Lab 1 – CreditTrax Product Description

Brian Nguyen

Old Dominion University

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Professor S. Hosni

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1   Introduction

Personal finance is a significant part of people's lives. Unfortunately, many Americans, especially young adults, struggle with their finances such as paying off debt and managing expenses. Overall, credit card debt among U.S consumers is at over one trillion dollars as of 2023 and credit card debt in Gen-Z increased by 14.3% from 2022-2023 (Horymski, 2023). There are many reasons as to why young adults are struggling in personal finance. They can struggle with paying their monthly bills due to either being busy and forgetting about it or not having the money to afford to pay for it. This will then make it harder for young adults to afford their fundamental needs and accomplish goals such as buying a house, buying a car, increasing net worth, getting married, having children, saving for retirement, or going on vacations (Rademacher & Melford, n.d.). Other reasons include being inexperienced in personal finance and not having a budget to follow and track expenses. Finally, if a young adult is experienced and would like to use apps for debt and budget management, most of the times they may be using two apps, one for budget management and one for debt management. Rarely do these two features are implemented in one app, making it hard for users to see the bigger picture. Financial apps such as EveryDollar are good basic apps that tracks your debt and expenses and gives you a zero-based budget style, but it doesn't give you many visualizations for debt progress. Credit Karma has debt visualizations, but it doesn't do budgeting. It is beneficial to young adults if an app teaches them personal finances all the while helping them manage their debt, budget, see the bigger picture such as net worth, set short-term and long-term goals to aim at and accomplish.

The solution is CreditTrax, a mobile web app designed to help young adults track expenses, track debt, create a personalized budget, and make recommendations using AI-based algorithms based on the user's needs. CreditTrax will also educate young adults on basic personal finance

concepts, allowing them to apply to grow good financial habits and make smarter financial decisions.

2   CreditTrax Product Description

CreditTrax is a mobile web app that uses chatbot AI to recommend young adults their personalized budgets, make projections regarding their finances, and to answer financial questions that they may have. The chatbot uses the information gathered to create a budget for the user. The app will also help young adults stay on track of their debt payments through reminders that increase in frequency and potentially tone if the user misses a payment. CreditTrax gamifies finances so young adults can be motivated in achieving their goals. Young adults can view their overall finances using CreditTrax's dashboard, which tells the user's net worth, spending habits, debt, badges, and goals. The main objective of CreditTrax is to educate young adults about personal finance while planting the seed for good financial habits to help them achieve financial freedom, one day at a time.

2.1   Key Product Features and Capabilities

A key feature of CreditTrax is the use of OpenAI API as the app's chatbot to help generate a budget based on the user's needs. Whether the user knows how to create a budget or not, the chatbot AI will assist the user in creating one while educating the user in basic budgeting concepts. Young adults can input their financial details such as monthly income, expenses, and outstanding debt balances as well as the interest rate, payment due date, minimum payment amount or monthly loan amount. OpenAI will also ask what the user's preferred expense management style is and whether they are prone to overspending or not. Using the data gathered from the user, OpenAI will recommend a budget style and shows it may look like. The user can approve of the recommendation or request changes, and OpenAI will make those changes where is needed. Once the user accepts the budget style, OpenAI will generate it so the user can interact

with it. With the budget, the user may manually add/remove categories, change the amount of money allocated for each category, as well as add/remove expenses or income in the budget. This is one of the main features of CreditTrax that helps solve a young adult's potential issue with creating a reasonable budget that they can follow without distress.

In addition to the chatbot-assisted budgeting, CreditTrax assists young adults in keeping track with their debt. Users can add sources of debt such as credit card debt, auto loan, and mortgages, inputting the total amount owed, the monthly amount owed, the term length, interest rate/APR, and the monthly due date. To help remind themselves to pay their monthly debt, users can choose to enable CreditTrax's smart payment reminder which prompts them to pay their debt and manually approve payment in the app. The reminders can be set to send notifications as frequently as the user wants and the messages themselves can be custom to the user. If the user fails to confirm their monthly payment before the due date, CreditTrax will first send a notification asking if the user has paid the debt. The user can then confirm payment if they actually paid it. If the user misses the payment, then the frequency and potential tone of the message will increase in severity, stressing the importance of not missing payments. While the user pays off their debts over time, CreditTrax will record their payments and places them in a graph, visualizing the progress the user has made since they started making payments. CreditTrax's debt management feature helps young adults remain conscious of their debt and reduces the risk of them straying from their path to being debt-free, a major step towards financial freedom. However, with the chatbot-assisted budgeting and the debt management, the user can still have a hard time visualizing where they stand financially. A central page is needed to allow young adults to see the bigger picture.

CreditTrax's financial dashboard is the central page young adults need to see the overall progress they have made and to assess their financial well-being. Their financial dashboard essentially ties all information from the user's budget, debts, and other features and shows them in a visually appealing manner. The user will be able to see charts and graphs showing their net worth, cash flow, spending habits, and their overall progress of their debt payments. In addition, users can view their short-term and long-term financial goals and their progress in completing them. Lastly, users can view the in-app badges they have earned through the gamification system that will be explained later. The financial dashboard is an important piece of CreditTrax as it visualizes a young adult's current financial standing and their general progression to achieve their goals.

To further motivate young adults to make good financial habits and to make personal finance more fun, CreditTrax utilizes a gamification system allowing users to earn badges, create short-term and long-term goals, and show where they stand with other users, hopefully making them more motivated to keep track of their finances. The badges are earned by completing certain requirements such as completing goals, creating a budget, or making a certain amount of payments to debt. Depending on the content of the badge, it can also level up in tier if the user has earned them previously. Each tier requirement is a harder version of the previous tier. Users can create short-term and long-term goals to have something to aim towards and accomplish. CreditTrax will track and update the goals using the inputs provided by the user. CreditTrax has a community page where users can see leaderboards and rankings for where they stand compared to their peers. In addition, users will see any groups that they are a part of, which is especially applicable to those who are students of a finance class and who are working with a personal finance advisor or coach. CreditTrax gamifies finances so young adults can think of personal

finance as something to enjoy and to be less stressed about. It can certainly motivate them to keep on track for a long time, but there is another feature that can help them aim for the long game.

CreditTrax's what-if analysis section allows young adults to project into the future what their financial standing will be months to years ahead. Users can input their income and expenses, financial goals, debts, and a scenario the user would like to run. For example, they may want to adjust their savings amount, so they input the new savings amount and CreditTrax will calculate and show a graph viewing the projected amount saved over time. With a financial goal, the user can see how much longer or shorter it would take for them to save to their goal if they started saving a different amount. Users can also change the data inputted to yield different results. The what-if section provides another way for young adults to visually see the long game and know that their efforts today will bear fruits in the future.

If the young adult users are interested in learning more about personal finance other than what is shown with the features mentioned above, CreditTrax has a financial literacy section that consists of articles and videos that can teach users on financial topics. Topics such as budgeting, debt payoff techniques, retirement, investing, saving, and more are available for anyone interested in education and applying them to their situation.

2.2   Major Components (Hardware/Software)

Figure 1: Major Functional Components Diagram
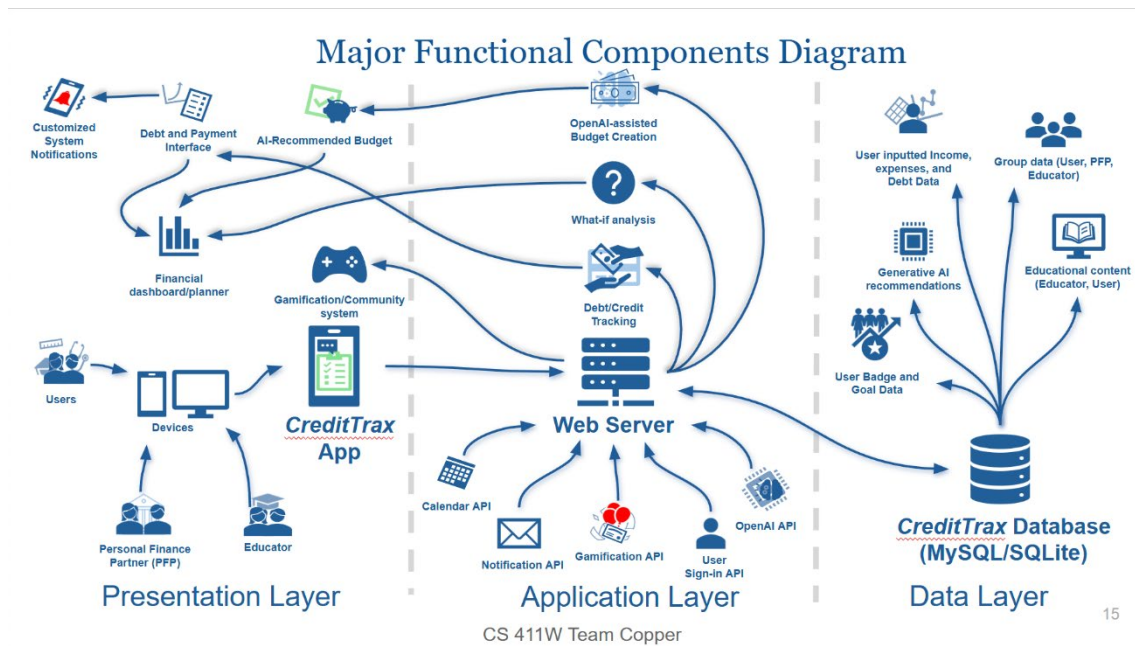
All the features of CreditTrax will be implemented with the support of software and

hardware. Among them are major functional components seen in Figure 1. CreditTrax will

utilize manual user input to obtain financial data needed for the features to function properly. All

the user's information will be stored in a web server and a database. The database will feed the

user's income, expenses, and debt data to OpenAI to help it recommend a custom budget for the

user. In addition, the gamification system will use the database to determine if the user has

accomplished their goals and have earned achievements in the app. The debt data is used for

CreditTrax's credit and debt interface, allowing the app to create visualizations for the data.

CreditTrax also uses the server for the calendar to store payment due dates and send reminders to

the user of upcoming deadlines. CreditTrax will be a web application, so using a phone or

computer will be the main hardware for using the app. On the software side, the app will use

OpenAI API to support its budgeting recommendation feature. Visual Studios Code will be used to program the application. CreditTrax's frontend will be coded in HTML, CSS, and JavaScript. The backend will be programmed in Python to be able to utilize OpenAI. In addition to Python, libraries such as Sci-kit learn, Numpy, and Pandas will be used as they are important in working with machine learning. CreditTrax will use Bootstrap for the frontend framework and Django as the backend framework. Mocha will be used as the frontend's testing framework and Pytest is the testing framework for the backend. The documentation tool for the frontend is JSDoc; Pydoc and Sphinx will be the documentation tools for the backend. Amazon RDS will be utitlized as the database software to store all of the users' data. A Badging system API will be used for the gamification feature and a calendar API will be used like mentioned before.

3   Identification of Case Study

CreditTrax is being developed with young adults in mind. The reasoning behind it is that people from ages 18-34 are either in college, have started their career or in the early stages of their career, and nearly all of them are experiencing personal finance for the first time. It is also a vital time for them to learn to build financial habits, become financially stable, invest in their retirement/future, and to pay off any debts they may have. With this reasoning, CreditTrax's goal is to help young adults, whether they are students, military service members/veterans, or starting professionals, achieve financial success later in life by planting good financial habits early on.

In addition to young adults, educational institution managers, or college professors for short, can benefit from using this app as a tool to help their students learn personal finance concepts by allowing them to apply what they learn in real life. They can form groups with their students using the community feature and share external links to financial videos and articles to their students. Professors can view a student's progress through the rewards system and the goals they have accomplished. Professors will not have access to a student's financial data such as their

debt, income, and expenses as they are private information for the students only. Personal finance partners such as financial advisors and financial coaches can also use this app for a similar purpose: To better help their clients with their finances. Like professors, personal finance partners can create groups with their clients and see their rewards and goals. But, the partners can see more information about the client such as their financial data, budget, debt, and others. They can edit a client's budget and view all AI-generated recommendations OpenAI made to the client. With that information, personal finance partners can give feedback on the accuracy of the recommendations.

4   CreditTrax Product Prototype Description

4.1   Prototype Architecture (Hardware/Software)

4.2   Prototype Features and Capabilities

4.3   Prototype Development Challenges

5   Glossary

Annual Inflation Rate: The percentage increase in the cost of goods over the course of a year.

APR (Annual Percentage Rate): The annual rate charged for borrowing money as a percentage of the total borrowed amount.

Credit Score: A three-digit number that reflects an individual's creditworthiness based on their credit history, influencing lenders' decisions on loan approvals and interest rates.

Debt: Money that is borrowed and must be repaid, typically with interest.

Financial Literacy: A strong understanding of essential financial skills and concepts, such as budgeting, saving, and debt management.

Financial Management: The process of budgeting, saving, and monitoring personal finances to achieve one's financial goals.

Financial Uncertainty: The fear or concern about one's financial situation, often relating to income, debt, or future stability.

Student Loans: Money borrowed by an individual for educational purposes (for tuition, transportation, textbooks, etc.) which must be repaid with interest.

"What-if" Analysis: A technique that allows users to simulate various (financial) scenarios and visualize their potential outcomes.

Young Adults: Individuals between the ages of 18 to 34 who are in the workforce and have limited experience with personal finances.

Young Professionals: Young adults aged 18-34 who are in the workforce, in college, or have

recently graduated.

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