

Fin-Vest: Personal Finance Management

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Abstract - Managing money along with saving and investing is termed as personal finance. The financial plan details how to accomplish monetary goals whereas the budget helps to manage one's needs, wants, and investments. It includes reducing unnecessary expenses, increasing one's investments and planning for the future, etc. Information Technology has changed the world of management of income and finances by providing solutions to these vital problems of an individual by decreasing their expenses if it crosses its limits and providing suggestions which can help one to manage one's finances. In this project, we have built a personal finance management software using various python libraries. This software can be used by anyone who wants to track their expenses, income, and financial goals.

Key Words: Saving, investing, personal finance, financial plan, goals, budget, python.

1. INTRODUCTION

Fin-Vest is a platform that can be used to track personal income, expenses, and financial goals, identify spending patterns, saving patterns, plan short-term and long-term goals, and get a glimpse of finances with just a click of a button which will help user to take right decisions. In loan section, one can calculate original interest with respect to tenure, rate of interest, and plan to reduce tenure and interest amount of loan by pre-payment of EMI. One can compare original interest amount, tenure and optimized interest amount, tenure in the form of graphs.

In India, the normal age of retirement set by the government for most of the occupations is sixty years. But due to the current hectic life pattern, a new trend has made an entry which is early retirement planning. One can get an early retirement plan ready within no time and stay up to date with the current information of the constantly changing financial world using our platform.

1.1 Technologies Used

For developing this project, we have used the following technologies:

1. Python as the main programming language.
2. Matplotlib for visualization.
3. Numpy for working with arrays.
4. Pandas for data manipulation.
5. MySQL as a database for the project.
6. Tkinter a python library to build GUI.
7. Excel for raw calculations on data.

2. METHODOLOGY

Fin-Vest is a personal finance management platform that is mainly developed by using python, MySQL, and Tkinter for GUI (graphical user interface). The platform has the following features such as input window for adding needs and wants, budgeting, loan section, short-term and long-term goals, early retirement plan, dashboard representing summary, and educational information.

First, the user needs to register in the Fin-Vest platform by entering the asked credentials. On registering the user gets a unique user id and all this data gets stored securely in the database. After registering user needs to log in using correct credentials which will be authenticated and if the credentials are correct then only the user logs in into the platform otherwise entry is denied. In the input window, the user has to enter the salary of the current month followed by needs and wants for that month.

If the user gets any bonus in the current month, then he/she needs to enter the bonus amount in the bonus section. If the user wants to make changes in the needs and wants section

then the user can use ADD, DELETE and UPDATE buttons present in their respective sections.

After entering the data in the input window, the user needs to go to the budgeting section where all entered data with summation of needs and wants amounts are shown in tabular format. The tabular format has been built using tree view widget from Tkinter GUI and data is fetched directly from the database into the tree view. According to the 50-30-20 rule of budgeting the salary is divided and displayed to the user by using an algorithm that is developed in python coding language. After this, the respective function compares the total amount of needs and wants with the salary's 50-30-20 composition and displays status of the user whether the user is in Over-budget, Under-budget, and In-budget. On the right portion of the window, the graphical representation of budgeting is displayed for easy understanding. In lower section of the window annual summary of investment is represented in tabular format and besides it, there is an investment progress graph is displayed which is a line scatter plot.

In the loan section first, the user needs to enter the data of their loan. After that, calculations are displayed such as total payable interest on principal amount with its respective tenure. On the right-side pre-payment of EMI concept's information is given for user understanding like how to reduce payable interest and tenure. After entering the number of EMIs to pre-pay, the pre-payment function gives optimized payable interest and reduced tenure along with comparison in tabular format. In the right section of window same comparison is displayed by using graphs consisting of line chart for overall comparison, bar plot for comparison of tenure, and donut graph for displaying the difference in before and after payable interest. By using the Loan section user can easily find out a strategy to optimize the loan.

In the planning window, user can plan their short-term and long-term goals along with retirement planning. In the beginning, user has to enter goals with their respective amount and no of years to achieve them. Likely user needs to enter the amount with which he/she wants to retire and in how many years. On the right-hand side goals, their amounts, time, and value at that time which is inflation calculated on that amount are displayed in tree view. On clicking the see planning button the user is directed to the next window which consists of a table having year-wise calculations of investment with total saved amount. On the right-hand side, the goals along with status whether it will be achievable or not in the given tenure is displayed. Adjustment options are also given at the bottom for goals.

Dashboard summarises all the user data using different graphs which are built using various data visualization python libraries. On the left-hand side of the dashboard, a salary with a 50-30-20 composition is displayed along with saving status. On the right-hand side user's financial goals

information is displayed in a bar graph. In the center section needs and wants graphs are plotted which are horizontal bar graphs.

Here user data is completely secured and privacy is maintained. The user enters his/her own data so the integrity of data is maintained. This platform helps the user get answers to his/her financial questions like, is my spending pattern right, where/how do I spend and save, which months are financially bad or good, how to optimize loan, how to plan retirement, etc. So, this platform is all in one solution to all user's financial queries.

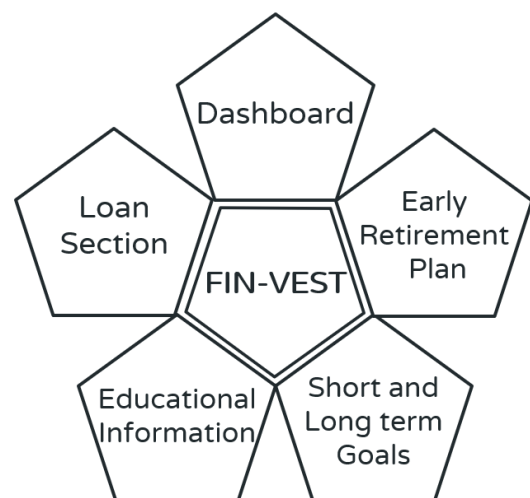
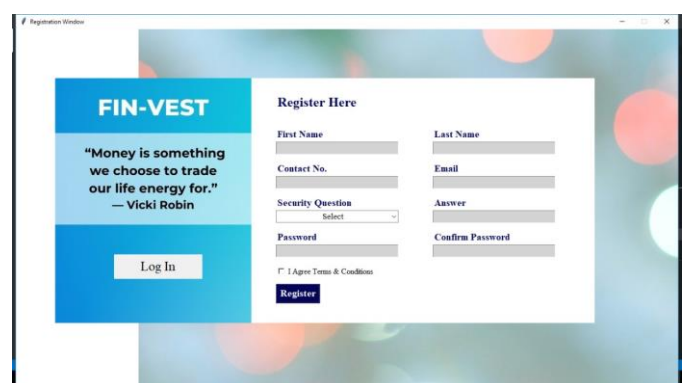


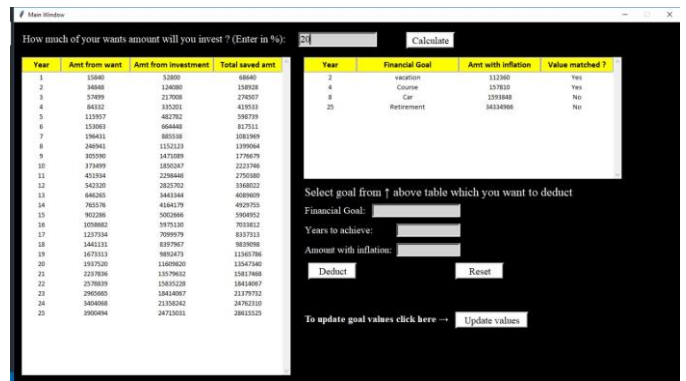
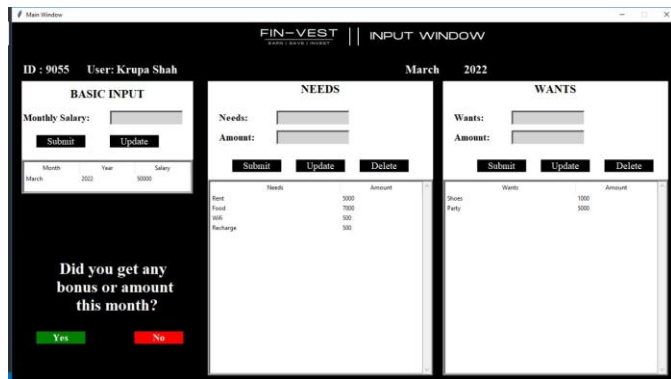
Fig -1: Features of Fin-Vest

3. RESULTS

1. Login and Registration window

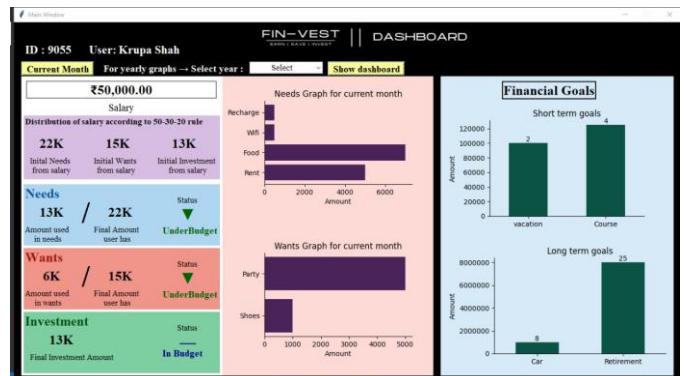
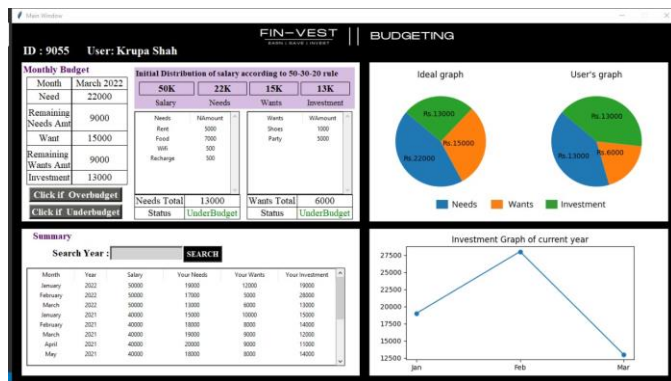


2. Input window



6. Dashboard

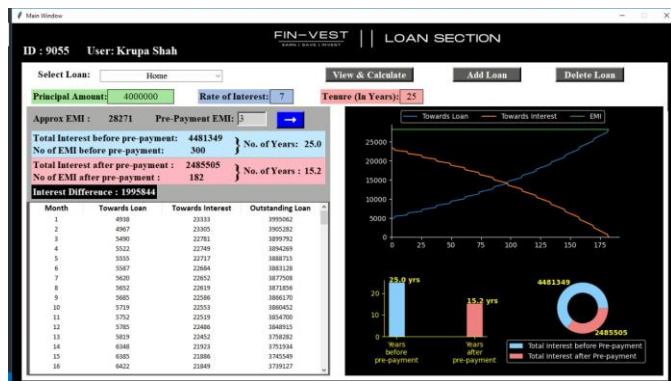
3. Budgeting window



4. CONCLUSION

4. Loan section

We have developed a software that evaluates financial condition of the user, helps to concentrate on monetary goals, organizes saving and spending, helps in building a better future and enables to invest wisely. It is important for everyone to have a personal finance plan in order to meet their financial goals, achieve financial stability, make rational financial decisions, take benefit of every financial opportunity and retire in comfort.



REFERENCES

5. Early retirement and goals planning window

[1] Rudolph, S., Savikhin, A., & Ebert, D. S. (2009). "FinVis: Applied visual analytics for personal financial planning". 2009 IEEE Symposium on Visual Analytics Science and Technology. DOI: 10.1109/vast.2009.5333920

[2] Kanaujia, P. K. M., Pandey, M., & Rautaraj, S. S. (2017). "Real time financial analysis using big data technologies". 2017 International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC). DOI: 10.1109/i-smac.2017.8058323

[3] Bi, Q., Tang, J., Van Fleet, B., Nelson, J., Beal, I., Ray, C., & Ossola, A. (2020). "Software Architecture for Machine Learning in Personal Financial Planning". 2020 Intermountain Engineering, Technology and Computing (IETC). DOI: 10.1109/ietc47856.2020.9249171

