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PERSONAL EXPENSE TRACKER

INTRODUCTION

OVERVIEW

The personal expense tracker is a web-based application that helps individuals track and manage their expenses. It provides a user-friendly interface for recording expenses, monitoring spending habits, and gaining insights into financial patterns. The application aims to empower users to make informed decisions about their personal finances. Some of key features are

Expense Recording:

- Users can log their expenses, including details such as date, category, description, and amount.
- The application provides a form or interface for users to input and save their expense information.

Income Tracking:

- Users can track their income sources, allowing for a comprehensive overview of their financial situation.
- The application may provide a way for users to record and monitor their various income streams.

Budgeting:

- Users can set budget limits for different expense categories or time periods.
- The application may provide notifications or alerts when users approach or exceed their budget limits.

Expense Analysis:

- The application generates visualizations, charts, or reports to help users analyze their spending patterns.
- Users can gain insights into their expenses by viewing breakdowns based on categories, time periods, or other criteria.

Expense Categorization:

- Expenses can be categorized into different groups (e.g., food, transportation, entertainment) for better organization and analysis.
- The application may offer predefined categories or allow users to create custom categories.

Expense History and Search:

- Users can access their past expense records and search for specific transactions based on various criteria (e.g., date, category, description).

PURPOSE

The purpose of your personal expense tracker project is to help individuals effectively manage their expenses and gain better control over their personal finances. By using this project, users can achieve several benefits and goals, including:

Expense Tracking and Awareness: The expense tracker enables users to log their expenses systematically, ensuring that they have a clear record of where their money is being spent. This helps users become more aware of their spending habits and promotes responsible financial behavior.

Budget Management: The project allows users to set budgets for different expense categories or time periods. By tracking expenses against these budgets, users can better manage their finances and avoid overspending. The system can provide alerts or notifications when users approach or exceed their budget limits, helping them stay on track.

Financial Analysis and Insights: The expense tracker provides visualizations, charts, or reports that allow users to analyze their spending patterns. Users can gain insights into their expenses by viewing breakdowns based on categories, time periods, or other criteria. This analysis helps users identify areas where they can cut costs, make adjustments, or reallocate their financial resources more effectively.

Goal Setting and Savings: With the expense tracker, users can set financial goals and track their progress. Whether it's saving for a specific purchase, a vacation, or an emergency fund, the project helps users monitor their savings and stay motivated towards achieving their financial objectives.

Financial Discipline and Decision-making: By using the expense tracker regularly, users can develop better financial discipline and make more informed decisions about their expenses. They can evaluate the necessity and value of their purchases, prioritize their spending, and make adjustments based on their financial goals.

Documentation and Record-keeping: The project maintains a history of expenses, allowing users to review past transactions and maintain an organized record of their financial activities. This documentation can be helpful for tax purposes, budget reviews, or financial audits.

Overall, the personal expense tracker project empowers users to take control of their finances, improve their spending habits, and work towards their financial goals. It provides a comprehensive solution for expense management, budgeting, analysis, and financial planning.

LITERATURE SURVEY

Traditional methods of expense tracking, such as pen and paper or spreadsheets, involve manually recording and categorizing expenses. With pen and paper, individuals write down their expenses in a notebook or a dedicated expense journal, noting the date, amount, and category of each expenditure. Spreadsheets, on the other hand, provide a digital format where expenses can be entered into cells and organized using formulas and functions.

Digital expense tracking tools and mobile applications offer a more automated and convenient approach to tracking expenses. These tools leverage technology to streamline the process and provide additional features. Users can input expenses directly into the app, which automatically categorizes them based on predefined rules or user customization. They can also capture and attach receipts using the device's camera, eliminating the need for manual data entry.

A comparative analysis of different expense tracking technologies involves examining and evaluating various options available to users. This analysis considers factors such as features, functionalities, ease of use, compatibility with different devices and platforms, data synchronization capabilities, and integration with other financial management tools. It helps users make informed decisions about which expense tracking technology best suits their needs and preferences.

Evaluation of user experience and usability of expense tracking tools assesses how well these tools meet user requirements and expectations. It involves examining the user interface, navigation, and overall design of the application or software. Usability testing and user feedback collection can help identify areas for improvement, such as intuitive data entry, clear expense categorization, effective reporting, and customization options. By evaluating the user experience and usability of expense tracking tools, developers can refine their products to enhance user satisfaction and engagement.

EXISTING PROBLEM

In the domain of personal expense tracking, there are several existing solutions available. These solutions often include mobile apps, web applications, or software programs that aim to help individuals manage their expenses. However, some of the common challenges or limitations faced by existing solutions include:

- a) Lack of Customization: Many existing expense tracking solutions may not offer sufficient customization options to cater to the specific needs and preferences of individual users. Users may require flexibility in expense categories, budgeting options, or reporting formats, which may be lacking in some solutions.
- b) Complex User Interface: Some expense tracking applications have a steep learning curve or a cluttered user interface, making it challenging for users to navigate and use the software effectively. This can hinder user adoption and overall usability.
- c) Limited Reporting and Analysis: Certain solutions may provide basic expense tracking features but lack robust reporting and analysis capabilities. Users may require comprehensive reports, visualizations, and insights into their spending patterns to make informed financial decisions.

PROPOSED SOLUTION

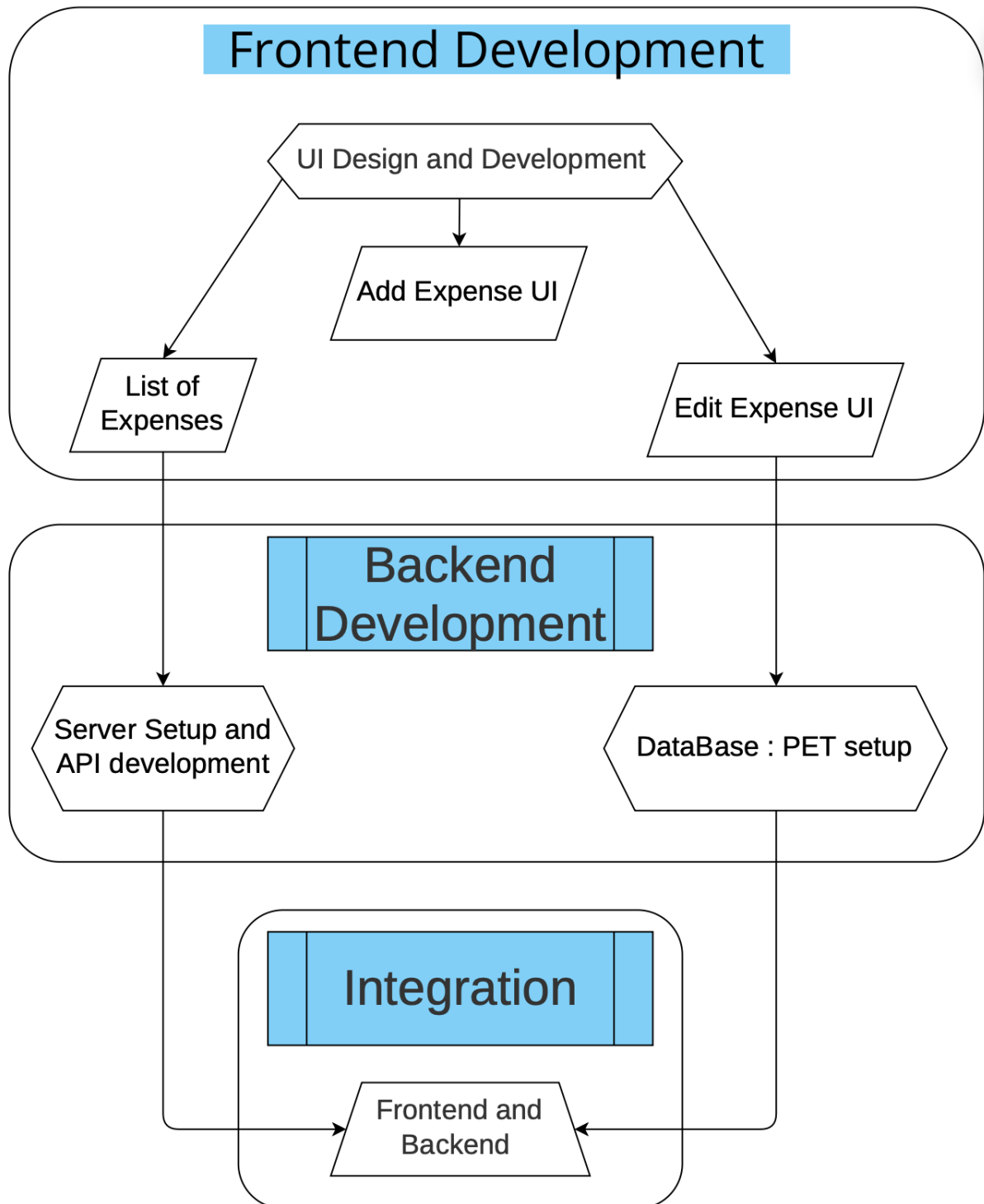
The proposed solution for the Personal Expenses Tracker project is to develop a web-based application using Java Spring Boot. The application will address the existing problems by providing the following features and improvements:

- a) Customization: The application will offer users the ability to customize expense categories, set budget limits, and configure the application according to their specific requirements. This flexibility will cater to individual preferences and ensure a personalized expense tracking experience.
- b) User-Friendly Interface: The user interface of the application will be designed to be intuitive, user-friendly, and visually appealing. The aim is to provide a seamless experience for users, enabling them to navigate the application effortlessly and perform tasks with ease.
- c) Comprehensive Reporting and Analysis: The Personal Expenses Tracker will include robust reporting and analysis features. Users will be able to generate detailed reports, visualize their expenses through charts and graphs, and gain insights into their spending habits. This will empower users to make data-driven financial decisions and identify areas for improvement.
- d) Data Security and Accessibility: The application will prioritize data security by implementing appropriate authentication and authorization mechanisms. Users will be able to access their expense data securely from multiple devices, ensuring accessibility and convenience.
- e) Scalability and Performance: The use of Java Spring Boot framework provides a solid foundation for developing a scalable and performant application. The application will be designed to handle a large number of users and efficiently manage expense data.

The proposed solution aims to overcome the limitations of existing expense tracking solutions by providing a customizable, user-friendly, and feature-rich application that empowers individuals to effectively manage their personal finances.

THEORETICAL ANALYSIS

BLOCK DIAGRAM



HARDWARE REQUIREMENT

a virtual private server (VPS) or a cloud platform like Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform (GCP) may suffice.

Servers with a multi-core CPU (e.g., Intel Xeon or AMD Ryzen processors) and at least 4-8 GB of RAM should be sufficient.

Atleast 8 gb of free space in hard disk or ssd primary storage.

Uninterrupted network connection of at least 2 mbps bandwidth.

SOFTWARE REQUIREMENT

Java Development Kit (JDK):JDK is required to compile and run Java applications, providing the necessary tools and libraries.

Integrated Development Environment (IDE): An IDE offers a comprehensive development environment for writing, debugging, and managing code. IntelliJ IDEA, Eclipse, or Visual Studio Code are popular choices for Java development.

Spring Boot: Spring Boot simplifies Java application development by providing predefined configurations, automatic dependency management, and a streamlined development experience. Used Spring Initializr or Spring Tools for our IDE to create a Spring Boot project.

MySQL Database: MySQL is a popular relational database management system. MySQL Workbench, a graphical tool for managing MySQL databases.

MySQL Connector/J:MySQL Connector/J is the official JDBC driver for connecting Java applications to MySQL databases. Included this dependency in our project to enable connectivity and interaction with MySQL.

Maven: A build automation tool used primarily for Java projects.

Docker and Kubernetes:Docker is a containerization platform that packages applications and their dependencies into portable containers, providing consistency across different environments.

Kubernetes is an orchestration tool that automates the deployment, scaling, and management of containerized applications, ensuring high availability, scalability, and easy management of containers across clusters of servers. Together, Docker and Kubernetes enable efficient application deployment, scalability, and management in a containerized environment.

EXPERIMENTAL INVESTIGATIONS

During the development process, the following analyses and investigations were conducted:

1. Spring Boot Application: Explored initialization, configuration, and Java package management.
2. Dependency Investigation: Identified and evaluated dependencies like Spring Web, Spring Security, Lombok, and MySQL Connector.
3. JSP Pages: Learned about JSP and their deployment in the Spring Boot application.
4. Getter and Setter Methods: Implemented data model access methods.
5. MySQL Integration: Integrated MySQL database with the Spring Boot application using Spring Data JPA .
6. Dockerization: Dockerized the Spring Boot application and database for easier deployment using docker and kubernetes.

These efforts ensured proper setup, configuration, dependency management, and integration for a successful Spring Boot application with MySQL database, along with Docker containerization.

FLOWCHART

1. User Registration and Authentication:

Users registered accounts.

Users provide necessary information and authenticate themselves.

2. Dashboard and Overview:

Users access the dashboard, which provides an overview of their financial information.

Summary of current expenses is listed

3. Expense Entry and Categorization:

Users enter their expenses, including the date, amount, and description.

4. Data Synchronization and Backup:

User data is securely synchronized across devices or stored in a centralized database.

Regular backups are performed to ensure data integrity and recovery in case of system failures.

RESULT

Login page:

Please sign in

Functionality

Add Expense

iPhone	90000	latest iPhone bought baby	<input type="button" value="Add Expense"/>
Delete			

Edit Expense

External HDD	4399.00	Western Digital 1TB My Passport Portable HDD	<input type="button" value="Update Expense"/>
Delete Home			

Dashboard

Expense Tracker

List of expenses

[Add Expense](#)

Smart Watch

₹7999.00

[Edit](#)

External HDD

₹4399.00

[Edit](#)

Taxi service

₹3500.00

[Edit](#)

Home rent

₹20000.00

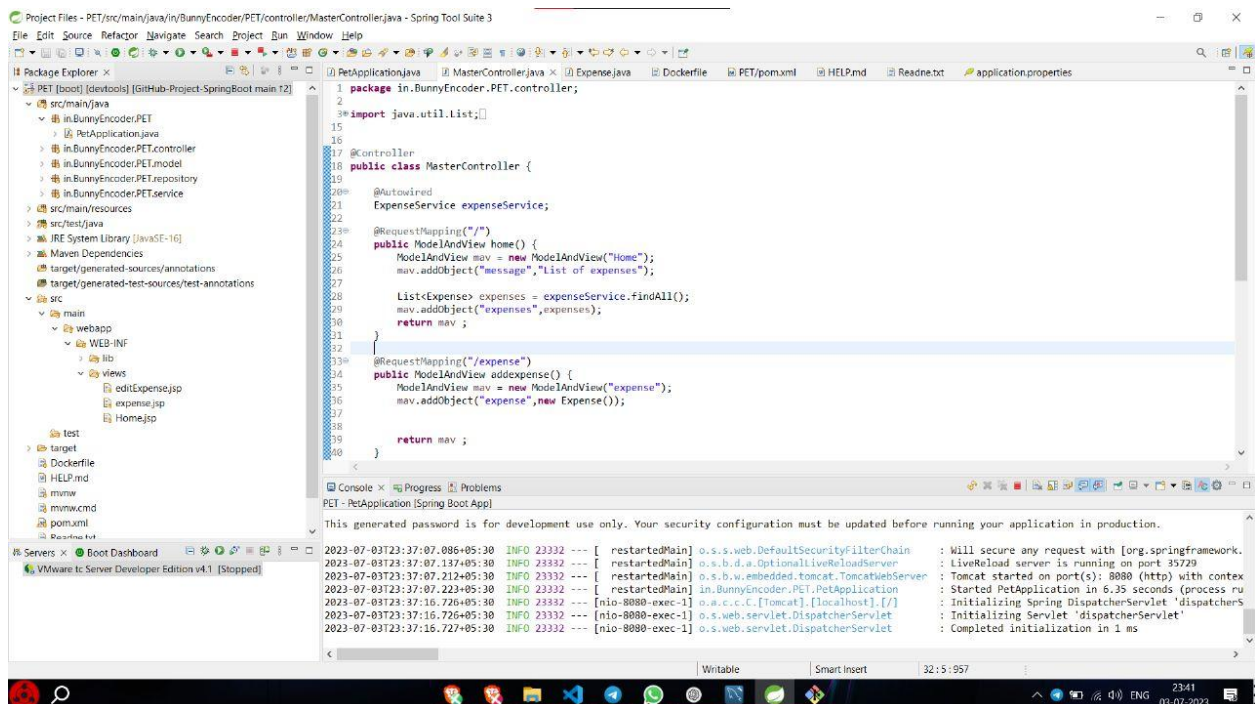
[Edit](#)

iPhone

₹90000.00

[Edit](#)

MAIN CODE

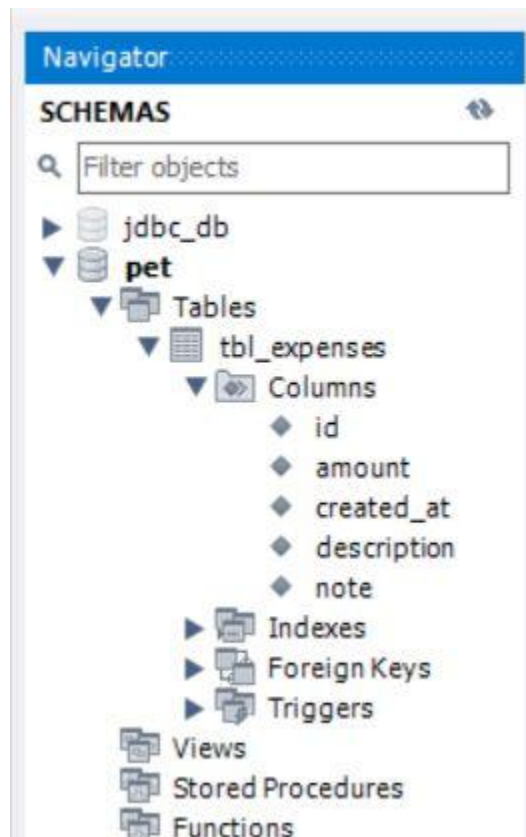


```
1 package in.BunnyEncoder.PET.controller;
2
3 import java.util.List;
4
5
6 @Controller
7 public class MasterController {
8
9     @Autowired
10     ExpenseService expenseService;
11
12     @RequestMapping("/")
13     public ModelAndView home() {
14         ModelAndView mav = new ModelAndView("Home");
15         mav.addObject("message", "List of expenses");
16
17         List<Expense> expenses = expenseService.findAll();
18         mav.addObject("expenses", expenses);
19         return mav;
20     }
21
22     @RequestMapping("/expense")
23     public ModelAndView addExpense() {
24         ModelAndView mav = new ModelAndView("expense");
25         mav.addObject("expense", new Expense());
26         return mav;
27     }
28 }
```

Console Output:

```
2023-07-03T23:37:07.086+05:30 INFO 23332 --- [ restartedMain] o.s.s.web.DefaultSecurityFilterChain : Will secure any request with [org.springframework,
2023-07-03T23:37:07.137+05:30 INFO 23332 --- [ restartedMain] o.s.b.d.a.OptionalLiveReloadServer : LiveReload server is running on port 35729
2023-07-03T23:37:07.212+05:30 INFO 23332 --- [ restartedMain] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8080 (http) with contex
2023-07-03T23:37:07.223+05:30 INFO 23332 --- [ restartedMain] in.BunnyEncoder.PET.PetApplication : Started PetApplication in 6.35 seconds (process ru
2023-07-03T23:37:16.726+05:30 INFO 23332 --- [nio-8080-exec-1] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring DispatcherServlet 'dispatcherS
2023-07-03T23:37:16.726+05:30 INFO 23332 --- [nio-8080-exec-1] o.s.web.servlet.DispatcherServlet : Initializing Servlet 'dispatcherServlet'
2023-07-03T23:37:16.727+05:30 INFO 23332 --- [nio-8080-exec-1] o.s.web.servlet.DispatcherServlet : Completed initialization in 1 ms
```

Mysql DATABASE



The screenshot shows the MySQL Result Grid displaying data from the 'tbl_expenses' table. The grid includes a toolbar with options like 'Filter Rows', 'Edit', 'Export/Import', and 'Wrap Cell Content'. The data is as follows:

	id	amount	created_at	description	note
▶	1	7999.00	1688102369	Smart Watch	AmazeFit GTS 4 mini Smart Watch
	2	4399.00	1688102369	External HDD	Western Digital 1TB My Passport Portable HDD
	3	3500.00	1688308208071	Taxi service	NULL
	4	20000.00	1688308257824	Home rent	NULL
	9	90000.00	1688407690607	iPhone	latest iPhone bought baby
★	NULL	NULL	NULL	NULL	NULL

ADVANTAGES AND DISADVANTAGES

Convenience: You may effortlessly keep track of your spending from any location with an internet connection using a personal costs tracker website. It is accessible through a variety of gadgets, including your computer, smartphone, or tablet.

Organisation: You may keep all of your financial data in one place by using an online spending tracker. It makes managing your spending simpler by doing away with the need for manual computations and paper receipts.

Real-time tracking: By entering your spending on a website in real-time, you can make sure that your financial records are accurate. This enables you to keep track of your expenditures and preserve a precise picture of your budget.

Analysing your spending habits is made simpler by the ability to categorise your expenses on the majority of personal expense tracking services. You can spot areas where your spending is out of control or where you might make changes to reduce your expenses.

Setting a budget and setting financial objectives are both possible on many personal spending tracking services, which also include tracking tools for your success. To make sure you're remaining inside your budget, you might divide up your finances among other categories and keep an eye on your spending.

Reporting and visualisation: These websites frequently give your financial information in the form of graphs and charts. You can better understand your spending patterns and manage your money by using these visualisations.

Security concerns: Storing your financial information online has security concerns. Your money and personal information may be subject to hacking or data breaches if the website's security measures are insufficient. To protect your data, you must select a reliable platform that is secure and implement the appropriate safeguards.

Learning curve: Using the platform efficiently may include a learning curve, depending on how complicated the website is. If you're not technologically skilled, it could take some time to get used to the website's features and functionality.

Internet dependence: A reliable internet connection is required in order to access and operate a personal cost tracker website. You might not be able to track your costs in real-time if you find yourself in a location with poor or no internet access, which could cause delays in updating your financial data.

Personal cost tracker websites may encounter technical problems like server outages or software bugs, just like any other online business. These problems may prevent you from successfully using the platform and interfering with your ability to track and analyse your finances.

APPLICATION

Budgeting: Expense trackers are frequently employed in budgeting. They assist people with tracking their income and outgoing costs, classifying their expenditure, and establishing spending caps for various expense categories. Individuals can allocate their money more wisely and make educated judgements about their financial priorities by keeping an eye on their spending.

Setting and accomplishing financial goals might be aided by using a personal cost tracker. Using spending trackers makes it possible for people to keep track of their progress and be held responsible for any financial goals, including vacation savings, debt repayment, and emergency fund building. People can work towards attaining their financial goals by examining their spending habits and identifying areas where they can make cuts.

Analysis of Expenses: Expense trackers give a thorough picture of a person's spending patterns. An individual can spot trends, patterns, and areas where they might be overpaying by categorising and analysing their expenses. This knowledge will enable them to make necessary modifications, cut back on wasteful spending, and manage their finances better.

Tax Preparation: By giving a detailed record of deductible costs, an expense tracker makes tax preparation easier. People may easily keep track of and classify expenses for business, medical, and other tax deductions. When filing taxes, this data can be utilised to determine tax deductions and guarantee accurate reporting.

CONCLUSION

In conclusion, personal expense trackers offer numerous advantages and can be applied in various ways to improve financial management and promote responsible spending. By providing convenience, organization, real-time tracking, categorization, and analysis of expenses, these trackers empower individuals to budget effectively, set financial goals, and make informed decisions about their money. Additionally, expense trackers aid in tax preparation, foster financial awareness and control, promote financial accountability in group settings, and help identify cost-saving opportunities. However, it is essential to consider potential disadvantages such as security risks, a learning curve, internet dependency, cost, data privacy concerns, and technical issues. By weighing the pros and cons and selecting a reputable and secure platform, individuals can leverage the benefits of personal expense trackers to enhance their financial well-being and achieve their financial objectives.

FUTURE SCOPE

1. **Advanced Data Analysis and Insights:** Utilize machine learning and predictive analytics for advanced financial insights and budget forecasting.
2. **Integration with Financial APIs and Services:** Expand integration capabilities with financial institutions and third-party services for a comprehensive view of users' financial information.
3. **Automation and Smart Expense Tracking:** Implement automated expense categorization and receipt scanning using OCR technology.
4. **Enhanced Security and Privacy Measures:** Strengthen security features and privacy measures to protect user data.
5. **Integration with Personal Finance Management:** Integrate with personal finance management tools for comprehensive financial management.
6. **Multi-Platform Support and Accessibility:** Extend support to web, mobile, and desktop platforms for a seamless user experience.
7. **Collaboration and Sharing Features:** Add collaboration capabilities for expense sharing and bill splitting with family, roommates, or colleagues.
8. **Integration with Expense Receipt Management:** Incorporate receipt management features like OCR-based scanning and digital receipt storage.

These future scope areas will enhance the functionality, security, and user experience of your expense tracker project.