

FinWiz: A Data Driven Approach for Charting the Path to Financial Management with Django Framework

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Abstract—This Tracking System is a better solution that helps individual to manage their finances efficiently. This tracker is designed to maintain data on daily, weekly, monthly, yearly expenses and earnings in a simple way. User should enter their expenses and income by selecting types, adding other related information such as date of expense, and saving the information to database. This tool provides numerous advantages, such as minimizing the necessity for manual calculations and furnishing users with a comprehensive overview of their expenditures. Users can conveniently examine their expenses on a weekly, monthly, or yearly basis. Additionally, the tracker enables users to input their income, facilitating the computation of their daily total expenses. Particularly beneficial for those keen on monitoring expenses during trips, the tracker sends alert notifications to the registered email address when expenditures surpass the pre-defined limit. This functionality aids in prudent financial management by preventing overspending and mitigating the risk of accruing debt.

Keywords—Add income, Add expense, Expenses, Income, User, Finance

I. INTRODUCTION

The 'FinWiz- A Data Driven Approach for Charting the Path to Financial Management with Django Frameworks' gives a financial discipline to our monthly income. This Income and Expense management involves good tracking of earnings and expenditures. Income derived from various sources like salaries is recorded alongside expenses entertainment, travel, food etc. This categorize transactions to gain a comprehensive overview.

The process extends beyond you think. Savings play a crucial role requiring a dedicated portion of income to be aside for emergencies or for the future goals, facilitated through automatic transfers or investments. Regular analysis of spending habits ensures alignment with financial objectives and allows for adjustments to achieve these goals effectively. Automation tools can streamline in investments

Due to some busy works we may forget noting our income and expenses. Nearly 44% of the world population use the tech gadgets like desktops, smartphones[1]. These desktops play vital role in our day to day lives. They can store huge amount of data. So we can take this as an additional advantage and get into the idea of storing the expenses and income in our day to day lives. There are some existing projects that can track daily expense [2]–[5]. We have implemented various features rather than just displaying the related information.

We have added the feature to convert the required information into PDF and it can be sent to registered mail.

We've integrated a feature that enables users to visualize their income and expenses through a user-friendly bar graph [7]. This functionality allows users to effortlessly examine monthly transactions, providing a clear overview of income and expenses. The graphical representation in the form of a bar graph simplifies the process of assessing whether income outweighs expenses or vice versa on a monthly basis. This not only facilitates easy monitoring of financial activities but also serves as a valuable tool for users seeking to establish and maintain financial discipline in their monetary affairs. Our application also has an option to add a bill for the particular transaction which will be very useful to check the particular transaction after some days effortlessly.

II. BACKGROUND STUDY

In the process of preparing this project, we extensively delved into various research papers. Through our exploration, we gained valuable insights into the intricate dynamics of income and expenses. This research shed light on the prevalent financial challenges and highlighted the financial indiscipline that users often grapple with in managing their financial matters [6]. Our findings revealed a deep-seated need for addressing the issues related to financial discipline and prompted us to design a solution that not only captures the nuances of income and expenses but also aims to rectify the financial indiscipline faced by users in their financial endeavors. The following are the features that we have studied from the research papers.

From certain research papers, we adopted the concept of capturing daily income and expenses, wherein users input transactions with corresponding dates. Additionally, inspired by other literature, we embraced the notion of visualizing income and expenses through graphical representations such as bar graphs and pie charts [8]. The incorporation of visual elements proves immensely beneficial, allowing users to effortlessly assess their financial dynamics without experiencing any time delays.

This local application aims to streamline the process of monitoring daily expenses for users. Managing personal spending can be a daunting task for many individuals, often making it challenging to identify specific areas where their money is being utilized.

Our solution revolves around developing an intuitive and user-friendly interface, empowering users to

instantly log their expenses. The objective is to eliminate the necessity for employing multiple methods to track spending, providing a seamless and efficient way for users to record, review, and understand their spending patterns locally. The ultimate aim is to deliver an easily accessible tool that enables users to manage and analyze their expenses conveniently and accurately within their local environment.

III. PROPOSED SYSTEM

The system encompasses an authentication page, where users are required to log in to FinWiz as verified users. For new users, a registration process is in place, necessitating the provision of various details for successful registration. Subsequently, users receive a confirmation email to validate the registration process. Upon confirmation, users can log in to the application using their credentials.

Upon successful login, users are directed to the Dashboard, offering a comprehensive view of various details such as Wallet and Datatable. Within the Dashboard, a dedicated section labeled "Summary" provides users with a concise overview of their transactions.

Upon accessing the "Add" button, users are presented with various transaction options, allowing them to specify whether the entry pertains to income or expense. The user can input essential details such as the amount, date, and attach any relevant bills. The record module offers a convenient feature enabling users to review their expenses on a weekly, monthly, and yearly basis.

For enhanced user understanding, the application provides visual representations of this financial data through informative bar graphs and pie charts. These graphical elements serve as effective tools, offering users a clear and insightful overview of their spending patterns over different timeframes. This visual representation not only simplifies the interpretation of financial information but also contributes to a more intuitive and user-friendly experience within the application.

IV. SYSTEM OVERVIEW

FinWiz is organized into six distinct modules, each serving a specific purpose. These modules include Login, Dashboard, Profile, Record, Yearly Record, and History[9]. This system operates as a streamlined one-tap solution for efficiently tracking daily expenses, while also maintaining comprehensive yearly and monthly records.

By incorporating the Record module, users can effortlessly input and manage their transactions with ease. The Yearly Record module is dedicated to preserving a consolidated overview of yearly financial activities, providing users with a comprehensive perspective on their long-term financial trends.

The History module enhances user accessibility to past records, facilitating a convenient way to monitor and analyze expenses [10]. This feature proves invaluable for users in adhering to their pre-allocated budgets, as it offers insights into spending patterns over time. The main functions are described below:

A. Welcome

The welcome page features the prominent FinWiz logo, providing users with a distinctive visual identifier. Additionally, it includes a convenient login button for existing users, streamlining the access process. For those who are new to FinWiz, there is a signup link readily available, inviting individuals to register and create an account to unlock the full range of financial tools and services. This user-friendly design ensures a seamless experience for both returning and first-time users, fostering easy navigation and accessibility to FinWiz's offerings.

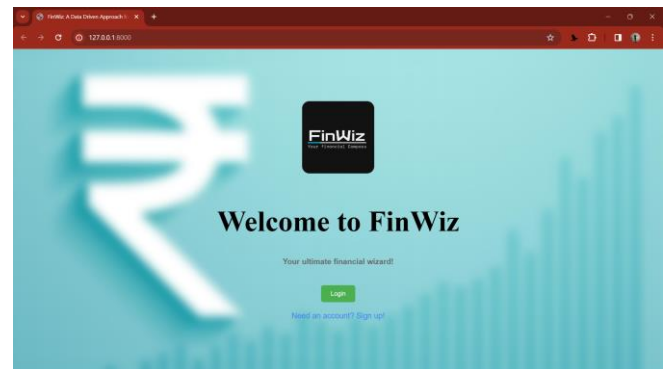


Fig.1 Welcome page

For new users joining FinWiz, the initial step involves navigating to the registration page and entering the necessary details, including their email[12]. Upon successful completion of the registration process, users receive a confirmation email affirming their successful registration.

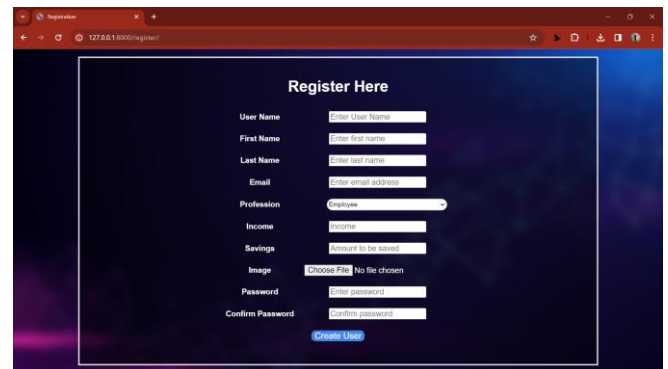


Fig.2 Registration

B. Login

Accessing FinWiz requires users to undergo a login process to ensure validation. During this authentication, users are prompted to input their valid credentials, including a user ID and password [11]. The login page also offers additional features such as the option to recover a forgotten password and initiate the registration process.

For enhanced security and user experience, the login mechanism necessitates the provision of accurate user details. In instances where users forget their passwords, the application provides a streamlined process for password recovery. Simultaneously, users new to the platform can seamlessly register by following the designated steps. The provided image illustrates the appearance of the login

page.

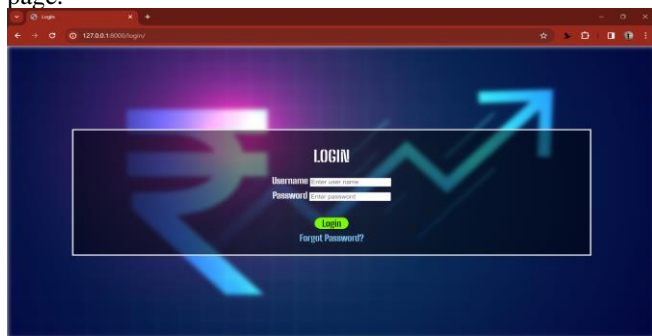


Fig.3 Login

If a user forgets their password, they can click on the "Forgot Password" button. This action redirects the user to the Forget Password page, where they are required to input their registered email ID and click the "Send" button. The accompanying image provides an overview of the Forget Password page.

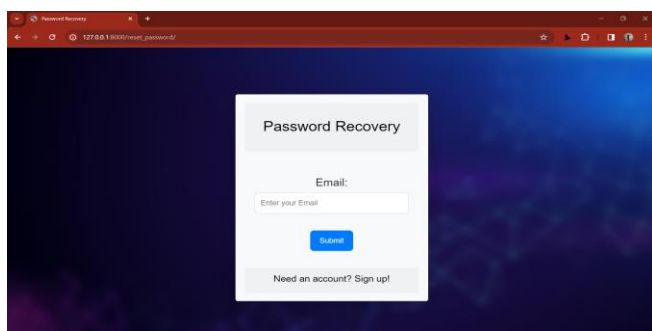


Fig.4 Forget Password

Upon clicking the submit button, the user receives a confirmation message indicating that the email has been sent successfully. Upon receiving the email, the user can proceed to reset their password by following the provided link. This action redirects the user to the login page, where they can input the updated credentials and successfully log in.

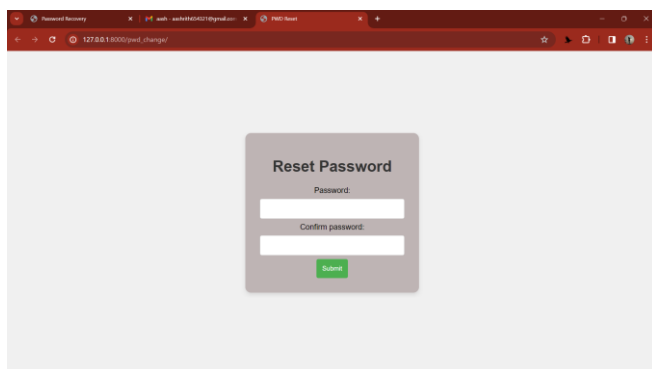


Fig.5 Reset Password

C. Dashboard

Following a successful login, users seamlessly transition to the dashboard, greeted by a confirmation message. Within this page, users encounter various options, including Summary, Logout, MyWallet with an additional plus button for new entries, and a Datatable presenting a comprehensive overview of transactions. The Datatable encompasses essential details such as transaction date, attached bill, amount transacted, and

options to edit or delete specific transactions. The user is presented with a list of options, including Dashboard, Profile, Record, Yearly Record, and History, facilitating easy navigation to the desired page of their choice. The provided page illustrates the registration page.

A key highlight within the dashboard is the inclusion of a detailed Datatable, providing users with a comprehensive overview of their transactions. This Datatable meticulously displays essential details such as the transaction date, attached bills, transaction amounts, and offers convenient options to edit or delete specific transactions. This user-centric approach ensures that individuals can effortlessly manage and review their financial activities within a single, well-organized interface.

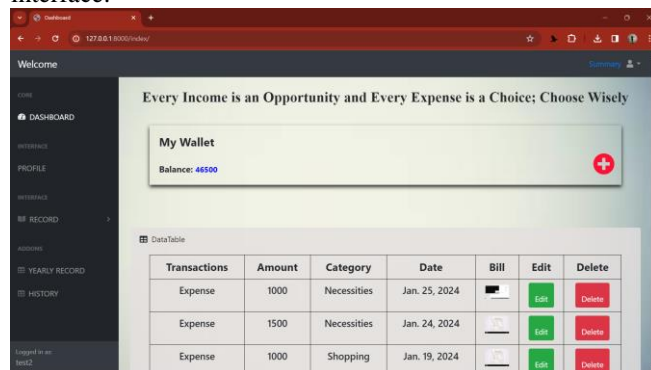


Fig.6 Dashboard

Upon navigating to the summary page, users gain access to pivotal financial insights such as base income, targeted savings, total expenses, and any additional income. This comprehensive presentation offers users a succinct yet detailed snapshot of their financial situation [13]. By perusing this information, users can quickly and effectively comprehend the dynamics of their income and expenses, aiding in making informed financial decisions and maintaining a balanced financial strategy.

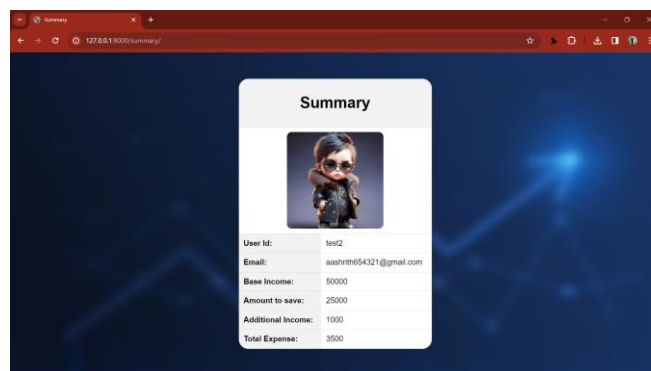


Fig.7 Summary

Within the Dashboard, users can easily view the MyWallet section, showcasing the remaining balance derived from their income. The inclusion of a plus button in this section proves to be a valuable feature, allowing users to seamlessly add new income or expense entries to the database [14]. This intuitive functionality enhances user convenience by providing a quick and straightforward means to update and manage financial transactions within the application.

Upon pressing the plus button, leading to the addition page, users are redirected to a space where they can seamlessly input new transactions, whether it be income or expenses [15]. Within this page, users are provided with options to specify the destination of the expense or income, and additional features include the ability to input the amount, transaction date, select the transaction category, and attach a bill. The inclusion of the bill attachment feature proves particularly beneficial, especially in scenarios such as dining at a restaurant. Users can effectively preserve and later review bills, enabling them to itemize expenses and gain insights into individual costs within the overall transaction.

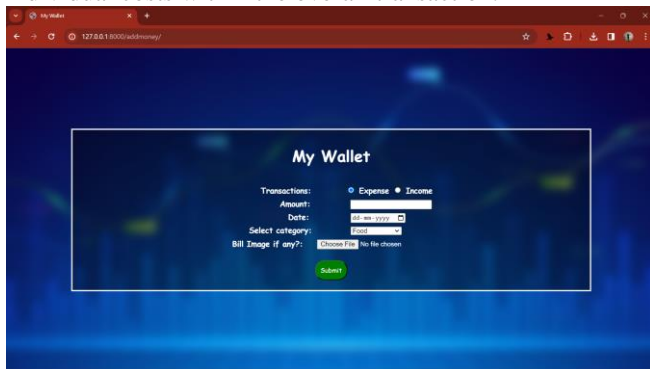


Fig.8 MyWallet

As the user scrolls down, they encounter a datatable, a valuable tool providing detailed information about transactions. This datatable serves as a comprehensive resource, furnishing data on the nature of the transaction, whether it is income or expense, the transaction amount, category, transaction date, and the presence or absence of a bill [16]. For transparency and convenience, users are granted the ability to edit or delete specific transactions directly from the datatable.

Moreover, the inclusion of a bill section adds an extra layer of detail. Users have the option to input bills associated with transactions, enhancing the overall visibility of expenses. In instances where a bill is not available, the datatable clearly denotes this status, streamlining the user experience and ensuring a complete and organized representation of their financial activities.

D. Profile

The user's profile serves as a comprehensive repository of information entered during the registration process, offering insights into various key details. Within the profile, users can easily review and manage information such as their profile image, user ID, name, email address, declared income, savings data, and professional details. This centralized view provides a holistic snapshot of the user's personal and financial information, fostering a sense of control and understanding [17]. The inclusion of these details within the profile ensures that users have quick and convenient access to the information they provided during registration, facilitating a seamless and transparent user experience. There will be an option to edit all the details that are provided.

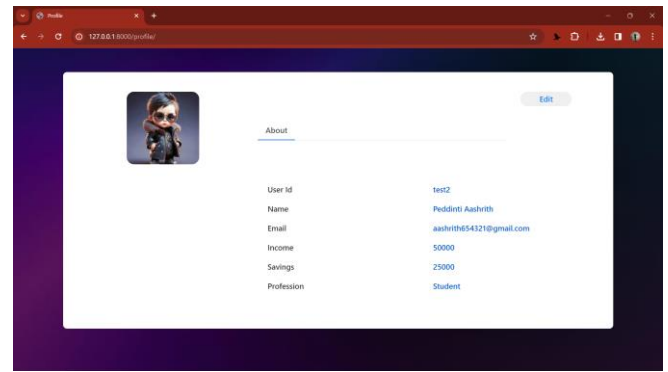


Fig.9 Profile

E. Record

Adjacent to the Profile section, the Records segment unfolds, offering users two distinct sub-sections: Weekly Record and Monthly Record. These subsections serve as informative hubs, providing users with a comprehensive overview of all transactions conducted during specific timeframes. Users can delve into the Weekly Record to scrutinize transactions made within a week, gaining detailed insights into their short-term financial activities [18]. Meanwhile, the Monthly Record unveils a broader perspective, encapsulating all transactions throughout the entire month.

This dual-subsection structure empowers users to effortlessly navigate through their financial history, facilitating a nuanced understanding of spending patterns over both shorter and more extended periods [19]. The Records section, therefore, stands as an invaluable tool for users seeking to track, analyze, and maintain financial discipline throughout the varying temporal dimensions of their financial activities.

Within the Weekly Record section, users gain insights into transactions conducted during a specific week, focusing particularly on expenses incurred. This data is eloquently presented through a pie chart, offering users a visually intuitive representation of their spending distribution [20]. The pie chart serves as a valuable tool, enhancing the user's ability to grasp and analyze expense patterns for the designated week.

Furthermore, the Weekly Record section goes beyond visual representation by furnishing additional information. Users can easily access details such as the total amount spent during that particular week, providing a clear understanding of their weekly financial dynamics [21]. Additionally, the section highlights the amount saved during the specified week, offering users a comprehensive overview of their financial achievements and helping them align with their savings goals [22]. This multifaceted approach within the Weekly Record section ensures users not only visualize but also comprehend and manage their weekly financial activities effectively.

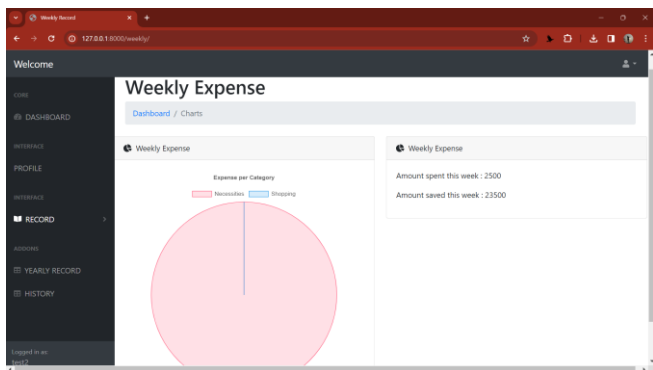


Fig.10 Weekly Expense

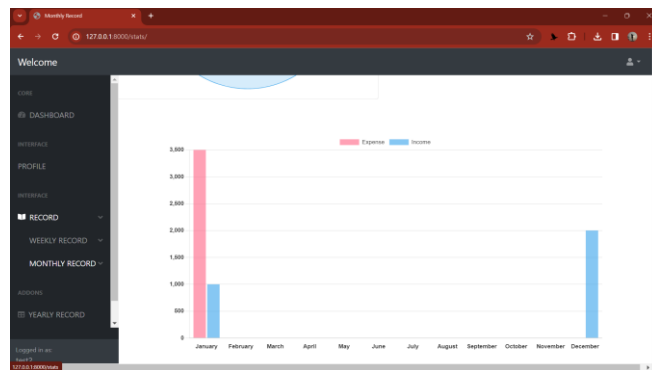


Fig.11b Monthly Expense

In the Monthly Record section, users can comprehensively review all transactions conducted within a given month. This segment offers users a visual representation of both income and expenses through informative bar graphs and pie charts. This visual aid proves invaluable, enabling users to easily assess the balance between income and expenses for the month at a glance.

Within this section, users are provided with additional details, including the amount to be saved, the total amount spent, and a comparison of the amount spent versus the designated savings target [23]. These details offer users a nuanced understanding of their financial performance for the specific month.

Notably, the Monthly Record section introduces convenient options such as "View Report" and "Send Mail." These features are particularly useful for users who wish to save their financial data as a PDF. The generated PDF includes comprehensive details like user ID, name, total expenses, base income, email, and even the user's profile image. The option to send this report to a specified email serves as a practical storage solution for the PDF, ensuring users can easily access and manage their financial reports for future reference.

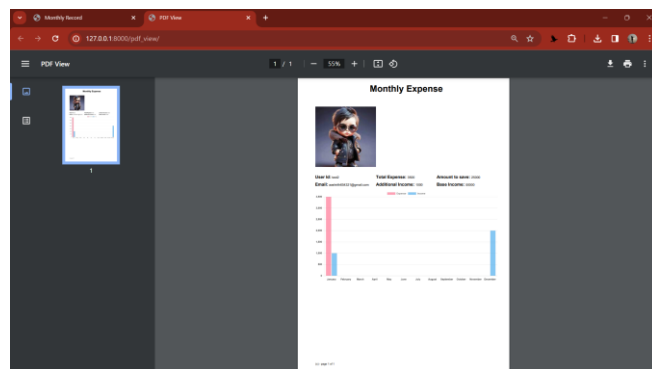


Fig.11c Monthly Expense (Report)

F. Yearly Record

The Yearly Record section offers users an overarching view of their financial activities throughout the entire year. Within this segment, a comprehensive pie chart is employed to visually represent expense distributions across all twelve months. This graphical representation not only encapsulates the cumulative spending patterns but also serves as an insightful tool for users to assess their financial trends over the course of multiple years.

By providing a condensed yet detailed overview of yearly expenses, users can easily identify trends, spot patterns, and gain a holistic understanding of their long-term financial behavior [24]. The pie chart, acting as a visual summary, enhances user comprehension and aids in making informed financial decisions based on historical data. This Yearly Record section, therefore, serves as a valuable resource for users aiming to maintain financial discipline and strategic planning over extended periods.

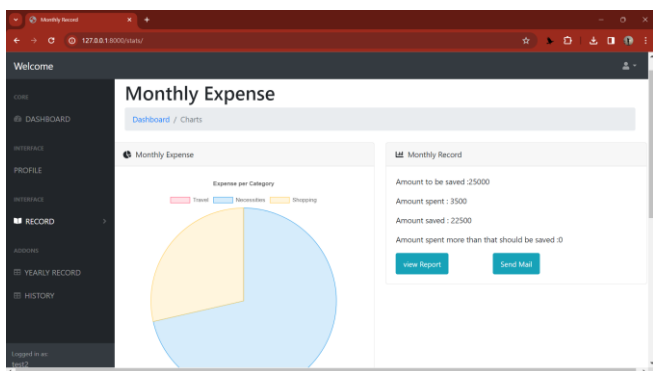


Fig.11a Monthly Expense

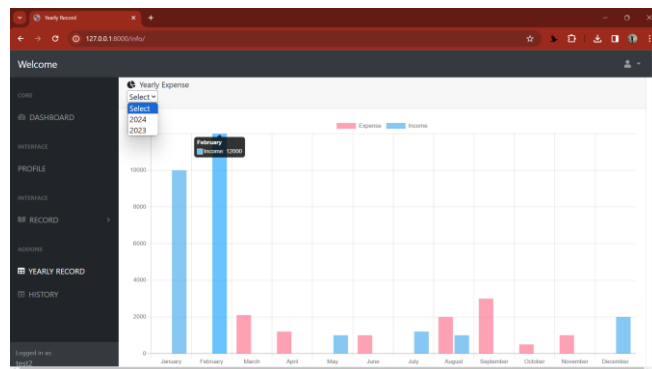


Fig.12 Yearly Expense

G. History

Within the History section, users can access a comprehensive display of transaction details, encompassing transaction types, amounts, categories, and respective dates. This section is designed to offer users a thorough archive of their financial activities over time.

A noteworthy feature embedded in the History section is the advanced search option, enabling users to specifically tailor their search queries based on date ranges. This functionality proves highly beneficial, empowering users to efficiently retrieve specific transactions within designated time frames [25]. Whether seeking transactions from one date to another or aiming to pinpoint particular financial activities, the search option enhances the user experience by providing a targeted and streamlined approach to accessing historical financial data.

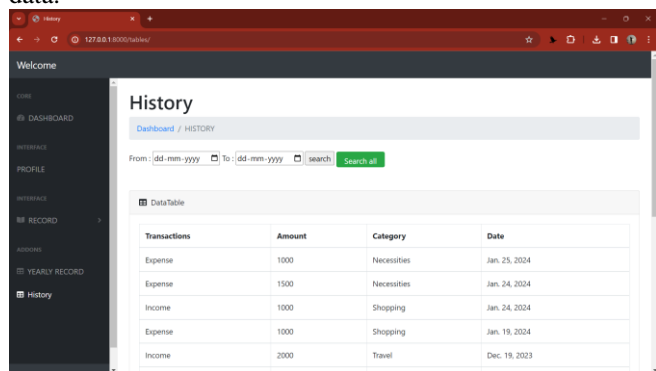


Fig.13 History

V. SYSTEM FUNCTIONALITIES

The system has been crafted adhering to established principles. Additionally, it introduces several distinctive contributions that set this app apart, presenting a novel approach that addresses shortcomings associated with traditional, time-consuming methods. The innovation of this system can be outlined on the following grounds:

A. Interface Design

FinWiz not only excels in functionality but also prioritizes an intuitive and user-friendly interface design across its diverse sections. Starting with the secure login page, the layout ensures a seamless authentication process while offering accessible options for password recovery and user registration. The dashboard serves as a central hub, presenting key options like Summary, Logout, MyWallet, and a detailed datatable, enhancing user control over transaction information with editing and deleting capabilities.

The Profile section follows a clear and organized layout, providing users with a visually appealing overview of personal details entered during registration, including a profile image, user ID, name, email, income, savings, and profession. The Record section further refines the interface design, breaking down into Weekly, Monthly, and Yearly records with intuitive visual representations like pie charts and bar graphs for enhanced data interpretation.

In the History section, the chronological display of transactions is accompanied by an advanced search option,

seamlessly integrating functionality with design for a user-friendly experience. The Add Transaction page, accessible through the dashboard, maintains a clean and efficient layout, enabling users to input income or expenses effortlessly.

The Summary page incorporates a concise yet informative design, offering users a quick snapshot of critical financial information. The Report Generation feature continues this trend, ensuring that detailed PDF reports are presented in a visually appealing manner, incorporating user details, total expenses, base income, and more. Overall, FinWiz's meticulous interface design contributes significantly to providing users with a visually pleasing, efficient, and engaging financial management platform.

B. Smart Features

The Summary page consolidates critical financial information, providing users with a quick overview of their base income, savings, total expenses, and additional income. The Report Generation feature enables users to view and send detailed PDF reports, incorporating user details, total expenses, base income, and more. FinWiz, with its meticulous design and comprehensive set of features, stands as a powerful tool for users seeking efficient and user-friendly financial monitoring and analysis.

Within the Add Transaction page, users have the capability to attach bills to their expenses, providing a systematic way to organize and store receipts or documentation related to specific transactions. This feature proves particularly valuable in scenarios where users want to keep detailed records of their spending, such as tracking individual items purchased or maintaining a clear record of expenses incurred at specific establishments.

PDF generation and email functionality—aimed at enhancing the accessibility and sharing of financial information. The PDF generation feature allows users to create comprehensive reports encompassing crucial financial details, such as user information, total expenses, and base income. This feature ensures that users have tangible, organized documents that serve as a snapshot of their financial standing and transaction history.

Complementing this, the "Send Mail" feature enables users to seamlessly share these generated PDF reports via email. This functionality not only promotes efficient communication but also provides a secure and convenient means for users to distribute and store their financial summaries. By utilizing these features, FinWiz empowers users to maintain organized financial records, fostering transparency and facilitating effortless communication of their financial insights. Together, these capabilities contribute to a user-friendly and efficient financial management experience within the application.

When a user approaches the predetermined savings threshold, FinWiz deploys a proactive alert system by sending notifications to the user's registered email address. This alert mechanism proves to be an invaluable feature, serving as an early-warning system to notify users when they are nearing the established savings limit. This real-time notification not only enhances financial

awareness but also provides users with a timely prompt to reassess their budgetary allocations or take necessary actions to align with their savings goals. By incorporating this feature, FinWiz prioritizes user engagement and financial discipline, offering a personalized and responsive approach to managing savings within the application.

FinWiz prioritizes user security through an advanced alert system that sends notification emails to the registered email address upon every user login and logout. This proactive security measure ensures that users are promptly informed of any account activity, allowing them to stay vigilant and take swift action if necessary. In the event of unauthorized access, the immediate email alert serves as an extra layer of protection, empowering users to respond quickly by changing passwords or contacting support. This feature not only enhances the overall security posture of FinWiz but also instills confidence in users regarding the protection of their sensitive financial data.

Furthermore, this security feature plays a crucial role in preventing unauthorized access by alerting the original user when someone else attempts to log in with their credentials. The timely notification establishes a robust security protocol, fostering a secure user experience within FinWiz. This thoughtful implementation reflects FinWiz's commitment to providing a secure and user-centric financial management platform.

VI. SYSTEM EVALUATION

Usability testing, as applied in our system evaluation, involves observing users during their interaction with the system. The primary goal is to closely monitor user experiences to identify both effective and ineffective features based on user feedback. This feedback is crucial for evaluating and enhancing system efficiency, contributing significantly to the overall system design.

Employing an empirical approach, we conducted an examination and comparison of the usability of various conceptual designs. In the realm of mobile applications, we identified several conventional apps designed for day-to-day expenditure tracking. Through a comparative analysis with these existing applications, we present an improved solution. To assess the usability of our system, we devised experiments centered around specific metrics.

- Duration taken to accomplish a specific task.
- Rate of successful task completion.
- Count of errors encountered.
- User satisfaction rating.

A total of 15 participants actively participated in this testing phase, contributing diverse perspectives to our evaluation. The participants were strategically divided into three age groups: 5 individuals in the 18-29 age range, another 5 in the 30-39 age range, and the remaining 5 participants aged 40 and above. Each participant was assigned a set of tasks to complete, allowing us to gather comprehensive insights across different age demographics. This approach ensures a well-rounded assessment of the system's usability and performance among users of varying age groups.

The testing process involved the engagement of the initial cohort comprising 8 participants, who were assigned the task of entering their respective expenses and income into FinWiz. These individuals were actively encouraged to explore the functionalities of the application. Simultaneously, the remaining 7 participants were directed to perform a similar task but in a traditional app, one that lacked any visual representations.

An additional layer of complexity was introduced for the latter group, as they were not only required to input their financial data but were also tasked with analyzing and discerning trends. Specifically, they were asked to identify the years in which their income and expenses were comparatively higher or lower.

Each participant, irrespective of their assigned group, was provided with a dedicated timeframe of 5 minutes to complete the data entry task and formulate their responses. Subsequently, the analysis of the obtained results focused on two key aspects: the total time taken by participants to fulfill the assigned tasks and the computation of an average success rate. This comprehensive approach ensured a thorough examination of usability, efficiency, and user proficiency across both FinWiz and the traditional app.

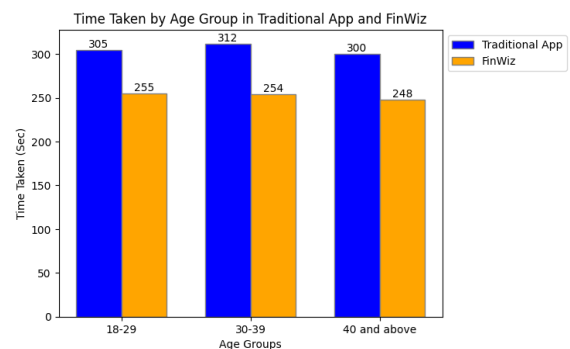


Fig.14 Average time to complete the task

S.No	Application	Age	Time (300 sec)
1	Traditional	18	310
2	Traditional	19	308
3	Traditional	32	315
4	FinWiz	30	240
5	FinWiz	43	260
6	Traditional	20	298
7	FinWiz	35	270
8	Traditional	45	302
9	FinWiz	46	220
10	FinWiz	26	230
11	FinWiz	31	254
12	Traditional	41	299
13	Traditional	33	309
14	FinWiz	21	256
15	FinWiz	47	264

Table1: Based on Age and Time taken to complete Task

- FinWiz is generally faster than Traditional in processing applications, regardless of the applicant's age.
- The difference in processing time between FinWiz and Traditional is most significant for younger applicants (under 30 years old).
- The processing time for Traditional applications tends to increase slightly with the applicant's age, while the processing time for FinWiz applications remains relatively consistent across different age groups.
- FinWiz has the fastest processing time for applicants aged 20-29, with an average processing time of 230 seconds.
- Traditional has the fastest processing time for applicants aged 30-39, with an average processing time of 302 seconds.
- FinWiz has the fastest processing time for applicants aged 40 and above, with an average processing time of 262 seconds.

VII. CONCLUSION

The Tracking System is a valuable tool for individuals looking to manage their finances efficiently. It offers a simple and user-friendly way to track daily, weekly, monthly, and yearly expenses and earnings. The system eliminates the need for manual calculations and provides users with a comprehensive overview of their spending habits.

One of the key benefits of the Tracking System is its ability to send alert notifications to users when their expenditures exceed a pre-defined limit. This feature is particularly useful for individuals who are prone to overspending or who want to stay within a specific budget. By receiving these alerts, users can take immediate action to adjust their spending and avoid accumulating debt.

Overall, the Tracking System is a valuable tool that can help individuals gain control of their finances and make informed financial decisions. It is a user-friendly and comprehensive system that offers a variety of features to help users manage their money effectively.

VIII. CONCLUSION

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