ÇANKAYA UNIVERSITY

Software Requirements Specification

Mobile Assistant for Cryptocurrency Markets

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1. Introduction

1.1. Purpose

The purpose of this document is to describe Mobile Assistant for Cryptocurrency Markets application. This application is intended to help cryptocurrency enthusiasts to access order books of cryptocurrency stock markets, give insights with comparisons by visualizing specific cryptocurrency data, and help users to find the most profitable exchange among cryptocurrencies and stock markets by analysing various stock markets' prices for currencies and fee policies of markets. This document defines this product's details by covering requirement specifications, user characteristics, selected methodology for development, and interfaces. Also, this document defines system constraints and concerns of stakeholders.

1.2. Scope

With the interest to cryptocurrencies growing day by day, more people started to ponder about how to make significant profit by trading those virtual currencies using stock market websites which are being used to buy/sell cryptocurrencies, like how people trade foreign exchange using real money. Unlike the people who knows "tricks" and methodologies to profit using those currencies, there are still a lot of people who are interested in trading, but don't know what to do and which to learn for earning money.

This application's main concern is to help people who have the desire to track down and trade cryptocurrencies. Using stock markets' API modules, the assistant can compare prices and amount of fees deducted from the user among various stock markets to show users the best pathway to follow for profiting. This application also aims to find the most profitable exchange chain between stock markets. For example, if there isn't a possible direct exchange (a coin is not supported by market) between two cryptocurrencies in a specific market, the application can suggest a trading path which includes more than one market.

Using the assistant, users can find their favourite trading market by checking and comparing order books and fee policies of stock markets and gain an insight of their favourite crypto coins by reviewing price history of them.

1.3. Glossary

TERMS	DEFINITONS
API	API is an interface that utilizes communication between two clients [1].
Cryptocurrency	Blocks of cryptographic digital information that designed to replace normal currencies [2].
Stock Market	Stock markets are places where people can buy/sell in a collection of exchanges [3].
Android	Android is a mobile operating system which is based on a derived Linux kernel [4].
GUI	The main user interface module consists of graphical icons and indicators [5].

Table 1 – Glossary

1.4. Overview

Below this section in the first part, the document includes a perspective of the product, user characteristics and suited development methodology in terms of specifications of product. In the second part, functional and non-functional requirements analysis, use cases, interfaces and system attributes are included.

2. Overall Description

2.1. Product Perspective

Cryptocurrency works independently of the banking system. It can be used like cash in many countries. The application evaluates crypto coin and analyses it according to many criteria. In the light of the information provided by this system, users can easily find the way to sell or buy goods or services and system gives users an advantage over this aspect. In this application, we develop a mobile assist for cryptocurrency market that can be easily used by users.

2.2. Product Functions

This system is a simple and powerful cryptocurrency portfolio application, in which you can track bitcoin and many altcoin market prices. Users do not have any registration process. It has an easy view to see your cryptocurrency investments on the Android platform and to have more details. Using stock markets' API modules, we can check latest status of stock markets and currencies. We expect users to encounter a stock market list at first. Users select a market from the market list and according to this, the application gives a list under the name of the currency list. This list has an up-to-date price list that can be easily seen, and the list can be sorted according to the market value of the currency. It also includes the information section of the market they choose. Features such as current and past pricing, fee prices, volume and exchange info are available. The user has an option under the time-range name to see the performance of the currency in different time periods. In short, the system can help users determine the trend direction and see what the current market situation

2.3. Development Methodology

We plan to use Scrum when developing this project. Scrum is an administrative model with very simple rules. It is implemented for the management of complex software projects that are open to change. Scrum does not specify the steps to be followed in detail in the project and instead offers a flexible management with a few simple but important rules. Scrum includes daily meetings and project process are divided into sprints. The most important advantage is the short sprints and dealing with the changes thanks to the feedbacks in an efficient way.

2.4. Operating Environment

The software of the product will be designed for the Android platform. It can work on any phone with Android operating system.

2.5. User characteristics

2.5.1. General User
2.5.1.1. The user must read and understand the English language as the application is English-based.

2.5.1.2. The user is expected to use the Market Application.

2.5.1.3. The user is expected to use the system to obtain and analyse information.

3. Requirements Specification

3.1. External Interface Requirements

3.1.1. User Interfaces
The application will be running on Android platform. Besides the main menu, this program also will have several GUI structures for some of the features like when listing markets/coins, showing best path and searching.

3.1.2. Hardware Interfaces
There will be no need for implementing any hardware interfaces for this product.

3.1.3. Software Interfaces
The application will work on Android, hence there will be no need for any additional software interfaces besides the operating system.

3.1.4. Communication Interfaces
Because the data will be pulled from the APIs, a stable internet connection will be required.

3.2. Functional Requirements

3.2.1. List Markets Use Case
- Show a list of markets
- Sort markets
- Select a stock market
- Show detailed information of selected market (fee policy etc.)
- Show tradable coins in selected market
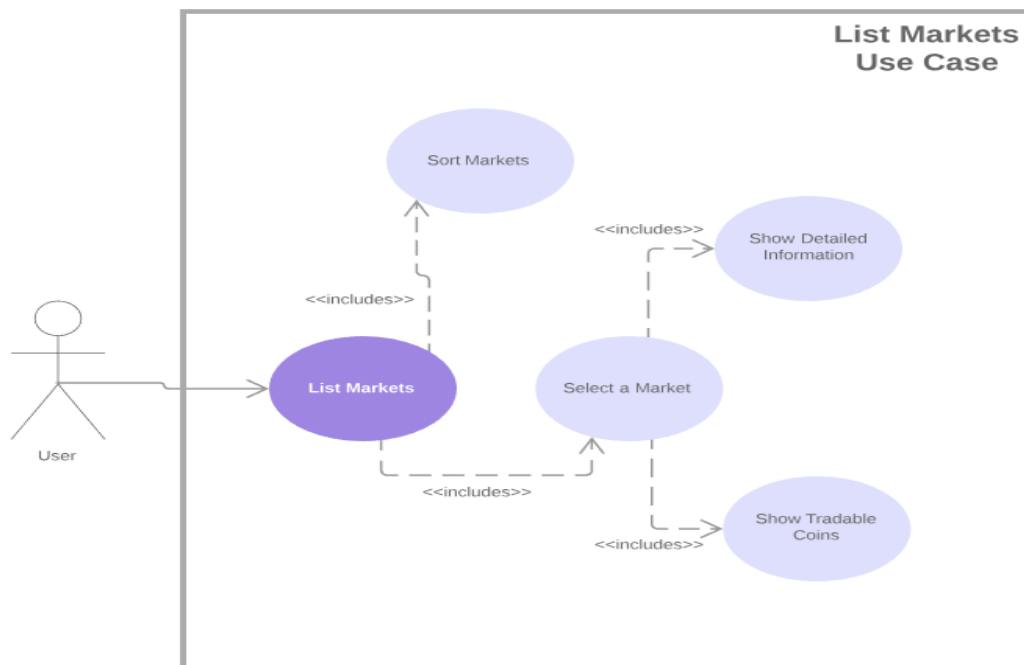
Brief Description

Figure 1 – List Markets Use Case Diagram

Figure 1 shows the use case diagram that a user can perform during market listing. The user can bring a list of markets and sort them according to the attributes of markets. User can select a stock market in the list if he/she desires to see detailed information such as fee policies, volume etc. Also, user can see which coins are supported by these markets.

Initial Step by Step Description

1. User shall see a list of stock markets to choose.

2. User shall sort markets by their attributes (name, volume, fee price etc.).

3. User shall select a stock market for details.

   3.1. User can see selected stock market's policies and transaction volume.

   3.2. User can see cryptocurrencies supported in the selected stock market.

3.2.2. List Coins Use Case
- Show a list of coins
- Sort coins
- Select a coin
- Show stock markets that support selected coin and price in that market
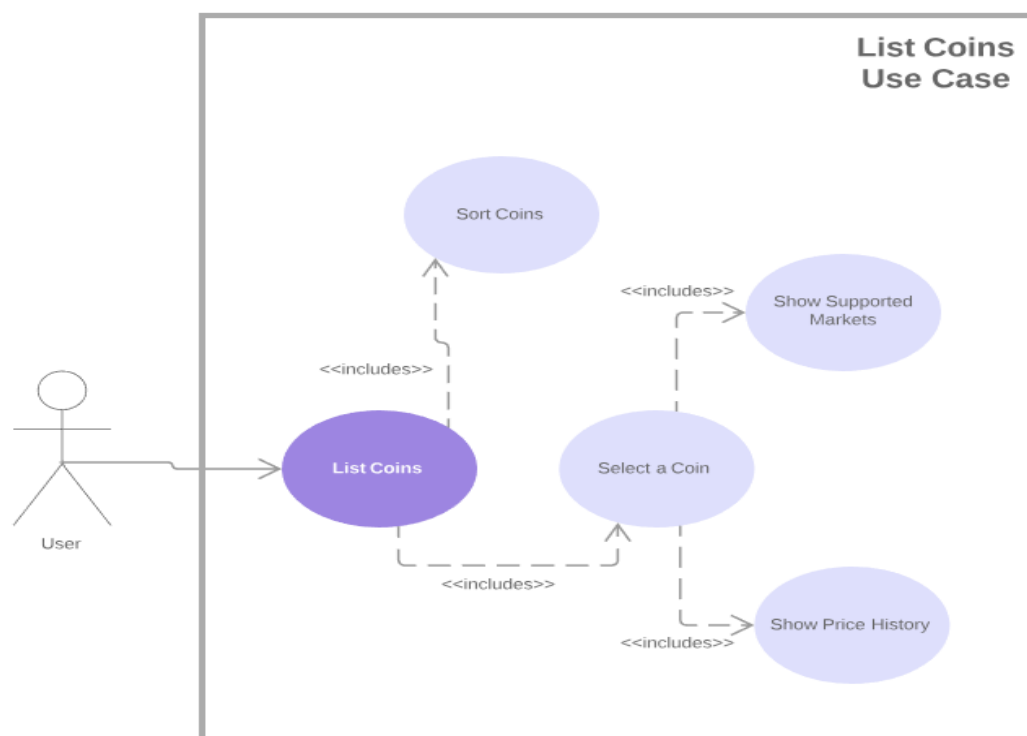- Show price history between specified time interval

Brief Description

Figure 2 – List Coins Use Case Diagram

Figure 2 above shows the use case diagram that a user can perform during coin listing. User can call for a list of coins. Those coins can be sorted by their prices, volumes and change of value in percentage. If a user taps on a coin, he/she can see stock markets that support selected coin. Moreover, the user can inspect price history of that coin in a stock market.

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Initial Step by Step Description

1. User shall see a list of crypto coins.

2. User shall sort crypto coins by their attributes (name, price, volume, daily change etc.).

3. User shall select a desired coin for details.
   3.1. User can see a list of markets that support selected crypto coin with prices sorted.
   3.2. User can see a price history of selected coin in a market.

3.2.3. Find Best Path to Profit Use Case
   • Select input and output coin/currency
   • Select markets desired for exchanging
   • Show best path according to selections with instructions and pricing
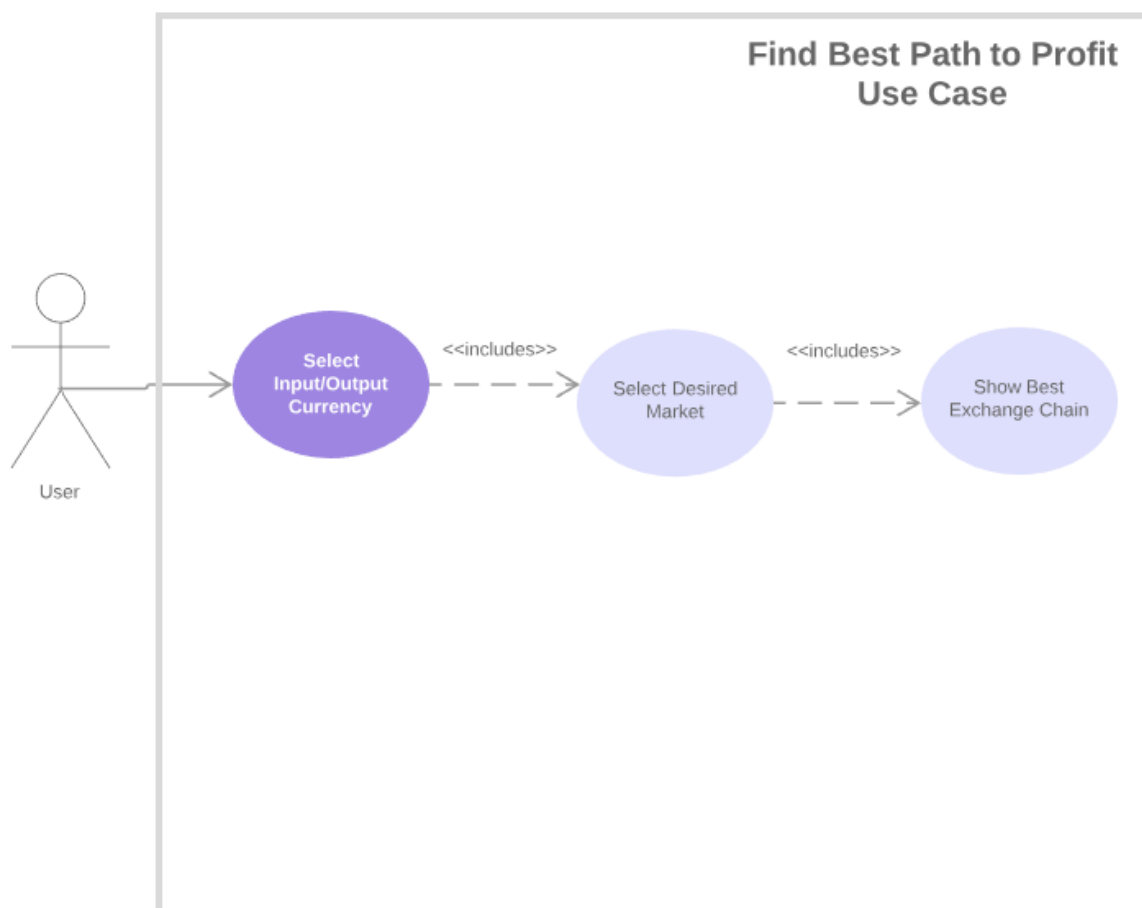
Brief Description

Figure 3 – Find Best Path to Profit Use Case Diagram

Figure 3 shows the use case diagram that a user can perform during best profitable chain finding. User can select an input and an output coin or currency to be exchanged. Then user can select desired stock markets to exchange these inputs and outputs. Finally, a pathway for best exchange will be shown to the user according to his/her selections.

Initial Step by Step Description

1. User shall select an input and output coin or fiat currency to be exchanged.

2. User shall select one or multiple stock markets to allow exchanging of input and output coins or currencies.

3. User shall be prompted with possible exchange route according to the selections that user made earlier.

3.3. Performance Requirements

Our product runs on Android Environment; therefore, minimum system requirements are as follows:

1) CPU: 1.4 GHz – Quad Core or above

2) RAM: 2 GB or more

3)Operating System: Android 6.0 (Marshmallow) or above

4) Stable Internet Connection

3.4. Software System Attributes

3.4.1. Portability
- The product works with Android devices, therefore any device that uses Android version 6.0 or above and satisfies the performance requirements will be suitable.

3.4.2. Performance
- Performance can be changed due to the internet connection at that moment. If there is no internet connection, application will not work properly.
- Because application pulls data from APIs to show the current state of digital currencies, the states will change regularly. As a result, prices will change over time.

3.4.3. Usability
- The product is expected to be used by who are interested in cryptocurrencies. Users will experience this application with the help of mobile devices.
- Final version of this product should be passed from usability tests. The application will be suitable for users who have beginner level of mobile phone knowledge and has an interest in cryptocurrencies.
- Mobile user interface design principles will be adapted during the development.
- Application should have a plain and simple design for users.

3.4.4. Adaptability
- New stock markets and crypto coins are entering the market every day. Therefore, new stock markets and crypto coins can be added.

3.4.5. Scalability

- Since this product is for mobile devices, multiple users can access this application from their devices.

3.5 Safety Requirements

- Giving investment advices is illegal in Turkey unless the advisor is not qualified [6]. Hence, anything shown in the application should not classified as an investment advice.

4. References

[1] What is an API, Mulesoft (online) https://www.mulesoft.com/resources/api/what-is-an-api (accessed at 21.11.2018)

[2] What is Cryptocurrency, CCN (online), https://www.ccn.com/cryptocurrency/ (accessed at 21.11.2018)

[3] Stock Market, Investopedia (online), https://www.investopedia.com/terms/s/stockmarket.asp

[4] Android, Wikipedia (online), https://en.wikipedia.org/wiki/Android_(operating_system) (accessed at 21.11.2018)

[5] GUI, Wikipedia (online), https://en.wikipedia.org/wiki/Graphical_user_interface (accessed at 21.11.2018)

[6] Capital Markets Board of Turkey (online), http://www.spk.gov.tr/Duyuru/Goster/20091214/1 (accessed at 22.11.2018)