

Lab 1 – CreditTrax Product Description

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1 Introduction

Many individuals grow up receiving well-intended advice such as “save a little each month,” “keep a budget,” or “steer clear of unnecessary debt,” but only a few truly understood the value of these lessons until the bills started piling up. In today’s world, countless young adults navigate a maze of financial obligations that can feel both isolating and overwhelming. According to the Federal Reserve (2024), student loan debt alone has surpassed \$1.7 trillion, confirming a reality: debt has become a defining characteristic of early adulthood for many. With credit card balances, rising interest rates, and the ever-increasing cost of living, a perfect storm is created where daily expenses collide with long-term aspirations. This situation is more than just numbers on a statement; it is the accumulated stress of paying off loans, the worry over missed payments affecting credit scores, and the frustration of wanting to move forward in life (e.g., purchasing a first home, starting a family, or pursuing other personal goals) while feeling anchored by financial burdens.

While many applications promise a quick fix through budget planning or debt management, only a few provide a comprehensive solution that addresses immediate financial challenges and fosters lasting financial growth and peace of mind. CreditTrax was created to empower young adults with practical tools that make financial awareness and planning both accessible and transformative. By merging debt tracking, AI-driven budgeting, and educational components into a single, user-friendly platform, CreditTrax helps individuals build healthy financial habits that last. Its personalized dashboards, what-if scenario modeling, and interactive notifications support busy young professionals who need more than just a static budgeting sheet. They provide dynamic guidance and encouragement that empower users to take control of their financial journey. Ultimately, CreditTrax is about bringing relief, clarity, and confidence to those who,

during student loans and monthly bills, are striving to shape their financial future and live life on their own terms.

2 Product Description

CreditTrax is a web and mobile application that merges debt management, financial literacy, and AI-powered budgeting into one cohesive system. Its primary goal is to help users optimize their finances and take control of their long-term financial goals. By analyzing spending behavior, providing real-time reminders, and offering educational resources, CreditTrax equips users with the knowledge and skills to overcome financial challenges. Ultimately, CreditTrax aims to reduce the stress and confusion often associated with personal finance by giving users a clear roadmap for achieving their short- and long-term objectives.

2.1 Key Product Features and Capabilities

CreditTrax takes an integrated approach by unifying debt tracking, budgeting, and financial literacy within a single, intuitive platform. Its debt tracking feature centralizes multiple sources of debt, such as credit cards, student loans, and personal loans, into a single dashboard that provides clear visibility into balances, due dates, and payment histories. Rather than just displaying totals, this system includes smart notifications and visual timelines that illustrate how each payment reduces outstanding debt. By furnishing real-time insights, it promotes greater transparency and helps prioritize high-interest obligations, potentially yielding significant savings.

In addition, CreditTrax utilizes generative AI to provide adaptive budgeting recommendations that surpass basic expense categorization. Through continuous analysis of income patterns, expenditure trends, and savings goals, the platform identifies areas of excessive

spending and offers adjustments aligned with broader financial objectives. This feature is dynamic and recalibrates budgets as new information emerges, for example when an individual's income changes or unexpected expenses arise. By facilitating efficient resource allocation, the budgeting engine addresses the challenge of balancing short-term demands and long-term aspirations, ultimately reducing financial stress and encouraging different spending practices.

Additionally, CreditTrax provides a comprehensive financial literacy module that simplifies key concepts and highlights the long-term effects of everyday monetary decisions. Topics within this module include strategies for building emergency funds, distinguishing between essential and discretionary expenditures, and recognizing how late or missed payments can influence credit scores. Interactive lessons and quizzes break down complex ideas into more accessible learning activities, ensuring that individuals gain both knowledge and confidence. This focus on education sets CreditTrax apart by shifting users from passive observers to active managers of their finances. By integrating robust debt tracking tools, an adaptable budgeting system, and a thorough educational platform, CreditTrax offers a multifaceted solution for immediate financial challenges and establishes the groundwork for sustainable financial well-being.

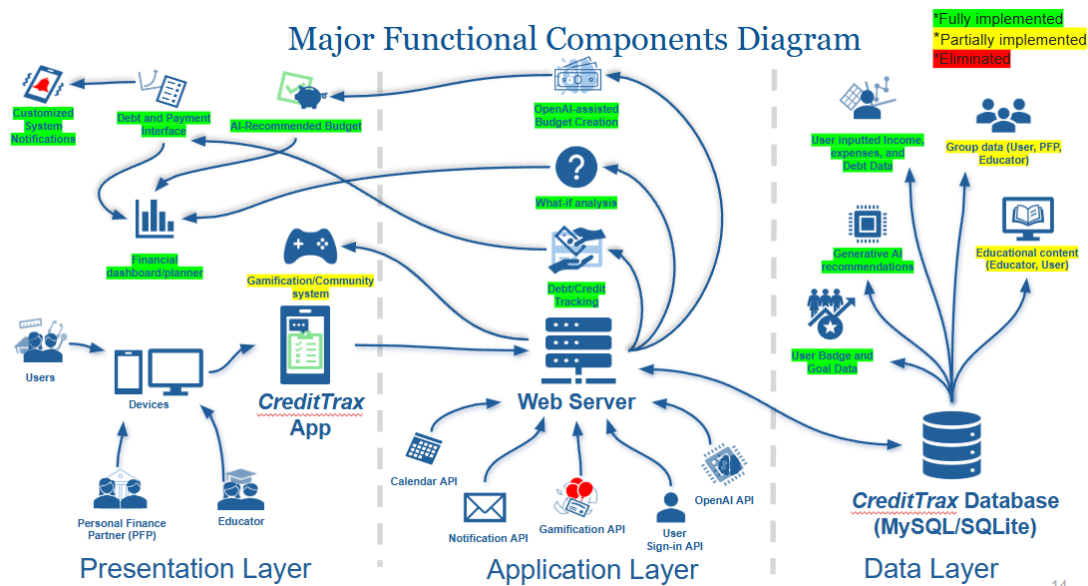
Moreover, CreditTrax includes a “What If” analysis feature and both short-term and long-term goal-setting capabilities to help users explore and plan for various financial scenarios. Through adjustable parameters such as debt repayment intervals, interest rates, and savings allocations, this tool demonstrates how minor shifts in spending or repayment strategies can significantly influence overall progress. Users can set goals ranging from immediate debt reduction targets to larger milestones like purchasing a home, then incorporate these objectives into their “What If” simulations to evaluate potential outcomes and refine their plans. This dual

emphasis on scenario planning and goal orientation encourages continuous engagement, promotes proactive financial decision-making, and further strengthens an individual's path toward long-lasting financial well-being.

2.2 Major Components (Hardware/Software)

From a hardware standpoint, CreditTrax functions seamlessly on standard personal computing devices, including laptops and desktops, as well as on smartphones and tablets. Its backend infrastructure can be deployed on cloud-based or on-premise servers, managing user authentication, data storage, and AI-driven operations. This flexible approach allows secure, convenient access to the platform regardless of hardware, location, or network environment.

On the software side, CreditTrax features a web and mobile front-end constructed using HTML5, CSS, and JavaScript frameworks, including Tailwind and Alpine, to deliver a responsive and user-friendly interface. The backend is implemented in PHP, leveraging Laravel or a comparable framework, and connects to a MySQL or SQLite database for effective data handling. Further enhancements are achieved through the integration of various external APIs and libraries. The OpenAI API provides generative AI capabilities and natural language features; a calendar API and notification API facilitate reminders and scheduling; a gamification API supports the tracking of badges and achievements; and MathPHP and Chart.js enable advanced calculations and data visualization. Collectively, these elements align with the Major Functional Component Diagram (MFCD), which demonstrates how user devices interface with the CreditTrax web server, database, and external services.

Figure 1*Figure of the MFCD*

3 Identification of Case Study

CreditTrax is designed for young adults who often lack substantial financial literacy. This includes college students, recent graduates, and young professionals carrying significant debt. For this prototype, a small case study group of students from Old Dominion University will be the initial testers, providing feedback on user interface, learning curve, and financial literacy outcomes. In the future, CreditTrax can expand to other users and organizations, including financial institutions seeking to partner with emerging fintech platforms, employers interested in offering financial wellness programs, and universities or educators wanting to integrate a personal finance tool in their curriculum.

4 Glossary

Generative AI: A branch of artificial intelligence that uses machine learning models, such as large language models, to produce new content or make predictions based on patterns in existing data.

MFCD (Major Functional Component Diagram): A high-level diagram illustrating how the main components of a system interact, including hardware, software, and external services.

What-if Analysis: A decision-making tool allowing users to simulate different financial scenarios (e.g., increasing savings or accelerating debt payments) and project the outcome based on existing data.

Back-End: The server-side portion of an application that handles data processing, storage, and business logic. It is typically hidden from direct user interaction and accessed through the front-end.

Debt-to-Income Ratio (DTI): A metric that compares a person's total monthly debt payments to their monthly gross income, often used by lenders to gauge an individual's capacity to manage debt.

Gamification: The incorporation of game design elements—like points, badges, or leaderboards—into non-game contexts (such as personal finance) to increase user engagement, motivation, and participation.

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