

Personal Expense Tracker Application

PNT2022TMID22147

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1.INTRODUCTION:

1.1 PROJECT OVERVIEW:

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

1.2 PURPOSE:

The app will track all your payment dates, whether it is for credit card dues, phone bills, utility bills and so on. It will send alerts to your phone so that you do not miss any payments. Advance alerts help you manage large payments like credit card dues. This means that you do not have to pay late payment charges

2.LITERATURE SURWAY:

2.1 EXISTING PROBLEM:

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

2.2.REFERENCES:

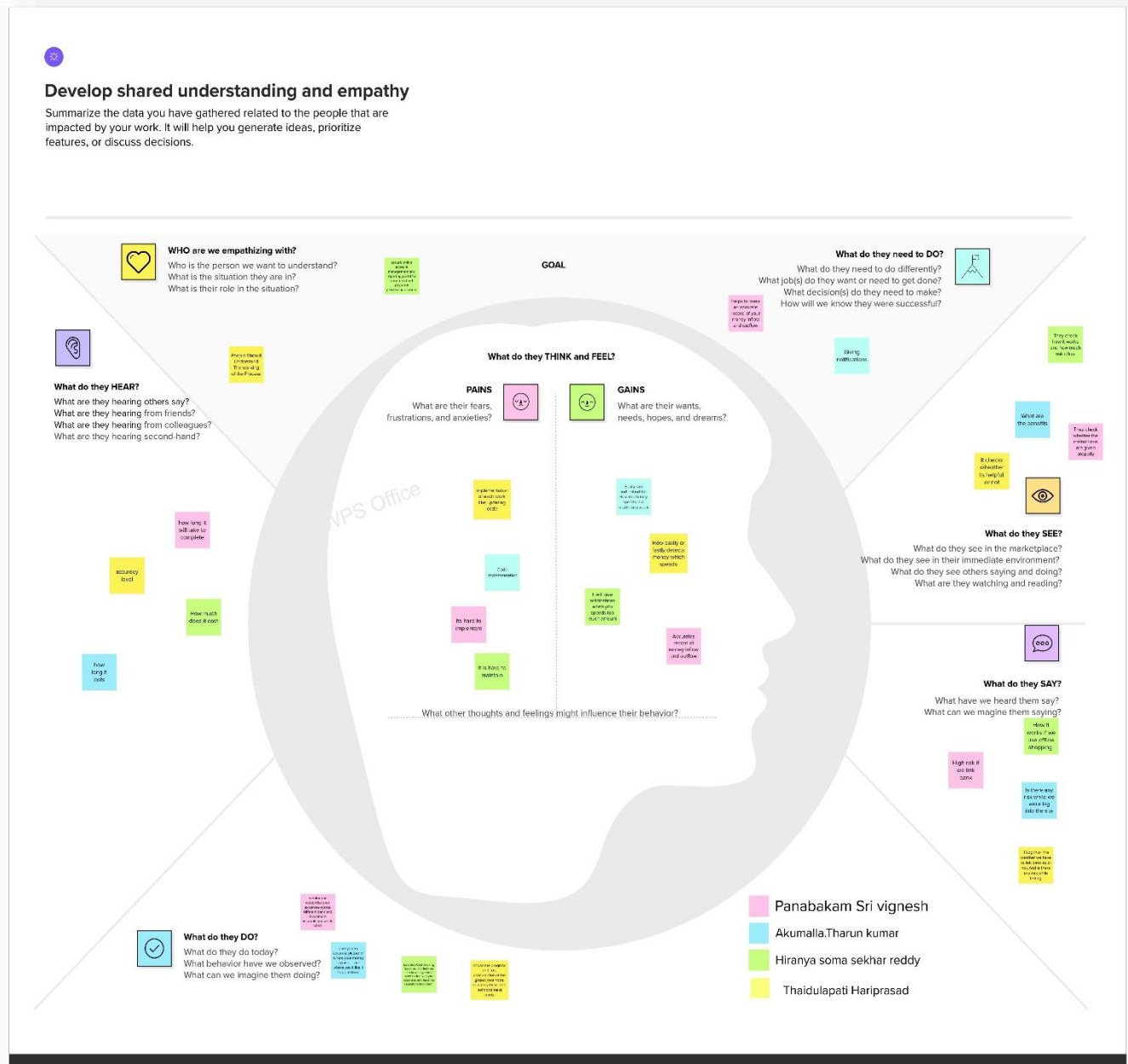
https://www.academia.edu/33268815/EXPENSE_TRACKER_MOBILE_APPLICATION
<https://digitallibrary.sdsu.edu/islandora/object/sdsu%3A3676/datastream/OBJ/view>
<https://www.atlassian.com/agile/project-management>
<https://www.atlassian.com/agile/tutorials/how-to-do-scrum-with-jira-software>

2.3 PROBLEM STATEMENT DEFINITION:

Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	I am an Employee	I'm trying to Track my monthly expenses	I am unable to follow	Because I'm using multiple payment apps	I may not able to regulate my expenses
PS-2	I am a student staying in room	I'm trying to track my day to day or weekly expenses	I'm confused about my expenses	Because of my daily needs	Like I am overspending my pocketmoney
PS-3	I'm a family person	Keep an eye on my expenses	It is very hard for me	of various requirements in house	Like I'm not controlling my inflation

3.IDEATION & PROPOSED SOLUTION:

3.1 EMPATHY MAP CANVAS:



3.2 IDEATION & BRAINSTORMING:

2 Brainstorm

Write down any ideas that come to mind that address your problem statement.

⌚ 10 minutes

TIP
Stick it in a sticky note and fill in your ideas to stick it to your drawing!

3 Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence like: label if a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

⌚ 10 minutes

TIP
Add a submain title to each sticky note or label it with a word, sentence, or phrase, and color-code the notes to track your ideas.

3.3 PROPOSED SOLUTION:

S.No.	Parameter	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 description	The user can enter income and expenses into the personal cost tracker programme. 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 / Customer Satisfaction	The personal spending tracker programme not only assists the user in budgeting and accounting, but it also provides insights into money management through analysis. If the monthly limit is surpassed, the user is also notified.
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4.REQUIREMENT ANALYSIS:

4.1 FUNCTIONAL REQUIREMENTS:

Functional Requirements:

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User Wallet Page	Track and watch expenses through graph
FR-4	User add expense	Add through another web page
FR-5	Alert user	Alert the user through automated send grid mail system

Non-functional Requirements:

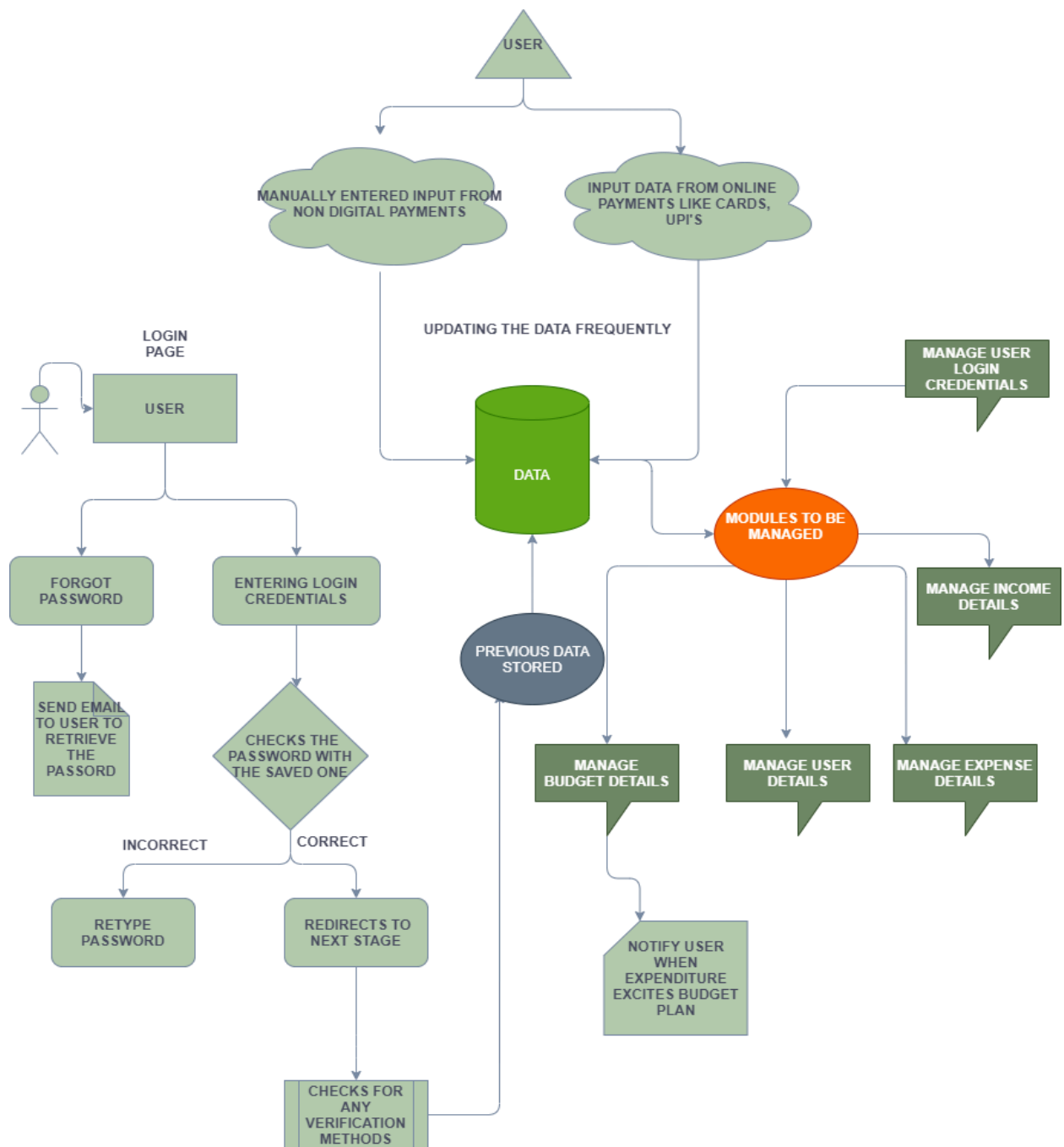
Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	Simple see and do, icon and small description based interactive UI with virtual assistant.
NFR-2	Security	User login with a high strong password and also planned two step authentication.
NFR-3	Reliability	It will work and give results on time and will operate in a good environment without failure

NFR-4	Performance	It is loaded in a docker container so the speed of loading is high since it's a light weight process.
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5.PROJECT DESIGN:

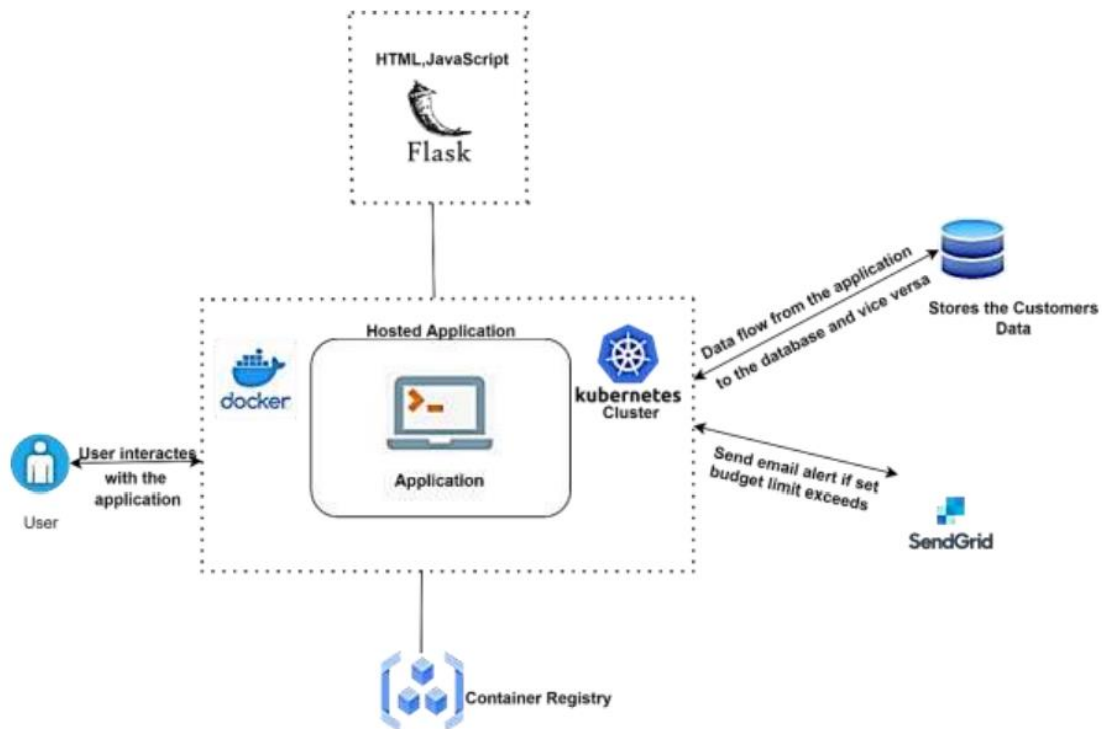
5.1 DATA FLOW DIAGRAMS:



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

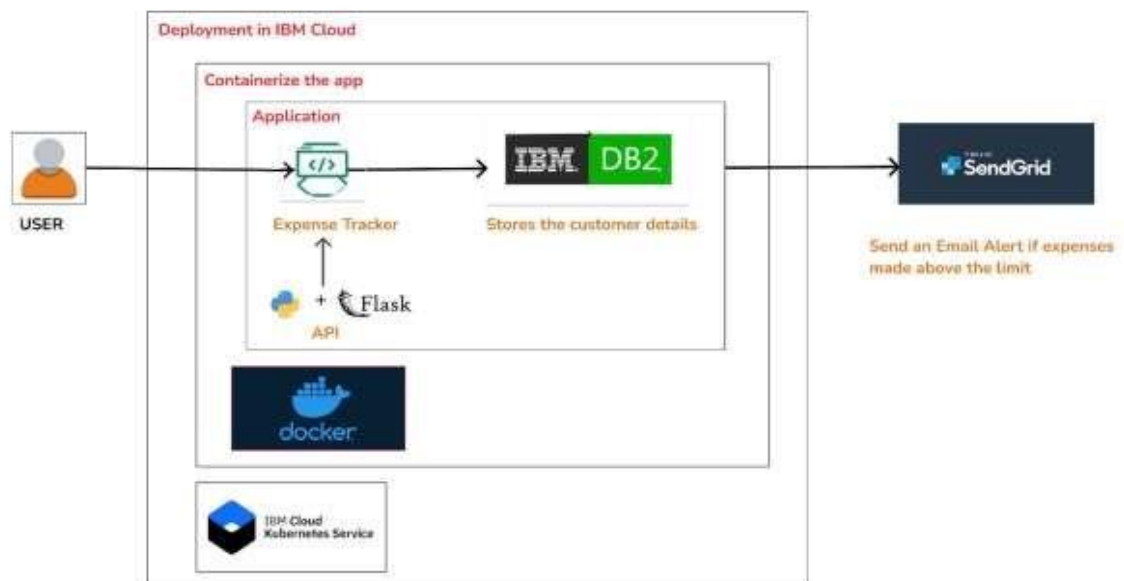
5.2 SOLUTION AND TECHNICAL ARCHITECTURE:

TECHNICAL ARCHITECTURE:



The application interacts with database for storing and retrieving customer details and also stores cookies within the browser for improved application performance. The deployed application also been integrated with sendgrid service for sending mails to the user regarding to their budget limit exceed.

- **Solution Architecture**



5.3 USER STORIES:

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail		Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password		High	Sprint-1
	Dashboard	USN-6	I can access the dashboard of mine.		Medium	Sprint-2
Customer (Web user)	Access resources	USN-7	I can use my credentials for accessing my resources.	Other than me, there is less chance to access my resources.	High	Sprint-1

Customer Care Executive		USN-8	As customer care executive I will always be available for the interaction with the customer to clarify the queries.	An executive will note down the customers complaints and solve their problems.	High	Sprint-2
Administrator	Updating data	USN-9	Collecting the data and store it	Checking and updating dataset	High	Sprint-1
Customer tools	Tools	USN-10	I can perform analysis by login or registration	I have an ease of accessing Web application	High	Sprint-1

6.1 SPRINT PLANNING AND ESTIMATION:

(I) PROJECT TRACKER:

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	28 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	04 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	11 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	18 Nov 2022	20	19 Nov 2022

(II) VELOCITY:

Velocity

We have a 6-day sprint duration, and the velocity of the team is 20 (points per sprint).
Calculating the team's average velocity (AV) per iteration

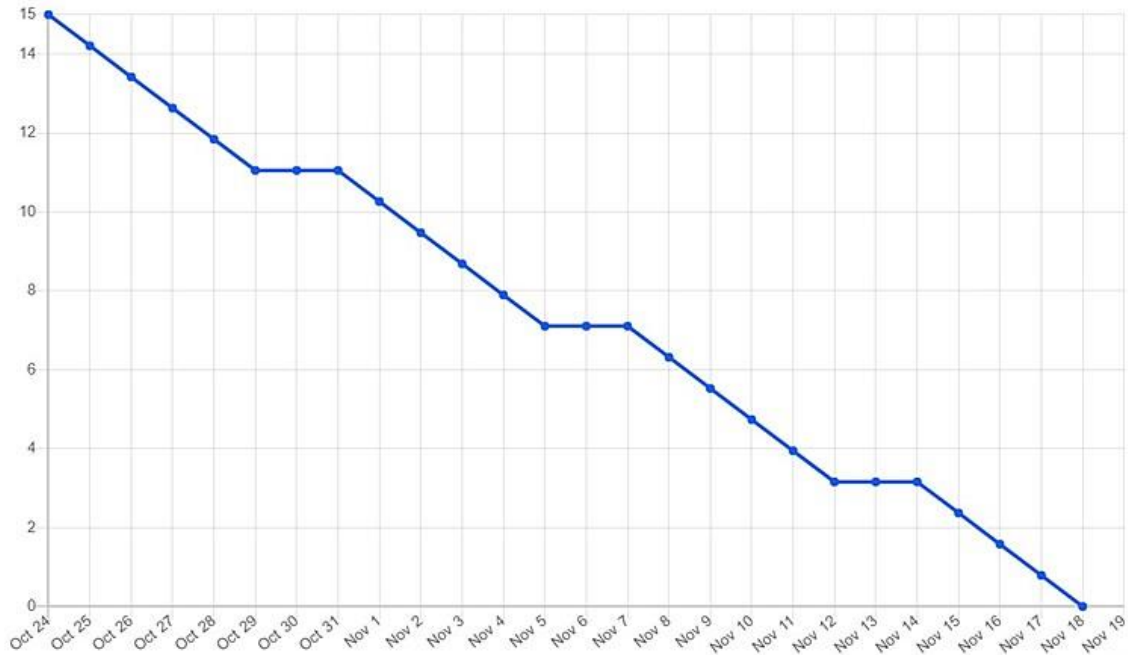
unit (story points per day)

$$AV = \text{sprint duration} / \text{velocity} = 20/6 = 3.33$$

(III) 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.

Burndown Chart



6.2 SPRINT DELIVERY SCHEDULE:

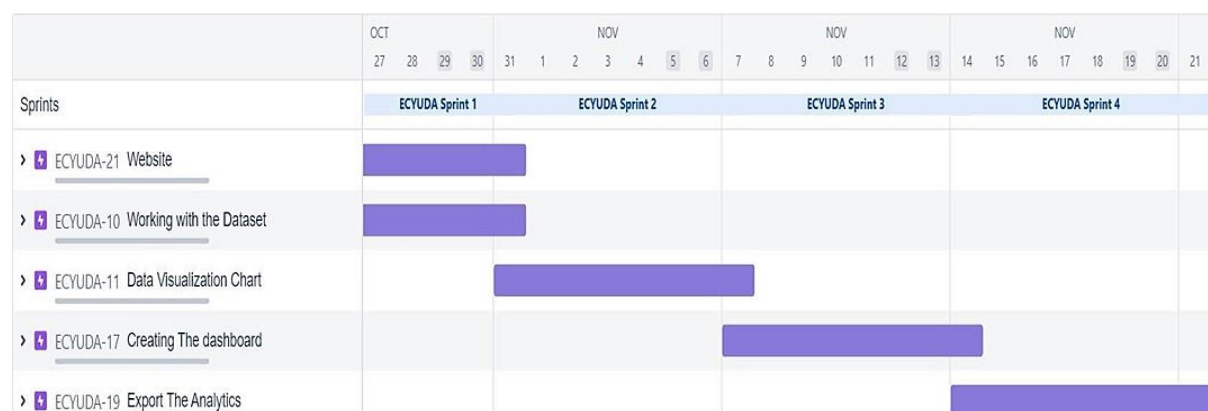
Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	3	High	Hiranya Soma Sekhar Reddy

Sprint-1	Registration	USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Panabakam Sri Vignesh
Sprint-1	Login	USN-3	As a user, login to the application with mail and password	2	Low	Akumalla Tharun Kumar
Sprint-1	Dashboard	USN-4	After log into the account you can get the dashboard	2	Medium	Thaidulapati Hari Prasad
Sprint-2	Workspace	USN-1	Workspace for personal expense tracking	1	High	Hiranya Soma Sekhar Reddy
Sprint-2	Chart	USN-2	Creating various graphs and statistics of customer's data	2	Medium	Akumalla Tharun Kumar
Sprint-2	Connecting to IBM DB2	USN-3	Linking database with dashboard	2	Medium	Panabakam Sri Vignesh
Sprint-2	dashboard	USN-4	Making dashboard interactive with JS	2	High	Thaidulapati Hari Prasad
Sprint-3		USN-1	Wrapping up the server side works of frontend	2	High	Akumalla Tharun Kumar
Sprint-3	Watson Assistant	USN-2	Creating Chatbot for expense tracking and for clarifying user's query	1	Low	Panabakam Sri Vignesh
Sprint-3	SendGrid	USN-3	Using SendGrid to send mail to the user about their expenses	1	High	Thaidulapati Hari Prasad
Sprint-3		USN-4	Integrating both frontend and backend	3	High	Hiranya Soma Sekhar Reddy

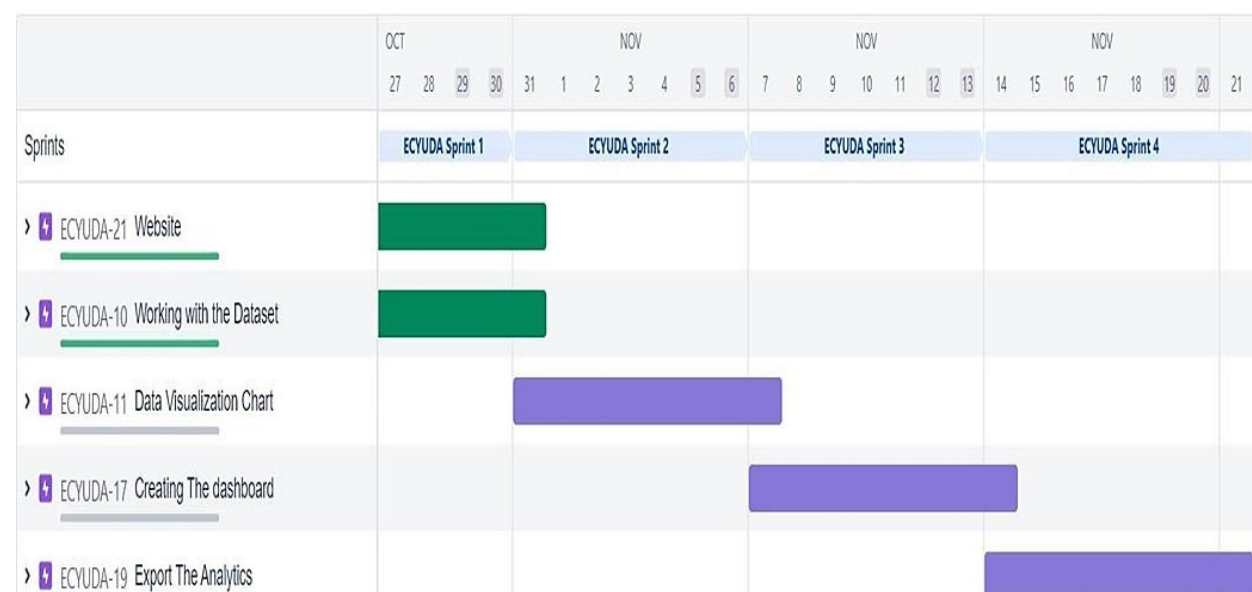
Sprint-4	Docker	USN-1	Creating image of website using docker/	2	High	Thaidulapati Hari Prasad
Sprint-4	Cloud Registry	USN-2	Uploading docker image to IBM Cloud registry	2	High	Hiranya Soma Sekhar Reddy
Sprint-4	Kubernetes	USN-3	Create container using the docker image and hosting the site	2	High	Panabakam Sri Vignesh
Sprint-4	Exposing	USN-4	Exposing IP/Ports for the site	2	High	Akumalla Tharun Kumar

6.3 REPORTS FROM JIRA:

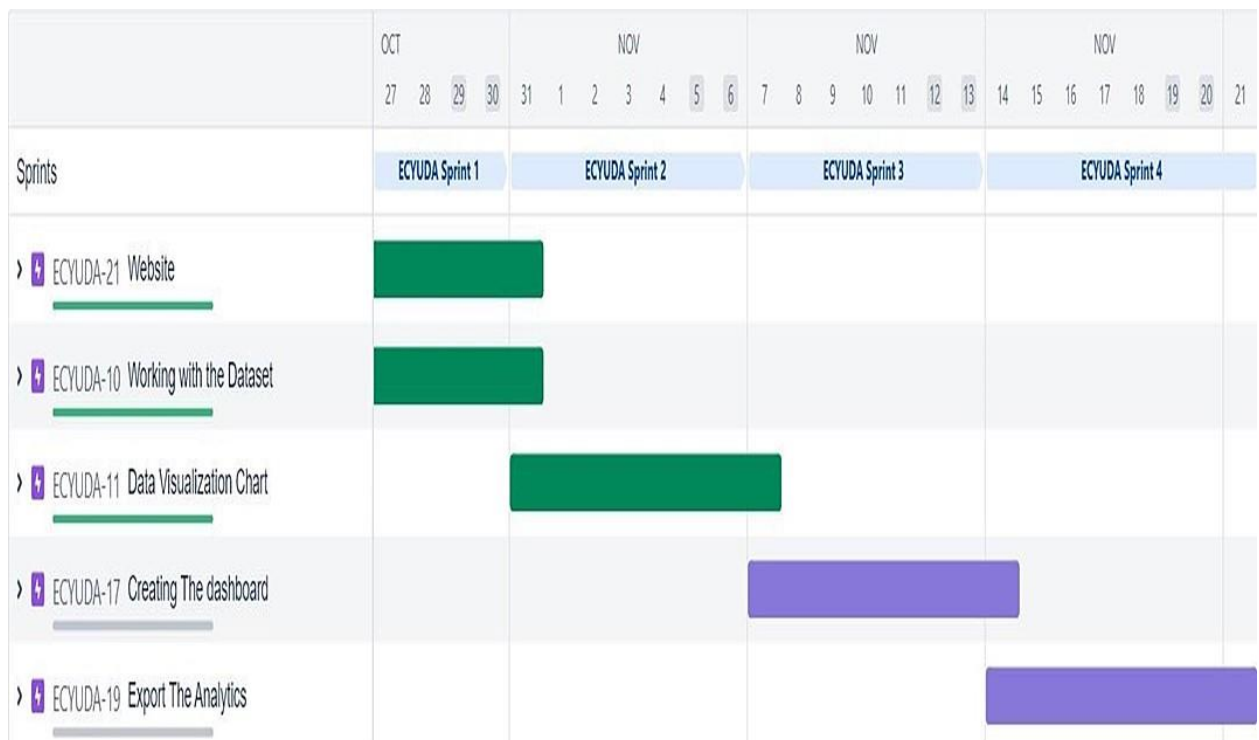
(I) BEFORE START OF THE SPRINT:



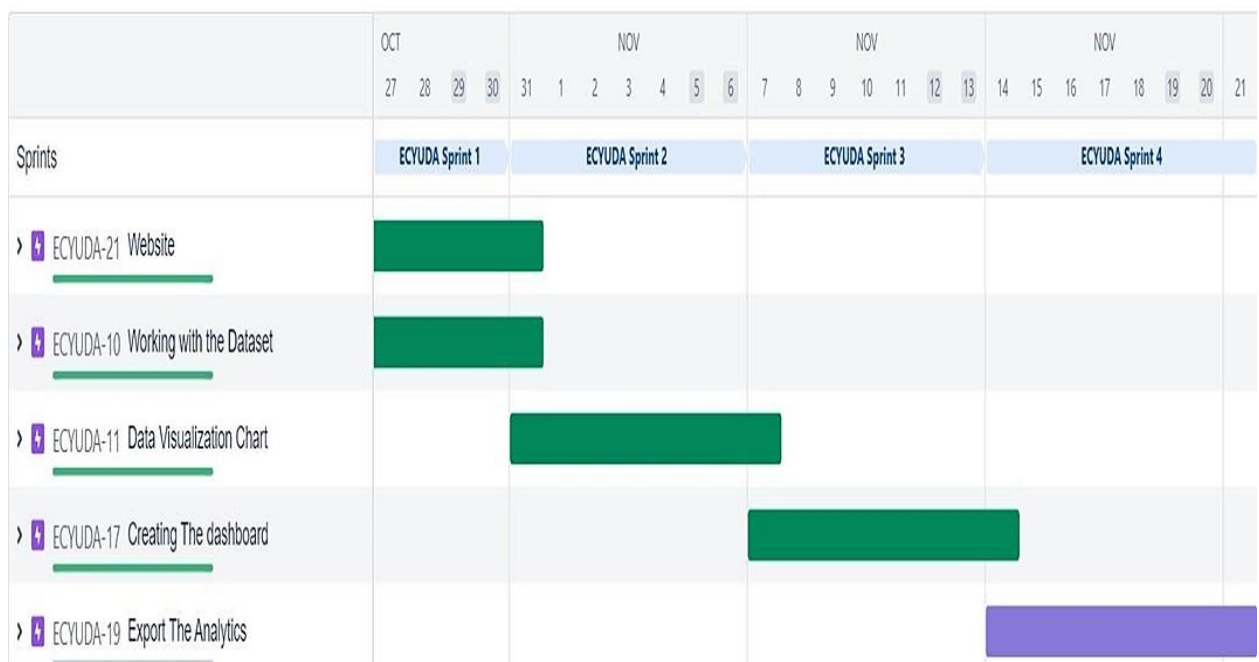
(I) SPRINT 1:



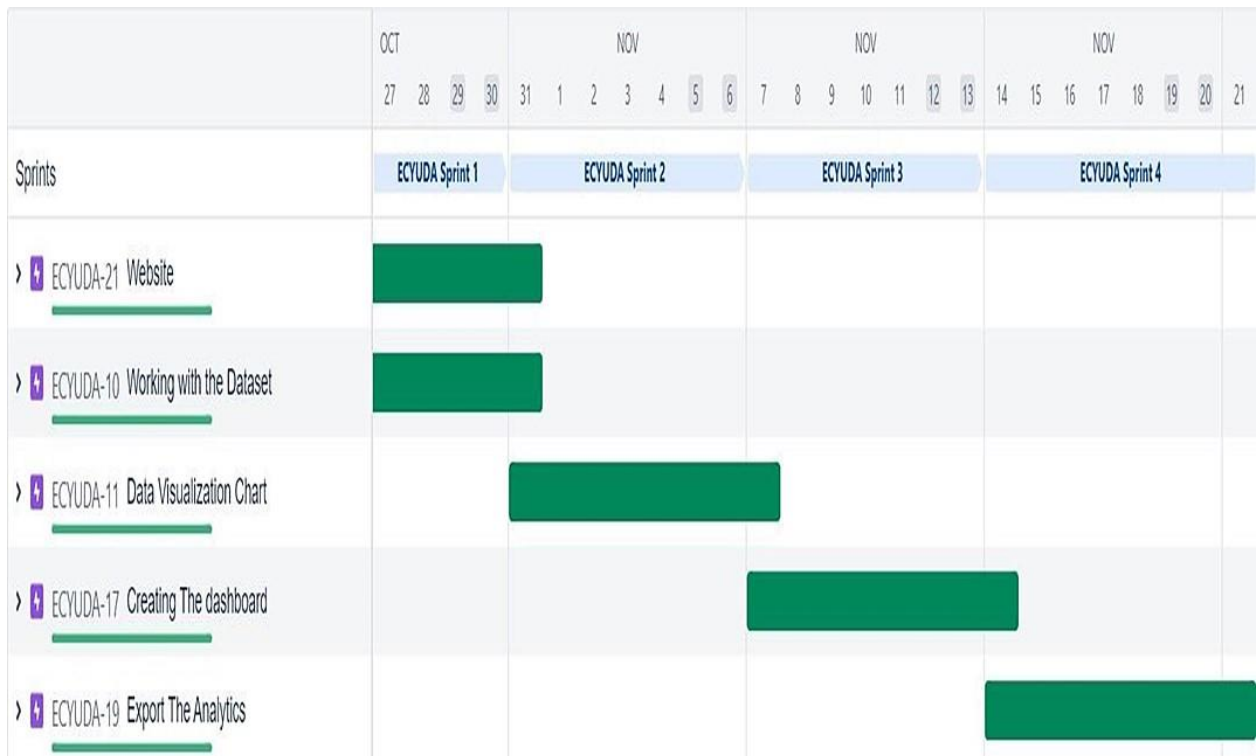
(II) SPRINT 2:



(III) SPRINT 3:



(IV) SPRINT 4:



7.CODING & SOLUTIONING:

7.1 FEATURE 1:

DASHBOARD DESIGN:

The dashboard is created using IBM cognos tool which efficiently visualises a given data. The design the expense tracker of the person and all data will be available.

```
<!doctype html>
```

```
<html lang="en">
```

```
<head>
```

```
<!-- Required meta tags -->
```

```
<meta charset="utf-8">
```

```
<meta name="viewport" content="width=device-width, initial-scale=1">
```

```
<!-- Bootstrap CSS -->
```

```
<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet" integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9Nao0Yz1ztcQTWfSpd3yD65VohhpUuCOMLASjC"
crossorigin="anonymous">
```

```
<title>Dashboard</title>

</head>

<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-
MrcW6ZMFYlzcLA8Nl+NtUVF0sA7MsXsP1UyJoMp4YLEuNSfAP+JcXn/tWtIaxVXM"
crossorigin="anonymous"></script>

<div class="container-fluid" >

  <div class="row flex-nowrap">

    <div class="col-auto col-md-3 col-xl-2 px-sm-2 px-0" style="background-color:
#B2D3C2">

      <div class="d-flex flex-column align-items-center align-items-sm-start px-3 pt-2
min-vh-100" style="color:black">

        <p class="d-flex align-items-center pb-3 mb-md-0 me-md-auto text-white text-
decoration-none">

          <span class="fs-5 d-none d-sm-inline" style="color:black; font-weight:
bold;">Personal Expense Tracker</span>

        </p>

        <ul class="nav nav-pills flex-column mb-sm-auto mb-0 align-items-center align-
items-sm-start" id="menu">

          <li class="nav-item mt-2" style="background-color:#00AD83; height: 50px;
width: 150px; border-radius: 5px;">

            <a href="dashboard.html" class="nav-link align-middle px-0"
style="color:black;">

              <span class="ms-1 d-none d-sm-inline">Home</span>

            </a>

          </li>

          <li class="nav-item mt-2">

            <a href="addexpense.html" class="nav-link px-0 align-middle"
style="color:black;">
```



```

                <span class="ms-1 d-none d-sm-inline">Add Expense</span>
            </a>
        </li>
        <li class="nav-item mt-2">
            <a href="modifyexpense.html" class="nav-link px-0 align-middle"
style="color:black;">
                <span class="ms-1 d-none d-sm-inline">Modify Expense</span>
            </a>
        </li>
        <li class="nav-item mt-2">
            <a href="analysis.html" class="nav-link px-0 align-middle"
style="color:black;">
                <span class="ms-1 d-none d-sm-inline">View Analysis</span>
            </a>
        </li>
        <li class="nav-item mt-2">
            <a href="rewards.html" class="nav-link px-0 align-middle"
style="color:black;">
                <span class="ms-1 d-none d-sm-inline">Rewards & Goals</span>
            </a>
        </li>
    </ul>
</div>
</div>
<div class="col py-3" style="background-color:black">
    <h3 style="color:white; text-align: center;">Welcome Back! Here are your
expenses:</h3>
</div>
```

</div>

</div>

</html>

7.2 FEATURE 2:

The filters used for classifying different parameters of the dataset can be efficiently done using the cognos tool . The particular state with the log in can be visualised in the map. <html>

<!doctype html>

<html lang="en">

<head>

<!-- Required meta tags -->

<meta charset="utf-8">

<meta name="viewport" content="width=device-width, initial-scale=1">

<!-- Bootstrap CSS -->

<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9Nao0Yz1ztcQTwFspd3yD65VohhpuuCOMLASjC" crossorigin="anonymous">

<title>Login</title>

</head>

<script

src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js" integrity="sha384-MrcW6ZMFYlzcLA8Nl+NtUVF0sA7MsXsP1UyJoMp4YLEuNSfAP+JcXn/tWtIaxVXM" crossorigin="anonymous"></script>

<body style="background-color:#B2D3C2">

```

<div class="container mt-3">

  <h1 style="color: black; text-align: center;">

    Personal Expense Tracker 

  </h1>

  <div class="container mt-5" style="width: 600px;">

    <div class="card shadow-lg bg-white rounded">

      <div class="card-header" style="text-align: center;">

        <h4>Login</h4>

      </div>

      <div class="card-body">

        <form action="/login" method="POST">

          <div class="mb-3">

            <label for="email" class="form-label">Email: </label>

            <input type="email" class="form-control" name="email" id="email"
placeholder="abc@gmail.com">

          </div>

          <div class="mb-3">

            <label for="passowrd" class="form-label">Password: </label>

            <input type="password" class="form-control" name="password"
id="password"></input>

          </div>

          <button type="submit" style="background-color:#00AD83; border-
color:#00AD83; border-radius:5px;">Login</button>

        </form>

      </div>

      <div class="card-footer text-muted" style="text-align:center">

        New user? <span><a href="registration.html">Register Here</a></span>

      </div>

    </div>

  </div>

```

</div>

</body>

</html>

8.TESTING:

8.1 TEST CASES:

Test case ID	Feature Type	Component	Test Scenario	Steps To Execute	Result	Status
HomePage_e_	Functional	Home Page	Verify user is able to see the Login/Signup popup when user clicked on Login Bu on in the Homepage	1.Enter URL and click go 2.Click on Login Bu on 3.Verify login/Singup popup displayed or not	Login page should pop up as soon as the Login bu on is clicked	Pass
LoginPage_e_	UI	Login Page	Verify the UI elements in Login/Signup popup	1.Enter URL and click go 2.Click on Login Bu on 3.Verify login/Singup popup with below UI elements: a.email text box b.password text box c.Login bu on d.New customer? Create account link e.Last password? Recovery password link	Applica on should show below UI elements: a.login with twiter & facebook b.password text box c.Login buton with orange colour d.Last password? Recovery password link	Fail

LoginPage_	Functional	Login Page	Verify user is able to log into application with Valid credentials	1.Enter URL(login.html) 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	User should navigate to user account homepage	Pass
Dashboard_	Functional	Dashboard page	Verify user is able to view the dashboard and see the charts	1.Enter URL(dashboard.html) 2.Click on the different charts that the user wants.	Application should show the expected charts	Pass
				3.The embedded link will be able to display the charts from dashboard		

8.2 USER ACCEPTANCE TESTING:

(I) 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).

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	7	0	0	7
Client Application	40	0	0	40
Security	3	0	0	3

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	3	19
Duplicate	1	0	3	0	4
External	2	3	0	1	6
Fixed	11	2	4	18	35
Not Reproduced	1	0	0	0	1
Skipped	0	0	1	1	2
Won't Fix	0	0	2	1	3
Totals	25	9	12	24	70

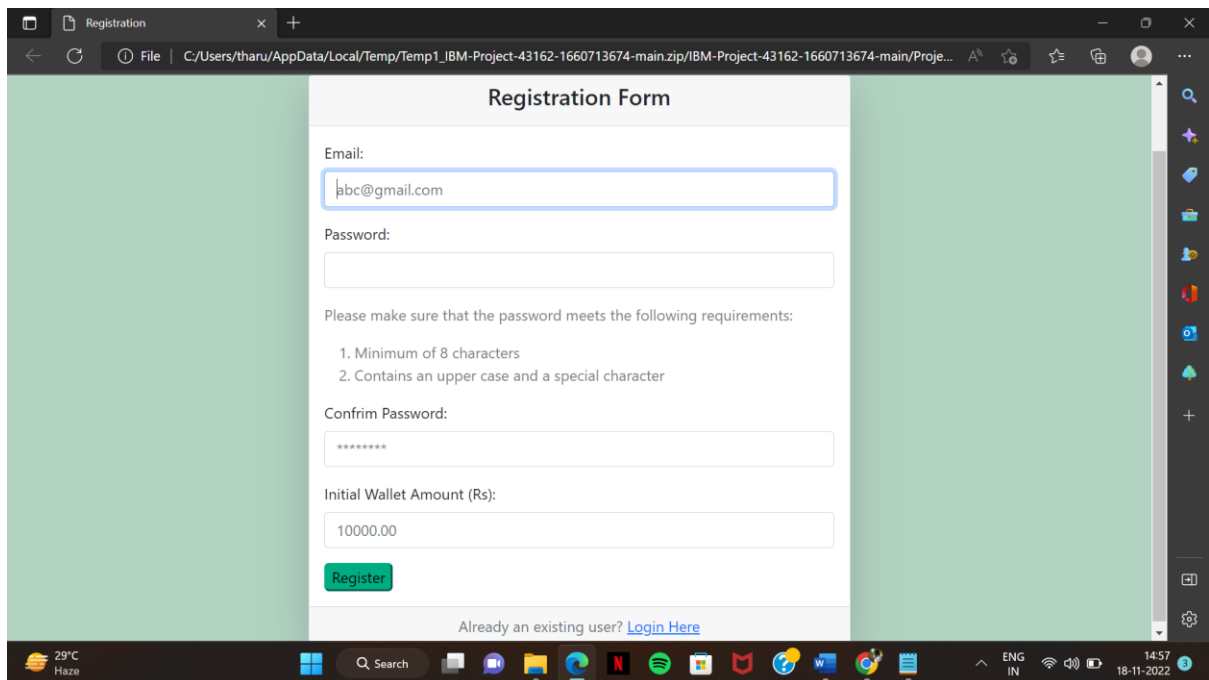
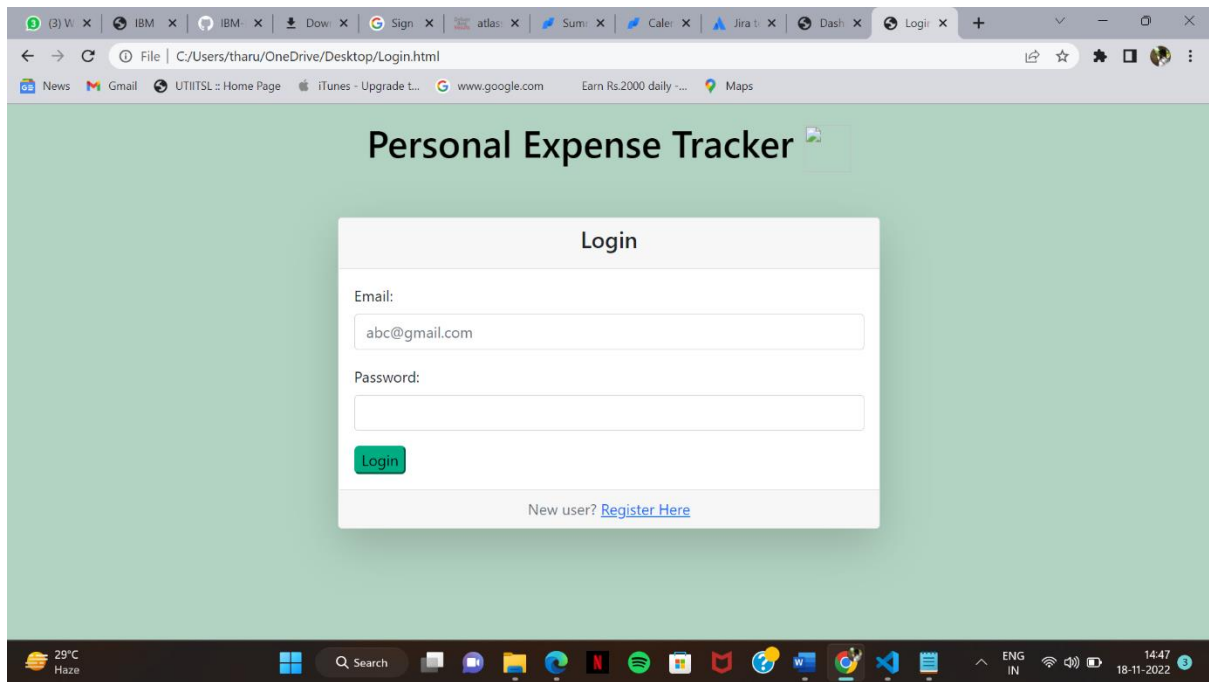
(II) TEST CASE ANALYSIS:

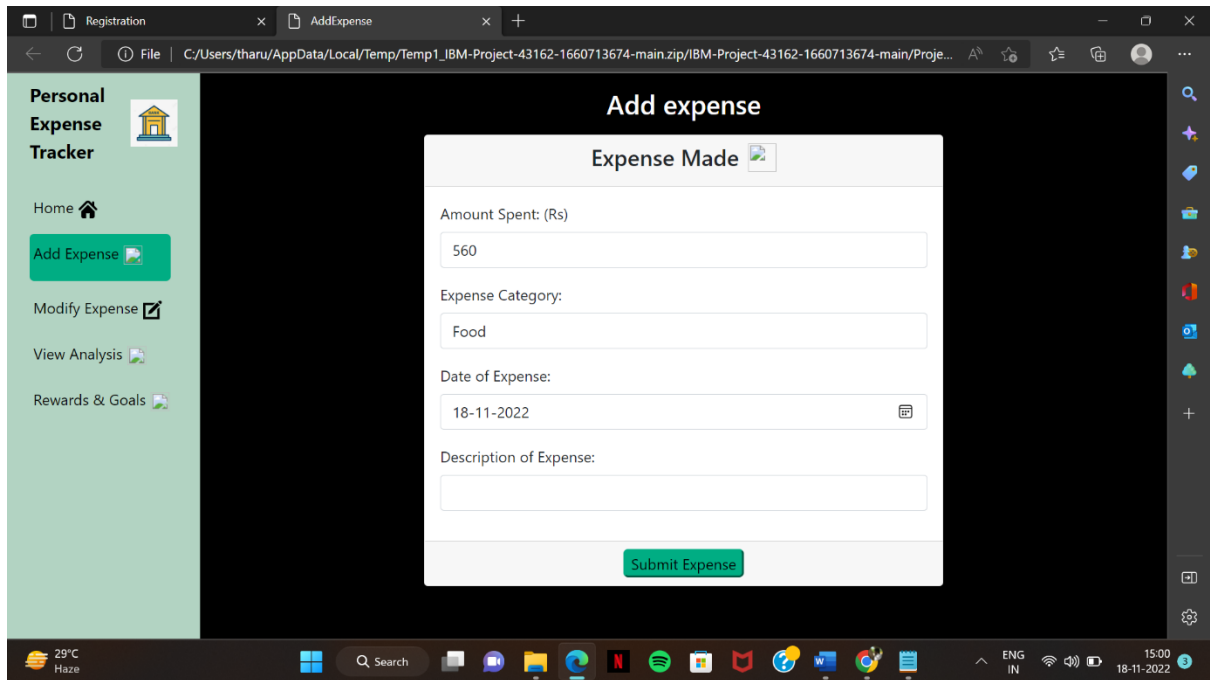
This report shows the number of test cases that have passed, failed, and untested

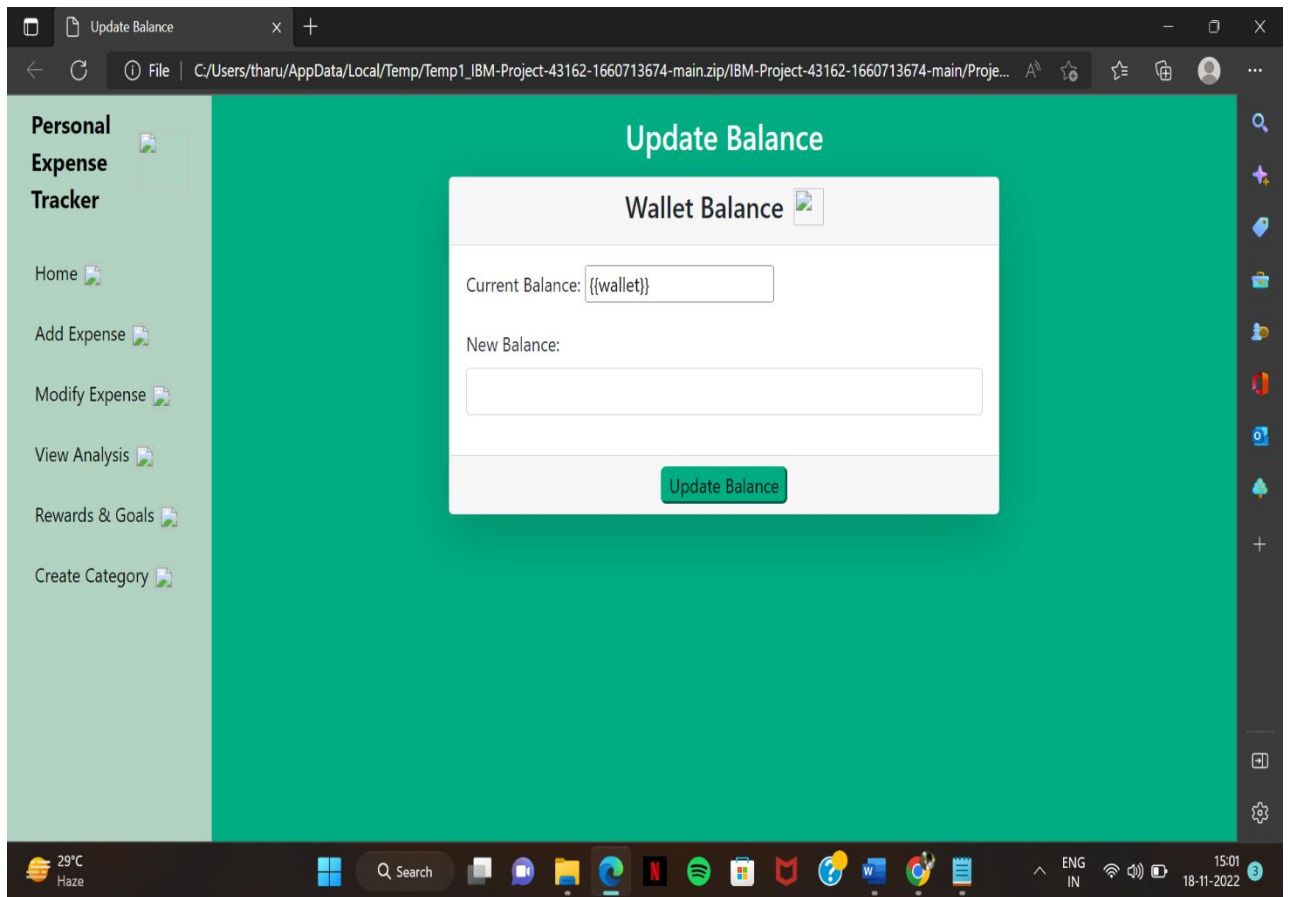
Outsource Shipping	3	0	0	3
Exception Reporting	9	0	0	9
Final Report Output	5	0	0	4
Version Control	2	0	0	2

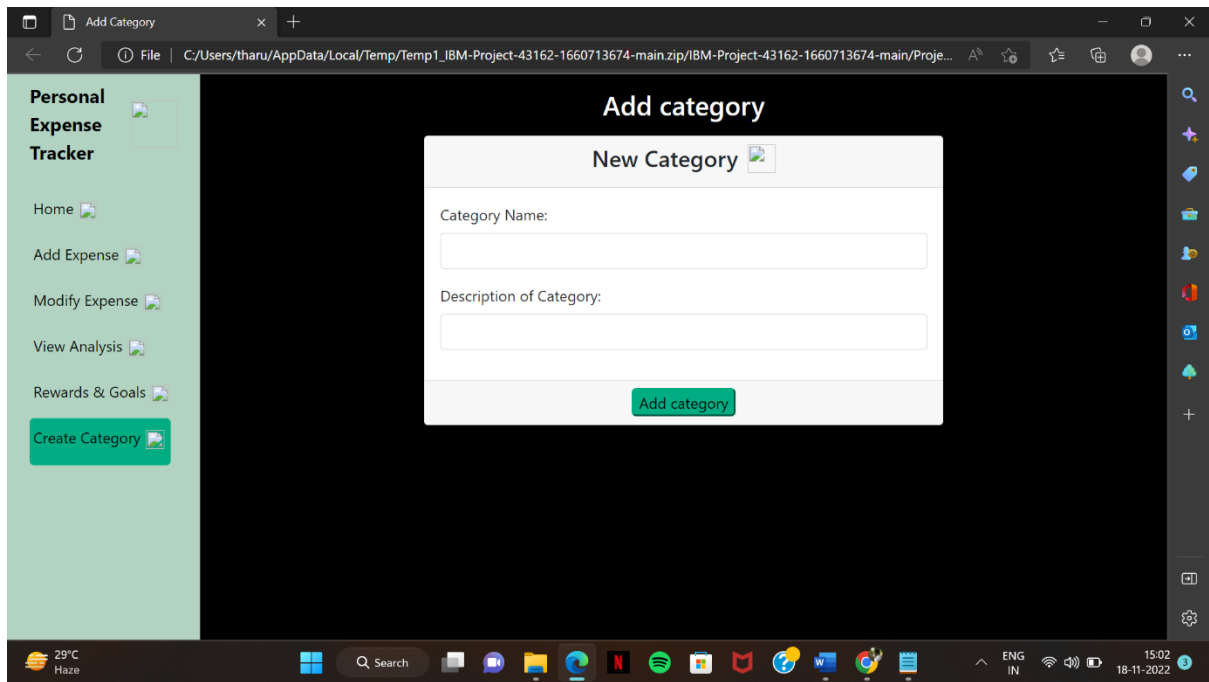
9.RESULTS:

9.1 PERFORMANCE MATRICS:









10.ADVANTAGES & DISADVANTAGES:

ADVANTAGES:

With a daily expense manager, you will be able to allocate money to different priorities and this will also help you cut down on unnecessary spending. As a result, you will be able to save and be able to keep worry at bay. A daily money tracker helps you budget your money so that you use it wisely.

DISADVANTAGES:

Your information is less secure, and probably being used and sold. They have to pay their bills somehow, so regardless of what their privacy policy may or may not say, just assume that your spending history and trends are going to be recorded and analyzed, by someone, somewhere. Now, you shouldn't have to worry about credit card fraud or identity theft, these companies are large enough and secure enough that you'll never have to worry about something like that. Just recognize that your information, most likely anonymous, will be used and potentially even sold.

11.CONCLUSION:

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.

12.FUTURE SCOPE:

- 1) It will have various options to keep record (for example Food, Travelling Fuel, Salary etc.).
- 2) Automatically it will keep on sending notifications for our daily expenditure.
- 3) In today's busy and expensive life, we are in a great rush to make moneys, but at the end of the month we broke off. As we are unknowingly spending money on title and unwanted things. So, we have come over with the plan to follow our profit.
- 4) Here user can define their own categories for expense type like food, clothing, rent and bills where they have to enter the money that has been spend and likewise can add some data in extra data to indicate the expense.

13.APPENDIX:

13.1 SOURCE CODE:

https://drive.google.com/drive/folders/1F58yVqYU1A0JhpWsadReaUSd_FbDuCUA?usp=share_link

13.2 GITHUB & PROJECT DEMO LINK:

GITHUB: <https://github.com/IBM-EPBL/IBM-Project-5244-1658752310>

13.3 Demo link:

<https://youtu.be/9Wf6sonGu3g>