PERSONAL EXPENSE TRACKER APPLICATION

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CHAPTER 1
INTRODUCTION

A personal expense tracker is a great way to keep track of your spending and make sure you're not overspending. This application can help you manage your finances better and ensure that you're not wasting money. This is a useful application for all people who want to keep track of their expenses and save money by spending less. Expenses can be anything from shopping to dining out, paying off debts, and more. Everyone has different expenses that impact their finances, and it's important to keep track of them all so that you can manage your money effectively and avoid spending too much. There are many different tools and apps that can help with keeping track of your expenses, but most of them are too complicated and difficult to use. It's important to have a simple and easy-to-use tool that can help you keep track of all your expenses and help you save more money.

When it comes to tracking expenses, you can make your system as simple as collecting receipts and organizing them once a month. You might get a little more information from other expense tracking systems (listing them in a spreadsheet, using money management software, or even choosing an online application), but all methods have one thing in common: you have to get in the habit of thinking about your expenses. It's very easy to misplace a receipt or lose track of any money you've spent. You may even think that a cup of coffee or a trip to the vending machine isn't worth tracking, although those little expenses can add up amazingly fast.

There are all sorts of opportunities to throw a kick into your plan to track expenses. You have to get in the habit of doing so to reduce those lapses and make sure that the data you're basing financial decisions on is solid.

1.1 Project Overview

In a nutshell, personal finance encompasses all financial decisions and activities that a finance app facilitates by assisting you in managing 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, their wallet balance will be updated and made visible to the user. Also, users can get a graphical analysis of their expenditures.

1.2 Purpose

An expense tracker is software or an 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 a low salary, invariably it is due to poor money management skills.

People tend to overspend without realizing it, and this can prove 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 of 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.

CHAPTER 2
LITERATURE SURVEY

Denis E. Yurochkin is devoted to the description of creating a mobile application that helps to keep track of your expenses and control your budget. It works as follows: a receipt is scanned by a phone camera, pre-processing the image. Then the text on the image is recognized, the needed data is selected, and the database is saved. The application records statistics on expenses paid with checks.

In this study, the main tasks were implementing a correctly working text recognition algorithm, determining the required data, and their distribution. Despite the complexity of the tasks, they have been successfully resolved. Further, the preservation and further storage of this data were implemented.

Ting-Sheng Weng proposed the design of a personal financial planning management information system. This study uses Visual Basic for programming and adopts the Open Database method of saving data in an Access database in order to develop a personal financial planning management system. This system provides financial planning functions, including accounting, budgeting, financial planning, and monitoring.

The system design includes user accounts, password settings, a security management system, journal-type account management, displayable account subjects, options for additional budgeting lists, modification and deletion options, and revenues and expenditures of annual accounting. The system is suitable for personal financial planning.

Suhailah Mohd Yusof proposed using their mobile as a device as it can be used anytime and anywhere. This generates the idea of developing a mobile financial planner application due to the fact that most individuals have poor money management skills.

Financial planning helps individuals balance their income and expenses by prioritizing their needs and desires. This paper provides a decision mechanism solution using the forward chaining technique that can further improve an individual's money management and decision-making skills.

SUMMARY OF LITERATURE REVIEW

mobile application that keeps track of the user's personal expenses as well as his or her own contribution to group expenses, monthly. As of now, the data is stored in the mobile application itself, and it doesn't provide email insights for the users.

2.1 EXISTING PROBLEM

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.

2.2 REFERENCE

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2.3 PROBLEM STATEMENT DEFINITION

Many businesses use their own system to keep track of their income and expenses because they believe this to be the most important factor in how well their operations are going. It is a good habit to keep track of daily expenses and income, but because people are unaware of the proper applications to protect their privacy and lack the capacity to make decisions, they are still using the old-fashioned note-taking techniques to do so. There is a constant overload to rely on the daily entry of the expenditure and total estimation up until the end of the month because there isn't a complete tracking system.

Kevin, who is interested in stock investing, finds it challenging to estimate the cost of stock investing. He can easily and effectively plan out his expenses for investing with the aid of expense tracking.

Raj, a novice budgeter, finds it difficult to keep track of and manage his expenses in the midst of his hectic schedule. Setting priorities for his expenses will enable him to reduce irrational spending.
High school student, Ariyan typically receives a meager allowance from his parents. So he can spend on both his regular expenses and himself by keeping track of his spending and using good budgeting techniques.

Janet, a shopaholic, struggles to restrain her urge to purchase things. She needs to keep track of her spending and hold herself responsible if she wants to avoid overindulging in impulsive purchases.

CHAPTER 3
IDEATION & PROPOSED SOLUTION

3.1 Empathy Map

An empathy map is a short, easy-to-understand visual that gathers information about a user's actions and attitudes. It is a valuable tool for assisting teams in a greater understanding of their users. Understanding the major issue and the person experiencing it is essential for developing an effective solution. The map-making exercise makes participants analyze things from the user's point of view, as well as his or her goals and obstacles.

PERSONAL EXPENSE TRACKER APPLICATION
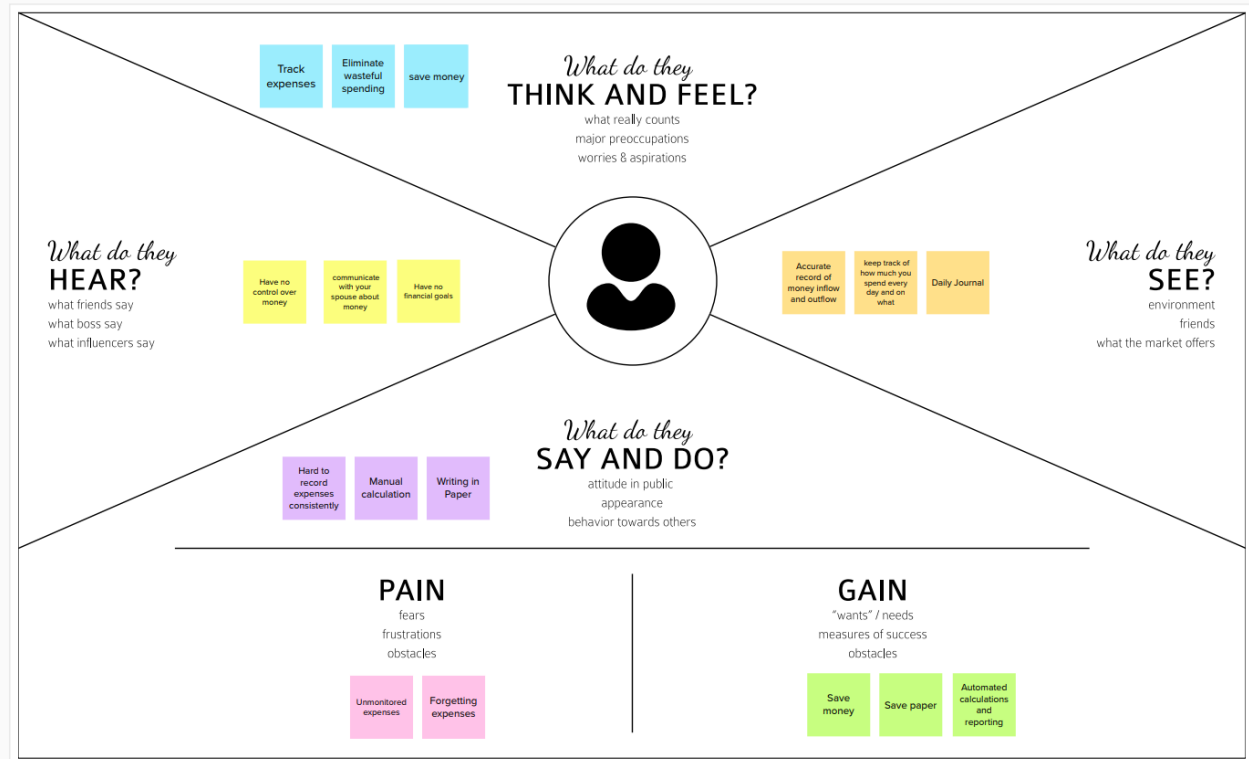
3.2 Ideation & Brainstorming

Ideation refers to the whole creative process of coming up with and communicating new ideas. It can take many different forms, from coming up with a peculiar idea to combining multiple existing idea to create a new process or organizational system. Ideation is similar to a practice known as brainstorming.

3.3 Proposed Solution

The proposed web application is where the user will get email insights, and we have used IBM DB2 Cloud as a platform to store data.

Tools used: IBM Cloud, HTML, Javascript, IBM Cloud Object Storage, Python-Django, Kubernetes, Docker, IBM DB2, and IBM Container Registry.

S.No	Parameter Description	Description
1.	Problem Statement (Problem to be solved)	The problem is that people find it difficult to maintain track of their monthly expenses and to avoid obsessive spending.
2.	Idea/Solution	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	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 exceeded, the user is also notified.

3.4 Proposed Solution Fit

Problem-Solution fit canvas 2.0 | PERSONAL EXPENSE TRACKER APPLICATION - TEAM ID: PNT2022TMID04493

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

Define CS, fit into CC | *Explore AS, differentiate*

2. JOBS-TO-BE-DONE / PROBLEMS — J&P
Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.

- 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.

Focus on J&P, tap into BE, understand RC | *Focus on J&P, tap into BE, understand RC*

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 channels from #7

Virtual budget trackers have numerous advertising that, when clicked, capture information including account numbers if 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.

Identify strong TR & EM | *Extract online & offline CH of BE*

CHAPTER 4

REQUIREMENT ANALYSIS

4.1 Functional requirement

These are the requirements that the end user specifically demands as basic facilities that the system should offer. All these functionalities need to be necessarily incorporated into the system as a part of the contract. These are represented or stated in the form of input to be given to the system, the operation performed, and the output expected. They are basically the requirements stated by the user, which one can see directly in the final product, unlike the non-functional requirements.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration Form for collecting details.
FR-2	User Login	Enter your username and password.
FR-3	Forget Password	Resetting the password requires sending an OTP to the user's email.
FR-4	Calendar	Personal expense tracker applications must allow users to add the data to their expenses.
FR-6	Dashboard	Users can add them and then evaluate them using the provided options.
FR-5	Expense Tracker	This application must graphically represent the expense, like a report.
FR-6	Report generation	Reports must be generated in a graphical format.
FR-7	Category	This application shall allow users to add categories of their expenses.
FR-8	Result Page	Show the user's result.

4.2 Non-Functional requirements

These are basically the quality constraints that the system must satisfy according to the project contract. The priority or extent to which these factors are implemented varies from one project to another. They are also called non-behavioral requirements. They basically deal with issues like:

- Portability
- Security
- Maintainability
- Reliability
- Scalability
- Performance
- Reusability
- Flexibility

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Most web browsers allow users to access the application. The application's attractive and detailed user interface makes it easier to use. It makes it easier for you to monitor your earnings and expenses.
NFR-2	**Security**	Customers are required to set up an account for themselves using their email, which is secured by a longer password of six characters. This application might prevent you from engaging in online crimes.
NFR-3	**Reliability**	Each data record is kept in an effective database schema that is well built. No chance of data loss exists.
NFR-4	**Performance**	Expense types include categories and an option. The system's throughput is increased thanks to the lightweight database support.
NFR-5	**Availability**	Since it is hosted on IBM's cloud, the application is accessible round-the-clock. The program must operate continuously.

NFR-6	**Scalability**	Being able to handle increasing demands in an appropriate manner.

CHAPTER 5
PROJECT DESIGN

5.1 Data Flow Diagrams

A new user needs to register with the credentials, and a verification email is sent to the user after successful verification. The page is redirected to the login page. If the user forgot the password it is reset by using forgot password option then he redirected to login page.After successful login the user can able to view the dashboard .In dashboard he can able

- **Add Expense**
- **Add Category**
- **Add Income**
- **Income Summary**
- **View Charts**
- **View Transaction made by the user**
- **Download Data**
- **available balance, etc.,**
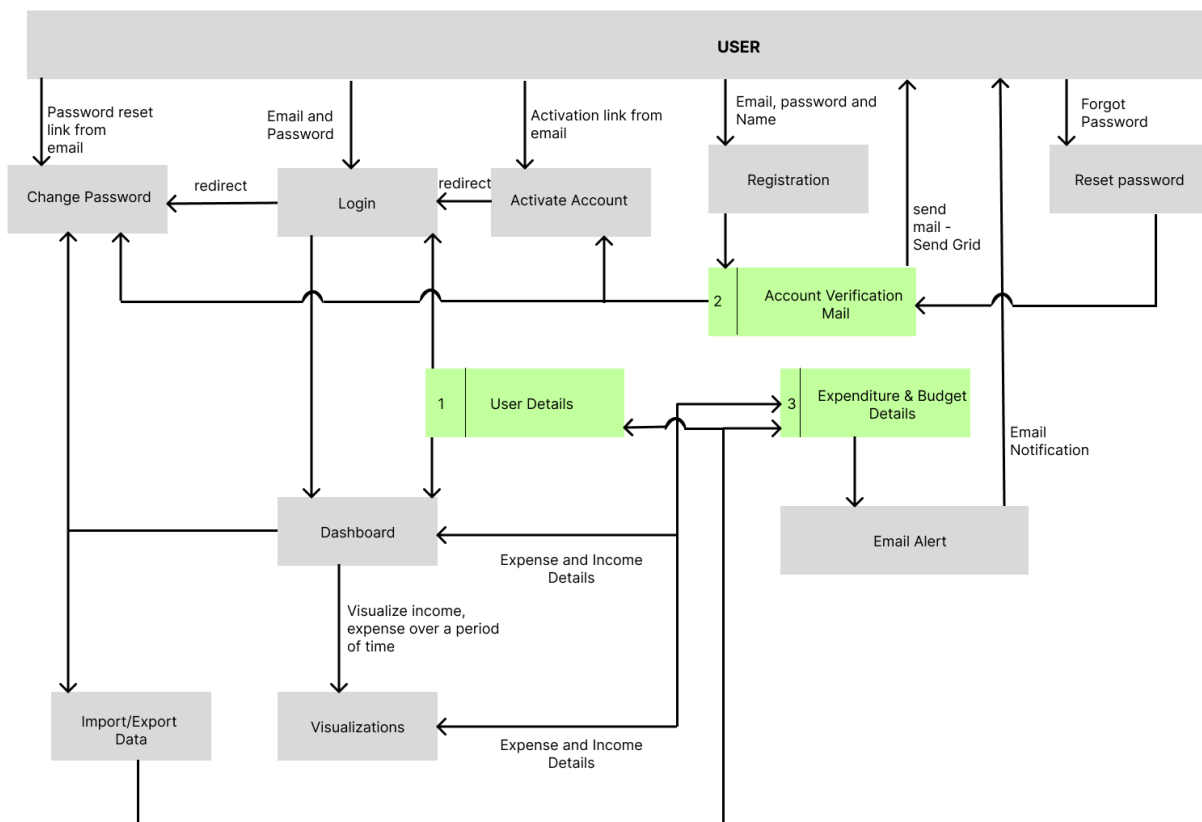
5.2 Solution & Technical Architecture

Components & Technologies

S. No	Component	Description	Technology
1.	User Interface	The user interacts with the application through the Web app.	HTML, CSS, JavaScript.
2.	Application Logic-1	The application contains the signup/signin or register page, where the user will login into the main dashboard.	HTML, CSS, JavaScript, Python
3.	Application Logic-2	Dashboard contains the fields like "Add income," "Add expenses," "Visualize income and expenses over a period of time," and "Export and Import data."	Django
4.	Application Logic-3	The user will get the expense report in graph format.	IBM Watson Assistant, SendGrid
5.	Database	The income and expense data are stored in the MySQL database.	IBM DB2
6.	Cloud Database	With the use of the database service on the cloud, the user's data is stored in a well manner.	IBM DB2, IBM Cloudant etc.
7.	File Storage	IBM Block Storage is used to store the financial data of the user.	IBM Block Storage or Other Storage Service or Local Filesystem

Application Characteristics

S. No	Characteristics	Description	Technology
1.	Open-Source Frameworks	The Django Framework in Python is used to implement this application.	Python-Django
2.	Security Implementations	This application provides high security to the user's financial data by using the built-in Django authentication system.	Python-Django
3.	Scalable Architecture	Expense Tracker is a lifetime-access application. It must be scalable as the number of users and user data grows.	Container Registry, Kubernetes Cluster
4.	Availability	This application can be accessed by any number of users, and it is available at any time.	Container Registry, Kubernetes Cluster
5.	Performance	The performance of the application is high because there will be no network traffic.	Kubernetes Cluster

5.3 User Story

A user story is the smallest unit of work in an agile framework. It's an end goal, not a feature ; they can also be internal customers or colleagues within your organization who depend on your team.
User stories are a few sentences in simple language that outline the desired outcome. They don't go into detail. Requirements are added later, once agreed upon by the team.
Stories fit neatly into agile frameworks like Scrum and Kanban.

In scrum, user stories are added to sprints and "burned down" over the duration of the sprint. Kanban teams pull user stories into their backlog and run them through their workflow. It's this work on user stories that helps scrum teams get better at estimation and sprint planning, leading to more accurate forecasting and greater agility. Thanks to stories, kanban teams learn how to manage work-in-progress (WIP) and can further refine their workflows.

User stories are also the building blocks of larger agile frameworks like epics and initiatives. Epics are large work items broken down into a set of stories, and multiple epics comprise an initiative. These larger structures ensure that the day-to-day work of the development team (in stores) contributes to the organizational goals built into epics and initiatives.

User Stories

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

User Type	Functional requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer	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	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 am 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	Dashboard	USN-7	As a user, I can download the expense and income data as CSV and Excel and complete spreadsheet (All data as CSV and Excel)	I can download the income and expense data	Low	Sprint-4
Customer	Dashboard	USN-8	As a user, I can add the expense category and view expense category list and income source and income source list	I can view both income and expense summary in a graphical format	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

CHAPTER 6
PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

In Scrum projects, estimation is done by the entire team during the Sprint Planning Meeting. The objective of the estimation would be to consider the user stories for the sprint by priority and the Ability of the team to deliver during the time Box of the Sprint.

Product product owner ensures that the prioritized user Stories are clear, can be subjected to estimation, and they are brought to the beginning of the Product Backlog.

As the Scrum Team in total is responsible for the delivery of the product increment, care would be taken to select the User Stories for the Sprint based on the size of the Product Increment and the effort required for the same.

The size of the Product Increment is estimated in terms of User Story Points. Once the size is determined, the effort is estimated by means of the past data, i.e., effort per User Story Point called Productivity.

Sprint Planning

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, name and confirming my password.	2	High	Vishnu M K
Sprint-1	Account Activation	USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Vishnu M K
Sprint-1	Login	USN-3	As a user, I can log into the application by entering email & password	2	High	Vedhapriyaa S
Sprint- 2	Dashboard	USN-4	As a user, I can add expenses and income	2	High	Srivarshan T
Sprint- 4	Dashboard	USN-5	As a user, I can change my password through reset link from email	1	Low	Srivarshan T
Sprint- 2	Dashboard	USN-6	As a user, I can view my past expenses and income over a period of time and visualize them	2	High	Vishnu M K
Sprint- 4	Notification	USN-7	As a user, when my monthly limit exceeds, I get a email notification	1	Low	Srivarshan T
Sprint- 4	Dashboard	USN-8	As a user, I can set a monthly expense limit	1	Low	Vishnu Kiran M
Sprint- 3	Forget password	USN-9	As a user, I can get a reset password link if I forget it through mail	2	High	Vishnu Kiran M
Sprint- 3	Forget password	USN-10	As a user, I can change my password if I forget it	2	High	Vedhapriyaa S

Using JIRA Software

6.2 Sprint Delivery Schedule

Sprint is a set period where an agile team works to complete a specific set of development tasks. In most cases, there are multiple sprints within a larger development project. Sprints ultimately provide a framework for taking large, complex software projects and breaking them down into digestible phases.

When a sprint ends, the team shows their work to the project owner, who reviews it. If the project meets expectations, the team moves on to the next sprint.

Since sprints take place over a fixed period of time, it's critical to avoid wasting time during planning and development. And this is precisely where sprint scheduling enters the equation. In case you're unfamiliar, a sprint schedule is a document that outlines sprint planning from end to end. It's one of the first steps in the agile sprint planning process—and something that requires adequate research, planning, and communication.

Sprint Schedule

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 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

a.Velocity Report

Velocity is the average amount of work a scrum team completes during a sprint. In team-managed Jira Software projects, this can be measured in either story points or the number of issues. Teams can use velocity to predict how quickly they can work through the backlog because the report tracks the forecasted and completed work over several sprints. The more sprints, the more accurate the forecast.
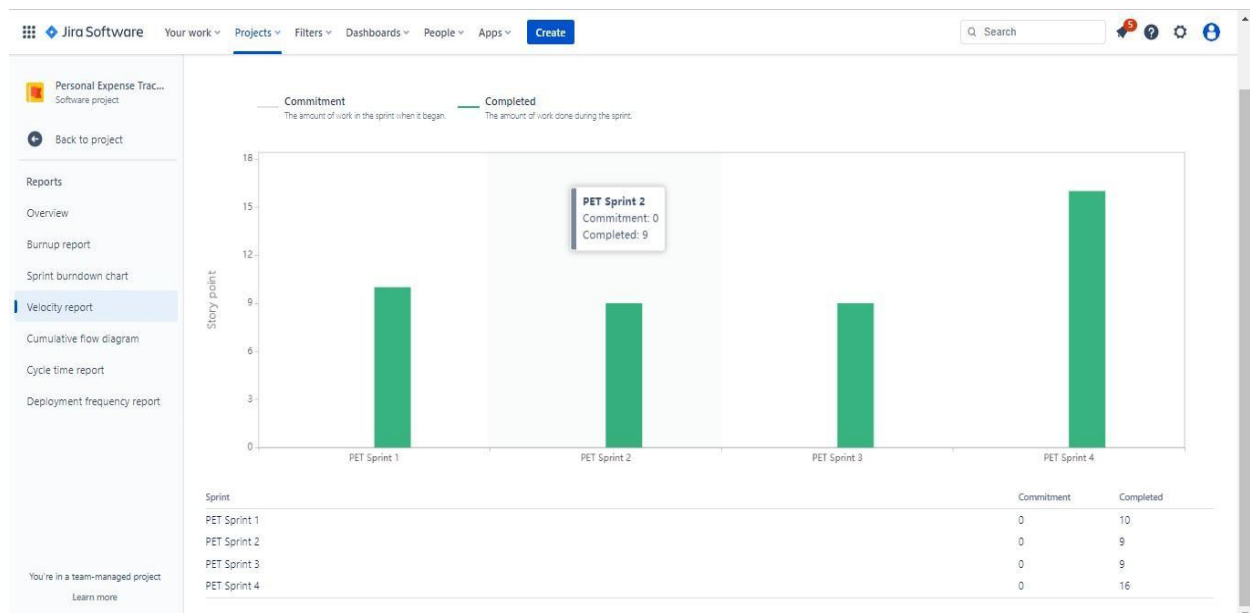
The above report describes

- The vertical axis displays the statistic used for estimating stories. The horizontal axis displays the last 7 sprints completed by the team; this data is used to calculate velocity.

- The **Commitment** (blue) bar for each sprint shows the total estimate of all issues in the sprint when it begins. After the sprint has started, any stories added to the sprint, or any changes made to estimates, will not be included in this total.

- The **Completed** (green) bar in each sprint shows the total completed estimates when the sprint ends. Any scope changes made after the sprint started are included in this total.

b.Sprint burndown Chart

A sprint burndown chart shows the amount of work that has been completed in a sprint and the total work remaining. Sprint burndown charts are used to predict your team's likelihood of completing their work in the time available. By tracking the remaining work throughout the sprint, a team can manage its progress , and respond to trends accordingly. For example, if the burndown chart shows that the team may not reach the sprint goal, then the team can take the necessary actions to stay on track.

Sprint-1/Story points

Date - October 24th, 2022 - October 29th, 2022
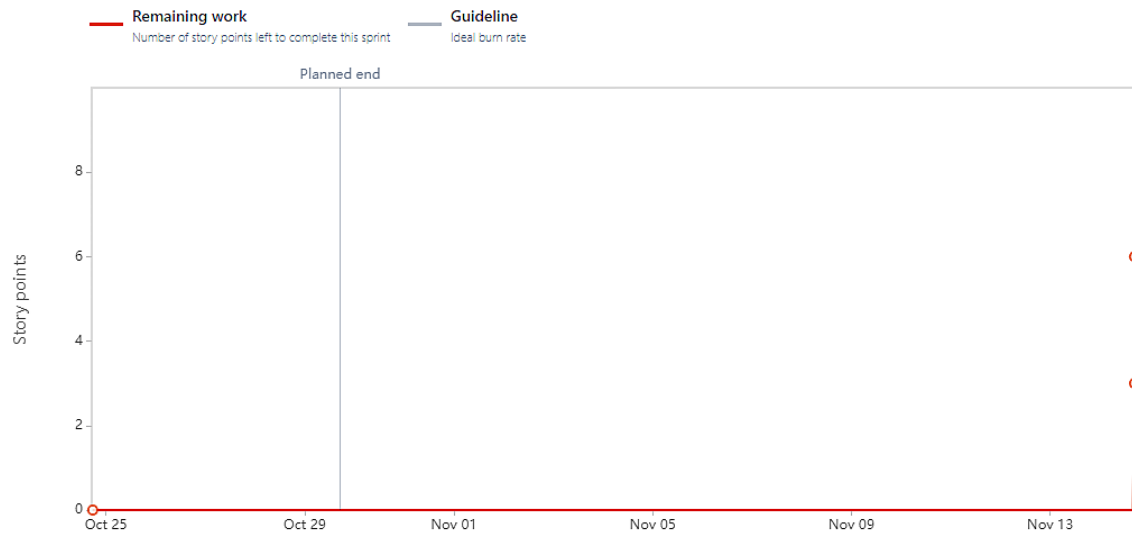
- The vertical axis represents the amount of work; either number of issues or story points (if Estimation is enabled). The horizontal axis represents the timeframe of the sprint.
- The **gray** line shows the ideal progress rate. It trends downwards at a linear rate, because teams should ideally be completing work at a consistent pace.
- The **red** line shows how much work remains in the sprint. The closer this line is to the grey line, the better.

Sprint-1/Issue Count

Date - October 24th, 2022 - October 29th, 2022

Remaining work
Number of issues left to complete this sprint

Guideline
Ideal burn rate

Sprint-1/Time

Date - October 24th, 2022 - October 29th, 2022

Remaining work
Hours of work left to complete this sprint

Guideline
Ideal burn rate

Scope changes log   View in issue navigator

Date ⌃	Key ⌄	Summary ⌄	Issue type ⌄	Epic ⌄	Details of scope change ⌄	Change in estimation
2022-11-14	PET-1*	User have to create account	🔲 Story	REGISTRATION	Issue added to sprint	-
2022-11-14	PET-11*	User Verification using mail	🔲 Story	REGISTRATION	Issue added to sprint	-
2022-11-14	PET-12*	User login	🔲 Story	LOGIN	Issue added to sprint	-
2022-11-14	PET-13*	Hold the user logged state	🔲 Story	LOGIN	Issue added to sprint	-
2022-11-14	PET-1	User have to create account	🔲 Story	REGISTRATION	Estimate of 3 has been added	- → 3
2022-11-14	PET-11	User Verification using mail	🔲 Story	REGISTRATION	Estimate of 3 has been added	- → 3
2022-11-14	PET-12	User login	🔲 Story	LOGIN	Estimate of 2 has been added	- → 2
2022-11-14	PET-13	Hold the user logged state	🔲 Story	LOGIN	Estimate of 2 has been added	- → 2

Completed issues   View in issue navigator

Key ⌄	Summary ⌄	Issue type ⌄	Epic ⌄	Status ⌄	Assignee ⌄	Story points
PET-1	User have to create account	🔲 Story	REGISTRATION	DONE	NS	3
PET-11	User Verification using mail	🔲 Story	REGISTRATION	DONE	👤	3
PET-12	User login	🔲 Story	LOGIN	DONE	👤	2
PET-13	Hold the user logged state	🔲 Story	LOGIN	DONE	👤	2

Issues completed outside of sprint

Key ⌄	Summary ⌄	Issue type ⌄	Epic ⌄	Status ⌄	Assignee ⌄	Story points

- The report also has a number of tables that provide more context for the chart. Table data can be sorted by selecting the column header. The tables are:
    - **Scope changes log**: Issues that were added to the sprint, removed from the sprint, or had estimation changes, while the sprint was in progress.
    - **Incomplete issues**: Issues in the sprint that were never completed (ie: never moved to a *Done* status). This includes issues that were never started.
    - **Completed issues**: Issues that were moved to a *Done* status while the sprint was in progress.
    - **Issues completed outside of sprint**: This includes issues that were:
        - completed and then added to the sprint, either before the sprint started or after the sprint started.
        - added to the sprint, but completed before the sprint started.
    - **Issues removed from sprint**: Issues that were removed from the sprint while the sprint was in progress.

CHAPTER-7

CODING & SOLUTIONING

7.1 Feature 1

Analytics Section

```
{% extends "base.html" %}

{% load static %}

{% block title_main %}Dashboard{% endblock %}

{% block body_main %}

    {% include "partials/_sidebar_main.html" %}

  <div class="main-content" id="panel">

    {% include "partials/_navbar_main.html" %}

    <div class="header bg-gradient-info pb-6">

      <div class="mr-5 ml-5"><div class="mr-5 ml-5">{% include
"partials/_messages.html" %}</div></div>

      <div class="container-fluid">

        <div class="header-body">

          <div class="row align-items-center py-4"><div class="col-lg-6
col-7"><nav aria-label="breadcrumb" class="d-none d-md-inline-block
ml-md-4"><ol class="breadcrumb breadcrumb-links breadcrumb-dark"><li
class="breadcrumb-item"><a href="#"><i class="fas fa-home"></i></a></li><li
class="breadcrumb-item"><a href="{% url 'dashboard'
%}">Dashboard</a></li><li class="breadcrumb-item active"
aria-current="page">Default</li></ol></nav></div></div>

          <div class="row">

            <div class="col-xl-3 col-md-6"><div class="card
card-stats"><div class="card-body"><div class="row"><div class="col"><h5
class="card-title text-uppercase default mb-0">Spent Today</h5><span
class="h2 font-weight-bold mb-0">{{ spent_today }}</span></div><div
class="col-auto"><div class="icon icon-shape bg-gradient-red text-white
rounded-circle shadow"><i class="ni
ni-chart-bar-32"></i></div></div></div><p class="mt-3 mb-0 text-sm"><span
class="text-nowrap mr-2">No of Expenses: </span><span
class="text-danger">{{spent_today_count}}</span></p></div></div></div>
```
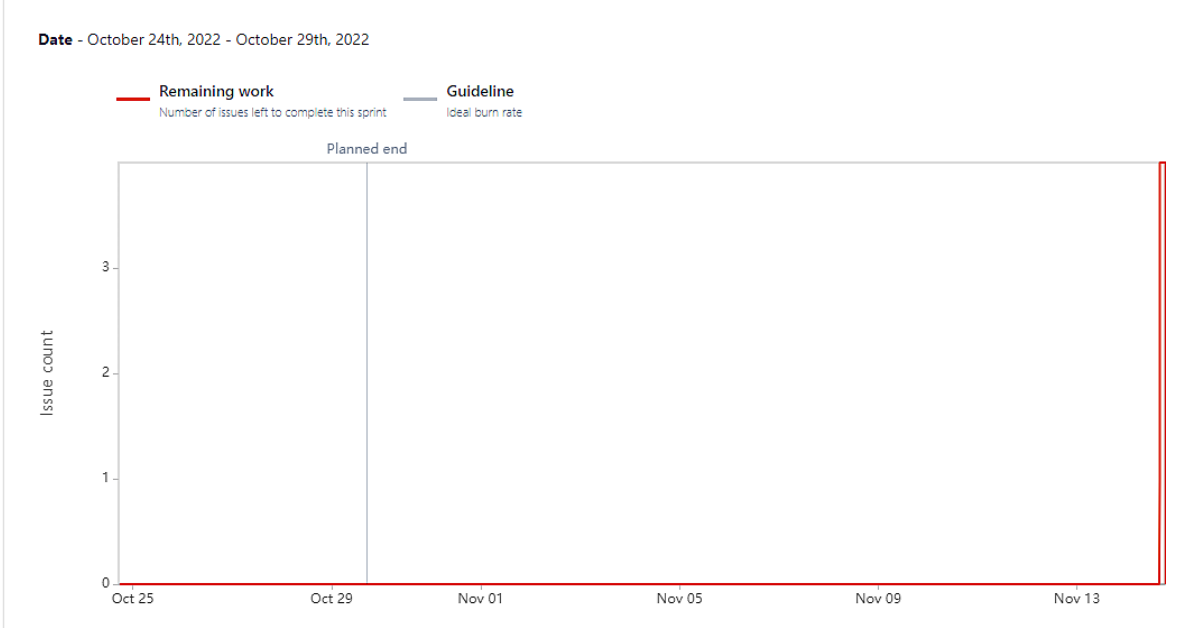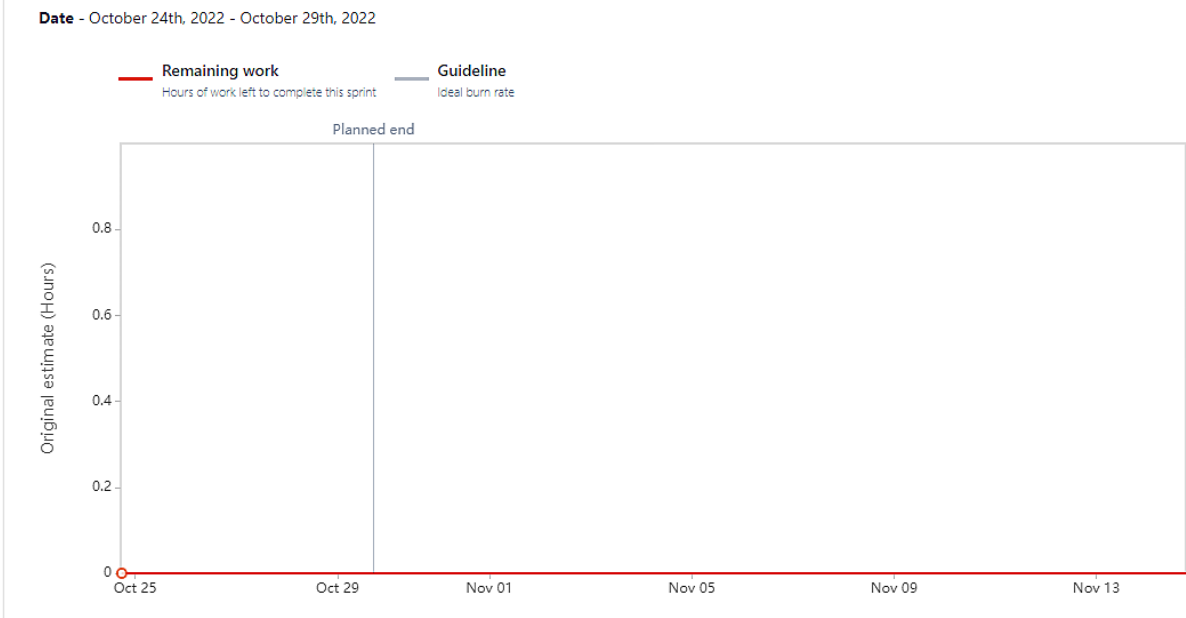
```html
            <div class="col-xl-3 col-md-6"><div class="card
card-stats"><div class="card-body"><div class="row"><div class="col"><h5
class="card-title text-uppercase default mb-0">This Week</h5><span
class="h2 font-weight-bold mb-0">{{spent_week}}</span></div><div
class="col-auto"><div class="icon icon-shape bg-gradient-orange text-white
rounded-circle shadow"><i class="ni
ni-chart-pie-35"></i></div></div></div><p class="mt-3 mb-0 text-sm"><span
class="text-nowrap mr-2">No of Expenses: </span><span
class="text-danger">{{spent_week_count}}</span></p></div></div></div>

            <div class="col-xl-3 col-md-6"><div class="card
card-stats"><div class="card-body"><div class="row"><div class="col"><h5
class="card-title text-uppercase default mb-0">This Month</h5><span
class="h2 font-weight-bold mb-0">{{spent_month}}</span></div><div
class="col-auto"><div class="icon icon-shape bg-gradient-green text-white
rounded-circle shadow"><i class="ni
ni-money-coins"></i></div></div></div><p class="mt-3 mb-0 text-sm"><span
class="text-nowrap mr-2">No of Expenses: </span><span
class="text-danger">{{spent_month_count}}</span></p></div></div></div>

            <div class="col-xl-3 col-md-6"><div class="card
card-stats"><div class="card-body"><div class="row"><div class="col"><h5
class="card-title text-uppercase default mb-0">This Year</h5><span
class="h2 font-weight-bold mb-0">{{spent_year}}</span></div><div
class="col-auto"><div class="icon icon-shape bg-gradient-info text-white
rounded-circle shadow"><i class="ni
ni-chart-bar-32"></i></div></div></div><p class="mt-3 mb-0 text-sm"><span
class="text-nowrap mr-2">No of Expenses: </span><span
class="text-danger">{{spent_year_count}}</span></p></div></div></div>

          </div>

        </div>

      </div>

    </div>

    <div class="container-fluid mt--6">

      <div class="col-lg-6 col-5"><button id="line" class="btn btn-sm
btn-neutral">Line Graph</button><button id="pie" class="btn btn-sm
btn-neutral">Pie Chart</button></div>

      <div class="row mt-4">

        <div class="col-xl-6">

          <div class="card bg-gradient-white">

            <div class="card-header bg-transparent">
```

```html
                <div class="row align-items-center"><div class="col"><h5
class="h3 text-black mb-0 text-center">This Month's Expense</h5><div
class="chart-container" style="position: relative; height:500px;
width:450px"><canvas id="myChart" class="chart-canvas
chartjs-render-monitor" width="450"
height="500"></canvas></div></div></div>

              </div>

            </div>

          </div>

          <div class="col-xl-6">

            <div class="card bg-gradient-white">

              <div class="card-header bg-transparent">

                <div class="row align-items-center">  <div class="col"><h5
class="h3 text-black mb-0 text-center">This Month's Income</h5><div
class="chart-container" style="position: relative; height:500px;
width:450px"><canvas id="myChart2" class="chart-canvas
chartjs-render-monitor" width="450"
height="500"></canvas></div></div></div>

              </div>

            </div>

          </div>

        </div>

        <div class="row">

          <div class="col-md-6">

            <div class="card">

              <div class="card-header border-0"><div class="row
align-items-center"><div class="col"><h3 class="mb-0 text-center">Recent
Expenses</h3></div></div></div>

              <div class="table-responsive">

                <table class="table align-items-center table-flush">

                  <thead class="thead-light"><tr>{% if expenses %}<th
scope="col">Category</th><th scope="col">Amount</th><th scope="col">Created
At</th>{% else %}<tr><p class="text-center">NO NEW DATA</p></tr>{% endif
%}</tr></thead>

                  <tbody>
```

```
                {% if expenses %}

                  {% for expense in expenses %}<tr><th
scope="row">{{expense.category.name}}</th><td><i class="fas fa-arrow-down
text-warning mr-3"></i> {{expense.amount}}</td><td>{{ expense.created_at
}}</td></tr>{% endfor %}

                {% endif %}

            </tbody>

          </table>

        </div>

      </div>

    </div>

    <div class="col-md-6">

      <div class="card">

        <div class="card-header border-0"><div class="row
align-items-center"><div class="col"><h3 class="mb-0 text-center">Recent
Incomes</h3></div></div></div>

        <div class="table-responsive">

          <table class="table align-items-center table-flush">

            <thead class="thead-light"><tr>{% if incomes %}<th
scope="col">Source</th><th scope="col">Amount</th><th scope="col">Created
At</th>{% else %}<tr><p class="text-center">NO NEW DATA</p></tr>{% endif
%}</tr>

            </thead>

            <tbody>

              {% if incomes %}

                {% for income in incomes %}

                  <tr><th
scope="row">{{income.source.source}}</th><td><i class="fas fa-arrow-up
text-success mr-3"></i> {{income.amount}}</td><td>{{ income.created_at
}}</td></tr>

                {% endfor %}

              {% endif %}

            </tbody>

          </table>
```

```
            </div>

          </div>

        </div>

      </div>

    </div>

  </div>

  <script src="{% static 'js/dashboard.js' %}"></script>
{% endblock %}
```
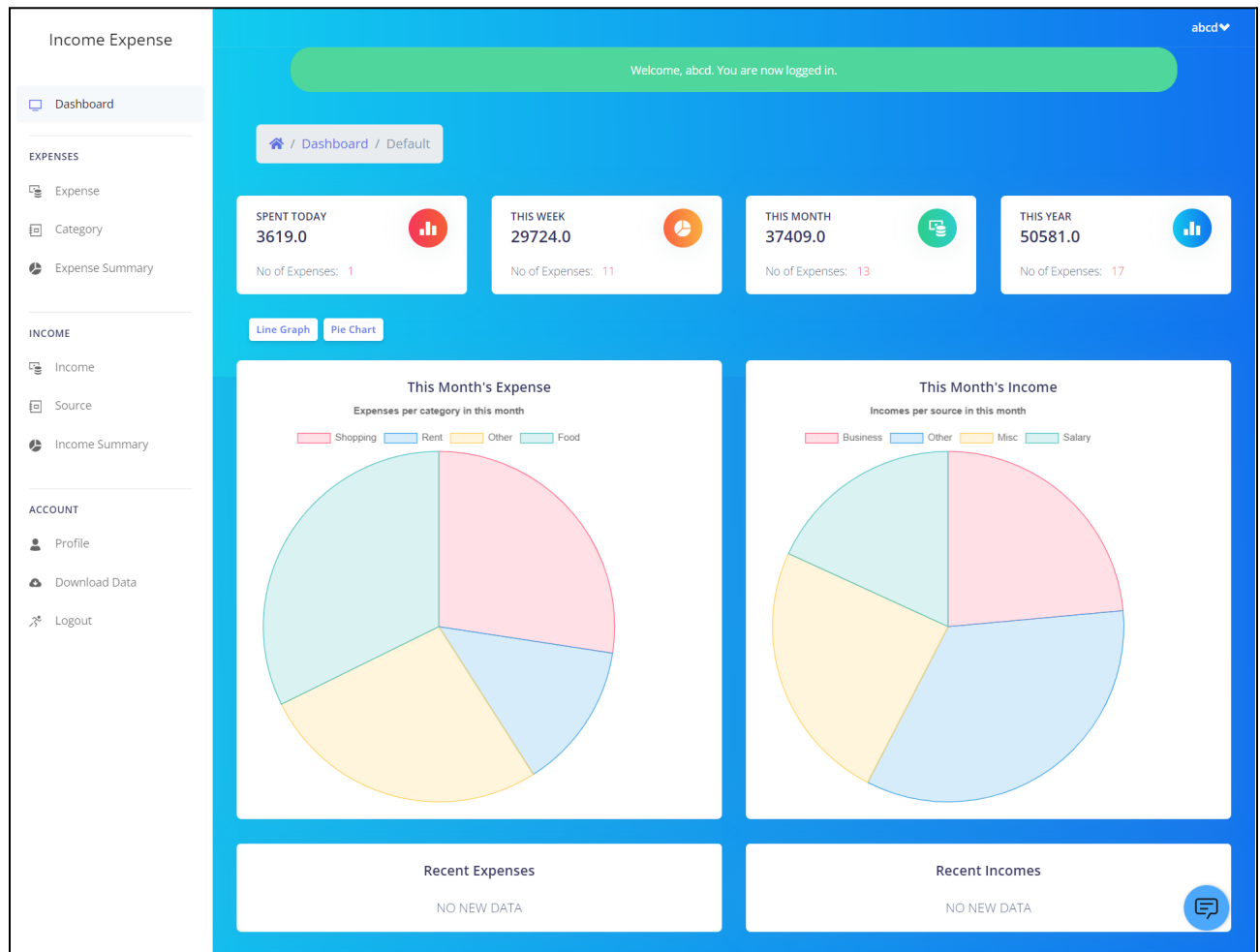
7.2 Database Schema

USER TABLE

S.No.	FIELD NAME	DATA TYPE
1	ID	INTEGER
2	FIRST NAME	VARCHAR
3	LAST NAME	VARCHAR
4	EMAIL	VARCHAR
5	PASSWORD	VARCHAR
6	TOKEN	VARCHAR
7	VERIFIED	BOOLEAN

TRANSACTION TABLE

S.No.	FIELD NAME	DATA TYPE
1	ID	INTEGER
2	AMOUNT	VARCHAR
3	DATE	DATE
4	CATEGORY	VARCHAR
5	DESCRIPTION	VARCHAR
6	TYPE	VARCHAR
7	USER	INTEGER

CATEGORY TABLE

S.No.	FIELD NAME	DATA TYPE
1	ID	INTEGER

2	NAME	VARCHAR
3	KEY	VARCHAR

TRANSACTION TABLE

S.No.	FIELD NAME	DATA TYPE
1	NAME	VARCHAR
2	CREATED_AT	DATE
3	RANGE	VARCHAR
4	LIMIT	VARCHAR
7	USER	INTEGER

CHAPTER-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	Commnets	TC for Automation(Y/N)	BUG ID	Executed By
LoginPage_TC_OO 1	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 My Account dropdown button 3.Verify login/Singup popup displayed or not	http://cloud-object-storage-ek-cos-static-web-hosting-tk n.s3-web.jp-tok.cloud-objec t-storage.appdomain.cloud/ authenticate	Login/Signup popup should display	Working as expected	Pass	initial load is very less			Mohammed Kaif K
LoginPage_TC_OO 2	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	http://cloud-object-storage-ek-cos-static-web-hosting-tk n.s3-web.jp-tok.cloud-objec t-storage.appdomain.cloud/ authenticate	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	user frriendly and attractive			Karthick V
LoginPage_TC_OO 3	Functional	Home page	Verify user is able to log into application with Valid credentials		1.Enter URL(https://shopenzer.com/) 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: chalam@gmail.com password: Testing123	User should navigate to user account homepage		Pass	components are routed			Harish M
LoginPage_TC_OO 4	Functional	Login page	Verify user is able to log into application with InValid credentials		1.Enter URL(https://shopenzer.com/) 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: chalam@gmail password: Testing123	Application should show 'Incorrect email or password ' validation message.		Pass	components are routed			Lokesh V

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_OO 4	Functional	Login page	Verify user is able to log into application with InValid credentials		1.Enter URL(https://shopenzer.com/) 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: chalam@gmail.com password: Testing123678686786876876	Application should show 'Incorrect email or password ' validation message.		Pass	comfortable to use			Sethu S
LoginPage_TC_OO 5	Functional	Login page	Verify user is able to log into application with InValid credentials		1.Enter URL(https://shopenzer.com/) 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: chalam password: Testing123678686786876876	Application should show 'Incorrect email or password ' validation message.		Pass	user frriendly and attractive			Vibin T
LoginPage_TC_OO 6	Functional	Dashboard	Add income and expense and check whether the insights are changing		1.After login 2.Add income and expense 3.View chartts	Income:Rs INR Expense:Rs INR	View charts		Pass	Every events are changing accurately			Sudhan A
LoginPage_TC_OO 7	Functional	Dashboard	Email insights		insights are viewed in mail		Mail insights		Pass	insights are reached on time			Srinath S

8.2 User Acceptance Testing

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	5	2	3	20
Duplicate	1	0	3	0	4
External	2	3	0	1	6
Fixed	11	2	4	20	37
Not Reproduced	0	0	0	0	0
Skipped	0	0	0	0	0
Won't Fix	0	5	2	1	8
Totals	24	14	13	26	75

Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	7	0	0	7
Client Application	29	0	0	29
Security	4	0	0	4
Outsource Shipping	6	1	0	5
Exception Reporting	7	0	0	7
Final Report Output	4	0	0	4
Version Control	8	0	0	8

CHAPTER-9
RESULTS

9.1 Performance Metrics Locust

Locust is a Python-based testing tool used for load testing and user behavior simulation. Load testing is the practice of testing a software application with the primary purpose of stressing the application's capabilities. Locust is a tool that creates a set of testing functions that simulate a heavy number of users.

Locust Test Report

During: 11/19/2022, 3:50:54 PM - 11/19/2022, 3:51:57 PM

Target Host: http://localhost:5000/api

Script: test.py

Download the Report

Request Statistics

Method	Name	# Requests	# Fails	Average (ms)	Min (ms)	Max (ms)	Average size (bytes)	RPS	Failures/s
GET	/api/budget	9	0	2667	2560	2899	60	0.1	0.0
GET	/api/transaction	5	0	2678	2574	2928	60	0.1	0.0
	Aggregated	14	0	2671	2560	2928	60	0.2	0.0

Response Time Statistics

Method	Name	50%ile (ms)	60%ile (ms)	70%ile (ms)	80%ile (ms)	90%ile (ms)	95%ile (ms)	99%ile (ms)	100%ile (ms)
GET	/api/budget	2600	2600	2700	2800	2900	2900	2900	2900
GET	/api/transaction	2600	2700	2700	2900	2900	2900	2900	2900
	Aggregated	2600	2600	2700	2800	2900	2900	2900	2900

Charts

```python
import time
from locust import HttpUser, TaskSet, task, between

class SubClassTest(TaskSet):

    @task
    def main_page(self):
        self.client.headers = {'Authorization': 'Token 2603a281-4074-4fe9-b634-e1258e78e085'}
        self.client.get('/transaction')

    @task(2)
    def perihal_page(self):
        self.client.headers = {'Authorization': 'Token 2603a281-4074-4fe9-b634-e1258e78e085'}
        self.client.get('/budget')


class MainClassTest(HttpUser):
    tasks = [SubClassTest]
    wait_time = between(5, 10)
```

```
$ locust -f test.py
[2022-11-19 15:44:35,806] LAPTOP-6KU7KOHB/INFO/locust.main: Starting web interface at http://0.0.0.0:8089 (accepting connections from all network interfaces)
[2022-11-19 15:44:35,867] LAPTOP-6KU7KOHB/INFO/locust.main: Starting Locust 2.13.0
[2022-11-19 15:50:54,188] LAPTOP-6KU7KOHB/INFO/locust.runners: Ramping to 2 users at a rate of 1.00 per second
[2022-11-19 15:50:55,203] LAPTOP-6KU7KOHB/INFO/locust.runners: All users spawned:    MainClassTest : 2 (2 total
```

CHAPTER-10
ADVANTAGES & DISADVANTAGES

10.1 Advantages

There are a lot of reasons why you might want to use a personal expense tracker, and we're here to highlight a few of the most important ones. One of the main advantages of using a personal expense tracker is that it can help you keep track of where your money is going each month. This is especially important if you're trying to keep your finances under control – not having a clear idea of where you're spending your money can be a huge burden. By using an expense tracker, you'll be able to stay on top of your spending so you can identify problem areas and make necessary changes to get back on track.

Another reason why you might want to use a personal expense tracker is that it can be a useful tool for budgeting. Using an expense tracker can help you create an accurate budget so that you'll have a better idea of how much you can spend without going broke.

Advantages of using a personal expense tracker include:
1) You can keep track of the expenses you incur on a regular basis, such as groceries and utilities.
2) You can set up budget categories for your expenses and keep an eye on how much you are spending in each category.
3) You can see exactly where your money is going each month so you can make necessary changes to improve your spending habits.
4) It's easy to categorize and categorize your costs.
5) You can easily see your weekly or monthly expenses at a glance so you know where you are financially at all times.

10.2 Disadvantages

One of the many advantages to using a personal expense tracker is that you can keep track of your spending in an organized and easy-to-use format. However, there are a few disadvantages to consider when using this type of expense tracking system. One of the primary disadvantages to using a personal expense tracker is that it requires a lot of dedication in order to properly use it. Disadvantages of using a personal expense tracker include:

1) It can be difficult to keep track of all of your expenses in one place.

2) It can be time consuming to enter all of the details of your transactions each week or month.

3) It can be stressful to see how much money you have spent during the month and can cause you to feel guilty about spending too much in some areas.

4) It can take a long time to categorize each transaction if you use the app to record your expenses.

5) It's not always easy to find a category for a transaction if you don't know where to put it.

CHAPTER-11
CONCLUSION

As a business owner, you know that tracking your expenses is essential for keeping your business running smoothly. However, doing this manually can be a time-consuming and difficult task. Therefore, it is important to have an automated expense tracking system that records all of your business expenses and allows you to track them efficiently. Once you have such a system in place, you can use it to analyze your spending and identify areas where you may be able to reduce your costs. This will allow you to save money in the long run and improve the performance of your business. Below, you will find a list of some benefits that your business can expect to receive from implementing a fully automated expense management system.

1.   It makes it easy to identify and eliminate unnecessary expenses Your business may not be getting the most out of its expenses if it has no way of identifying and eliminating unnecessary expenses. However, when you implement a system that allows you to automatically record and analyze your expenses, you can quickly and easily identify any areas that are not yielding positive results for your business. You can then implement strategies to eliminate these expenses and get your business back on track

2.   It allows you to analyze your spending patterns and identify areas of improvement A system that tracks your expenses allows you to identify areas where you may be overspending so that you can make the necessary adjustments and cut costs where necessary. These adjustments will help you to reduce your overall costs and improve the efficiency of your business

<div align="center">

CHAPTER-12
FUTURE SCOPE

</div>

As the world becomes more digitized, individuals are increasingly looking for ways to manage their finances in a convenient and effective way. One popular way to do this is through the use of personal expense trackers. Personal expense trackers allow you to monitor all your expenses in real time - giving you an easy way to stay on top of your finances and make sure that you're sticking to your budget. There are a number of great options on the market when it comes to personal expense trackers, but what really sets them apart is their comprehensive range of features. In this article, we're going to take a closer look at some of the best personal expense trackers on the market today and see what sets them apart from their competitors. Let's start by taking a look at some of the key features that you can expect from a good personal expense tracker...

12.1 Key features of a personal expense tracker

12.1.1 Helps you stick to your budget

While it's great to be able to monitor all your transactions in real time, it can often be difficult to figure out where all the money goes. This is where a personal expense tracker can help. Most personal expense trackers include budget tracking functionality that allows you to monitor your spending on a daily basis. By setting a budget, you can keep on top of your spending and ensure that you're not spending more than you can afford. This can prevent you from falling deep into debt and help you to stay on top of your finances.

12.1.2 Monitors your spending in real time

When it comes to personal finance, it's more important than ever to keep track of where your money is going. A good personal expense tracker will help you to do this by monitoring all of your transactions in real time. This helps you to identify areas where you may be overspending or where you can make some savings. It also lets you track unexpected expenses and plan for the future. When you monitor all your transactions in real time, you can take corrective action right away to ensure better financial health in the future.

12.1.3 Works on any device

These days, most people access the internet using mobile devices such as smartphones and tablets. This means that you need a tool that is accessible from any device so that you can track your spending on the go. With most personal expense trackers, you can access your account from any smartphone, tablet, or computer and view your account information in real-time.

CHAPTER-13
APPENDIX

SOURCE CODE:

GITHUB LINK:
https://github.com/IBM-EPBL/IBM-Project-22612-1659855016/tree/main/Final%20Deliverables/Personal%20Expense%20Tracker

PROJECT DEMO LINK
https://drive.google.com/file/d/1_jbZLTqH-he8EPsUv1vPp9jKuQgbUVqJ/view?usp=sharing

LIVE URL
http://159.122.178.174:30012/