DECENTRALIZED SYSTEMS PROJECT

CENG 3550, DECENTRALIZED SYSTEMS AND APPLICATIONS

Ahmad Farhad Quraishi
farhadquraishi1@gmail.com
Muhammad Rafi Khudayar
rafi.khudayar@gmail.com
Oğulcan Bulut
ogulcanbulut3@posta.mu.edu.tr

Thursday 23rd June, 2022

Abstract

In our day and age, one can still observe that not all consumers get to know the whole background of the food they purchase. Not only they do not have a certain way to trust the transparency of the third party that delivered the food but also they do not know anything about the quality of the food until they buy it.

1 Introduction

Food is one of the most essential part of our lives, second to water in fact. It is also essential for a consumer to know the background of the food before they buy it. To begin with, in this current system consumers cannot trust the transparency of the progress that their food was processed in. There comes the second pivotal problem of the whole issue and that is the quality of the food. Consumers should know in which conditions their food was grown, washed or transported to their local grocery store so that they can avoid the spoiled food. Thus, making sure that no one is affected by the unnecessary health issues caused by the spoiled food.

In the next section, fundamentals of the systems that are used in the proposed system will be defined. Then on section 3, related works are covered. While section 4 explains how the system is designed, section 5 shows its implementation. Results and discussion is covered in section 6 and lastly section 7 explains the results.

2 Fundamentals

2.1 What is a Blockchain?

A blockchain is defined as a shared and immutable ledger that records the transactions of basically anything of value that is either tangible or intangible.

2.2 What is A Smart Contract?

Smart contracts are little programs put inside blockchains that run only when certain predetermined conditions are met. They take away the need for third party interventions, therefore, saving time and cost for both end users.

3 Related Works

When we searched about similar or less similar related to our project idea, there are some related project ideas that is not much like our project idea, for instance IBM company has a project name (Food Trust) that somewhat has same idea with our project that most probably has not launch yet, since we could not find related domain on the internet. Moreover, after more research we found one more project that is also partly related to our project idea the project name is (Transparency of Organic Food Supply Chain) and the idea behind this project is to ensure quality, transparency and the origin of organic product that a customer buy it from a store. Like our project whenever a customer buys a product from a store, they can track each step of the product from its origin to retailer store.

4 System Proposal

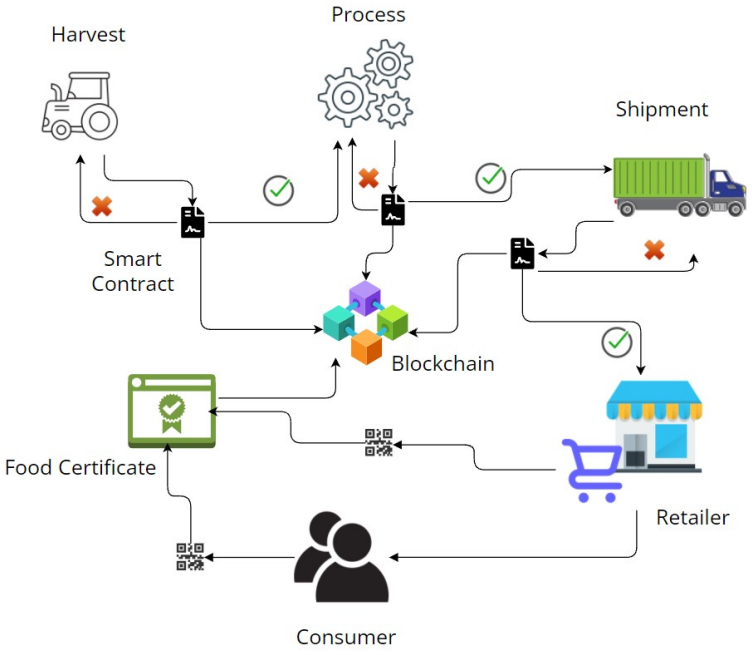

Figure 1: System Proposal

5 Implementation

React and JavaScript are used in making of the user interface. Remix is used to develop smart contracts due to its ease of use and time efficiency. Hardhat to deploy, compile, test and debug smart contracts. Solidity language is used to write the codes of smart contracts. Lastly Ethers library for JavaScript is used to connect the smart contracts and the front end.

User interface is shown in Figure 2.

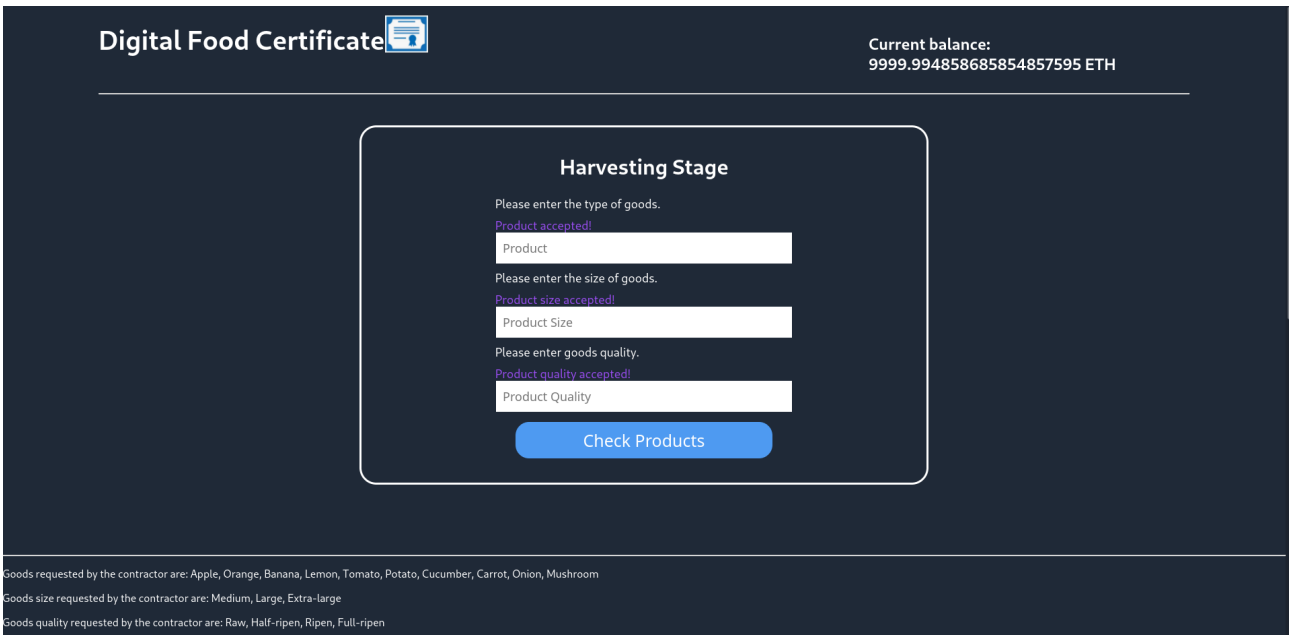

Figure 2: System Proposal

This project is published on GitHub page(https://github.com/ogulcanblt/Decentrlised_Systems

6 Conclusion

In conclusion, as technology developed in every aspect of human life and blockchain technology is a new era in human being life and most of the people in world are not aware of such a technology like back in 19s when internet was first created. And we will see in the near future that most of the current technology will be switched to blockchain technology when that is the time that people would have the right of privacy policy. Furthermore, digital food certificate technology is important for people life since people have the right to know how the product that they use come through since every step will be recorded on the blockchain as well as such technology would ease seller work as well because they can see every step of the products they receive and everything will be transparent.

Acknowledgement

Thanks to members of our team and Enis Hoca for a wonderful and educational semester. Additionally, in the future we would like to work more on this project and develop it even more as this was a really fun topic to work on. Even though we were not able to develop the project fully, in time there are other specifics to the project and make it even more functional.

References

[1] https://www.ibm.com/topics/what-is-blockchain#:~:text=Blockchain%20overview,patents%2C%20copyrights%2C%20branding).

[2] https://www.ibm.com/topics/smart-contracts

[3] https://ieeexplore.ieee.org/abstract/document/8842690

[4] https://www.sciencedirect.com/science/article/abs/pii/S0924224418303686

[5] https://ieeexplore.ieee.org/abstract/document/9239691