University of Pittsburgh at Johnstown

Software Requirements Specification

Cryptocurrency Tracker

CS 1735

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Submitted By:
        Cody Klingler
        Jacob Hoffman
        Ahmed Ayad
        Robert Mahaffey
Section: 12:00 PM - 12:50 PM
Instructor: James Bilitski, Ph.D.

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1. Introduction

a. Purpose

The purpose of this document is to provide a detailed description of the Cryptocurrency Tracker. The contents of this document will include an explanation of the system features and objectives, system interface designs and attributes, and operation limitations based upon user input. The documentation is intended for the developers and stakeholders of the project so that the scope of the project's requirements is clearly provided.

b. Scope of Project

The Cryptocurrency Tracker's software will implement a crypto currency tracking mobile application for iOS and Android. The application will allow the user to track all crypto currencies enabled for tracking within the system. The application will maximize the amount of features provided for modularity and detailed viewing for the user, such as sorting functionality based on several cryptocurrency attributes and detailed breakouts for all coin attributes. Additionally, the user will have access to customizable options for their app. This will include a favorites list that will allow a user to add and remove coins, and an investment tracking list that will track the quantity and pricing of any coins owned by the user. A gain/loss value and percentage of the coins owned by the user will be displayed within the investment list, as well.

c. List of Terms

Cryptocurrency - Digital cryptographic currency

Ticker - Shorthand name for a currency

Investment - Purchased cryptocurrency

Android - Mobile operating system

iOS - Mobile operating system

2. Overall Description

a. Product Perspective

The software product being developed is for customers who want to track cryptocurrency through a mobile application (iOS, Android, etc). This application will feature all the coins on the current market and will allow the user to track the price, supply, and the change in prices (12 hrs, 24 hrs, 3 days, 7 days, 1 month). It will also allow for the user to add/remove coins from a favorites list for easier viewing and accessibility. This product will use databases for coin updates/info, and local storage to save the user's information including their favorites list and their investments tracking list.

b. Product Features

The Cryptocurrency Tracker contains the following key features:

i. Showcases all cryptocurrency on the current market by using a database.

ii. Showcases current prices and price changes with the choice of 12 hours, 24 hrs, 3 days, and 1 month.

iii. Allows users to keep a list of cryptocurrencies on a favorites page for ease of viewing.

iv. Selecting a cryptocurrency will show details including information about the coin, trade volume, price, supply, and the price changes.

v. Allows users to view investments from each cryptocurrency.

vi. Displays the amount of investments the user has placed on each cryptocurrency, with information that includes the current gain or loss the user has achieved.

c. User Classes and Characteristics

i. User:

Primary users of this software will include both platforms of iOS and Android. Users will be using this program for cryptocurrency tracking and investments. It is recommended that users should be knowledgeable about cryptocurrencies as well as the basic awareness of how trading/investing works. However, knowledge regarding cryptocurrencies is not a requirement to fully utilize this product.

ii. Developer:

The developer must have some knowledge of programming and UI design. He/She has the ability to update any information and can improve the database management.

d. Operating Environment

The software will operate using iOS and Android. It will be compatible with iOS 8 and Android 4.0 onward. The hardware will be any phone that can run iOS or Android.

e. Design and Implementation Constraints

i. Users must have an internet connection to be able to access the database.

ii. If the database goes offline, the user will not be able to obtain the information.

3. Functional Requirements

a. Use Case: Display All Coins Statistics Screen (U1)

i. Objective: The U1 use case will present the user with a UI that will show all currencies being tracked within the database. Each currency will be displayed with a corresponding name, ticker, trade volume, price, supply, 12-hour change, 24-hour change, 3-day change, 7-day change, or 1-month change based on the selected sorting option. The user may sort the currencies by any of the aforementioned fields using a sort picker at the top of the screen. Each currency will also be selectable, and will present a details screen that showcases all information about the currency to the user when selected. At the bottom of the screen will be the main navigation bar that consists of a row of buttons which will allow navigation between the all coins statistics screen, the favorites list screen, and the investment list screen. This screen will be presented whenever the application is launched, or whenever the all coins statistics screen is selected on the main navigation bar.

ii. Priority: High

iii. Source: User

iv. Actors: User, Database

v. Flow of Events:

    1. Basic Flow: Selecting statistics tab

        a. The user selects the statistics tab on the navigation bar

      b.   The data is updated from the database

      c.   The statistics are displayed.

2. Alternative Flow: Launching application

      a.   The user initializes the application.

      b.   The data is updated from the database.

      c.   The statistics are displayed.

3. Exception Flow: Connection Failed

      a.   The data fails to be updated.

      b.   The user is warned of the failure.

      c.   If available, the latest statistics saved in the app are displayed.

vi.   Includes: Accessing database

vii.   Requirements

1. Allow the user to view current prices.

2. Allow the user to view change in prices.

3. Allow the user to view net gain/loss.

viii.   Pre-conditions: User is logged into the application.

ix.   Post-conditions: The All Coins Statistics screen is now displayed on the user's

device.

x.   Notes/Issues:

xi.   Special Requirements:

b. *Use Case: Sort List by Field Selection in All Coins Statistics Screen (U2)*

    i.   Objective: The U2 use case refers to the sort picker on the top of the all coins statistics screen. The user will be able to interact with the sort picker to select a field to sort the list of currencies on the all coins statistics screen by. The sorting options include the following: name, ticker, trade volume, price, supply, 24-hour change, 12-hour change, 3-day change, 7-day change, and 1-month change. Each sorting order will be in ascending order.

    ii.   Priority: Low

    iii.   Source: User

    iv.   Actors: User

    v.   Flow of Events:

        1. Basic Flow: Sort Select

            a. The user selects a field to sort.

            b. Each coin is sorted in ascending order by the field.

            c. The list of coins is displayed in the new order.

    vi.   Includes:

    vii.   Requirements:

        1. The user selects the sort picker at the top of the screen.

        2. Allow the user to select a new sorting option.

    viii.   Pre-conditions: The user must be on the All Coins Statistics screen.

    ix.   Post-conditions: The All Coins Statistics screen will now be sorted by the sorting option the user chose.

x.   Notes/Issues:

xi.   Special Requirements:

c. *Use Case: Select a Details Screen in All Coins Statistics Screen (U3)*

i.   Objective: The U3 use case refers to selecting the pop-up details screen that appears whenever the user selects a currency on the all coins statistics screen. Each currency on this screen will be a button that presents the corresponding details screen as it's action. The details screen will provide a detailed overview and a news view of the selected currency.

ii.   Priority: High

iii.   Source: User

iv.   Actors: User

v.   Flow of Events:

1. Basic Flow: Selecting Currency

   a. The user selects a currency from the All Coin Statistics screen.

   b. Information corresponding to the currency is retrieved from the database.

   c. The Details Screen is displayed.

2. Exception Flow: Connection Failed

   a. The user selects a currency from the All Coin Statistics screen.

   b. The relevant information fails to be retrieved from the database.

        c.   The user is warned of the connectivity issue and the Details Screen is not displayed.

vi.   Includes: Find relevant currency information directly by searching keywords.

vii.   Requirements:

       1.   An active internet connection is necessary.

viii.   Pre-conditions: App is on all coin statistics screen

ix.   Post-conditions: Detailed currency information is displayed.

x.   Notes/Issues: None

xi.   Special Requirements:

d. Use Case: Display Details Screen (U4)

i.   Objective: The U4 use case will present the user with a UI that will show a detailed overview of a currency. An add entry to favorites button is available to the user in the top-right of the details screen view. Additionally, the details screen will allow the user to view news about the specific currency. A news article can be selected to launch the article with the user's default web browser on their smartphone. A detail view can be dismissed with a back button located at the top-left of the view. This view will be presented whenever a user selects a currency on the all coins statistics screen.

ii.   Priority: Medium

iii.   Source: User

iv.   Actors: User

v. Flow of Events:

    1. Basic Flow: Display Details

        a. Relevant information is retrieved from the phone's memory.

        b. The information is displayed.

vi. Includes:

vii. Requirements:

    1. Show news relating to the currency.

    2. Allow the user to favorite the currency

    3. Allow the user to leave the screen

    4. Show the current price of the currency.

viii. Pre-conditions

    1. User has selected a currency from the All Statistics Screen.

ix. Post-conditions

    1. Details Screen of selected currency will be shown.

x. Notes/Issues:

xi. Special Requirements:

e. Use Case: Launch News Article (U5)

i. Objective: The U5 use case will launch a news article in the default web browser on the user's smartphone. The user will select a news article to launch by tapping on the specific article's headline within the details screen.

ii. Priority: Medium

iii.   Source: User

iv.   Actors: User

v.   Flow of Events:

1.   Basic Flow: Open Article

a.   A news article is selected from the details screen.

b.   The webpage for the news article is opened in the user's browser.

vi.   Includes: Details Screen, Web Browser

vii.   Requirements:

1.   An active internet connection is necessary.

2.   Stable connection to the news source's server is required.

viii.   Pre-conditions: User is on the Details screen.

ix.   Post-conditions: User's default web browser will launch and open the

corresponding web page.

x.   Notes/Issues:

xi.   Special Requirements:

f. Use Case: Display Favorites List Screen (U6)

i.   Objective: The U6 use case will present the user with a UI that will show all

currencies that have been added to their personal favorites list. The user may

add a specific currency to their list from the add entry button in it's detail screen.

The user may remove currencies from their list with the remove button at the

top-left of the favorites list screen. At the bottom of the screen will be the main

navigation bar that consists of a row of buttons which will allow navigation between the all coins statistics screen, the favorites list screen, and the investment list screen. This screen will be selected whenever the favorites list screen is selected on the main navigation bar.

   ii.   Priority: Low

  iii.   Source: User

  iv.   Actors: User, Database

   v.   Flow of Events:

       1. Basic Flow: Display Favorites Screen

          a. The Favorites List Screen is selected from the navigation bar

          b. Updated information on the favorited currencies is retrieved from the database.

          c. The favorite currencies and their statistics are displayed in alphabetical order of coin name.

       2. Exception Flow: Connection Failed

          a. The Favorites List Screen is selected from the navigation bar.

          b. Updated information can not be retrieved from the database.

          c. The user is warned of the connectivity issue.

          d. The most recent information available is displayed.

  vi.   Includes: Accessing Database, Navigation Bar, Favorites List

 vii.   Requirements:

       1. Allow the user to remove favorites.

viii. Pre-conditions: The user must be on a screen with access to the navigation bar.

ix. Post-conditions: The user's Favorites List is displayed.

x. Notes/Issues:

xi. Special Requirements:

g. *Use Case: Add Entry to Favorites List (U7)*

i. Objective: The U7 use case refers to a user adding a currency entry to their favorites list. From the details screen of a specific currency, the user will select the add entry button at the top-right of the screen.

ii. Priority: Low

iii. Source: User

iv. Actors: User

v. Flow of Events:

1. Basic Flow: Add Favorite

a. The user selects the favorite button for a currency.

b. The currency is added to the list of favorite currencies.

c. The favorite button visually changes to indicate that it is favorited.

vi. Includes: Favorites List

vii. Requirements:

1. Indicate to the user if the currency is in the favorites list.

viii. Pre-conditions: The user is on a Currency Detail Screen.

ix. Post-conditions: The currency is added to the Favorites List.

x. Notes/Issues:

xi. Special Requirements:

h. *Use Case: Remove Entry to Favorites List (U8)*

i. Objective: The U8 use case refers to the user removing a currency from their favorites list. From the favorites list screen, the user will select the remove entry button located at the top-left of the screen. The user can then select individual currencies from the list to be removed. Additionally, the user may remove a favorited currency from the corresponding currency's detail view by toggling the add entry button at the top-right of the view, but the currency must already be favorited.

ii. Priority: Low

iii. Source: User

iv. Actors: User

v. Flow of Events:

    1. Basic Flow: Remove Favorites

        a. The user selects the remove button from the Favorites List screen.

        b. The user selects the currencies to remove from favorites.

        c. The user selects the remove button again.

        d. The selected currencies are removed.

vi. Includes: Favorites List

vii. Requirements:

1. Allow the user to remove multiple favorites at one time.

viii. Pre-conditions: There is at least one currency in the user's Favorites List.

ix. Post-conditions: The chosen currency is removed from the user's Favorites List.

x. Notes/Issues:

xi. Special Requirements:

i. *Use Case: Display Investment Tracking List Screen (U9)*

i. Objective: The U9 use case will present the user with a UI that will show all the current investments they have added to their investment tracking list. The user may add a specific investment to their list with the add investment button at the top-right of the investment tracking list screen. The user may remove a specific investment from their list with the remove investment button at the top-left of the investment tracking list screen. Each currency in the investment tracking list will keep a record of the quantity owned and what price the currencies were purchased at. Additionally, individual currencies in the list will show the current gain/loss value and percentage with respect to the buy-in price of the user's investment. At the bottom of the screen will be the main navigation bar that consists of a row of buttons which will allow navigation between the all coins statistics screen, the favorites list screen, and the investment list screen. This screen will be selected whenever the favorites list screen is selected on the main navigation bar.

ii. Priority: High

   iii.   Source: User

   iv.   Actors: User

   v.   Flow of Events:

       1.   Basic Flow: Show Investments

           a.   The Investment Tracking button is selected from the Navigation Bar.

           b.   Updated data on the relevant coins is retrieved from the database.

           c.   Information on each investment is displayed including relevant information.

   vi.   Includes: Investment List, Navigation Bar

   vii.   Requirements:

       1.   Show user current holdings, gain/loss, value in USD.

   viii.   Pre-conditions: The user is on a screen with the Navigation Bar.

   ix.   Post-conditions: The user's Investment Tracking List will be displayed.

   x.   Non-functional Requirements:

   xi.   Notes/Issues:

   xii.   Special Requirements:

j. *Use Case: Add Entry to Investment Tracking List (U10)*

   i.   Objective: The U10 use case refers to a user adding a currency entry to their investment tracking list. From the investment tracking list screen, the user will select the add investment button at the top-right of the screen. The user will be

presented with a screen prompt that requires submission of a currency ticker, a

quantity, and a buy price. Based on the entered currency ticker, the

corresponding currency will be added to the investment tracking list with record

of the quantity and buy price displayed.

ii. Priority: High

iii. Source: User

iv. Actors: User

v. Flow of Events:

1. Basic Flow: Add Investment

   a. The add investment button is selected.

   b. A prompt is shown asking the user to enter ticker, amount, and

      price.

   c. The user fills out each form in the prompt.

   d. The button to proceed is selected.

   e. The app returns to the Investment Tracking screen.

   f. The investment is added.

2. Alternative Flow: Investment not Added

   a. The add investment button is selected.

   b. A prompt is shown asking the user to enter ticker, amount, and

      price.

   c. The back button is selected.

   d. The app returns to the Investment Tracking screen.

3. Exception Flow: Invalid Input

    a. The add investment button is selected.

    b. A prompt is shown asking the user to enter ticker, amount, and price.

    c. The button to proceed is pressed before all of the required information is entered or an input is invalid.

    d. A warning tells the user that the input is invalid.

vi. Includes: Investment Tracking screen.

vii. Requirements:

    1. Prevent invalid inputs from being entered.

viii. Pre-conditions:

ix. Post-conditions: The chosen investment will be available to view on the user's Investment Tracking List.

x. Non-functional Requirements:

xi. Notes/Issues:

xii. Special Requirements:

k. Use Case: Remove Entry to Investment Tracking List (U11)

i. Objective: The U11 use case refers to the user removing a currency from their investment tracking list. From the investment tracking list screen, the user will select the remove investment button located at the top-left of the screen. The user can then select individual currencies from the list to be removed.

ii.   Priority: High

iii.   Source: User

iv.   Actors: User

v.   Flow of Events:

    1. Basic Flow: Remove Investments

        a. The remove investment button is selected.

        b. Checkboxes are displayed for each currency.

        c. The user selects the currencies to be removed

        d. The user presses the remove investment button again

        e. Any selected currencies are removed from the investment list.

vi.   Includes: Investment Tracking

vii.   Requirements:

    1. The user has at least one investment.

viii.   Pre-conditions: There must be at least one entry on the user's Investment

        Tracking List.

ix.   Post-conditions: The chosen investments will be removed from the user's

        Investment Tracking List.

x.   Non-functional Requirements:

xi.   Notes/Issues:

xii.   Special Requirements:

I. Use Case: Update Application Software (U12)

    i.   Objective: The U12 use case refers to the application software and database

being updated.

    ii.   Priority: High

    iii.   Source: Developer

    iv.   Actors: User, End User's Device, Master Database

    v.   Flow of Events:

        1. Basic Flow: Update Available

          a. The developer pushes an update to the app store.

          b. The user is notified of the update.

          c. The user updates the software on their phone.

    vi.   Includes:

    vii.   Requirements:

        1. Connection to app store required.

    viii.   Pre-conditions: A previous version of the application software is installed on the

device.

    ix.   Post-conditions: Software updates are installed onto the device.

    x.   Non-functional Requirements:

    xi.   Notes/Issues:

    xii.   Special Requirements:

4. Interface Requirements

a. User Interfaces

The Cryptocurrency Tracker's user interface is designed to make it easier for investors to obtain market information and monitor their currency investments. The home screen contains the entire list of tracked cryptocurrencies provided by the database. The user can click on any currency and it will present the real-time details and news of that currency. A user can choose to view their favorite currencies and holdings with the unified navigation bar at the bottom of the UI of each view. A user can select the Favorites option to view their current favorite currencies. A user can select the Investment Tracker option to view their currency holdings. A user can select the All Coins option to return to the home page and view the entire list of cryptocurrencies within the database.

b. Hardware Interfaces

There is currently no hardware interface required for the Cryptocurrency Tracker.

c. Communication Interfaces

The user can easily update the software application for the Cryptocurrency Tracker through their computer system's specified app store. A reliable internet connection will be required to reload data in real-time within the application. Additionally, an internet connection will be required for updating the application's software.

d. *Software Interfaces*

The application will require connectivity to a database that provides required information about all cryptocurrencies. Additionally, the application will need to save a user's data about favorite currencies selected and current holdings, but considering the scope of the application, this can be saved locally to their device.

5. Other Non-functional Requirements

In Section *3. Functional Requirements*, for use case U8, the user may remove a favorited currency from the corresponding currency's detail view by toggling the add entry button at the top-right of the view, but the currency must already be favorited. This is an additional method of removing an entry from the favorites list and is not required for the functionality of the application.

6. Other Requirements

Other requirements regarding any functional requirements are listed in section 3. Functional Requirements under the specific functional requirement. There are currently no additional other requirements.
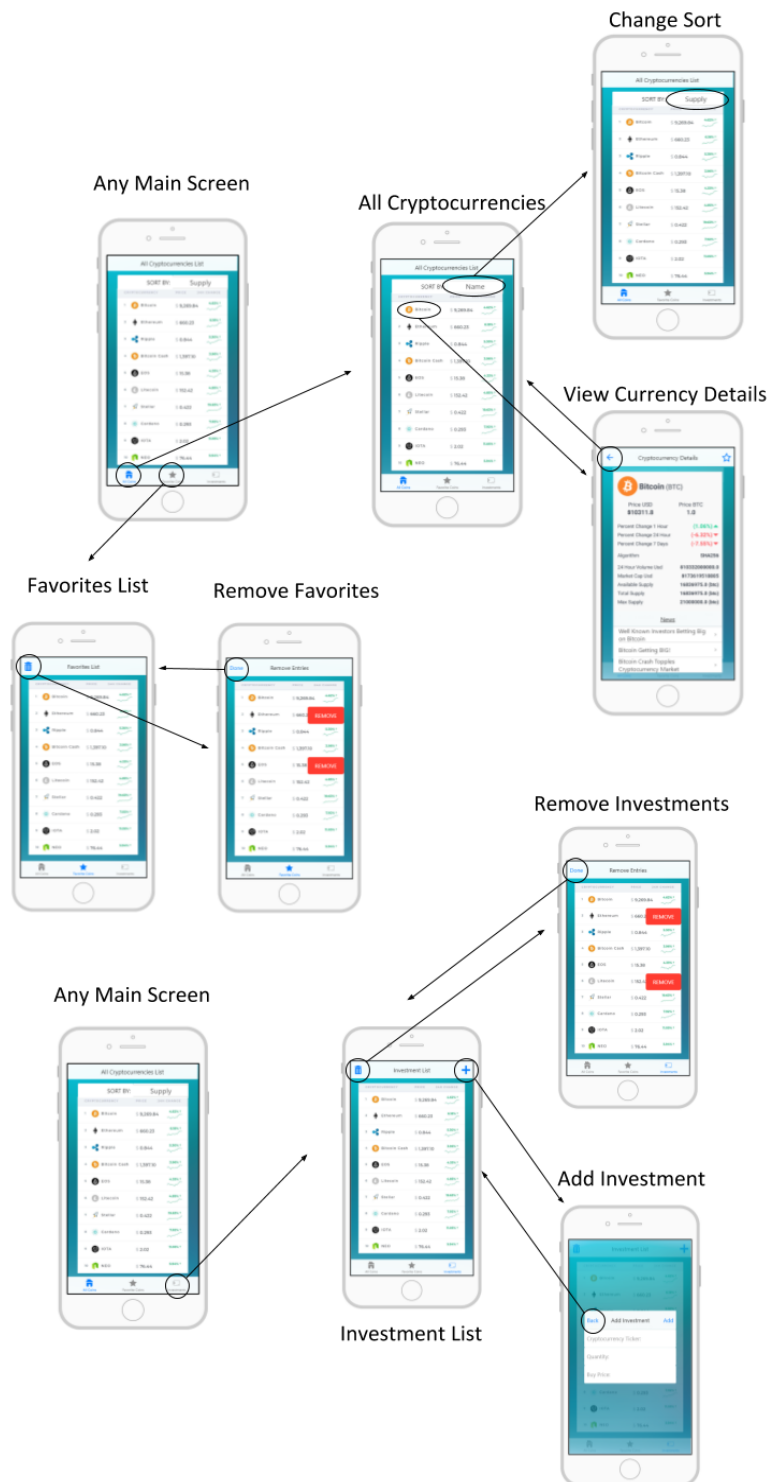
7. System Requirements Chart

- F = Functional, NF = Nonfunctional

Requirement ID	Priority	Type	Source Used	Description
3.a.vii.1	High	F	User Craig Crypto	U1 Allow the user to view current prices.
3.a.vii.2	High	F	User Craig Crypto	U1 Allow the user to view change in prices.
3.a.vii.3	High	F	User Craig Crypto	U1 Allow the user to view net gain/loss.
3.b.vii.1	Low	F	User Craig Crypto	U2 The user selects the sort picker at the top of the screen.
3.b.vii.2	Low	F	User Craig Crypto	U2 Allow the user to select a new sorting option.
3.c.vii.1	High	F	User Craig Crypto	U3 An active internet connection is necessary.
3.d.vii.1	Medium	F	User Craig Crypto	U4 Show news relating to the currency.
3.d.vii.2	Medium	F	User Craig Crypto	U4 Allow user to favorite the currency
3.d.vii.3	Medium	F	User Craig Crypto	U4 Allow the user to leave the screen
3.d.vii.4	Medium	F	User Craig Crypto	U4 Show the current price of the currency
3.e.vii.1	Medium	F	User Craig Crypto	U5 An active internet connection is necessary.
3.e.vii.1	Medium	F	User Craig Crypto	U5 Stable connection to the news source's server is required.
3.f.vii.1	Low	F	User Craig Crypto	U6 Allow user to remove from favorites list
3.g.vii.1	Low	F	User Craig Crypto	U7 Indicate to the user if the currency is already on the favorites list.
3.h.vii.1	Low	F	User Craig Crypto	U8 Allow user to remove multiple favorites at one

time.

Requirement ID	Priority	Type	Source Used	Description
3.i.vii.1	High	F	User Craig Crypto	U9 Show user current holdings, gain/loss, valued in USD
3.j.vii.1	High	F	User Craig Crypto	U10 Prevent invalid inputs from being entered.
3.k.vii.1	High	F	User Craig Crypto	U11 The user has at least one investment.
3.l.vii.1	High	F	Development Team	U12 Connection to app store required.
5.1	Low	NF	User Craig Crypto	U8 Additional method of removing currency from favorites list.

8. Appendix

Wireflow Diagram