TED UNIVERSITY

CMPE 491 Project Specification Report

CryptooFun

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1   Introduction

Cryptocurrencies are digital assets that are used as virtual currency and do not exist in any physical form. Unlike currencies in the classical sense, cryptocurrencies are not issued by a central authority. This feature is perhaps the most attractive aspect of cryptocurrencies for investors.[1] 18,000 businesses around the world now accept various cryptocurrencies in transactions. Cryptocurrencies, which are both a payment tool and an investment tool, are reaching more and more users day by day. According to 2022 data, the entire market cap of crypto is $1.76 trillion, with daily crypto trading reaching $93.4 billion.[2] Between 2012 and 2022, the price of Bitcoin increased by over 540,000. In addition to this, it already has 300+ million active users. [3] There are respondents who stated that they own or use cryptocurrencies in 56 countries and regions around the world from 2019 to 2022. Considering that Turkey is in the 3rd place in this ranking [4], we can see that people who want to make money easily prefer this market. This market, which has reached large masses and has proven its existence, opens the door to wealth for many investors. People who have developed themselves in this field and who try to make a living by providing investment consultancy also benefit from the returns of this market. The main reason for the need for consultancy is to understand the risks and dynamics of this market and to prevent possible monetary losses. Through many sites and applications, people are trying to make a profit by buying and selling in this market. To understand and gain experience in this market, many investors damage their assets by making wrong investments.

1.1   Description

The aim of our project is to ensure that people make minimal losses from their future investments by practicing with our application before investing their money in cryptocurrency exchanges. We will also provide real stock market experience by receiving the data of cryptocurrencies live. Thus, the experiences that people will have, will be more suitable for real life. In addition, there are a lot of cryptocurrency training videos on the market. Users will be able to reinforce their knowledge through our application by applying the investment techniques they learned after watching the tutorial videos. The feature that distinguishes our project from other projects in the market is that we will enable people to compete while improving their knowledge with practice. Thus, we will encourage people to use our app. We will reveal the competitive environment by making various leagues and publishing the overall balance in the statistics table. Users will be able to increase their balance with the gift starting balance we will give them when they sign up for the application, as well as their actual virtual balance with daily login rewards. At the same time, an extra reward balance will be given with the profits they get from the game lobbies they enter. Thus, we will show the 20 people with the most balances in the statistics table. In addition, people will be able to see how they rank in their profiles.

1.2   Constraints

1.2.1   Economical

Most software libraries and tools that might be required are available for free with proper licenses and terms. Consequently, software components will not be economically costly. However, hardware components including but not limited to virtual compute resources provided by public cloud vendors may cause huge costs and fees in the long-term prospect for ensuring global-level scalability. From user perspective, the application will be freely available and cost nothing.

1.2.2   Environmental

The project does not impact the environment directly, but the compute machines that the application will be hosted on may produce significant amount of carbon footprint. The situation is totally up-to hosting/cloud provider and how sustainable their server computers are unless hosting of the application is fulfilled by us.

1.2.3 Social

Some users may break away from the reality and interpret cryptocurrencies as making easy money that results in population who are unwilling to work in society. Nevertheless, the project aims to educate its user-base for the healthier utilization of cryptocurrencies in real markets. Therefore, the possible constraints claimed for social aspects would be limited.

1.2.4 Political

There are well-known countries that imposed sanctions to and/or completely banned the use of cryptocurrencies for exchanging goods and services. Since the project is only for educational purposes and will not be available to trade real-world financial instruments, we do not expect any political barriers to execute the project.

1.2.5 Ethical

For the proposed solution, there has not been any noticeable ethical issue so far. The project's main pillar is training people who are willing to learn more about cryptocurrency market dynamics and cannot be interrelated with ethical concerns raised for blockchain or crypto frameworks in general.

1.2.6 Health and Safety

The project gamifies the learning process via various competitive activities. These activities may be slightly addictive for some users and carry out risks to make people enormously greedy. Especially, this situation may raise concerns about health and safety of children under age 18 in the context of their cognitive development.

1.2.7 Manufacturability

As it was mentioned in Environmental constraints section, there are no issues apart from the possible indirect harms of server computers in terms of environmental sustainability. From the social and economic sustainability points of views, we also do not expect any issues.

1.3 Professional and Ethical Issues

- Acknowledge users about possible financial risks posed by nature of cryptocurrencies.
- Encourage users to participate in the platform freely if their actions do not impose any harm to other users willingly or unintentionally.
- Provide fair and lawful environment for users.
- Respect the users' privacy and do not access their data without proper legal basis.
- Design and implement secure systems.
- Ensure that any third-party code integrated into the software has sufficient permissions to use and distribute it legally.
- As maintainers of the software, put enough dedication to create high quality and professional work.
- Do not deliver any malicious, misleading and/or harmful content (code, art, information, etc.) to users as part of the software product/service.

2 Requirements

The application should be able to provide a good experience to the user in all aspects. It should be able to do everything we intend to do with a high level of performance. There are certain requirements that must be determined at the beginning of every project. Meeting these requirements greatly affects the project and the resulting product. The requirements of our project can be divided into functional and non-functional.

2.1 Functional Requirements

- The system should be able to show live cryptocurrency data to the user with the minimum possible delay.
- Users shall be able to create an online account.
- The user who enters e-mail and password shall be able to press the log in button.
- The system should be able to authenticate the user.
- The system should be able to define virtual balance to users.
- Users should be able to trade with their virtual balances.
- The system should be able to calculate the profit and loss of the users and update the balance of the user.
- Users should be able to enter trading competition lobbies.
- The system should allow users to view their profile and change some of their data.
- Users should be able to see how much money they have in their virtual balance and what cryptocurrencies they have.
- The system should be able to award virtual balance rewards to the winners of the game lobbies.

2.2 Non- Functional Requirements

2.2.1 Performance

The system must have a very fast response time. It is not a problem if there will be a slight slowdown in the system when too much work is overloaded on the system. However, how late users get their work done reduces the reliability of the application proportionally. There should be no loss of speed during both the registration and login processes. All procedures performed by users should be carried out as quickly as possible. The system must be built on an efficient database. The system should not make mistakes while using real-time data and should be able to reduce the possible delay to the shortest level. The increase or decrease in the rate of increase or decrease of cryptocurrencies should not affect the system badly. Because users need to trade in a high-performance environment.

2.2.2 Security

Data security is the most important requirement of the application. While keeping the private information of the users in the database, it is most important that the access to them is prevented by external people. Although users have virtual balances, the system must ensure the security of these balances. If different users access each other's virtual balances, the application is useless. Both the general security of the system and the security of the cryptocurrencies that users have virtually must be at a high level.

2.2.3 Usability

- The System should be user friendly.
- Users should not experience confusion while using the application.
- The graphical interface of the application should be understandable and interesting.
- The performance of the application should be at high levels so that the user does not force the application.

2.2.4 Reliability

- The system must work 24 hours a day. The user should be able to use this application whenever he/she wants.
- The failure rate of the system should be at very low levels. Errors that may occur independently of the user should be minimized.

2.2.5 Durability

- The system must be prepared for overload.
- The system should provide lifetime use.

2.2.6   Privacy
- o Although it has been a virtual environment, it must exist with a high level of privacy, just like a real cryptocurrency exchange.
- o Due to the law on the protection of personal data, users' password data shall be stored in an encrypted manner.
- o The system shall ensure the confidentiality of the data as a priority.

2.2.7   Supportability
- o The system should be prepared for possible updates.
- o The system should be maintainable.

3   References

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