                    var ctx =
                      document.getElementById('myCh
                      art').getCo ntext('2d');
98                    var myChart = new Chart(ctx, {
99                    type: 'doughnut',
100                   data: {
```

Personal Expense Tracker Application

IBM-Project-34741-1660275861

```
101                              labels: ['Food',
         'Entertainment', 'Business', 'Rent',
   'EMI', 'Other'],
102                              datasets: [{
103                              label:
   'Expenses Chart',
104                              data: [food,
                                 entertainment,
                                 business, rent, emi,
                                 other],
105                              backgroundColor: [
106                              'rgb(255, 99, 132)',
107                              'rgb(0, 0, 0)',
108                              'rgb(255, 205, 86)',
109                              'rgb(201, 203,
   207)',
```

Personal Expense Tracker Application
IBM-Project-34741-1660275861

```
110                              'rgb(54,
   162, 235)',
111                              'rgb(215, 159,
                                 64)'
112                              ],
113                              }]
114                              },
115                              options: {
116                              responsive: true,
117                              plugins: {
118                              legend: {
119                              position:
                                 'bottom',
120                              },
121                              title: {
122                              display: true,
123                              text: 'EXPENSE
                                 BREAKDOWN'
124                              }
125                              }
```

```
110                              'rgb(54,
  162, 235)',
111                              'rgb(215, 159,
                                 64)'
112                              ],
113                              }]
114                              },
115                              options: {
116                              responsive: true,
117                              plugins: {
118                              legend: {
119                              position:
                                 'bottom',
120                              },
121                              title: {
122                              display: true,
123                              text: 'EXPENSE
                                 BREAKDOWN'
124                              }
125                              }
```

Personal Expense Tracker Application

IBM-Project-34741-1660275861

Personal Expense Tracker Application

IBM-Project-34741-1660275861

```
127                    });
128                    </script>
129                    </div>
130              </div>
131        </div>
132    </section>
133    </div>
134    {% endblock %}
```

```python
1   @app.route("/today")
2   def today():
3
4           param1 = "SELECT TIME(date) as tn, amount FROM expenses
       WHERE userid = " + str(session['id']) + " AND DATE(date) =
       DATE(current timestamp) ORDER BY date DESC"
5           res1 = ibm_db.exec_immediate(ibm_db_conn, param1)
6           dictionary1 = ibm_db.fetch_assoc(res1)
7           texpense = []
8
9               while dictionary1 != False:
10              temp = []
11              temp.append(dictionary1["TN"])
```

Personal Expense Tracker Application

IBM-Project-34741-1660275861

```
12      temp.append(dictionary1["AMOUNT"])
13      texpense.append(temp)
14      print(temp)
15      dictionary1 = ibm_db.fetch_assoc(res1) 16
17              param = "SELECT * FROM expenses WHERE userid = " + str(session['id']) + " AND
                DATE(date) = DATE(current timestamp) ORDER BY date DESC"
18              res = ibm_db.exec_immediate(ibm_db_conn, param)
19              dictionary = ibm_db.fetch_assoc(res)
20              expense = []
21              while dictionary != False:
22              temp = []
23              temp.append(dictionary["ID"])
24              temp.append(dictionary["USERID"])
25              temp.append(dictionary["DATE"])
26              temp.append(dictionary["EXPENSENAME"])
27              temp.append(dictionary["AMOUNT"])
28              temp.append(dictionary["PAYMODE"])
29              temp.append(dictionary["CATEGORY"])
30              expense.append(temp)
31              print(temp)
32              dictionary = ibm_db.fetch_assoc(res) 33
34          total=0
35          t_food=0
36          t_entertainment=0
37          t_business=0
38          t_rent=0
39          t_EMI=0
40          t_other=0
41
```

Personal Expense Tracker Application

IBM-Project-34741-1660275861

```
42        for x in expense:
43            total += x[4]
44            if x[6] == "food":
45                t_food += x[4]
46            elif x[6] == "entertainment":
47                t_entertainment  += x[4]
48            elif x[6] == "business":
49                t_business  += x[4]
50            elif x[6] == "rent":
51                t_rent  += x[4]
52            elif x[6] == "EMI":
53                t_EMI  += x[4]
54            elif x[6] == "other":
55                t_other  += x[4]
56        print(total)
57        print(t_food)
58        print(t_entertainment)
59        print(t_business)
60        print(t_rent)
61        print(t_EMI)
62        print(t_other)
63
64
65        return render_template("today.html", texpense = texpense,
    expense = expense,  total = total ,
66                               t_food = t_food,t_entertainment =
    t_entertainment,
67                               t_business = t_business,  t_rent =
    t_rent,
68                               t_EMI =  t_EMI,  t_other =  t_other )
```

7.2 Feature 2

Email no fica ons will be sent to the users once they cross the expenditure limit through

Personal Expense Tracker Application

IBM-Project-34741-1660275861

send grid mail system. Most notifications are transactional, meaning a recipient's action or account activity triggers them. But some notifications are marketing related, encouraging the recipient to take a specific action. Ecommerce product notifications inform recipients about new products or discounts. Plus, unlike general marketing emails, these are highly personalized and focus on a single product. For example, if a customer views an item on your website and that item goes on sale, you can send the customer a notification to let them know this is the best time to buy. Users can also opt into receiving notifications when an out-of-stock item is back in stock.

Notification emails tend to perform well because the content is highly relevant to the recipient. But the only way for the recipient to know this is if you state the content clearly in the subject line.

For example, the subject line "New Sign-in to Your Account" gets straight to the point, letting the user know why you sent this notification.

Personal Expense Tracker Application

IBM-Project-34741-1660275861

sendemail.py

```python
def sendgridmail(user,TEXT):
    from_email = Email("tproduct8080@gmail.com")
    to_email = To(user)
    subject = "Crossed the Expenditure Limit"
    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)
```

7.3 Data Schema

Table : 1)

REGISTER
    id INT NOT NULL GENERATEWD ALWAYS AS IDENDITY, username VARCHAR(255)

Personal Expense Tracker Application
IBM-Project-34741-1660275861

NOT NULL, password VARCHAR(255) NOT NULL

EXPENSES

id INT NOT NULL GENERATEWD ALWAYS AS IDENDITY, userid INT NOT NULL,date TIMESTAMP NOT NULL, expensename VARCHAR(255) NOT NULL, amount INT NOT NULL,paymode VARCHAR(255) NOT NULL< category VARCHAR(255) NOT NULL

LIMITS

id INT NOT NULL GENERATED ALWAYS AS IDENDITY, userid VARCHAR(255) NOT NULL, limits VARCHAR(255) NOT NULL

8.TESTING

8.1 Test Cases

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	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	None	1. Go to website 2. Home page appears	Username: JA3 Password: 123456	Login/Signup popup should display	Working as expected	Pass	-			Ashika SJ
LoginPage_TC_OO2	UI	Home Page	Verify the UI elements in Login/Signup popup	Home	1.Go to website 2.Enter details and click login	Username: JA3 Password: 123456	Application should show below UI elements: a. email text box b. Password text box c. Login button with blue colour d. New customer? Create account link e. Last password? Recovery password link	Working as expected	Pass	-			Aishwarya T
LoginPage_TC_OO3	Functional	Home page	Verify user is able to log into application with Valid credentials	Username & password	1.Go to website 2.Enter details and click login	Username: JA3 Password: 123456	User should navigate to user account homepage	Working as expected	Pass	-			Aruna KR
LoginPage_TC_OO4	Functional	Login page	Verify user is able to log into application with Invalid credentials	Username & password	1.Go to website 2.Enter details and click login	Username: JA3 Password: 123456	Application should show 'Incorrect email or password ' validation message.	Working as expected	Pass	-			Jenisha L
LoginPage_TC_OO4	Functional	Login page	Verify user is able to log into application with Invalid credentials	Login first	1.Go to website 2.Enter details and click login	Username: JA3 Password: 123456	Application should show 'Incorrect email or password ' validation message.	Working as expected	Pass	-			Ashika SJ
LoginPage_TC_OO5	Functional	Login page	Verify user is able to log into application with Invalid credentials	Login first	1.Go to website 2.Enter details and click login	Username: JA3 Password: 123456	Application should show 'Incorrect email or password ' validation message.	Working as expected	Pass	-			Aruna KR
AddExpensePage_TC_OO5	Functional	Add Expense page	Verify whether user is able to add expense or not	Have some expense to add	1. Add date, expense name and other details. 2.Check if the expense gets added	add rent = 5000	Application adds expenses	Working as expected	Pass	-			Aishwarya T

Personal Expense Tracker Application
IBM-Project-34741-1660275861

8.2 User Acceptance Testing

1. Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the Personal Expense Tracker project 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 each severity level, and how they were resolved.

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	10	4	2	8	15
Duplicate	1	0	3	0	4
External	2	3	0	1	6
Fixed	9	2	4	11	20
Not Reproduced	0	0	1	0	1
Skipped	0	0	1	1	2
Won't Fix	0	5	0	1	8
Totals	22	14	11	22	51

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
Interface	7	0	0	7
Login	43	0	0	43
Logout	2	0	0	2
Limit	3	0	0	3
Signup	8	0	0	8
Final Report Output	4	0	0	4

9.RESULT

9.1 Performance Metrics

Personal Expense Tracker Application
IBM-Project-34741-1660275861

- Tracking income and expenses: Monitoring the income and tracking all expenditures (through bank accounts, mobile wallets, and credit & debit cards).

- Transaction Receipts: Capture and organize your payment receipts to keep track of your expenditure.

- Organizing Taxes: Import your documents to the expense tracking app, and it will streamline your income and expenses under the appropriate tax categories.

- Payments & Invoices: Accept and pay from credit cards, debit cards, net banking, mobile wallets, and bank transfers, and track the status of your invoices and bills in the mobile app itself. Also, the tracking app sends reminders for payments and automatically matches the payments with invoices.

- Reports: The expense tracking app generates and sends reports to give a detailed insight about profits, losses, budgets, income, balance sheets, etc.,

- E-commerce integration: Integrate your expense tracking app with your eCommerce store and track your sales through payments received via multiple payment methods.

Vendors and Contractors: Manage and track all the payments to the vendors and contractors added to the mobile app.

- Access control: Increase your team productivity by providing access control to particular users through custom permissions.

- Track Projects: Determine project profitability by tracking labor costs, payroll, expenses, etc., of your ongoing project.

- Inventory tracking: An expense tracking app can do it all. Right from tracking products or the cost of goods, sending alert notifications when the product is running out of stock or the product is not selling, to purchase orders.

- In-depth insights and analytics: Provides in-built tools to generate reports with easy-to-understand visuals and graphics to gain insights about the performance of your business.

- Recurrent Expenses: Rely on your budgeting app to track, streamline, and automate all the recurrent expenses and remind you on a timely basis.

10. ADVANTAGES & DISADVANTAGES

1. Achieve your business goals with a tailored mobile app that perfectly fits your business.

2. Scale-up at the pace your business is growing

3. Deliver an outstanding customer experience through additional control over the

app.

4. Control the security of your business and customer data.

5. Open direct marketing channels with no extra costs with methods such as push notifications.

6. Boost the productivity of all the processes within the organization.

7. Increase efficiency and customer satisfaction with an app aligned to their needs.

8. Seamlessly integrate with existing infrastructure.

9. Ability to provide valuable insights.

10. Optimize sales processes to generate more revenue through enhanced data collection.

11.CONCLUSION

Personal Expense Tracker Application
IBM-Project-34741-1660275861

From this project, we are able to manage and keep tracking the dailyexpenses as well as income. While making this project, we gained a lot ofexperience of working as a team. We discovered various predicted andunpredicted problems and we enjoyed a lot solving them as a team. We adopted things like video tutorials, text tutorials, internet and learningmaterials to make our project complete.

12. FUTURE

The project assists well to record the income and expenses in general.
However, this project has some limita ons:

- The application is unable to maintain the backup of data once it isuninstalled.

- This application does not provide higher decision capability.

To further enhance the capability of this application, we recommend   thefollowing features to be incorporated into the system:

- Multiple language interface.

- Provide backup and recovery of data.

- Provide better user interface for user.

- Mobile apps advantage.

Personal Expense Tracker Application
IBM-Project-34741-1660275861

13.APPENDIX

Source Code Github Link :

https://github.com/IBM-EPBL/IBM-Project-34741-1660275861

Project Demo Link :

https://drive.google.com/file/d/1OhD3pEgiqUsX_IvxX8B0NbYbvafWgecm/view?usp=drivesdk