

PERSONAL EXPENSE TRACKER APPLICATION

1. INTRODUCTION:

1.1. Project Overview

The most demanded skills for data scientists Python, R, SQL, and the list goes on and on. There are many surveys and reports that show some good statistics on popular data skills. In this post, I am going to gather first-hand information by scraping data science jobs from indeed.ca, analyze top skills required by employers, and make job recommendations by matching skills from resume to posted jobs. It will be fun! Python code can be found on my GitHub. This post is part of a series of people analytics experiments I am putting together: Job skill match (Recruitment) Employee attrition prediction (Employee Management) Pay gap by gender, ethnicity, profession (Employee Compensation) FUTURE WORK Organizational network analysis (ONA) FUTURE WORK Web Scraping I like scraping data from Internet because it is free! But you should not abuse it just because it is free. There are basic rules to follow so we do not get our cyber friends and reject ourselves from visiting their websites. All can be summed in two words: BE NICE. Read their terms and conditions on the website first, and space out your requests so that their website does not get hit too hard. Here is a very good web scraping 101. I scraped data science jobs from indeed.ca, the largest global recruiting website. I gathered data scientist/engineer/analyst jobs posted in the last 30 days (09/19/2018 – 10/19/2018), in 6 major Canadian cities, i.e. Toronto, Montreal, Vancouver, Ottawa, Calgary, and Edmonton. I used Selenium Webdriver to automate web scraping and saved results in a local JSON file. In total 367 job postings were retrieved, and it took about 20 minutes. Job Description Keyword Extraction For each job, I tokenized its job description, cleaned up the list by removing words defined in the NLTK list of stopwords, and finally filtered on a list of popular data science related skill words. Bar chart below shows top 30 data skills required by most employers. More than 60% jobs requires SQL, 48% requires Python, and 32% requires R. No surprise. It is worth noting that Excel is actually quite a common requirement, which I would not normally considered a serious data skill. Agile is also among the top required skills. AWS knowledge is more demanded than Azure or GCP.

1.2 Purpose:

An expense tracker is a desktop application that keeps track of all your expenses and stores all the information regarding them, including the person to whom you have paid the money (also called payee) and the reason why you paid the money. The objective of this project is to create a GUI based Expense Tracker. To build this, you will need an intermediate understanding of the Tkinter library, SQL language and its commands, and basic understanding of the message box module, ttk.Treeview widget and tkcalendar library.

2. LITERATURE SURVEY:

2.1. Existing problem:

Money View App reads all of the transactional SMS messages and provides you with real-time visibility into your finances. This app unearths the hidden financial data that sits idly in SMS logs and makes excellent use of it. This personal finance manager app acts as a proactive budget planner, assisting you in staying on top of your budget, bills, and finances. The personal finance app was designed for simple, real-time budget and financial tracking, making it one of the best expense tracker apps in India. You can use the budget planner and spending tracker to keep track of your personal and business financial transactions, review financial data on a daily/weekly/monthly basis, and manage your assets. Monefy tracks the user's expenses and compares them to the monthly income and the budget planner. Monefy's money manager app keeps your monthly budget in top shape. As a result, it could also serve as the best expense tracker app. Wallet can automatically track your daily expenses by syncing your bank account, view weekly expense reports, plan your shopping expenses, and share specific features with your loved ones. You can manage your money with a wallet from anywhere and at any time. Walnut automates and secures the tracking of your monthly expenses. You can stay within your budget, pay your bills on time, and save more money each month by using the Walnut app. They also provide personal loans.

2.2. References:

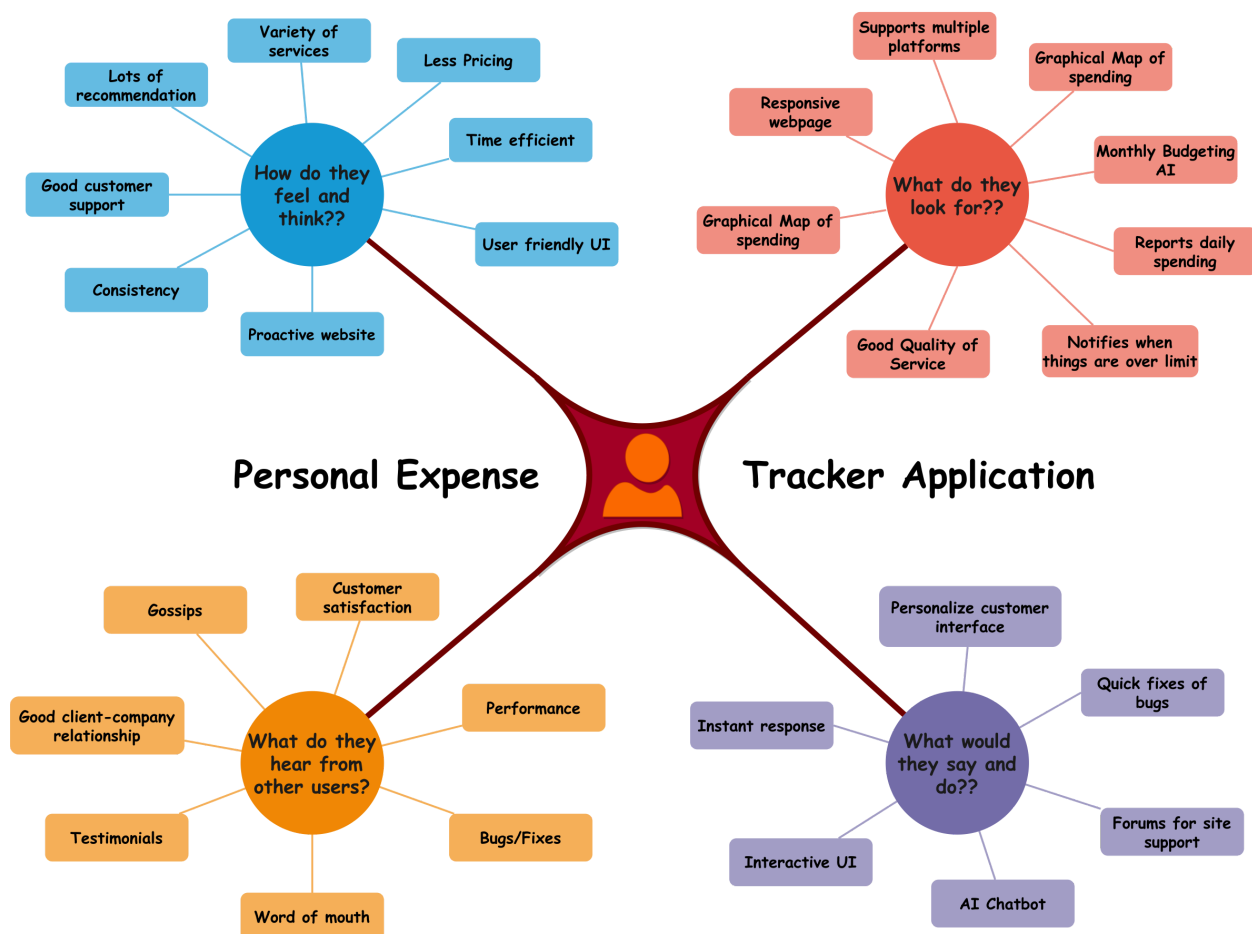
1. <https://moneyview.in/insights/best-personal-finance-management-apps-in-india>
2. <https://www.factmr.com/report/personal-finance-mobile-app-market>
3. <https://www.moneytap.com/blog/best-money-management-apps/>
4. <https://relevant.software/blog/personal-finance-app-like-mint/>
5. <https://www.onmanorama.com/lifestyle/news/2022/01/11/financial-literacy-trend-among-todays-youth-investment.html>
6. <https://www.livemint.com/money/personal-finance/96-indian-parents-feel-their-children-lack-financial-know-how-survey-11661336110855.html>
7. <https://economictimes.indiatimes.com/small-biz/money/importance-of-financial-literacy-amongst-youngsters/articleshow/85655134.cms>
8. <https://www.news18.com/news/education-career/only-27-adults-16-7-of-indian-teenagers-financially-literate-4644893.html>

2.3. Problem Statement Definition:

Modern education does not focus on finance management. This is primarily due to lack of resources and the Indian value system on giving money to children. Failing to teach this valuable knowledge had left many Indians to recklessly spend their income and fall into vicious cycles of EMI and debt. Many of them are just a month's salary away from bankruptcy. This issue is tackled by providing a web application for where people can plan their monthly expenses into categories, set alerts and get visual insights from their spending patterns. Who does the problem affect Young adults and earning middle class citizens? What is the issue? Lack of financial literacy among people When does the issue occur Primarily when the person moves from college to job and starts earning their own money. Where is the issue occurring Especially among young engineers who are newly exposed to consumer centric market and services.

3. IDEATION & PROPOSED SOLUTION:

3.1. Empathy Map Canvas



3.2. Ideation & Brainstorming:

Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

10 minutes to prepare
 1 hour to collaborate
 3-4 people recommended

Share template feedback

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

10 minutes

- Team gathering**
Gather who should participate in the session and send an invite. Share relevant information or prework ahead.
- Set the goal**
Think about the problem you're focusing on solving in the brainstorming session.
- Learn how to use the facilitation tools**
Use the facilitation Superpowers to run a happy and productive session.

Open article

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Right We statement. This will be the focus of your brainstorm.

5 minutes

How to allow the users a single way to track all their expenses and how we define a reminder system for the same

Key rules of brainstorming
To run an insight and productive session.

- Stay in topic.
- Defier judgment.
- Go for volume.
- Discourage wild ideas.
- Listen to others.
- If possible, be visual.

Brainstorm

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

10 minutes

MOHANASUNDARAM K

- Navigate to the dashboard
- Add user profile
- Add income and expenses
- Visualize the expenses
- Add reminder and get notify
- Set budget

PRASANATH M

- Generate Monthly report
- Filter the expenses periodically
- Keep accurate records
- Add multiple stream of income
- To remind user to enter the spending
- Categorize your expenses
- Add reminder and get notify
- Edit user profile
- Navigate to the dashboard

SARAJAY A

- Keep the expenses and expenses
- Keep accurate records
- Create a reminder system of income
- Visualize the expenses
- Set the Monthly report

SIRANJIVI J

- To remind the user to enter the spending
- Generate the Monthly report
- Visualize the expenses
- Keep accurate records
- Set the budget

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.

20 minutes

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

After you collaborate

You can export the mural as an image or pdf to share with members of your company who might find it helpful.

Quick add-ons

- Share the mural**
Share a view link to the mural with stakeholders to keep them in the loop about the outcomes of the session.
- Export the mural**
Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save to your drive.

Keep moving forward

Strategy blueprint
Define the components of a new idea or strategy.

Customer experience journey map
Understand customer needs, motivations, and obstacles for an experience.

Strengths, weaknesses, opportunities & threats
Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.

Show template feedback

3.3. Proposed Solution:

Problem Statement Building a personal finance tracking application that will imbibe good spending habits into students.(Problem to be solved)
Idea / Solution description To build a web application that is deployed in IBM cloud and leverage mailing service like sendgrid to implement the same Novelty / Uniqueness The stats generated with visual graphs are more effective than log books. It also helps in using technology to gain better insights from Social Impact / Customer Satisfaction Better financial knowledge is gained. Gamified approach can be used to give self satisfaction.Reduced chances of bad debt in future
Business Model (Revenue Model) Subscription can be incorporated to access premium tools within the app. Scalability of the Solution as deployment.As the application is containerized fr It can be easily scaled in a cloud service provider like IBM.

3.4. Problem Solution fit:

Define CS, fit into CC	1. CUSTOMER SEGMENTS: <ul style="list-style-type: none">➤ People who struggle in managing their expenses.➤ Working individuals, students, budget conscious consumers.	2.CUSTOMER CONSTRAINTS: <ul style="list-style-type: none">➤ Internet is required for accessing every data.➤ User have to enter every non digital payments manually.	3.AVAILABLE SOLUTIONS <ul style="list-style-type: none">➤ Instead of this applications user can maintain a diary or excel sheet.➤ PROS: Have to make daily update.➤ CONS: Ineffective way, takes a lot of time.
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<p>Focus on J&P, tap into BE, understand RC</p>	<p>4.JOBS-TO-BE-DONE/PROBLEMS:</p> <ul style="list-style-type: none"> ➤ To keep track of daily digital expenses and non-digital expenses. ➤ Should keep track of budget plan and notify when it excites. 	<p>5.PROBLEM ROOT CAUSE:</p> <ul style="list-style-type: none"> ➤ Unaccounted expenditure. ➤ Improper planning. ➤ Can't maintain a physical source properly since it takes of lot of time. 	<p>6.BEHAVIOUR:</p> <ul style="list-style-type: none"> ➤ Should take account of every expenses and note it. ➤ Should reduce unwanted spendings. ➤ Make use of software tools to maintain expenses.
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Identify Strong TR & EM	7.TRIGGERS: <ul style="list-style-type: none">➤ When the expenditure excites the budget plan.➤ Unaccounted expenditure may result in insufficient money for main needs.	9.YOUR SOLUTION: <ul style="list-style-type: none">➤ To create an application to manage the bridge between budget plan and expenditure.➤ And make it accessible anytime and anywhere.➤ By creating their own budget plan and comparing with previous plans.	10.CHANNELS OF BEHAVIOUR:
	8.EMOTIONS: <ul style="list-style-type: none">➤ BEFORE: Anxious, confused, Frustration, Inadequate.➤ AFTER: Confident, Calm and composed.		ONLINE MODE: By maintaining Excel sheets And using Expensing tracking applications OFFLINEMODE: Maintaining an expense diary or using any other traditional methods for managing expenses.

4. REQUIREMENT ANALYSIS:

4.1. Functional requirement

Following are the functional requirements of the proposed solution.

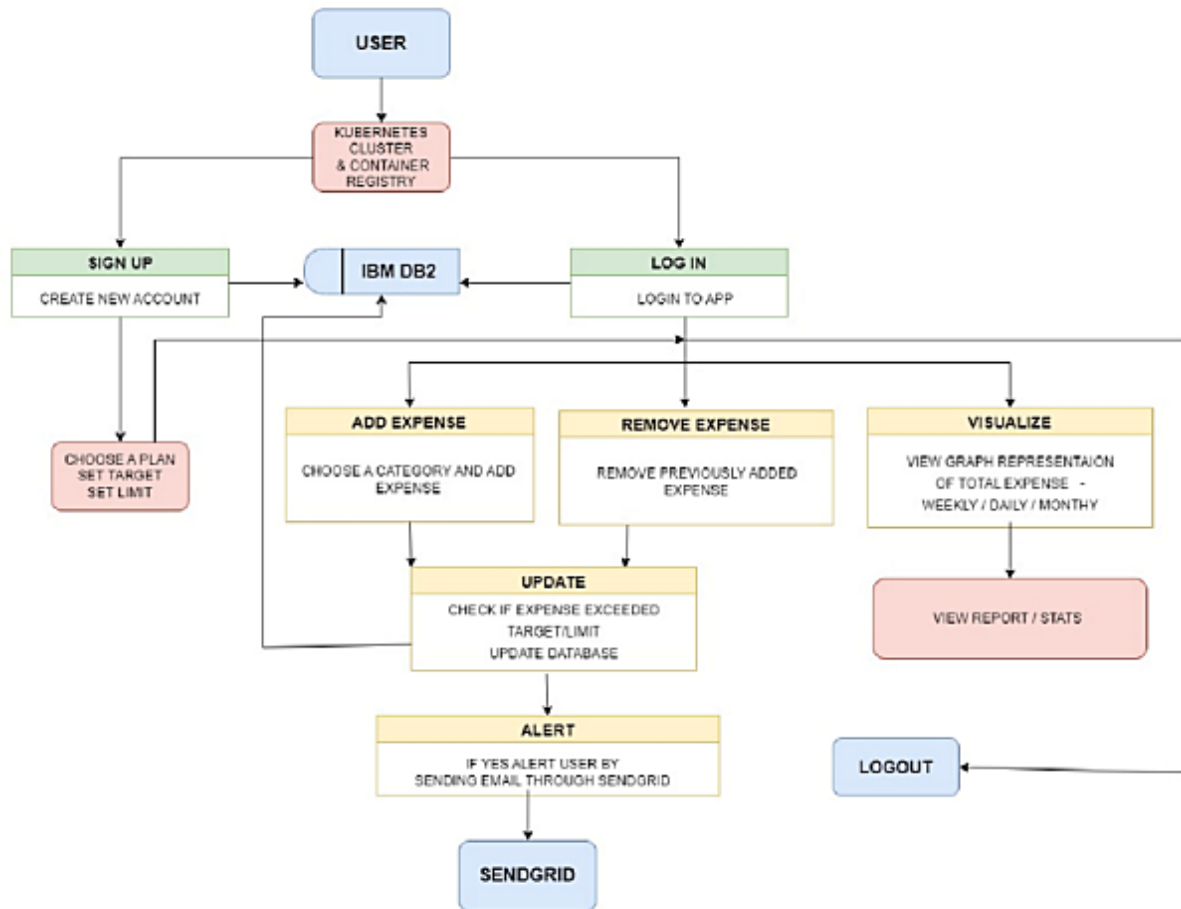
FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration is done through email.
FR-2	User Confirmation	Confirmation via Email.
FR-3	User Login	By entering username and password.
FR-4	Enter your expenses page.	Collects user's expenses data with date and time included.
FR-5	Expenses Report is generated.	Represent all user's data in the form of a graphical and easy to understand report.
FR-6	Option to add categories and type of expense to the data	The app can organize expenses based on different categories.

4.2. Non Functional requirements:

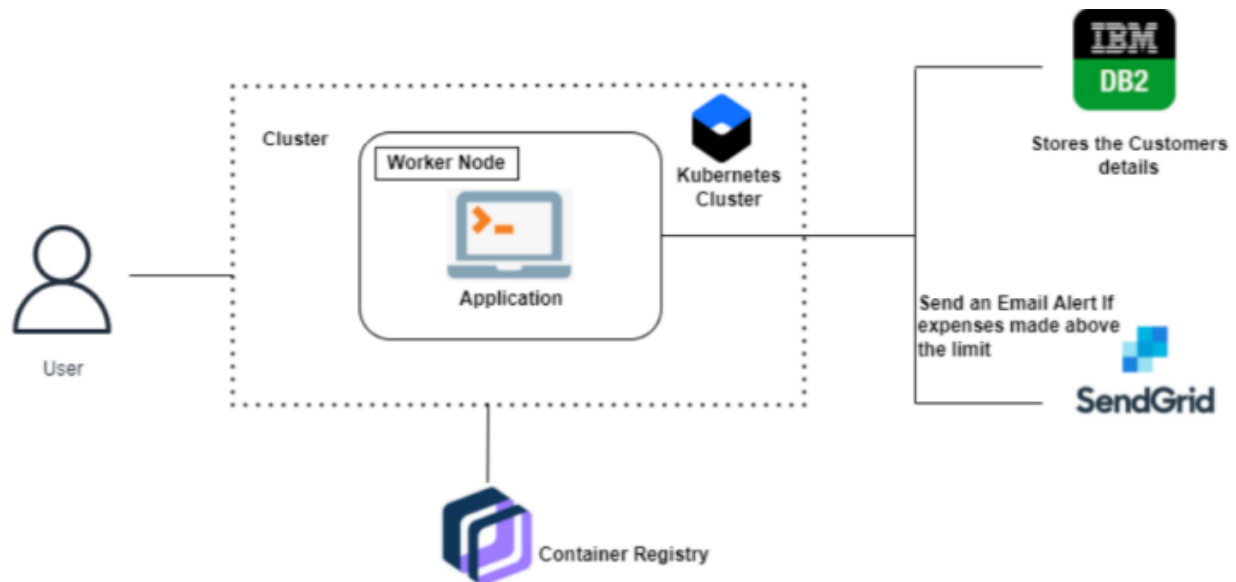
Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	Provides an effective and user-friendly way to keep track of all the users expenses.
NFR-2	Security	Data is protected by giving a unique login ID and password. Also, by not sharing users' data with third parties.
NFR-3	Reliability	Since the app is hosted on the web it can be accessed anytime and from anywhere on all devices if you have a device with internet connectivity.
NFR-4	Performance	User data is stored in a very data efficient way, which reduces load time of the application.
NFR-5	Availability	Application is hosted on the web and should be available 24/7 for the user.
NFR-6	Scalability	Can be scaled by increasing database size and better UI design to suit a larger audience.

5. PROJECT DESIGN:



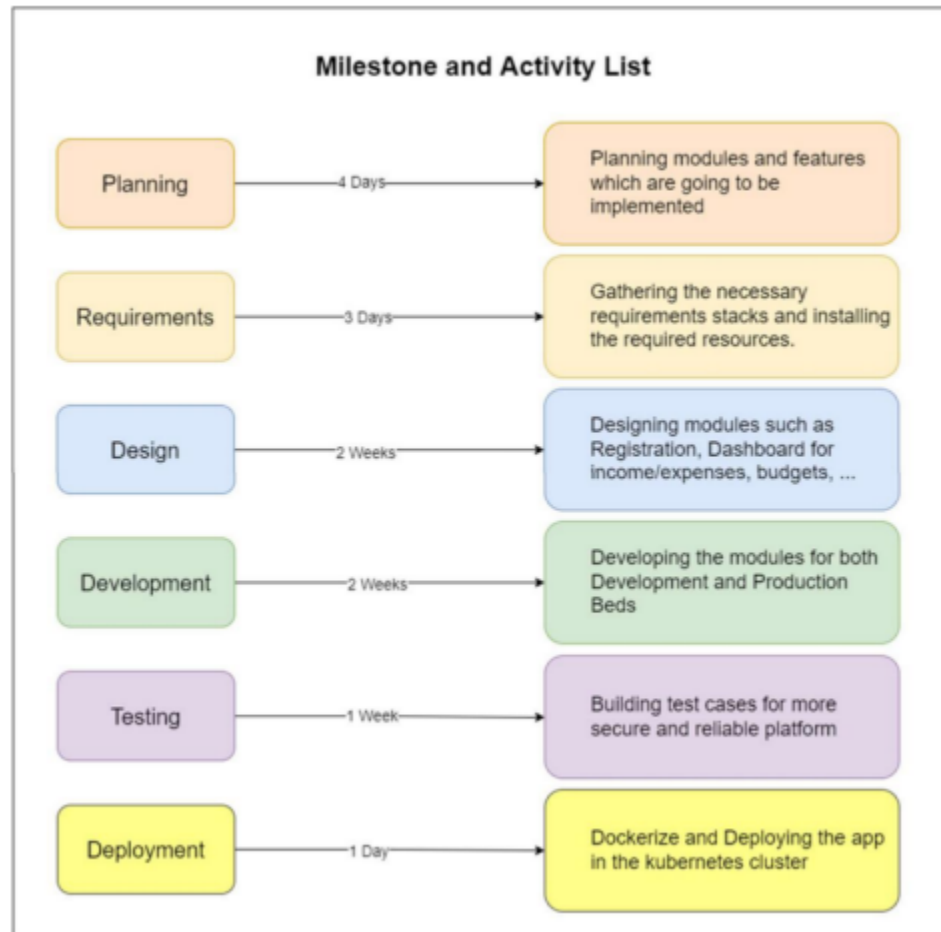
5.2. Solution & Technical Architecture:



5.3. User Stories:

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.
	Login	USN-2	As a user, I can log into the application by entering email & password
	Add	USN -3	As a user , I can add in new expenses.
	Remove	USN-4	As a user , I can remove previously added expenses.
	View	USN-5	As a user , I can view my expenses in the form of graphs and get insights.
	Get alert message	USN-6	As a user , I will get alert messages if I exceed my target amount.
Administrator	Add / remove user	USN-7	As admin , I can add or remove user details on db2 manually.
		USN-8	As admin , I can add or remove user details on sendgrid.

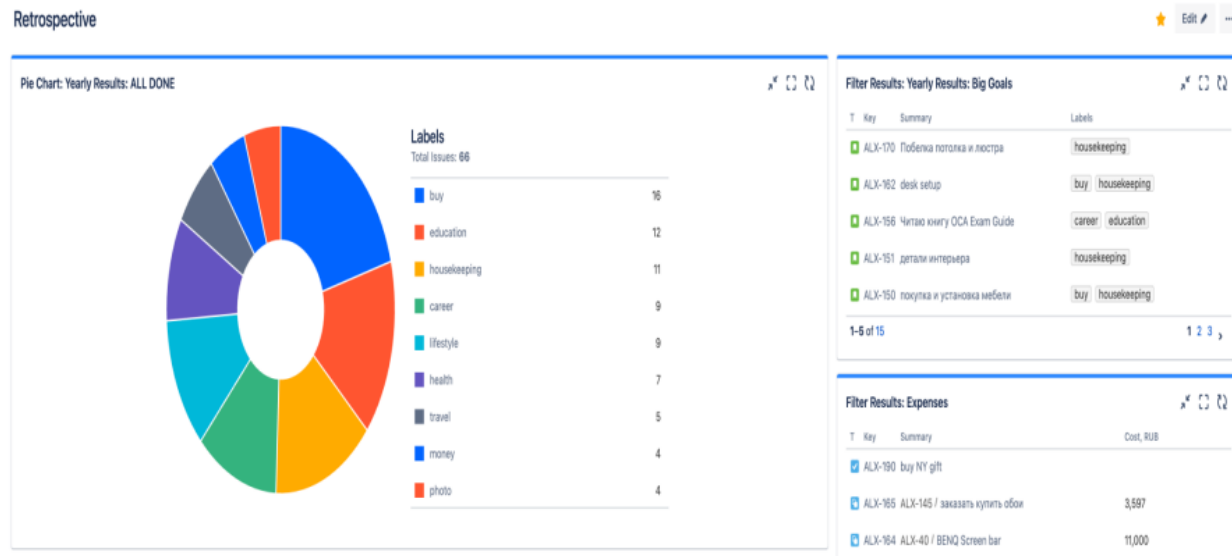
6. PROJECT PLANNING & SCHEDULING:



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.	2	High	Mohanasundaram K
		USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Sanjay A
	Login	USN-3	As a user, I can log into the application by entering email & password	1	High	Siranjivi J
	Dashboard	USN-4	Logging in takes to the dashboard for the logged user.	2	High	Prasanth D M
Bug fixes, routine checks and improvisation by everyone in the team *Intended bugs only						
Sprint 2	Workspace	USN-1	Workspace for personal expense tracking	2	High	Sanjay A
	Charts	USN-2	Creating various graphs and statistics of customer's data	1	Medium	Siranjivi J
	Connecting to IBM DB2	USN-3	Linking database with dashboard	2	High	Mohanasundaram K
		USN-4	Making dashboard interactive with JS	2	High	Prasanth D M
Sprint-3		USN-1	Wrapping up the server side works of frontend	1	Medium	Prasanth D M
	Watson Assistant	USN-2	Creating Chatbot for expense tracking and for clarifying user's query	1	Medium	Siranjivi J
	SendGrid	USN-3	Using SendGrid to send mail to the user about their expenses	1	Low	Mohanasundaram K
		USN-4	Integrating both frontend and backend	2	High	Sanjay A
Bug fixes, routine checks and improvisation by everyone in the team *Intended bugs only						
Sprint-4	Docker	USN-1	Creating image of website using docker/	2	High	Sanjay A
	Cloud Registry	USN-2	Uploading docker image to IBM Cloud registry	2	High	Mohanasundaram K
	Kubernetes	USN-3	Create container using the docker image and hosting the site	2	High	Prasanth D M
	Exposing	USN-4	Exposing IP/Ports for the site	2	High	Siranjivi J

6.3. Reports from JIRA:



7. CODING & SOLUTIONING:

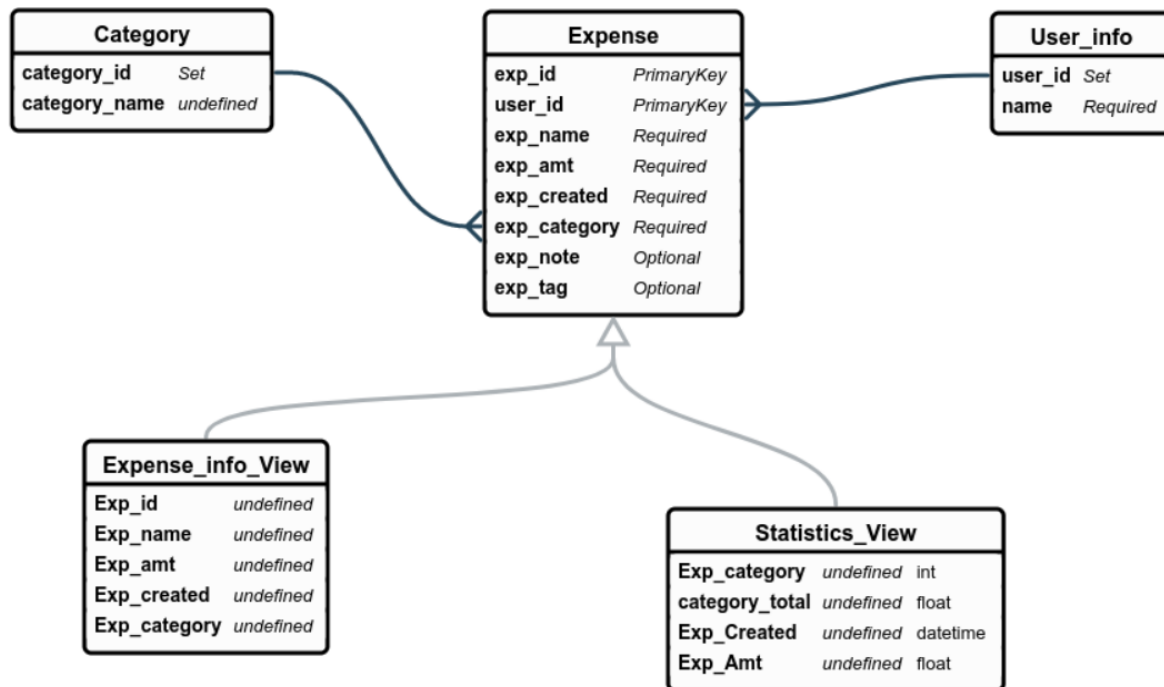
7.1. Feature-1:

Handle Documents It's time to stop using paper and excel spreadsheets for keeping records of your cash payments and online transactions! Papers are tough to handle and more dangerous for the environment. On the other hand, excel sheets may offer an online solution but don't do much help in money handling. So, it's better to develop money management software that collects insights from the data and helps make business decisions. Tracks Receipts You always can't find the cash and digital payments made by you and this is a big issue with tracking expenses. So, if you want to keep a track of your monetary investments, you should go using a business expense tracker app. This helps store all receipts by only clicking their images in your expenses handling app. Prevents Data Losses and Frauds Manual handling of personal expenses and finances can't check every transaction detail accurately. For this reason, fraud cases happen many times. Using an expense tracking and budgeting app, the workflow of money and finance handling becomes automated. This not just prevents fraudulence but also makes the procedure more accurate and transparent.

7.2. Feature-2:

Mitigates Human Errors We cannot afford mistakes when it comes to handling budgets and finances. However, humans may make some errors because of misunderstanding, carelessness, or negligence. With the help of an expense handling app, you can lower as well as prevent every mistake caused because of carelessness. Offers Precise Analytics Excel spreadsheets might track and store data and create helpful charts or graphs from it but still have no advanced functionality. On the other hand, human engagement brings the possibility of mistakes. So, it's best to build a business expense tracker app that carries out prediction analysis and helps you make efficient business decisions.

7.3. Database Schema:



8. TESTING:

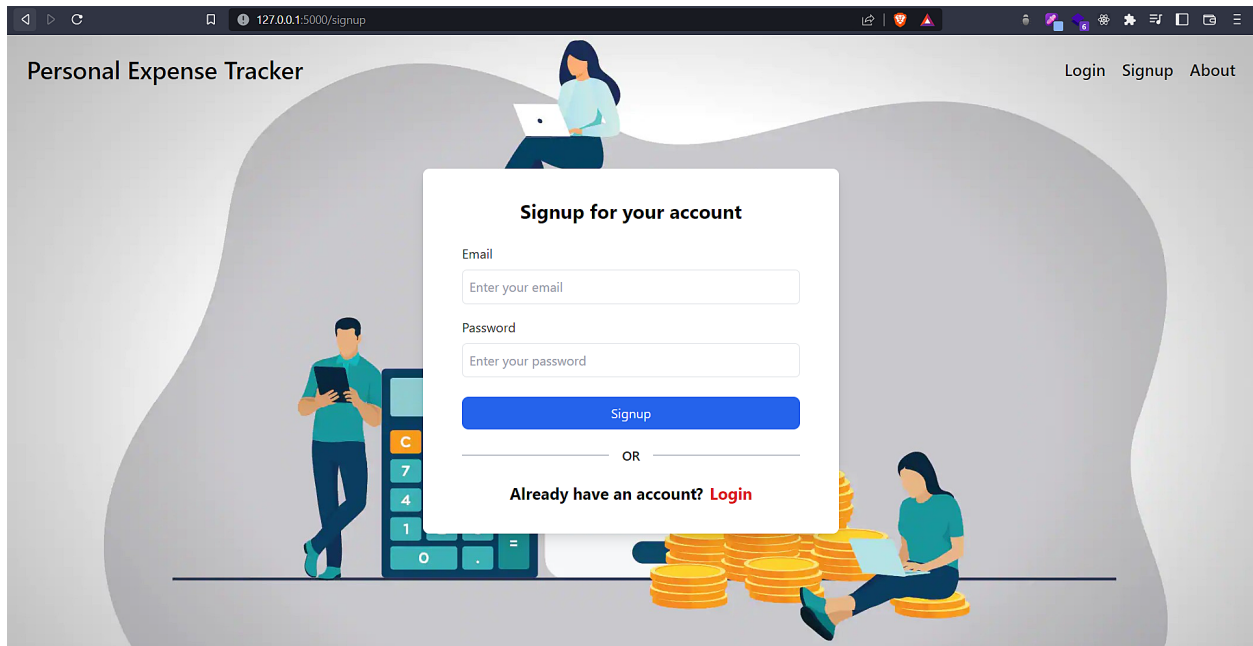
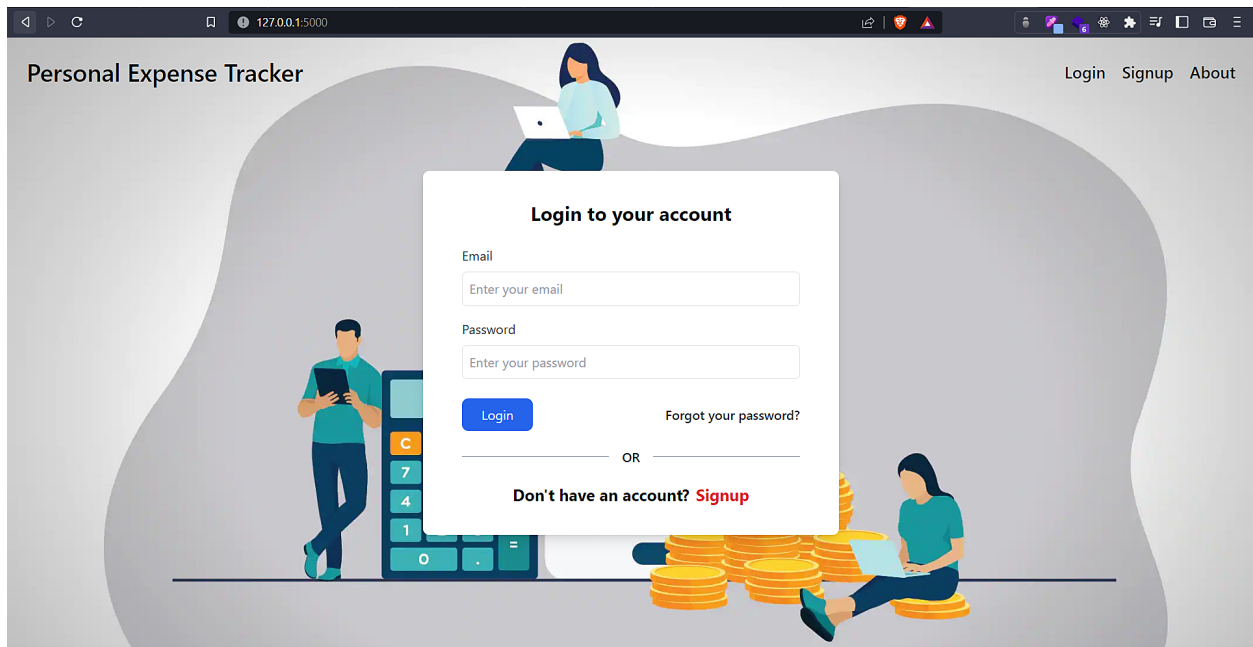
8.1. Test Cases:

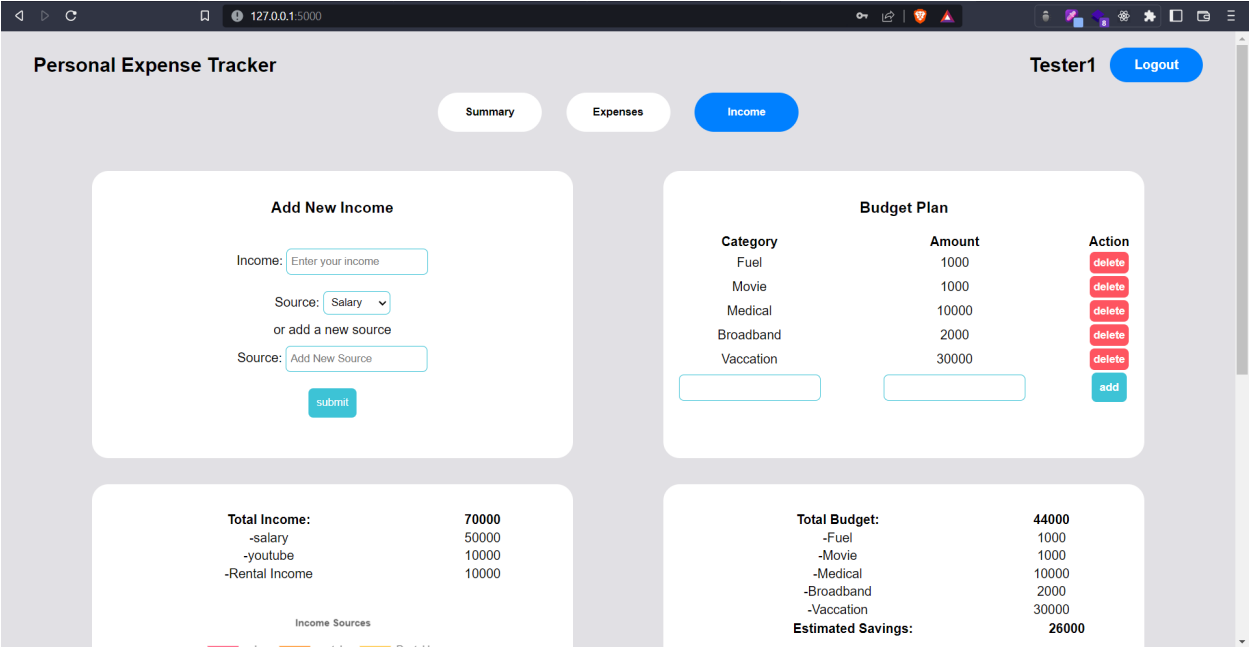
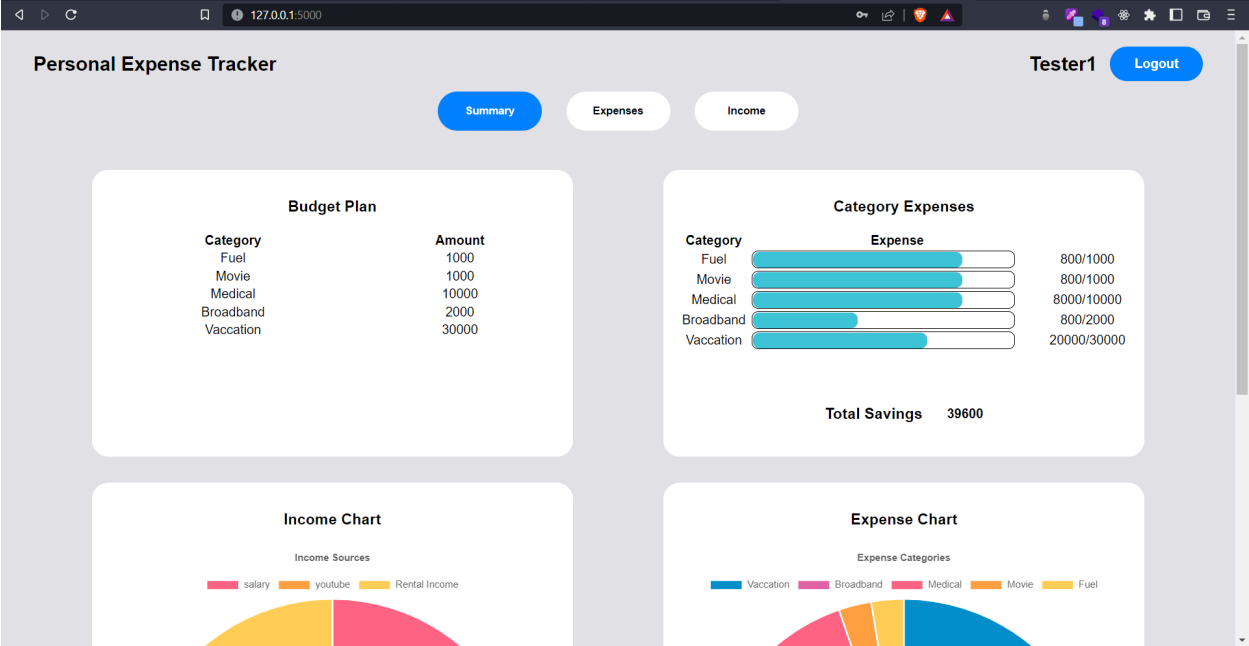
With a concerted effort, I conducted research on general well-being to have a rudimentary grasp on health management, as well as the existing job/skill recommender apps in order to get an understanding of what is already existing in the market, the characteristics, specialties, and usability. There are a considerable number of job/skill recommender apps tracking apps existing in the market. They aim to track daily spends intake by logging info given to achieve users' preset goals. To log spend, users can input the expense in the app, or scan the barcode of a package. Most apps allow users to connect with associated activities apps to track spend progress. With a premium upgrade, users can get access to tailor-made saving according to health goals or specified way to spend. In order to build a realistic initial target group, I wanted to conduct some usability tests with 5 users that regularly engage in buying activity and spending tracking, including both first-time and regular users of money planning. I asked these individuals to perform tasks related to general usage.

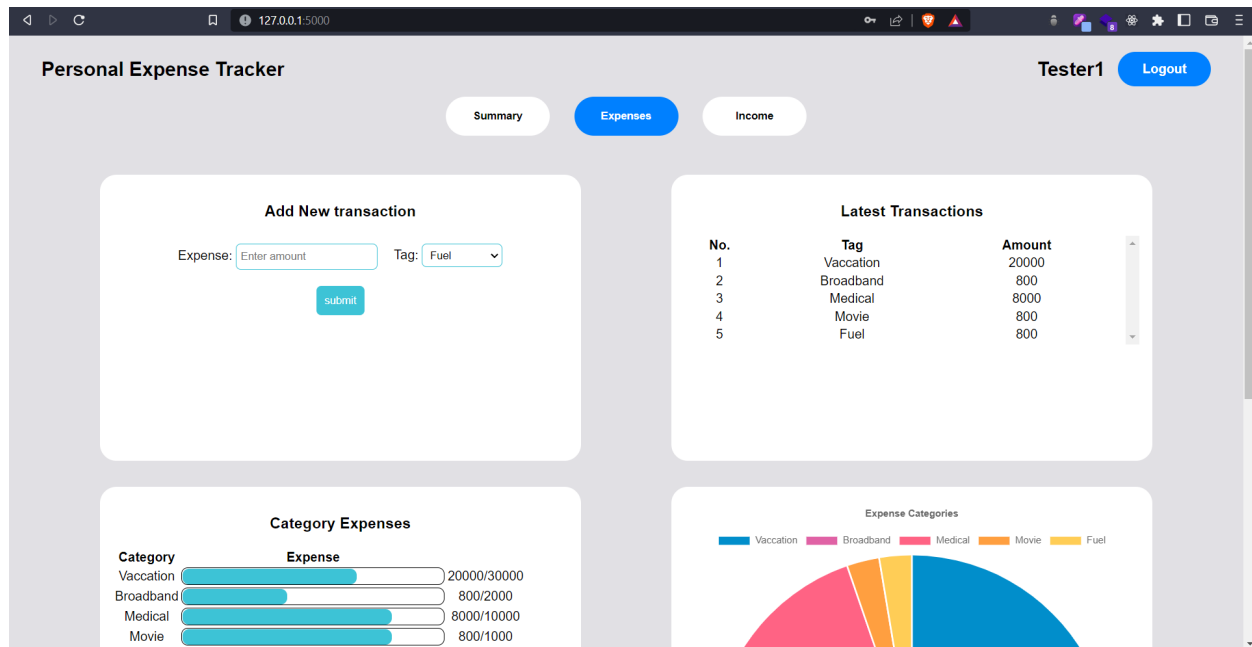
8.2. User Acceptance Testing:

Must-have features of a Job/Skill recommender app I wanted to address the user pain points by including (and improving) the core features of the application. Personal profiles After downloading the app, a user needs to register and create an account. At this stage, users should fill in personal information like name, gender, age, height, weight, spend preferences, spend logging and dashboard Allowing users to analyze their spending habits. They should be able to log expenses and money intake and see their progress on a dashboard that can track overall spends. Push notifications Push notifications are an effective tool for increasing user engagement and retention. To motivate users to keep moving toward their goals, it's pertinent to deliver information on their progress toward the current goal and remind them to log what they spend on. money counter Enabling the application to calculate spent amount of users have gone and done based on the data they've logged. Barcode scanner Let users count money and see accurate spend information via a built-in barcode scanner.

9. RESULTS:







10. ADVANTAGES & DISADVANTAGES:

10.1 Advantages:-

Some advantages of using a personal expense tracker application include: You can track your spending and budget more effectively. You can see where you are spending your money and where you can cut back. You can set goals and track your progress. You can track your credit card and bank account balances. You can find discounts and deals. You can track your investments. You can track your bills and payments. You can track your mileage and expenses for tax purposes. You can track your medical expenses. You can track your child care expenses. You can see exactly where your money is going and how much you are spending in each category. This can help you to curb your spending and save money. You can track your progress over time and see how much you are saving. This can help to keep you motivated to continue saving money. You can set goals and track your progress towards those goals. This can help you to stay on track and reach your financial goals.

10.2 Disadvantages:-

Your information is less secure, and probably being used and sold. If the service is free, then the product is you. Mint.com, like other financial apps, is a free service. 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. Personally, I have no problem with that, but if you do, then make sure you avoid these types of services. Automating everything to do with your finances can make you financially lazy. If your bills are paid automatically and your finances are track automatically, then what is there left for you to do? Not a lot, to be honest. So you might stop caring about what you're spending and where your money is going. Eventually you may look at your Mint data and realize that you've blown your budget over the last two months, but by then it is too late. So if you do choose to use this program, ensure that you are also being diligent in checking in on your finances. Set up a weekly or biweekly check for yourself to go through your finances and hit on all the important points.

11. CONCLUSION:

In this essay, we suggested a structure for the duty of employment recommendations. This structure makes it easier to comprehend the hiring process and permits the use of depending on the choices of the job recommender system designer, a number of text processing and recommendation techniques. Additionally, we make a new dataset with job seeker profiles and open positions publicly accessible. Future areas of our research will centre on conducting a more thorough review taking into account a larger number of methodologies and data as well as a thorough evaluation of the impact of each job seeker's professional skill on the recommendation they obtain for a position.

12. FUTURE SCOPE:

Software for expense management is evolving Modern expenditure management software underwent a continual evolution from a basic back-office function to an internal set of strategic activities year after year. But will it be adequate to meet the demands of next-generation businesses? Have you ever considered the ideal design for software of the future? The software should go through a number of adjustments to accommodate the expanding needs of next-generation firms as business requirements alter over time. The next-generation travel and expenditure (T & E) management systems should have mobile and cloud integration

capabilities that significantly boost corporate profitability in addition to simply accelerating the expense management process. Future T & E management software ought to be able to standardise crucial processes and offer better visibility into spending. future-proof expenditure management According to a recent T & E study, organisations prioritise visibility and information when trying to understand the costs involved with business travel. Additionally, the best-in-class organisations prioritise analytics. The goal is to not only improve the current process but also to take advantage of analytical skills and visibility that can help businesses increase productivity and estimate and plan company finances more accurately. Integration, analytics, and mobile apps are reportedly the three main elements that might help businesses flourish more quickly. When included, these elements give the company a competitive edge and added value. Integration It promotes transparency and streamlines the expenditure report cycle when corporate cards and expense management software are integrated. Analytics An unanticipated amount of visibility into travel expenses is made possible by increased intelligence, which also improves T & E intelligence as a whole. By assessing the ROI, businesses may gauge the actual performance of any business trip. Efficiency and intellect work well together to propel a company to new heights. Mobile applications are required Employees have the option to control spending while on the road thanks to mobile apps. It allows both businesses and employees the flexibility they need to manage tasks linked to managing expenses. In reality, accuracy rises when employers and employees both have access to technology's potential. In conclusion, the future generation of software should provide customers with a completely new level of expertise in spending management and enable businesses to concentrate on the things that matter most in order to grow.

13. APPENDIX:

13.1. Source Code:

app.py - file:

```
from flask import Flask,render_template,redirect,request,session
from flask_session import Session
from flask_mail import Mail,Message
import ibm_db
import secrets

app = Flask(__name__,template_folder='template')

secret_key = secrets.token_hex(16)
app.secret_key = secret_key
```

```
app.config['SESSION_TYPE'] = 'filesystem'
Session(app)
```

```
mail = Mail(app)
```

```
#Configuration of mail
```

```
app.config['MAIL_SERVER']='smtp.gmail.com'
app.config['MAIL_PORT'] = 465
app.config['MAIL_USERNAME'] = '7376192IT185@smartinternz.com'
app.config['MAIL_PASSWORD'] = 'PNTIBMJc'
app.config['MAIL_USE_TLS'] = False
app.config['MAIL_USE_SSL'] = True
mail = Mail(app)
```

```
#IBM DB2 Database Connecting and Retrieving
```

```
hostname = "55fbc997-9266-4331-afd3-
888b05e734c0.bs2io90l08kqb1od8lcg.databases.appdomain.cloud"
uid = "tcw14000"
pwd = "tIlfDfPaQSRd84SC"
driver = "{IBM DB2 ODBC DRIVER}"
db = "bludb"
port = "31929"
protocol = "TCPIP"
cert = "DigiCertGlobalRootCA.crt"
```

```
dsn = (
    "DATABASE={0};"
    "HOSTNAME={1};"
    "PORT={2};"
    "UID={3};"
    "SECURITY=SSL;"
    "SSLServerCertificate={4};"
    "PWD={5};"
).format(db, hostname, port, uid, cert, pwd)
```

```
print(dsn)
conn = ibm_db.connect(dsn, "", "")
```

```
#Routing Pages using the Pyhton Flask
```

```
@app.route('/', methods=['GET','POST'])
```

```

def login():
    msg = ""
    uid = ""
    if request.method=='GET':
        return render_template('login.html')
    if request.method == 'POST':
        email = request.form['email']
        password = request.form['password']
        sql = "SELECT * FROM USERS WHERE EMAIL=? AND PASSWORD=?"
        stmt = ibm_db.prepare(conn,sql)
        ibm_db.bind_param(stmt,1,email)
        ibm_db.bind_param(stmt,2,password)
        ibm_db.execute(stmt)
        account = ibm_db.fetch_assoc(stmt)
        if account:
            uid = (account["USERNAME"])
            return render_template('index.html',uid = uid)
        else:
            msg = "Entered Username or Password is wrong!!!"
            return render_template('login.html',msg = msg)

```

```

@app.route('/signup', methods=['GET','POST'])
def signup():
    msg = ""
    if request.method=='GET':
        return render_template('signup.html')
    if request.method=='POST':
        username = request.form['username']
        email = request.form['email']
        password = request.form['password']
        if(username!="" and email!="" and password!=""):
            print(username,email,password)
            sql = "INSERT INTO USERS VALUES(?,?,?)"
            stmt = ibm_db.prepare(conn,sql)
            ibm_db.bind_param(stmt,1,username)
            ibm_db.bind_param(stmt,2,email)
            ibm_db.bind_param(stmt,3,password)
            ibm_db.execute(stmt)
            return render_template('index.html',uid = username)
        else:

```

```
msg = 'Please fill out the necessary details'
return render_template('signup.html',msg=msg)
```

```
@app.route("/logout")
def logout():
    session.clear()
    return redirect("/")
```

```
if __name__ == '__main__':
    app.run(port=5000,debug=True)
```

loginpage.html - file:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <script src="https://cdn.tailwindcss.com"></script>
    <title>Document</title>
</head>
<body class='w-full h-full bg-no-repeat bg-cover' style="background-image:
url('../static/img/img.png');">
    <div class="flex text-black flex-row justify-between items-center px-6 py-6">
        <a class="flex text-3xl justify-center items-center font-semibold" href="/">Personal
Expense Tracker</a>
        <div class="flex flex-row text-xl gap-5 font-semibold">
            <button class="hover:text-blue-600"><a href="/">Login</a></button>
            <button class="hover:text-blue-600"><a href="/signup">Signup</a></button>
            <button class="hover:text-blue-600">About</button>
        </div>
    </div>
    <div class="flex items-center justify-center">
        <div class="px-12 py-9 mt-20 text-left bg-white shadow-lg w-4/12 rounded-lg">
            <div class="flex justify-center items-center mb-2">
                <p class="flex text-lg font-bold text-red-600">{{msg}}</p>
            </div>
            <h1 class="flex justify-center items-center text-2xl font-bold w-full">Login to your
account</h1>
            <form action="/" method="POST">
                <div class="mt-6">
```

```

        <label class="block">Email</label>
        <input type="text" name="email" placeholder="Enter your email" class="border
px-2 py-2 mt-2 w-full rounded-md">
    </div>
    <div class="mt-4">
        <label class="block">Password</label>
        <input type="password" name="password" placeholder="Enter your password"
class="border px-2 py-2 mt-2 w-full rounded-md">
    </div>
    <div class="flex mt-6 justify-between items-center">
        <button class="flex bg-blue-600 px-6 py-2 rounded-lg text-white">Login</button>
        <a class="font-semibold hover:text-blue-600" href="#">Forgot your password?</a>
    </div>

    <div class="relative flex py-5 items-center">
        <div class="flex-grow border-t border-gray-400"></div>
        <p class="text-center font-semibold mx-4 mb-0">OR</p>
        <div class="flex-grow border-t border-gray-400"></div>
    </div>
    <div class="flex flex-row gap-2 justify-center items-center">
        <p class="flex text-xl font-bold">Don't have an account?</p>
        <a href="/signup" class="flex text-xl font-bold text-red-600">Signup</a>
    </div>
</form>
</div>
</div>
</body>
</html>

```

signup.html -file:

```

<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <script src="https://cdn.tailwindcss.com"></script>
    <title>Document</title>
</head>
<body class='w-full h-full bg-no-repeat bg-cover' style="background-image:
url('../static/img/img.png');">

```

```

<div class="flex text-black flex-row justify-between items-center px-6 py-6">
  <a class="flex text-3xl justify-center items-center font-semibold" href="/">Personal Expense
Tracker</a>
  <div class="flex flex-row text-xl gap-5 font-semibold">
    <button class="hover:text-blue-600"><a href="/">Login</a></button>
    <button class="hover:text-blue-600"><a href="/signup">Signup</a></button>
    <button class="hover:text-blue-600">About</button>
  </div>
</div>
<div class="flex items-center justify-center">
  <div class="px-12 py-9 mt-10 text-left bg-white shadow-lg w-4/12 rounded-lg">
    <div class="flex justify-center items-center mb-2">
      <p class="flex text-lg font-bold text-red-600">{{msg}}</p>
    </div>
    <h1 class="flex justify-center items-center text-2xl font-bold w-full">Signup for your
account</h1>
    <form action="/signup" method="POST">
      <div class="mt-6">
        <label class="block">Username</label>
        <input type="text" placeholder="username" name="username" id="username"
class="border px-2 py-2 mt-2 w-full rounded-md">
      </div>
      <div class="mt-4">
        <label class="block">Email</label>
        <input type="text" placeholder="Enter your email" class="border px-2 py-2 mt-2 w-
full rounded-md" id="email" name="email">
      </div>
      <div class="mt-4">
        <label class="block">Password</label>
        <input type="password" placeholder="Enter your password" class="border px-2 py-
2 mt-2 w-full rounded-md" id="password" name="password">
      </div>
      <div class="flex mt-6 justify-between items-center">
        <button type="submit" class="flex bg-blue-600 px-6 py-2 rounded-lg text-white w-full
justify-center items-center">Signup</button>
      </div>

      <div class="relative flex py-5 items-center">
        <div class="flex-grow border-t border-gray-400"></div>
        <p class="text-center font-semibold mx-4 mb-0">OR</p>
        <div class="flex-grow border-t border-gray-400"></div>

```



```

    </div>
    <div class="flex flex-row gap-2 justify-center items-center">
      <p class="flex text-xl font-bold">Already have an account?</p>
      <a href="/" class="flex text-xl font-bold text-red-600">Login</a>
    </div>
  </form>
</div>
</div>
</body>
</html>

```

index.html - file:

```

<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <script src="https://cdn.tailwindcss.com"></script>
  <title>Document</title>
</head>
<body class='w-full h-full bg-no-repeat bg-cover' style="background-image:
url('../static/img/img.png');">
  <div class="flex text-black flex-row justify-between items-center px-6 py-6">
    <a class="flex text-3xl justify-center items-center font-semibold" href="/">Personal Expense
Tracker</a>
    <div class="flex flex-row text-xl gap-5 font-semibold">
      <button class="hover:text-blue-600"><a href="/">Login</a></button>
      <button class="hover:text-blue-600"><a href="/signup">Signup</a></button>
      <button class="hover:text-blue-600">About</button>
    </div>
  </div>
  <div class="flex items-center justify-center">
    <div class="px-12 py-9 mt-10 text-left bg-white shadow-lg w-4/12 rounded-lg">
      <div class="flex justify-center items-center mb-2">
        <p class="flex text-lg font-bold text-red-600">{{msg}}</p>
      </div>
      <h1 class="flex justify-center items-center text-2xl font-bold w-full">Signup for your
account</h1>
      <form action="/signup" method="POST">
        <div class="mt-6">

```

```

        <label class="block">Username</label>
        <input type="text" placeholder="username" name="username" id="username"
class="border px-2 py-2 mt-2 w-full rounded-md">
    </div>
    <div class="mt-4">
        <label class="block">Email</label>
        <input type="text" placeholder="Enter your email" class="border px-2 py-2 mt-2 w-
full rounded-md" id="email" name="email">
    </div>
    <div class="mt-4">
        <label class="block">Password</label>
        <input type="password" placeholder="Enter your password" class="border px-2 py-
2 mt-2 w-full rounded-md" id="password" name="password">
    </div>
    <div class="flex mt-6 justify-between items-center">
        <button type="submit" class="flex bg-blue-600 px-6 py-2 rounded-lg text-white w-full
justify-center items-center">Signup</button>
    </div>

    <div class="relative flex py-5 items-center">
        <div class="flex-grow border-t border-gray-400"></div>
        <p class="text-center font-semibold mx-4 mb-0">OR</p>
        <div class="flex-grow border-t border-gray-400"></div>
    </div>
    <div class="flex flex-row gap-2 justify-center items-center">
        <p class="flex text-xl font-bold">Already have an account?</p>
        <a href="/" class="flex text-xl font-bold text-red-600">Login</a>
    </div>
</form>
</div>
</div>
</body>
</html>

```

13.2. GitHub & Project Demo Link:

Github : <https://github.com/IBM-EPBL/IBM-Project-7625-1658894493>

Project demo link : <https://drive.google.com/file/d/1Dy52lY7Q8jWQhzyKN8DrRY581mY-HzcR/view?usp=sharing>