Personal Expense Tracker

A PROJECT REPORT

Submitted by

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Abstract

Personal Expense Tracker is a day-to-day expense management Application designed to easily and efficiently track the daily expenses done via both online and offline through a computerized system that eliminates the need for manual paper tasks that systematically maintains records and easily accesses data stored by the user. Tracking your expenses involves identifying your expenditures throughout the month. It's an essential activity that you should ideally do every day throughout the month. A budget helps create financial stability. By tracking expenses and following a plan, a budget makes it easier to pay bills on time, build an emergency fund, and save for major expenses such as a car or home. Overall, a budget puts a person on stronger financial footing for both the day-to-day and the long term.

Project Report Index

1. INTRODUCTION

a. Project Overview:

With the launch and increase in sales of smartphones over the last few years, people are using mobile applications to get their work done, which makes their lives easier. Mobile applications comprise various different categories such as Entertainment, Sports, Lifestyle, Education, Games, Food and Drink, Health and Fitness, Finance, etc. This Expense Tracker application falls in the Finance Category and serves the important purpose of managing finances which is a very important part of one's life. The software product went through the design, development, and the testing phase as a part of the Software Development Lifecycle. The application is not much user intensive but just comprises of having them enter the expense amount, date, category. With this entered information, the user is able to see the expense details daily, weekly, monthly, and yearly in figures, graphs. The aim of this thesis is to provide a solution for users on how to manage finances in any circumstance by keePasswordg track of their expenses every day. Ultimately, this contributes to societal well-being.

b. **Purpose:**

The sole reason behind the need for this application is that when you start finding out where you are spending your money, it becomes easy to figure out how you can save money by cutting back or even eliminating spending in some areas. You can concentrate on saving even a little bit on your biggest expense categories, compared to cutting back a lot on smaller expenses. As this tracking expense becomes a habit, you can get a good picture of how much money you need to maintain your lifestyle. Budget Setting and expense tracking both alter consumer choice. Mental Budgeting leads people to overconsume some goods and underconsume others. Because budgets are set before consumption opportunities arise, they sometimes overestimate or underestimate the money required for a particular amount.As people track their expenses, expenses that are relatively easy to categorize – those that are more typical examples of their categories –will be the most subject to the rigors of budgeting.

A number of students at SDSU were asked how much they spend per month on their needs and requirements, and nobody was able to provide an exact answer. Thus, they do not know where their money is going. They liked the idea of such an expense tracking tool where with just a few inputs everyday, you can make yourself organized and make your life a bit easier in the long run.

2. LITERATURE SURVEY
a. Existing problem:

In a world where we spend ravishingly, there is an important classification of expense ,that is need or want .Need is something of a necessity and it can be termed as primary expense, whereas the want is an expense that is not necessity and can be termed as secondary income . We can also add our income, which gives us a unique and personal perspective of how much to spend. In the existing personal expense trackers, we input the expense and it in turn generates an report which summarizes the weekly or monthly expenses. In our application after the input is given we have a visually enticing graph which summarizes the expenses. The graph is categorically generated. Mainly 3 types Needs vs want, Categories chart, Daily expense.

b. References:

A literature survey is an overview of the previously published works on a specific topic. A good literature survey review can ensure that a proper research question has been asked and a proper theoretical framework and/or research methodology have been chosen.

i. Thanapal, P., Patel, M., Lokesh Raj, T., & Satheesh Kumar, J. (2015). Income and Expense Tracker. Indian Journal Of Science And Technology, 8(S2), 118-122.

ii. Jian, L., Shen, S., Li, J., Liang, X., & Li, L. (2016). Budget online learning algorithm for least squares SVM. IEEE transactions on neural networks and learning systems, 28(9), 2076-2087.

iii. Gaither, G. H., Dukes, F. O., & Swanson, J. R. (1981). ENROLLMENTFORECASTING: USE OF A MULTIPLE-METHOD MODEL FOR PLANNINGAND BUDGETING. Decision Sciences, 12(2), 217-230.

iv. Elbasheer, F. A., & Samani, A. T. (2014). Forecasting Budget Estimated Using Time-Series. Intelligent Information Management, 2014, 6, 142-148, Published Online May 2014 in SciRes.

c. **Problem Statement Definition:**

Many organizations have their own system to record their income and expenses, which they feel is the main key point of their business progress. Due to lack of a complete tracking system, there is a constant overload to rely on the daily entry of the expenditure and total estimation till the end of the month.

1. Who does the problem affect?

If we don't track money, we won't know when to stop spending in a given category (food or clothing, for example). Due to inconsistent tracking, a serious problem might happen in managing money.
If we spent too little, we might want to allocate more to the saving and debit pre-payment.

2. What are the boundaries of the problem?

Identify and eliminate wasteful spending habits in your financial life.

Helps to figure out what is happening to our money, and whether you can afford something you want.

Expense trackers enable you to record each purchase you or your employees make.

3. What is the issue?

Person has to keep a log in a diary or in a computer.

All the calculations need to be done by the user.

Lack of proper planning of our income.

4. When does the issue occur?

Overload to rely on the daily entry of the expenditure.

At the end of the month, we start to have money crisis.

Excessive and frivolous spending.

Never-Ending payments.

Living on borrowed money.

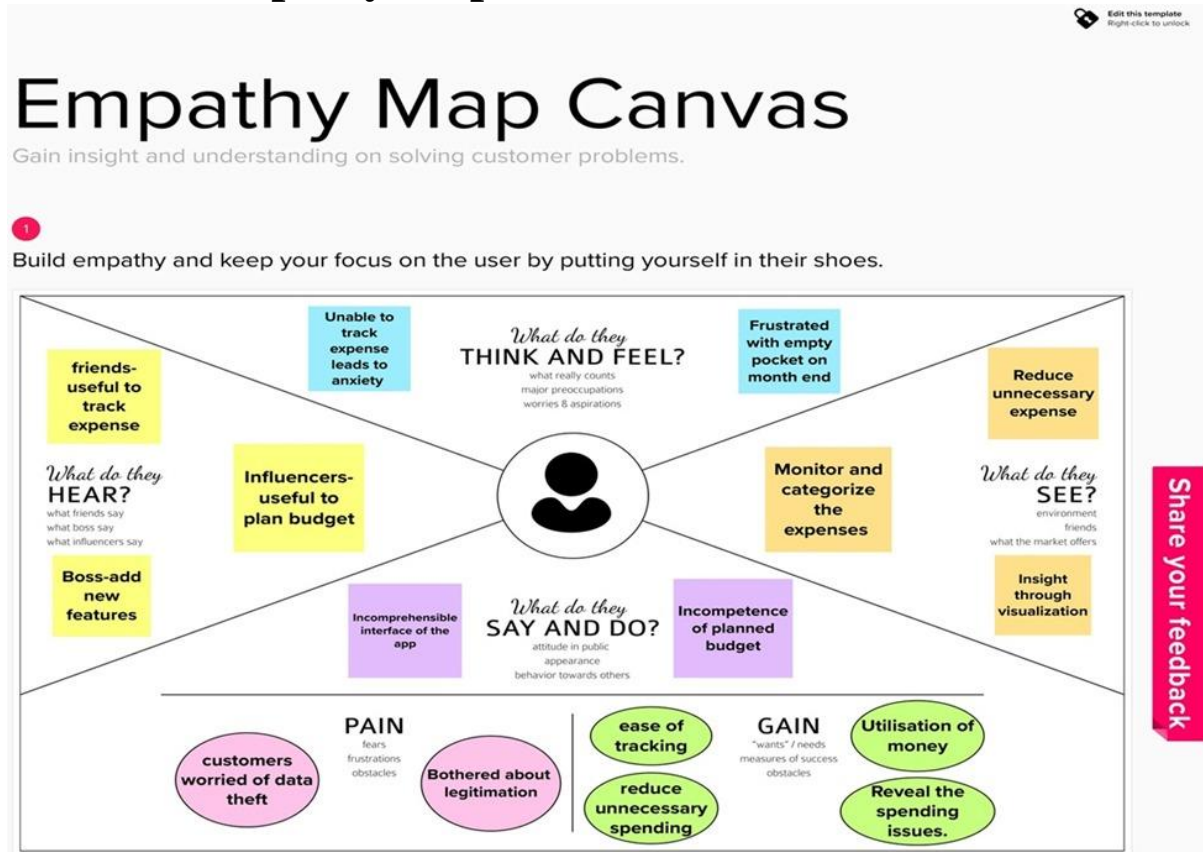**5. Where is the issue occur?**

Not investing in retirement.

Paying Off debt with savings.

External factors such as job loss, divorce or medical bills.

3. IDEATION & PROPOSED SOLUTION

a. Empathy Map Canvas:

b. Ideation & Brainstorming:

Brainstorm & Idea Prioritization Template. Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are

encouraged to collaborate, helPasswordg each other develop a rich amount of creative solutions.

Step 1: Team Gathering, Collaboration and select the problem Statement.

Step 2: BrainStorm, Idea listing.

Brainstorm

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

⏱ 10 minutes

TIP
You can select a sticky note and hit the pencil [switch to sketch] icon to start drawing!

Nithish kumar S

| Total expense so for | Security | Alert balance |
| Split incomes | Debit tracker | User limit |

Jeya venkatesh

| Filter expenses | Download statement | Edit expense |
| Remove expense | Manual limit | Transaction mode |

Mathan sundar

| Login device | Daily balance limit | Forget password |
| Expense insights | Email verification | Expense storage |

Jegajeeth

| Responsive | Mobile app | Neat UI |
| Customer response | Expense Storage | balance limit |

Step 3: Group Ideas

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 and break it up into smaller sub-groups.

⏱ 20 minutes

Security

| Email verification | Password reset | Two level authentication |

Feature

| User authentication | Transaction mode | Group of their expenses |
| Expense Filter | Split the income | Alert based on limit |
| Alert for each item |

Performance

| Neat UI | New colors | Optimizing the result function |
| Avoid multiple request |

TIP
Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

Step 4
: Idea Prioritization

④

Prioritize

Your team should all be on the same page about what's important
moving forward. Place your ideas on this grid to determine which
ideas are important and which are feasible.

🕐 20 minutes

♡

Importance

If each of these
tasks could get
done without any
difficulty or cost,
which would have
the most positive
impact?

TIP

Participants can use their
cursors to point at where
sticky notes should go on
the grid. The facilitator can
confirm the spot by using
the laser pointer holding the
H key on the keyboard.

Feasibility

Regardless of their importance, which tasks are more
feasible than others? [Cost, time, effort, complexity, etc.]

c. **Proposed Solution:**

S.NO.	Parameter	Description
1.	Problem Statement	In paper-based expense tracker system it is difficult to track our monthly expenses manually. In paper-based expense tracker system it is difficult to track our monthly expenses manually. The paper-based expense records may get lost in case of fire accidents, flood etc.
2.	Scalability of the Solution	This application can handle large number of users and data with high performance and security. This application can adapt for both large-scale and small-scale purposes. Easily available in all kinds of devices.
3.	Idea / Solution description	Daily expense management system which is specially designed for non-salaried and salaried personnel for keePasswordg track of their daily expenditure with easy and effective way through computerized system which tends to eliminate manual paper works. 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. 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.
4.	Novelty / Uniqueness	The user gets notified when their expense exceeds the limit and also it reminds the user when they
		forgot to make entry. Tracking expenses through SMS. Data analytics on expenses. Future expense prediction

5.	Social Impact / Customer Satisfaction	The application should be able to generate reports of their spending and notify users if they have exceeded their budget. It is designed to be dynamic to produce the prediction. It also provides users' personal information, their income as well as their expenses. This application can create awareness among common people about finance and stuffs. This application also helps user to be financially responsible. It Reduces time rather than entering details manually.
6.	Business Model (Revenue Model)	This Application is provided for free of cost. But It will have some advertisement. In premium version there is no advertisement and contains some additional features.

d. **Proposed Solution fit:**

1. CUSTOMER SEGMENT(S) `CS`	6. CUSTOMER LIMITATIONS EG. BUDGET, DEVICES `CL`	5. AVAILABLE SOLUTIONS PLUSES & MINUSES `AS`
People who are struggling to track their expenses are our customers. They can use our app to maintain records about their income and expenses	User have to entry every record manually. The category divided may be blunder or messy. person who is handling system must have some technical knowledge.	User can add their income and expenses. 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. PROBLEMS / PAINS + ITS FREQUENCY `PR`	9. PROBLEM ROOT / CAUSE `RC`	7. BEHAVIOR + ITS INTENSITY `BE`
In paper-based expense tracker system it is difficult to track our monthly expenses manually. The paper-based expense records may get lost in case of fire accidents, flood etc.	When the digits could not be recognized correctly. When the transactions are not successful. When the elder people unable to understand the smaller handwritten digits. When the paper based expense tracker records are subjected to fire accident, flood, etc.	They may keep a temporary note on their mobile. He/She will tell the other persons to remember the expense they do while calculating the expenses they consider only on the expenses that are single time and huge and leave the rest
3. TRIGGERS TO ACT `TR` This application can create awareness among common people about their income and expenses. It Reduces time rather than entering details manually. 4. EMOTIONS BEFORE / AFTER `EM` Frustration, Confusion, Inadequate > Boost , Feeling smart , Be an example for others	10. YOUR SOLUTION `SL` The application should be able to generate reports of their spending and notify users if they have exceeded their budget. This application can create awareness among common people about finance and stuffs. This application also helps user to be financially responsible.	8. CHANNELS of BEHAVIOR `CH` ONLINE Download statements from bank and pay monthly installment OFFLINE Using spreadsheets and notes for financial management

Column side labels (left to right): Define CS, fit into CL | Focus on PR, tap into BE, understand RC | Identify strong TR & EM | Focus on PR, tap into BE, understand RC | Extract online & offline CH of BE | Explore AS, differentiate

4. REQUIREMENT ANALYSIS

a. Functional Requirement:

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. Reports: The expense tracking app generates and sends reports to give a detailed insight about profits, losses, budgets, income, balance sheets, etc., 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. Recurrent Expenses: Rely on your budgeting app to track, streamline, and automate all the recurrent expenses and remind you on a timely basis. Budget Vs. Actual Spent: This is one of the most common features in an expense tracking mobile app. The user gets a detailed insight into the real-time income and expenditure. Thus, you can plan your budget strategically to reduce unnecessary expenses.

b. **Non-Functional Requirement:**

Non-functional requirements are the requirements that has nothing to do with the features of the application but with the speed of the requirements Also known as system qualities ,non functional requirements are just as critical as functional epics,capabilties,features and stories They ensure the usability and effectiveness of the enitre system.Failing to meet any one of them can result in systems that fail to satisfy internal business,user,or market needs or that fail to satisfy internal business,user or market needs,or that do not fulfill madotory requirements impsed by regulatory or standard agencies .

5. PROJECT DESIGN

a. Data Flow Diagrams:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is store.
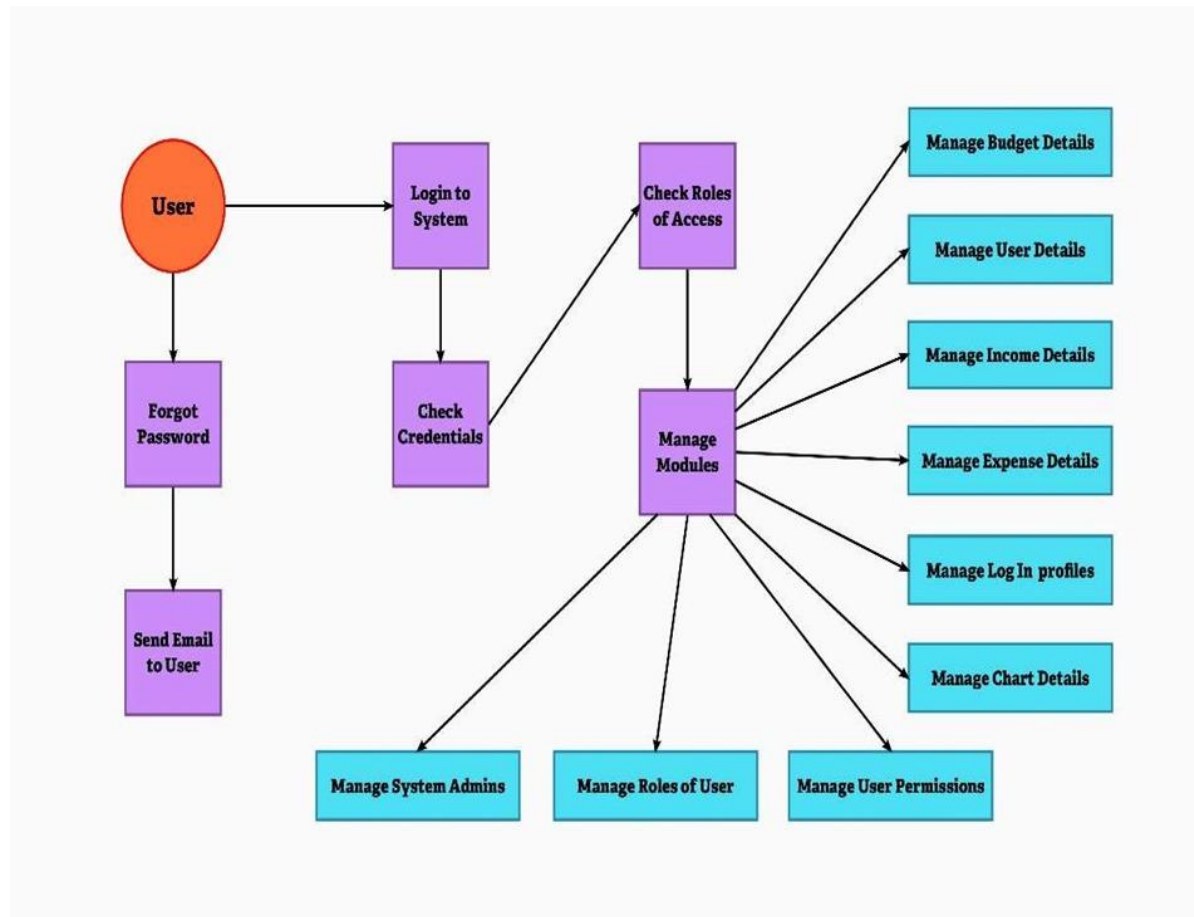
b. **Solution & Technical Architecture:**
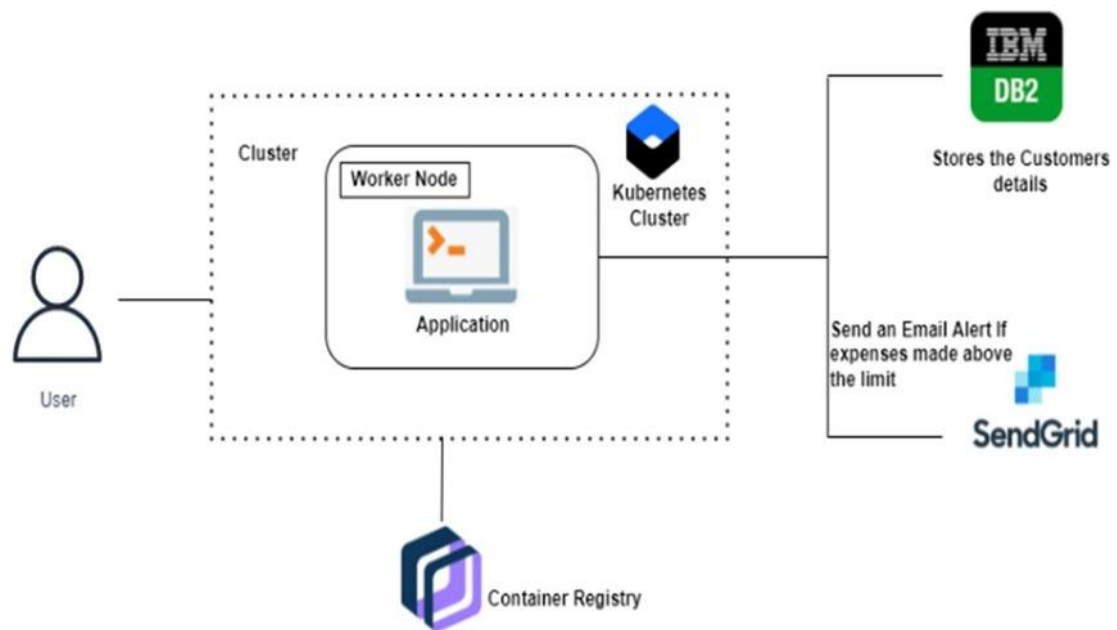
Table – 1: Components & Technologies: -

S. No.	Component	Description	Technology
1.	User Interface	The user can Interact with the application with use of Chatbot.	HTML, CSS, JavaScript / ReactJS, etc.
2.	Application Logic – 1	The application contains the sign in/sign up where the user will login into the main dashboard.	Python.
3.	Application Logic – 2	Dashboard contains the fields like Add income, Add Expenses.	IBM Watson STT service.
4.	Application Logic – 3	The user will get the expense report in the graph form and also get alerts if the expense limit exceed.	IBM Watson Assistant, SendGrid.
5.	Database	The Income and Expense data are stored in the MySQL database.	MySQL, NoSQL, etc.
6.	Cloud Database	With use of Database Service on Cloud, the User data are stored in a well secured Manner.	IBM DB2, IBM Cloudant, etc.
7.	File Storage	IBM Block Storage used to store the financial data of the user.	IBM Block Storage or Other Storage Service or Local Filesystem.

Table – 2: Application Characteristics:

S. No.	Characteristics	Description	Technology
1.	Open-Source Frameworks	Flask Framework in Python is used to implement this Application.	Python-Flask.
2.	Security Implementations	This Application Provides high security to the user financial data. It can be done by using the Container Registry in IBM cloud.	Container Registry, Kubernetes Cluster.
3.	Scalable Architecture	Expense Tracker is a life time access supplication. Its demand will increase when the user's incomes are high.	Container Registry, Kubernetes Cluster.
4.	Availability	This application will be available to the user at any part of time.	Container Registry, Kubernetes Cluster.
5.	Performance	The performance will be high because there will be no network traffics in the application	Kubernetes Cluster.

c. **User Stories:**

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user & Web user)	Registration	USN - 1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard.	High	Sprint - 1
		USN - 2	As a user, I can track my expenses and manage my monthly budget.	I can track my expenses and manage my monthly budget.	High	Sprint – 3
		USN - 3	As a user, I can see if there is an excessive expense and if there is such condition, I will be notified via e-mail.	I can receive e-mail, if there is an excessive expense.	Low	Sprint – 3
	Login	USN - 4	As a user, I can login to user dashboard and see the information about my incomes and expenses.	I can login to user dashboard and see the information.	High	Sprint – 1
	Dashboard	USN - 5	As a user, I can enter my income and expenditure details.	I can view my daily expenses.	High	Sprint – 2

		USN – 6	As a customer care executive, I can solve the log in issues and other issues of the application.	I can provide support or solution at any time 24*7	Medium	Sprint – 4
Customer Care Executive						
Administrator	Application	USN - 7	As an administrator, I can upgrade or update the application.	I can fix the bug which arises for the customers and users of the application.	Medium	Sprint - 4

6. **PROJECT PLANNING & SCHEDULING**

a. **Sprint Planning & Estimation:**

Sprint	Functional Requirements (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	PET-1	As a user, I can register for the application by entering my email, password, and confirming my password.	3	High	Nithish kumar S Jeya Venkatesh Mathan sundar Jegajeeth
Sprint-1	Login	PET-2	As a user, I can login to user dashboard and see the information about my incomes and expenses.	3	High	Nithish kumar S Jeya Venkatesh Mathan sundar Jegajeeth
Sprint-2	Dashboard	PET-3	As a user, I can enter my income and expenditure details.	4	High	Nithish kumar S Jeya Venkatesh Mathan sundar Jegajeeth
Sprint	Functional Requirements (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members

Sprint-3	Expense Update	PET-4	As a user, I can track my expenses and manage my monthly budget.	2	High	Nithish kumar S Jeya Venkatesh Mathan sundar Jegajeeth
Sprint-3	Email Alert	PET-5	As a user, I can see if there is an excessive expense and if there is such condition, I will be notified via e-mail.	6	Medium	Nithish kumar S Jeya Venkatesh Mathan sundar Jegajeeth
Sprint-4	Customer Care	PET-6	As a customer care executive, I can solve the login issues and other issues of the application.	3	Medium	Nithish kumar S Jeya Venkatesh Mathan sundar Jegajeeth
Sprint-4	Application	PET-7	As an administrator, I can upgrade or update the application.	3	Medium	Nithish kumar S Jeya Venkatesh Mathan sundar Jegajeeth

b. **Sprint Delivery Schedule:**

Sprint	Functional Requirements (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	Nithish kumar S Jeya Venkatesh Mathan sundar Jegajeeth
Sprint-1	Login	USN-2	As a user, I can login to user dashboard and see the information about my incomes and expenses.	3	High	Nithish kumar S Jeya Venkatesh Mathan sundar Jegajeeth
Sprint-2	Dashboard	USN-3	As a user, I can enter my income and expenditure details.	4	High	Nithish kumar S Jeya Venkatesh Mathan sundar Jegajeeth
Sprint	Functional Requirements (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-3	Expense Update	USN-4	As a user, I can track my expenses and manage my monthly budget.	2	High	Nithish kumar S Jeya Venkatesh Mathan sundar Jegajeeth
Sprint-3	Email Alert	USN-5	As a user, I can see if there is an excessive expense and if there is such condition, I will be notified via email.	6	Medium	Nithish kumar S Jeya Venkatesh Mathan sundar Jegajeeth

Sprint-4	Customer Care	USN-6	As a customer care executive, I can solve the login issues and other issues of the application.	3	Medium	Nithish kumar S Jeya Venkatesh Mathan sundar Jegajeeth
Sprint-4	Application	USN-7	As an administrator, I can upgrade or update the application.	3	Medium	Nithish kumar S Jeya Venkatesh Mathan sundar Jegajeeth

7. CODING & SOLUTIONING (Explain the features added in the project along with code)

a. Feature 1:

Login Authentication

For login authentication we are using IBM DB2 service to save the authentication data. For email validation we are using html email type input tag ,To check the existing account we added a query .

App.py file:

```
from flask import (

    Flask,

    render_template,

    send_file,

    request,

    redirect,

    url_for,

    session,

    flash,
```

```python
)
import ibm_db

import re

from matplotlib import pyplot as plt

from matplotlib.backends.backend_agg import FigureCanvasAgg as
FigureCanvas

from matplotlib.figure import Figure

from io import BytesIO


app = Flask(__name__)

app.secret_key = "Zenik"


conn = ibm_db.connect(
    "DATABASE=bludb;"
    "HOSTNAME=815fa4db-dc03-4c70-869a-
a9cc13f33084.bs2io90l08kqb1od8lcg.databases.appdomain.cloud;"
    "PORT=30367;"
    "SECURITY=SSL;"
    "SSLServerCertificate=DigiCertGlobalRootCA.crt;"
    "UID=wds99363;"
    "PWD=5xLyA3cB2GEolOUr;",
    "",
    "",
)


@app.route("/", methods=["POST", "GET"])
@app.route("/home")
def home():
    return render_template("home.html")
```

```python
@app.route("/login", methods=["GET", "POST"])
def login():
    msg = ""
    if request.method == "POST":
        username = request.form["username"]
        password = request.form["password"]
        sql = "SELECT clients.*,budgets.MAXBUDGET FROM clients LEFT JOIN BUDGETS ON CLIENTs.ID=BUDGETS.ID WHERE username =? AND password =?"
        stmt = ibm_db.prepare(conn, sql)
        ibm_db.bind_param(stmt, 1, username)
        ibm_db.bind_param(stmt, 2, password)
        ibm_db.execute(stmt)
        account = ibm_db.fetch_assoc(stmt)
        print(account)
        if account:
            session["Loggedin"] = True
            session["id"] = account["ID"]
            session["email"] = account["EMAIL"]
            session["username"] = account["USERNAME"]
            session["budget"] = account["MAXBUDGET"]
            print(session["Loggedin"])
            return redirect("/dashboard")
        else:
            msg = "Incorrect login credentials"
    flash(msg)
    return render_template("login.html", title="Login")
```

```python
@app.route("/register", methods=["GET", "POST"])
def register():
    msg = ""
    if request.method == "POST":
        username = request.form["username"]
        email = request.form["email"]
        password = request.form["password"]
        password1 = request.form["password1"]
        sql = "SELECT * FROM CLIENTS WHERE username =? or email=? "
        stmt = ibm_db.prepare(conn, sql)
        ibm_db.bind_param(stmt, 1, username)
        ibm_db.bind_param(stmt, 2, email)
        ibm_db.execute(stmt)
        account = ibm_db.fetch_assoc(stmt)

        print("account",account)
        if account:
            msg = "Account already exists"
        elif password1 != password:
            msg = "re-entered password doesnt match"
        elif not re.match(r"[A-Za-z0-9]+", username):
            msg = "Username should be only alphabets and numbers"
        else:
            sql = "INSERT INTO clients(EMAIL,USERNAME,PASSWORD) VALUES (?,?,?)"
            stmt = ibm_db.prepare(conn, sql)
            ibm_db.bind_param(stmt, 1, email)
            ibm_db.bind_param(stmt, 2, username)
            ibm_db.bind_param(stmt, 3, password)
```

```
        ibm_db.execute(stmt)

        return redirect("/dashboard")

    flash(msg)

    return render_template("register.html", title="Register")


if __name__ == "__main__":

   app.debug = True

   app.run()
```

b. **Feature 2:**

The everyday expenditure and the category most spent on was plotted in a chart

CODE:

```
@app.route("/reports")

def reports():

    return render_template("reports.html", title="Reports")

@app.route("/needVwant/")

def needVwant():

    sql = "SELECT Sum(amount) AS amount, need FROM transactions WHERE
DAYS(CURRENT_DATE)-DAYS(DATEADDED)<29 AND  user_id = ?
GROUP BY NEED ORDER BY need"

    stmt = ibm_db.prepare(conn, sql)

    transactions = fetchall(stmt)

    values = []
```

```python
    labels = []

    print(transactions)

    for transaction in transactions:

        values.append(transaction["AMOUNT"])

        labels.append(transaction["NEED"])

    fig = plt.figure(figsize=(10, 7))

    plt.pie(values)

    plt.title("Need v Want")

    plt.legend(["WANT", "NEED"])

    canvas = FigureCanvas(fig)

    img = BytesIO()

    fig.savefig(img)

    img.seek(0)

    return send_file(img, mimetype="image/png")

@app.route("/categoriesChart/")

def categoriesChart():

    sql = "SELECT Sum(amount) AS amount, category FROM transactions
WHERE DAYS(CURRENT_DATE)-DAYS(DATEADDED)<29
AND  user_id = ? GROUP BY category ORDER BY category"

    stmt = ibm_db.prepare(conn, sql)

    transactions = fetchall(stmt)

    values = []

    labels = []

    print(transactions)

    for transaction in transactions:

        values.append(transaction["AMOUNT"])

        labels.append(transaction["CATEGORY"])

    fig = plt.figure(figsize=(10, 7))

    plt.pie(values, labels=labels)
```

```python
    plt.title("Categories")

    plt.legend()

    canvas = FigureCanvas(fig)

    img = BytesIO()

    fig.savefig(img)

    img.seek(0)

    return send_file(img, mimetype="image/png")

@app.route("/dailyLineChart/")

def dailyLineChart():

    sql = "SELECT Sum(amount) AS amount, DAY(dateadded) as dateadded
FROM transactions WHERE DAYS(CURRENT_DATE)-
DAYS(DATEADDED)<29 AND  user_id = ? GROUP BY dateadded ORDER
BY dateadded"

    stmt = ibm_db.prepare(conn, sql)

    transactions = fetchall(stmt)

    x = []

    y = []

    print(transactions)

    for transaction in transactions:

        y.append(transaction["AMOUNT"])

        x.append(transaction["DATEADDED"])

        ##get budget

    sql = "SELECT MAXBUDGET FROM budgets WHERE id = ?"

    stmt = ibm_db.prepare(conn, sql)

    ibm_db.bind_param(stmt, 1, session["id"])

    ibm_db.execute(stmt)

    budget = ibm_db.fetch_assoc(stmt)

    print(budget)

    fig = plt.figure(figsize=(10, 7))

    plt.scatter(x, y)
```
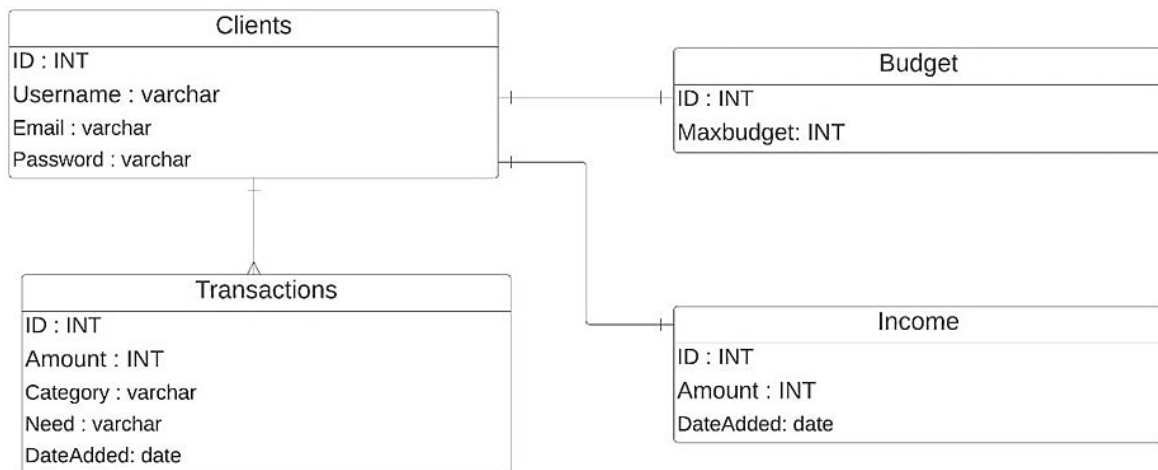
```
plt.plot(x, y, "-")
if budget:
    plt.axhline(y=budget["MAXBUDGET"], color="r", linestyle="-")
plt.xlabel("Day")
plt.ylabel("Transaction")
plt.title("Daily")
plt.legend()
canvas = FigureCanvas(fig)
img = BytesIO()
fig.savefig(img)
img.seek(0)
    return send_file(img, mimetype="image/png")
```

c. **Database Schema: (if Applicable)**

8. **TESTING**

| Test Cases	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
1	Test the application when valid email and Password is entered	Email: arun12@gmail.com Password: 123456	Login should be successful	Login was successful	Pass
2	Test the application when invalid email is entered	Email: arun12gmail.com Password: 123456	Check email id and Password and redirect to the same page	Check email id and Password and redirect to the same page	Pass
3	Test the application when invalid Password is entered	Email: arun12@gmail.com Password: 123456	Check email id and Password and redirect to the same page	Check email id and Password and redirect to the same page	Pass
4	Test the application when Password and confirm Password is matched	Password: 123456 Confirm Password: 123456	Registration should be successful	Registration should be successful	Pass
5	Test the application when Password and confirm password is **not matched**	Password: 153456 Confirm Password: 135456	Password didn't match and redirect to the same page	Password didn't match and redirect to the same page	Pass

6	Test the application if valid Email id is given	Email: premsundar153@gmail.com	Registration should be successful	Registration should be successful	Pass
7	Test the application if invalid Email id is given	Email: premsundar153@gmail.com	Invalid email id and redirect to the same page	Invalid email id and redirect to the same page	Pass
8	Test the application if valid User id is given	User name: 176	Registration should be successful	Registration should be successful	Pass
9	Test the application if invalid User id is given	User name: !$%abc	Incorrect User id and redirect to the same page	Incorrect User id and redirect to the same page	Pass
10	Add a new budget	Budget = 10000	Budget added successfully	Budget added successfully	pass
11	Add an Expense	Expense Amount = 150 Need Category = Food	Added Expense Successfully	Added Expense Successfully	pass
12	Add an Income	Income Amount = 11000	Successfully Added Income	Successfully Added Income	pass

b. **User Acceptance Testing:**

User's input: -

User wanted to visit the website

User accepted result: -
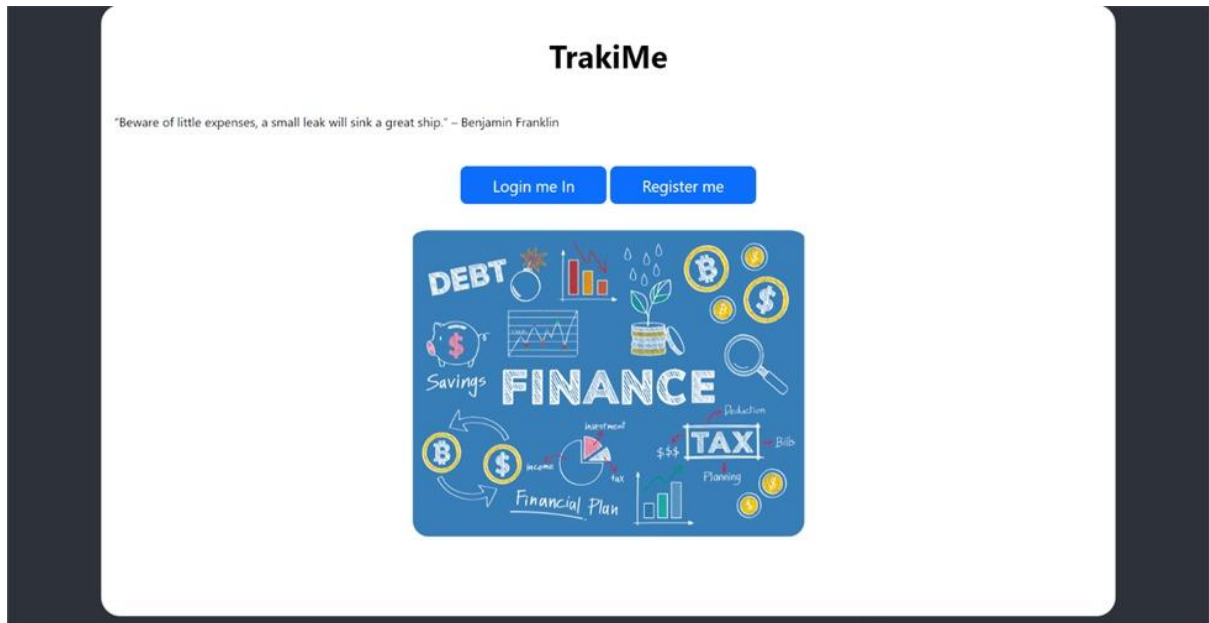
User's input: -

User wanted to login or sign up using credentials

User accepted result: -

User's input: -

User wanted to login or sign up using credentials

User accepted result: _
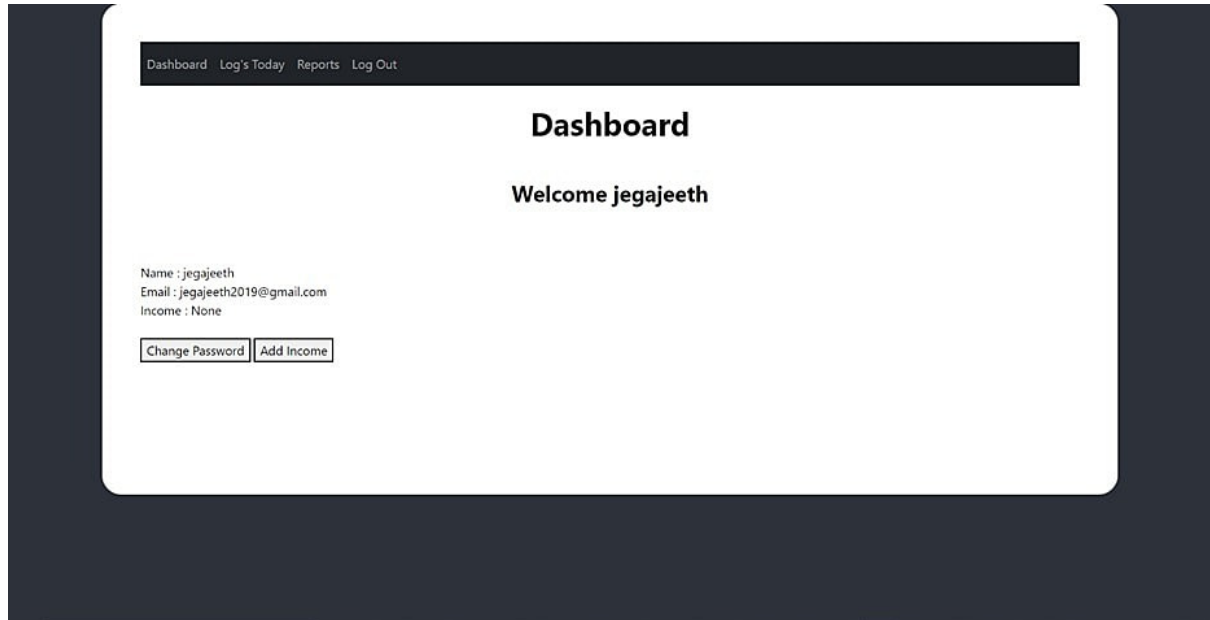
User's input: -

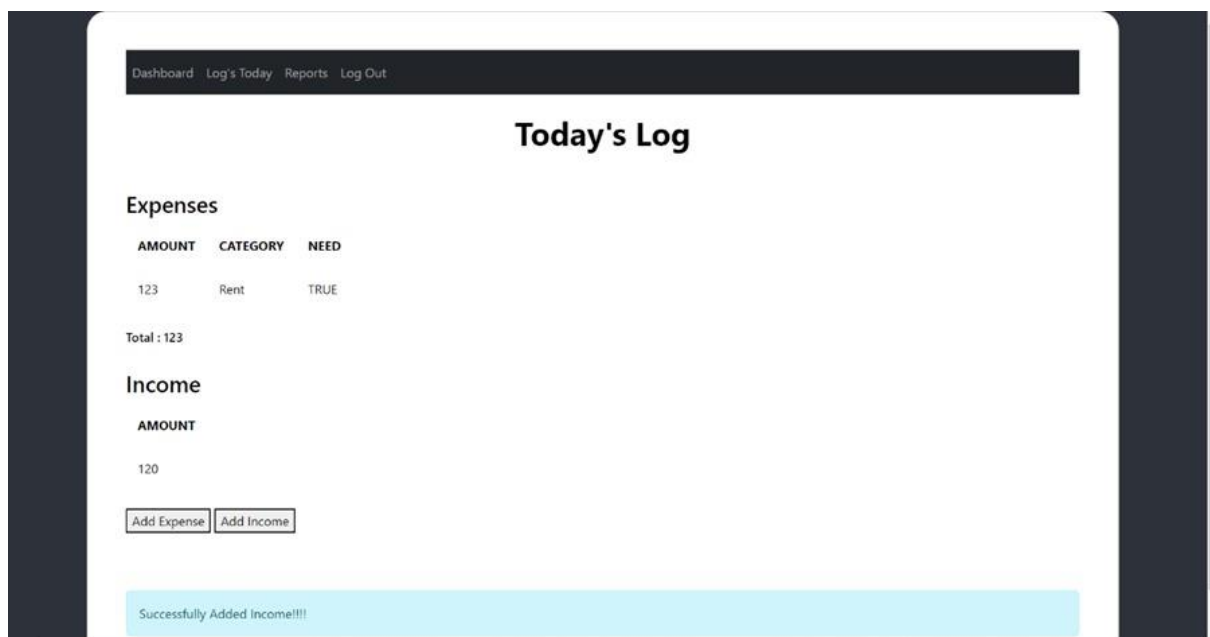After completion of registration the user is taken to the dashboard .

User accepted result: -

User's input: -

The user wants to add amount-120 and name the expense as rent.

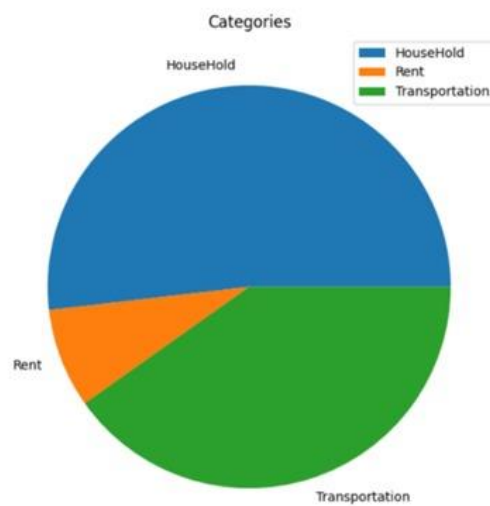## User accepted result: -

User's input: -

The user wants an pictorial representation of his expenses category wise.

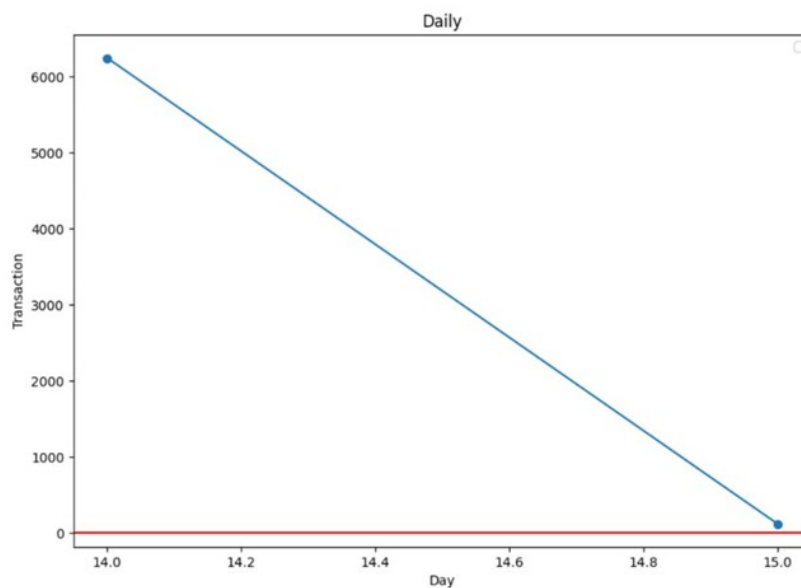## User accepted result: -

Categories Chart

User's input: -

The user wants an pictorial representation of his expenses category wise.

User accepted result: -

Daily Chart

9. ADVANTAGES & DISADVANTAGES

Advantage:

You are not constantly worried and stressed about your finances.
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. If you find that every month your expenses are more than what you earn, it is time to put your house in order and get a money manager app that keeps track of your money without any problem.You are unaware what is happening with your money.
Some short points to summarize-
You spend and save in a haphazard manner.
You have funds for emergencies
You do not take hints about financial problems
You don't take loans without knowing your financial situation
You cannot make your money grow

Disadvantage:

The budget may prescribe that certain amounts of overhead costs be allocated to various departments, and the managers

of those departments may take issue with the allocation methods used.

Only Considers Financial Outcomes-
Budgets are primarily concerned with the allocation of cash to specific activities, and the expected outcome of business transactions - they do not deal with more subjective issues, such as the quality of products or services provided to customers. It also does not encompass any review of the risks to which the business is subjected. These other issues can be stated as part of the budget, but this is not typically done.

Strategic Rigidity

When a company creates an annual budget, the senior management team may decide that the focus of the organization for the next year will be entirely on meeting the targets outlined in the budget. This can be a problem if the market shifts in a different direction sometime during the budget year. In this case, the company should shift along with the market, rather than adhering to the budget.

The major problem occurs when budgets are applied mechanicallyand rigidly.

Budgets can demotivate employees because of lack of participation. If the budgets are arbitrarily imposed top down, employees will not understand the reason for budgeted expenditures, and will not be committed to them.

Budgets can cause perceptions of unfairness.

Budgets can create competition for resources and politics.

A rigid budget structure reduces initiative and innovation at lower levels, making it impossible to obtain money for new ideas. Other constraints include Feeling constrained, finding the time for it, making the right decisions overlooking important factors, expense Allocations

10.CONCLUSION

– Thus the presented application will help to solve the procrastination of the user and help him prioritize what's the primary and the secondary expense to be focused on.

– Money management is simply a system that helps users keep track of all their expense such as expense types, expense name and expense description. The process also minimizes the chance of missing a expense . This one addresses the scalability and efficiency of this application. Hence this report explains briefly about the personal expense tracker and its benefits of the application.

– This application will also motivate others to manage money in a more effective way.

11. FUTURE SCOPE

Thus the presented application will help to solve the procrastination of the user and help him prioritize what's the primary and the secondary expense to be focused on.

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This application will also motivate others to manage money in a more effective way.

12.APPENDIX

GitHub-
https://github.com/IBM-EPBL/IBM-Project-24280-
1659940931
ProjectDemoLink-
https://drive.google.com/file/d/1JMHOj7R3W2MYpuxV8
YU-WY-HJFU28jIS/view?usp=share_link