

Lab 1 – CreditTrax Product Description

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1 Introduction

In recent years, personal debt has become an increasingly pressing issue for many Americans. According to the Federal Reserve, total consumer credit reached a staggering \$5.1 trillion in August 2024, marking a significant increase from previous years (Board of Governors of the Federal Reserve System, 2024). This trend is particularly concerning for young adults, who face mounting student loan debts averaging \$37,338 per borrower and rising costs of living in major metropolitan areas.

The increasing debt burden has far-reaching consequences, impacting individuals' financial stability, mental health, and future prospects. Research indicates that young adults with high debt levels may experience reduced credit scores by up to 100 points, potentially jeopardizing their long-term financial well-being (Martinchek & Santillo, 2024). Furthermore, the struggle with debt often leads to higher rates of stress and depression, creating a vicious cycle that can be difficult to break. These mental health concerns persist throughout a person's life, compounded by the worry and looming uncertainty caused by their unsustainable debt (Gravier, 2024).

To address this worsening problem, there is a clear need for accessible, user-friendly tools that can help individuals manage their debts effectively. Key solution characteristics include comprehensive debt tracking, personalized budgeting advice, motivational features to encourage consistent progress, and educational resources for building financial literacy.

Enter CreditTrax, an innovative smartphone application designed to empower young adults and young professionals in their journey towards debt freedom. By combining smart payment reminders, algorithmic-driven budgeting suggestions, and an engaging personal financial dashboard, CreditTrax offers a holistic approach to debt management and financial literacy that addresses the unique challenges faced by today's consumers.

2 CreditTrax Product Description

CreditTrax is a financial management application designed for young adults and professionals, offering a comprehensive solution to navigate the complexities of personal finance. The app provides a robust platform for debt tracking, allowing users to input and monitor various financial obligations while receiving smart payment reminders. Powered by AI, CreditTrax delivers personalized budgeting recommendations by analyzing income, expenses, and debt patterns, suggesting strategies like the 50-30-20 budget plan to optimize financial health. Its descriptive personal financial dashboard uses data analytics and visualization tools to help users understand their financial landscape, offering real-time insights and "what-if" scenario analyses that enable informed decision-making.

Beyond mere tracking, CreditTrax serves as a financial literacy tool, educating users about critical money management concepts and fostering proactive financial habits. The application addresses the unique challenges faced by young adults, particularly recent graduates burdened by student loans and credit card debt, by providing flexible goal-setting options and reducing financial anxiety.

2.1 Key Product Features and Capabilities

One key product feature is debt tracking. It allows users to view and track their debts, providing a centralized platform for managing multiple financial obligations such as credit card balances or student loans. Its smart payment reminders feature ensures users stay on top of their payments by issuing escalating notifications until manual approval is granted, significantly reducing missed payments and associated fees.

The app delivers personalized budgeting suggestions that analyze the user's income, expenses, and debt obligations. These recommendations help users optimize their finances by

reducing unnecessary spending and efficiently allocating funds. The app also enables users to set and track both short and long-term financial goals, offering flexibility and fostering better financial discipline over time.

To motivate users, the system incorporates a rewards-based gamification framework. Users earn badges for achieving milestones, such as reducing debt or adhering to their budgets, and can participate in financial challenges. They can also see how they compare with other CreditTrax users through the leaderboard ranking system. This approach encourages engagement and sustains user motivation to stay on track with financial goals.

The platform is equipped with a detailed financial dashboard, offering insights into spending trends, debt progress, and overall financial health. These visualizations—such as progress charts and graphical comparisons—enable users to monitor their performance and make informed decisions.

The system also facilitates financial literacy by allowing educators to share external resources like videos, articles, and blogs to their students. These materials help users understand core financial concepts and build essential skills, addressing gaps in financial education for young adults.

2.2 Major Components (Hardware/Software)

The Major Functional Components Diagram (Figure 1) illustrates the hardware and software structure required to implement the CreditTrax solution. It provides an overview of the interconnected systems supporting the application's features, such as debt tracking, budgeting, gamification, and analytics.

CreditTrax is a mobile web app compatible with Android and iOS devices, allowing seamless access for end-users. These devices serve as the interface for data input, budget

visualizations, and real-time updates. The primary language to be used for back-end development is Python and HTML5, CSS, and JS for the front-end. The application's back-end is hosted on Amazon Web Services (AWS), utilizing Amazon RDS for MySQL for database storage and Amazon Cloud Storage for secure data storage and retrieval. AWS Management simplifies database deployment and scalability, ensuring efficient processing of user data and system notifications. Front-end testing uses Mocha, ensuring the interface functions as intended across various devices and scenarios.

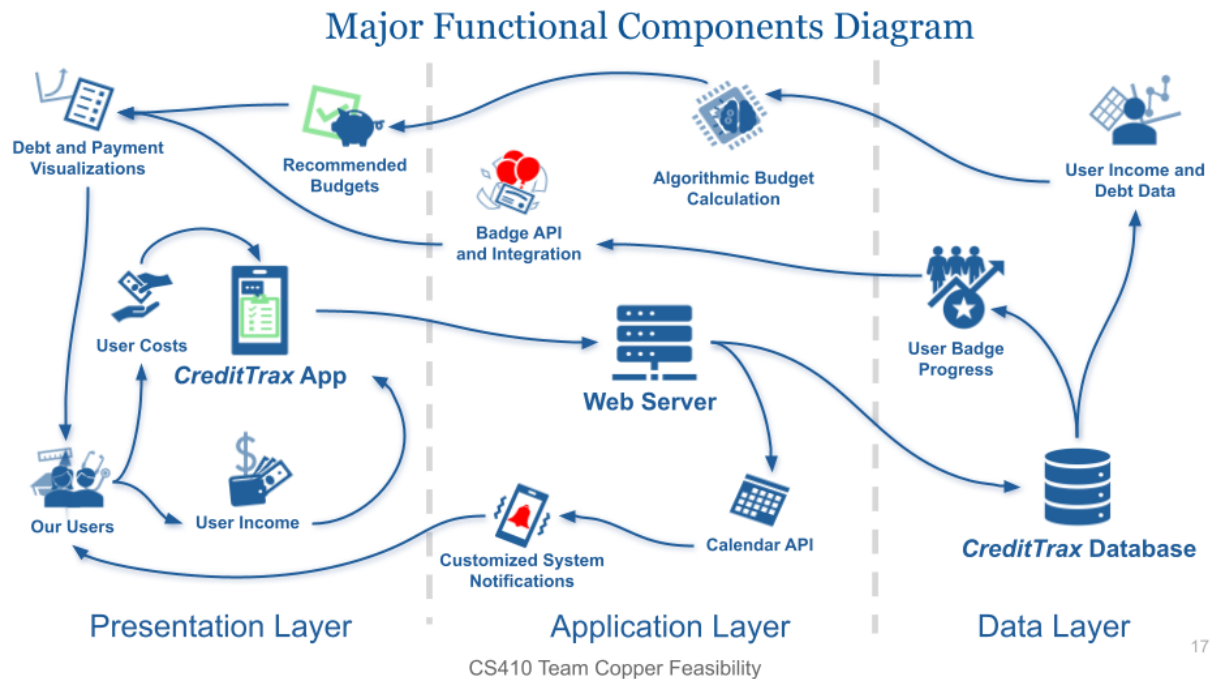
The application will use a central web server to process user requests, connect with APIs, and manage data flows between the front-end and database. It will utilize a Calendar API to support custom notifications and a Badge API to manage gamification features. These APIs streamline the app's functionality and enhances user engagement. Version control is handled via Git, enabling collaborative development, bug tracking, and streamlined updates.

User data (e.g., income, expenses, badges, and progress metrics) is stored in Amazon RDS for MySQL, ensuring secure and reliable data handling. The back-end performs AI-driven budget analysis, generating tailored recommendations and spending insights. Pytest will test and

validate back-end functionality, ensuring robust handling of calculations, data storage, and API interactions.

Figure 1

Major Functional Components Diagram



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3 Identification of Case Study

This product is developed for young adults aged 18-34, particularly young professionals and recent college graduates who face challenges in managing debt and finances effectively. This demographic often struggles with substantial student loans, credit card debt, and a lack of financial literacy, which can lead to poor financial decisions and increased financial stress. By offering personalized budgeting tools, debt tracking, and educational resources, the app empowers this group to develop sustainable financial habits, reduce debt, and achieve financial stability.

The app extends its usability to educational institutions, enabling them to offer financial literacy tools to students as part of their curriculum. Additionally, financial advisors, wellness coaches, and financial institutions could use the platform to support their clients in achieving financial wellness.

5 Glossary

- **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.
- **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.

6 References

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