CRYPTO CURRENCY TRACKER

Not Fast, Just Furious

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We have abided by the UNCG Academic Integrity Policy on this assignment

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Table of content

1 Introduction

1.1 Purpose:

Cryptocurrency is a digital asset designed to work as a medium of exchange wherein individual coin ownership records are stored in a ledger existing in a form of computerized database using strong cryptography to secure transaction records, to control the creation of additional coins, and to verify the transfer of coin ownership. Because of how popular cryptocurrency is, we want to create a program that helps users check the price and change in stock/price of every crypto currency and make decision based on the market. Users will also be able to save their favorite coins. The program will give users the ability to add friends and view their saved coins.

1.2 Document Conventions:

SQL: Structured Query Language.

JDK: Java Development Kit.

JAR: package file format typically used to aggregate many Java class files and associated metadata and resources into one file for distribution.

1.3 Intended Audience:

We want our program to be available for everyone whether they have experience with cryptocurrency or not. Our main intended audience: Ike Quigley, CSC-340 students and UNCG.

1.4 Definitions:

API: Application Programming Interface.

Database: A relational database that stores information across multiple tables.

Tab1: Table View.

Tab2: Graph View.

Tab3: Dashboard.

Tab4: Shared coins.

1.5 project Scope:

This program is intended to help users who are interested in cryptocurrency and to make decision regarding buying certain stocks. Each user will have their own account with an email, password, and profile picture of their own (and if they wish to skip, our program's

default picture will be displayed instead), said account will be stored in our database for next time log in validation, resetting password, retrieving username, displaying profile picture associated with the user, displaying friends list and saved coins list. If the user happens to forget their password or username, they should be able to reset the password through verifying a code sent to the email they used at the time of registration and retrieve their username using their email address stored in our database. The program will make its first API connection to the Email Verifier to validates the email used at the time of the registration process.

The user will be able to logout from any tab as our logout button is unified. The user should be able to see their saved coins in every tab and the ability to see all online users, friends, and saved coins is available in Tabs 1, 2, 3.

When the user logins, they will be taken to Tab3 in which connections to the 3 coin-related-APIs (Alpha Vantage, Coin Ranking, Coin Fixer) will be made. In tab3, the user will be able to see their saved coins in the form of bar and pie charts, below the bar chart, the saved coins will be displayed in a table and below the pie chart there's a search bar in which the user can search for available coins.

In tab1, the user will be able to display all coins (if "all" is selected) along the market share in a table and have the ability to save coins to their saved coins list. Changing the currency of the prices will also be included in tab1.

In tab2, the user will be able to use bar, pie, line, and candle graphs to graph their one of their saved coins or all of the saved coins while choosing a timeframe for the data to graph ranging from 24hr to 7 days.

In tab4, the user will be able to view a specific friend's saved coins in a table on the right side while theirs will be displayed on the left side table

Lastly, In the future, we want to give the user the ability to send a message and to appear offline for friends and other users (for privacy reasons).

1.6 Technical Challenges:

Our main technical challenges were connecting to the database as we have never done it before and using graphs to display data.

1.7 References:

https://blockgeeks.com/guides/what-is-cryptocurrency/

2 Overall Description

2.1 Product Features:

- Login page.
- Ability to reset password.
- Ability to retrieve username.
- Ability to create a new user.
- Ability to upload a picture as a profile picture when registering.
- Ability to see all online users.
- Ability to see friends.
- Ability to see all saved coins.
- Ability to display all available cryptocurrencies in a table.
- Ability to display all saved coins in a table.
- Ability to graph saved coins for certain time frame.
- Ability to display friend's saved coins in a table.
- Ability to use graphs to show data.
- Ability to search coins by name.
- Ability to save and remove coins.
- Ability to add and remove friends.
- Ability to save all coins/ saved coins and its data on one's device in different formats.
- Ability to switch between dark and light mode.
- Properly closing and exiting the program by clicking "x" or "log out."

2.2 User Characteristics:

As of now, there is only one type of user who has access to our main features of the program. The user is simply any user who is interested in cryptocurrency and has valid email to register to use our program.

2.3 Operating Environment:

Our program can be used by anyone who has access to a laptop or PC with internet connection.

2.4 Design and Implementation Constraints:

Our main constraint was displaying data on different graphs.

2.5 Assumptions and Dependencies:

The program depends on the Email Verifier, Alpha Vantage, Coin Ranking, and Coin Fixer APIs from which we get the data from and validate users' emails. Our main mission is to keep checking if the used APIs are still in a good shape and are not affecting our users' interactions.

3 Functional Requirements:

3.1 Primary:

The program's primary functions are: connecting to the 4 different APIs we are using in this program from verifying emails to getting cryptocurrency data, ability to view all cryptocurrencies as well as user's saved coins and friend's saved coins in a table. Saving coins that the user is interested in, using charts to display the saved coins or any coin by searching its symbol, adding online users to the friend list, and viewing the prices in different currencies.

3.2 Secondary:

The program cannot be accessed without having a user, so our main window features are: creating a new user and the option to choose a profile picture, resetting the password, retrieving the username and of course logging in.

4 Technical Requirements:

4.1 Operating Systems and Compatibility:

The program should work on any operating system that has Java installed, all JAR files imported and internet connection.

4.2 Interface Requirements

4.2.1 User Interface:

The user will need a keyboard and a mouse to be able to type in the information needed to register, login and use the program as intended.

4.2.2 Hardware Interface:

The program doesn't require hardware that is intended for gaming or heavy use, but rather basic hardware which includes a running PC/ laptop with functioning parts and ability to connect to the internet.

4.2.3 Software Interface:

The only requirement this program has is to have Java Development Kit 8 installed on the laptop or PC that the user wishes to use.

4.2.4 Communications Interface:

The very first connection our program will make is with the Email Verifier API to verify the user's email and then to the database to save the information and verifying login credentials. The second connection is with the three APIs used to retrieve data and process the returned information using JSON.

5 Non-Functional Requirements

5.1 Performance Requirements:

The program processes and displays all cryptocurrencies in a table/ chart within 1-3 seconds.

5.2 Safety and Recovery Requirements:

The user shouldn't be affected when the program crashes because we've added the ability to save coins to the "Saved coins" list which can be accessed at any time after the crash.

5.3 Security Requirements:

The program will require the user to create an account which consists of an email, username, password that must be longer than 6 characters and includes a number and a special character, and a profile picture if they wish. The information will be stored in the database.

5.4 Policy Requirements:

As of now we don't have any policy requirements, however, we might have the user agree to our terms and conditions after signing up.

5.5 Software Quality Attributes

5.5.1 Availability:

The program should always be available to be used at any given time except for when there's no internet access, account issues, or during updates/ maintenance.

5.5.2 Correctness:

The program should terminate and close properly when "x" is clicked, the logout button should take the user to the login screen.

5.5.3 Maintainability:

The developers should make sure that the APIs used are still running and working well with no delays or whatsoever.

5.5.4 Portability:

The program should be runnable on any machine that meets the Performance Requirements (5.5.1) specified in this document.

5.6 Process Requirements

5.6.1 Development Process:

The development of this program will start with setting the base functions and working on the documentation as the program develops. After completing the base/ primary functions we will move to our secondary functions and then add any extra features.

5.6.2 Time Constraints:

The program will be developed and modified starting from August 22nd, 2020 to December 1st, 2020.

5.6.3 Cost and Delivery Date:

This product will be free of charge to users. The product should be ready to our stakeholders and the public on December 1st, 2020.