Lab 1

Rewards Maximizer

Team Platinum

01 August 2024

I.   Introduction

   In 2023 American consumers owned an average of 3.90 credit cards. (Experian, 2024). Each card can have different reward programs based on who it is issued by or who the issuer is affiliated with. This provides a great opportunity for customers but can overwhelm them with choices thus discouraging them from going through the process of comparing them. This affects all types of customers including seasonal offers that they might not be tracking. Credit card rewards programs can have fine print that may include additional and can be hard for some customers to understand and tie in with vendor rewards programs. With existing solutions many consumers are concerned about sharing their financial information with a third party, which is a requirement for most existing services. As consumers we should have more options that can provide us with what we need without losing control of what gets shared and to whom. Existing website that offers similar services but utilize adware as well as sponsored content, which can be hard to navigate. These revenue strategies may work, but it does leave consumers wanting to seek for the information somewhere else as trust can be lost when the feeling of something being sold starts occurring. User interfaces have been trending to more minimalistic designs but which can be complicated to include ads in a thoughtful manner thus leaving these websites in a tight spot. Existing solutions do not include vendor reward programs which can provide even more savings to customers. Rewards Maximizer is a software in the form of a website application that will allow users to maximize their credit card rewards by letting them search for purchase categories and the system will utilize the credit cards in the wallet to automate the process of comparing them while also taking into consideration vendor specific reward programs.

II.   Product Description

    A. Rewards Maximizer will be a website application that will take into account

        vendor rewards and credit card comparisons to optimize a user's purchase.

        1. This will be accomplished by allowing the user to enter all credit and

            rewards cards in the user's possession into a wallet inside the program.

        2. The customer will then enter what they are trying to buy, which will

            prompt Rewards Maximizer to search for potential purchases from

            different businesses, and return the credit and rewards cards that will

            award the most points or discounts pertaining to the searched item.

    B. Rewards Maximizer will provide:

        1. A simple, clean interface with focused information for the user.

        2. A digital wallet with which to add all cards of interest.

        3. Optimized credit card recommendations which will tell the user which

            card will save the most money for a given purchase.

        4. Crowdsourced information about credit cards and rewards programs from

            fellow users of the application.

    C. Rewards Maximizer will not:

        1. Give the user more general financial advice.

        2. Store the user's specific credit card information.

        3. Provide real-time customer support.

    D. Competition Matrix

Features	Rewards Maximizer	PayPal Honey	Rakuten	NerdWallet	Rocket Money

Crowdsourcing	✔				
Search and compare credit cards	✔			✔	
Wallet functionality	✔			✔	✔
Gives cash back on purchases		✔	✔		
Search web and applies coupons		✔			
Exclusive use of anonymous data for analysis	✔				
Integration of vendor-specific deals and reward systems	✔	Partial	Partial		
Company Updates	✔	Partial	Partial		
Search company rewards and loyalty programs	✔			Partial	
Notifications and Alerts	✔	✔	✔	✔	✔

1.1.1

E. Major Components

   1. Front-End

     a) HTML

     b) CSS

        c) Javascript

        d) Bootstrap

        e) Ember.js

   2. Back-End

        a) Rust (for database integration)

        b) Rocket

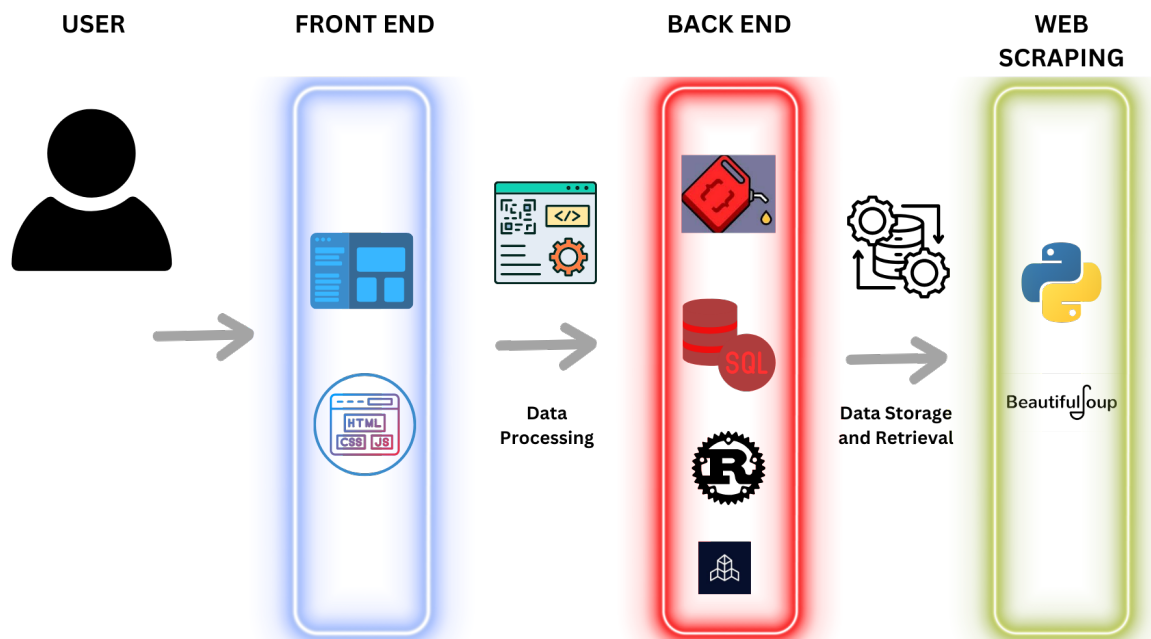   c) MySQL

        d) Python (for web crawler)

        e) Beautiful Soup

   3. Testing

        a) QUnit

III.   Identification of Case Study

      A. The application has the potential to be used by any consumer making purchases with a credit card or using vendor rewards programs.

      B. This being said, it is most likely be used by the subset of these people who are money conscious and like to use and keep track of the kinds of cumulative small savings Rewards Maximizer can provide.

      C. It is possible the application may be used in the future by larger scale companies needing to buy products in bulk.

IV.   Product Prototype Description

      A. The prototype will implement:

          1. Account management

          2. Login authentication

          3. The card search system

      B. The web crawler will be operating with an incomplete test dataset rather than live scraping many different financial sites.

      C. The card optimization algorithm will be simulated on test data rather than fully implemented with real up-to-date information.

      D. Prototype Comparison Table

Features	Real World Product	Prototype
User Account Setup	Fully Implemented	Not Implemented
Login Authentication	Fully Implemented	Not Implemented
Wallet Functionality	Fully Implemented	Not Implemented
Current Purchase Search	Fully Implemented	Not Implemented

Card Optimization Algorithm	Fully Implemented	Not Implemented
WebCrawler	Fully Implemented	Not Implemented
Feedback System	Fully Implemented	Not Implemented

1.1.2

E. Prototype Architecture

    1. The user will access Rewards Maximizer through a web application.

    2. The web application's GUI will allow the user to access their digital wallet, select a product they wish to search, or give feedback.

    3. The Data Layer will store information and interact with the web crawler and card optimization algorithm.

F. Prototype Features and Capabilities

    1. The prototype will demonstrate the capability for users to create their account and set up their tracked cards.

    2. The card optimization algorithm will demonstrate the ability to select the card giving the most savings for the test data provided.

G. Prototype Development Challenges

    1. Initial lack of knowledge on credit card minutae

    2. Inexperience with certain tools used, particularly Rust.

1.2

1.2.1

2 Glossary

Application Programming Interface (API): Software intermediary that allows two applications to talk to each other. APIs are an accessible way to extract and share data within and across organizations.

CSS: Cascading Style Sheets. Used to create web pages.

Graphical User Interface (GUI): A form of user interface that allows users to interact with electronic devices through graphical icons and audio indicators.

Git: version control system that tracks changes in a set of source files.

Github: A platform for software development and version control.

HTML: Hypertext Markup Language. Used to create web pages.

JavaScript: Programming language used to create web pages.

Rewards/Loyalty Program: A program offered by one vendor to entice customers to return usually offering discounts or free products

Rewards Credit Card: Credit cards which offer you some type of reward, typically cash back, points, or travel miles, for every dollar a customer spends.

WebCrawler: A program that systematically searches web pages for specific information.

3   References

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