



PANIMALAR ENGINEERING COLLEGE

Chennai – 600 123

Department of Computer Science & Engineering

CS 8811 - Project Work (2021 -2022)

SECOND REVIEW FORM

# A Blockchain based mobile application for Land ownership record and Product Anti-Counterfeiting

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# Introduction

- Nowadays with the advancement of technology people come up with new ways of **duplicating a product** and selling it for the same price as the original. Same is the case with land fraud as there are cases of forced land acquiring through fake documents.
- This project aims to solve this problem by providing a **mobile application with Blockchain technology** as the base architecture ensures that the contents of its **data are tamper-proof**.
- The mobile application displays a list of sources distributed by the product/country, so you can be sure that your **end distributor is selling a genuine product**.
- Blockchain guarantees transparency and reliability because the technology is decentralized over a shared network.
- That is, you cannot change the data. You can take **ownership of land / real estate** in the same application. In this case, large parties such as governments can act as a source to verify reliability and place data on the blockchain through applications.
- Therefore, a digital signature is assigned to the owner to ensure the security of the owner's ownership.

# Literature Survey

S.NO	Title	Methodology	Key Take aways	Drawbacks
1.	Designing blockchain systems to prevent counterfeiting in wine supply chains: a multiple- case study	Like track and trace systems are used	Though data are taken manually, measure should be taken to control data veracity	BC systems are not one-size-fits-all solution
2.	Blockchain Technology Implementation in Logistics	The system works in a way that a copy of database or its partial copy is distributed to each party, and such party may then make changes to the database subject to collectively accepted rules.	Tracking goods through blockchain can improve the decision making process with end result being a more satisfying service for the end user.	RFID must be as a additional component
3.	Blockchain empowered sustainable manufacturing and product lifecycle management in industry 4.0: A survey	The transparency characteristics enabled blockchain shows promising for the enhancing the sustainability of manufacturing networks	An overview of the social barriers and the challenges of achieving sustainability goal in blockchain empowered manufacturing applications have been presented.	Blockchain empowered transformation of a sustainable manufacaturing paradigm is still in an early stage of the hype phase
4.	Blockchain Technology in Healthcare: A Comprehensive Review and Directions for Future Research	Emerging blockchain-based healthcare technologies are conceptually organized into four layers, including data sources, blockchain technology, healthcare applications, and stakeholders	Securing data, storage, transaction, and managing their smooth integration are immensely valuable to any data-driven organization, especially in healthcare	Claims and billing in the healthcare sector are being continuously abused,

# Problem Statement

- The authenticity and ownership of the product has always been at risk of being tampered as the records can easily be duplicated and modified or a fake product can be replaced with it.
- Hence to solve this problem Blockchain technology is used as the data which are uploaded in the chain cannot be tampered or changed.
- As blockchain is a decentralized and distributed network there is no single point of failure, which makes it much harder to corrupt.
- Hacking into one part of the system cannot affect other parts. Hence it maintains the asset ownership of the user.

# Development Environment

## Hardware Requirements

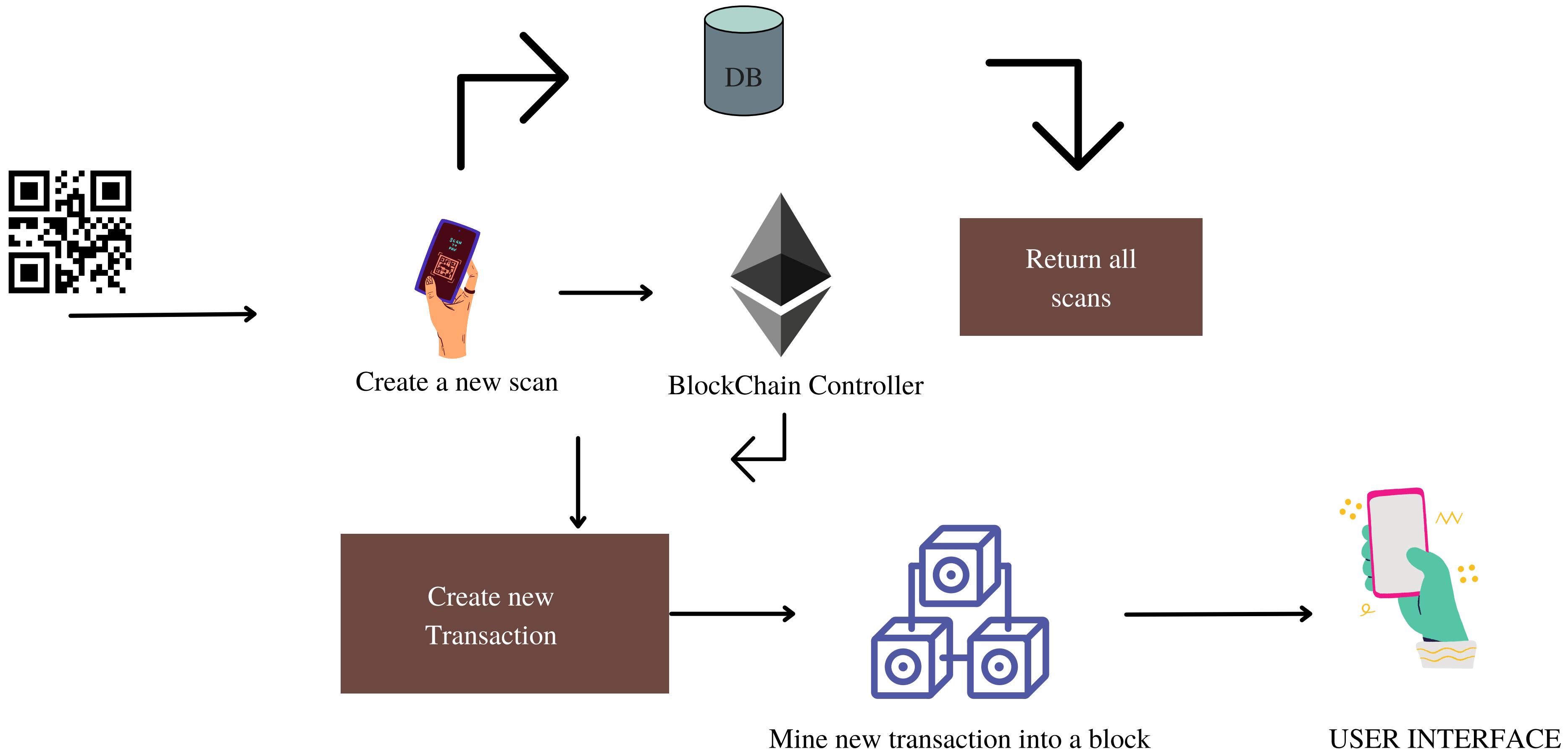
- Laptop / Desktop
- Mobile Phone

## Software Requirements

- Blockchain - Ethereum
- Language - Solidity, Flutter, Dart
- Database - Firebase
- Tools - Ganache, Visual Studio code, Truffle



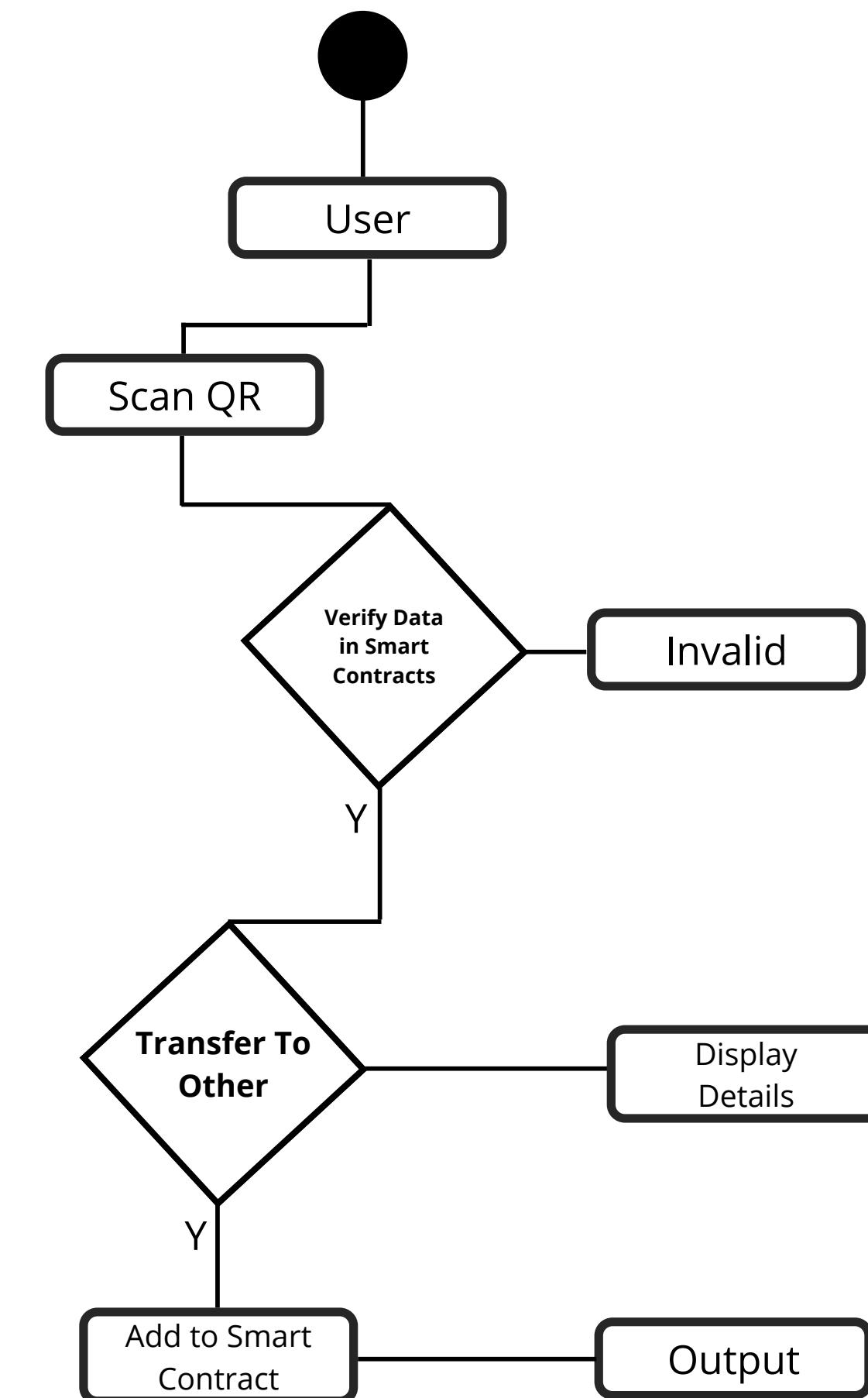
# System Architecture



# System Design

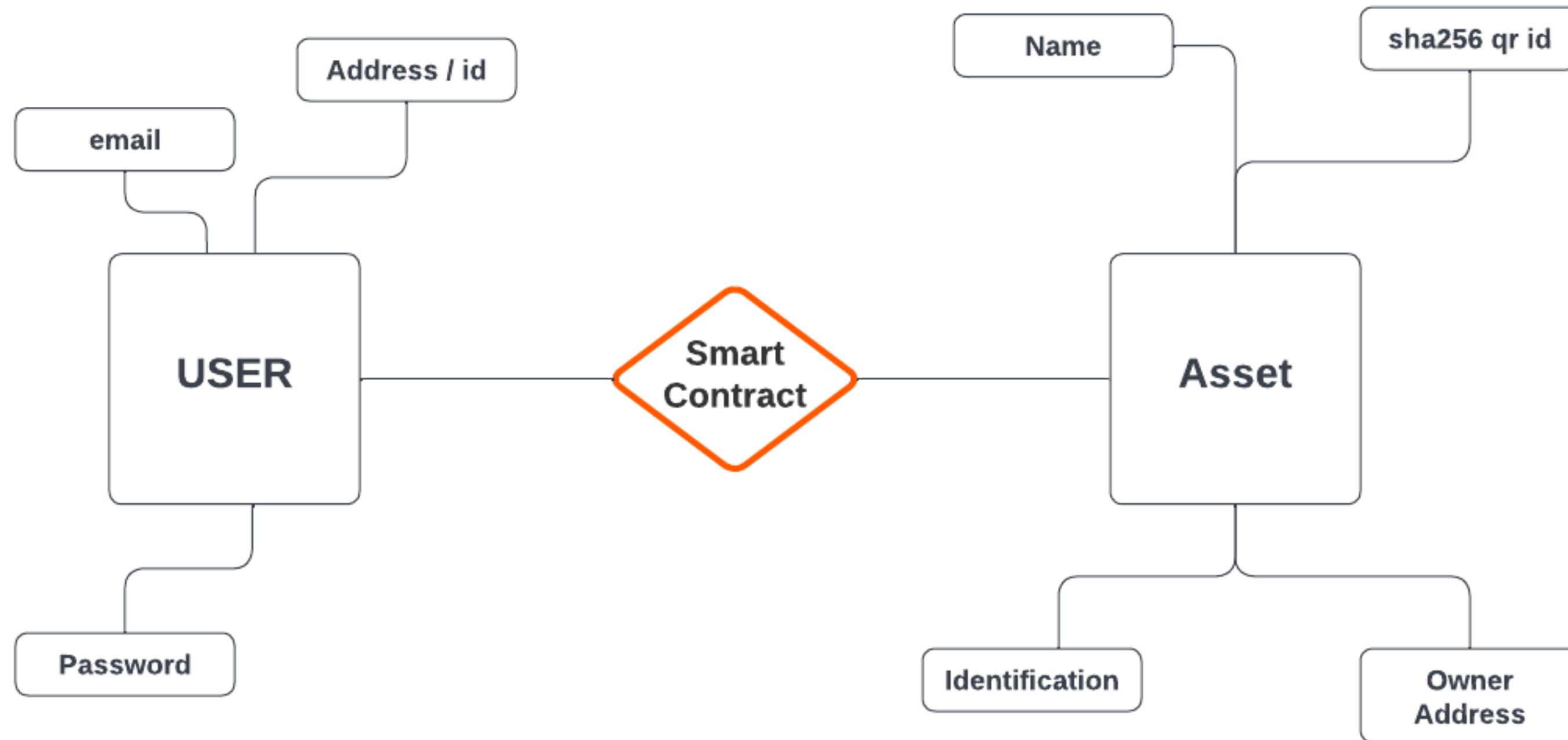
## Activity Diagram

- The activity flow from the user is followed with the scanning of qr.
- Then it is verified in the smart contact which gives two values.
- Valid or invalid, if valid the user has a option of transferring the ownership to other user.
- If yes, then the data is passed to smart contract which results in the final output.



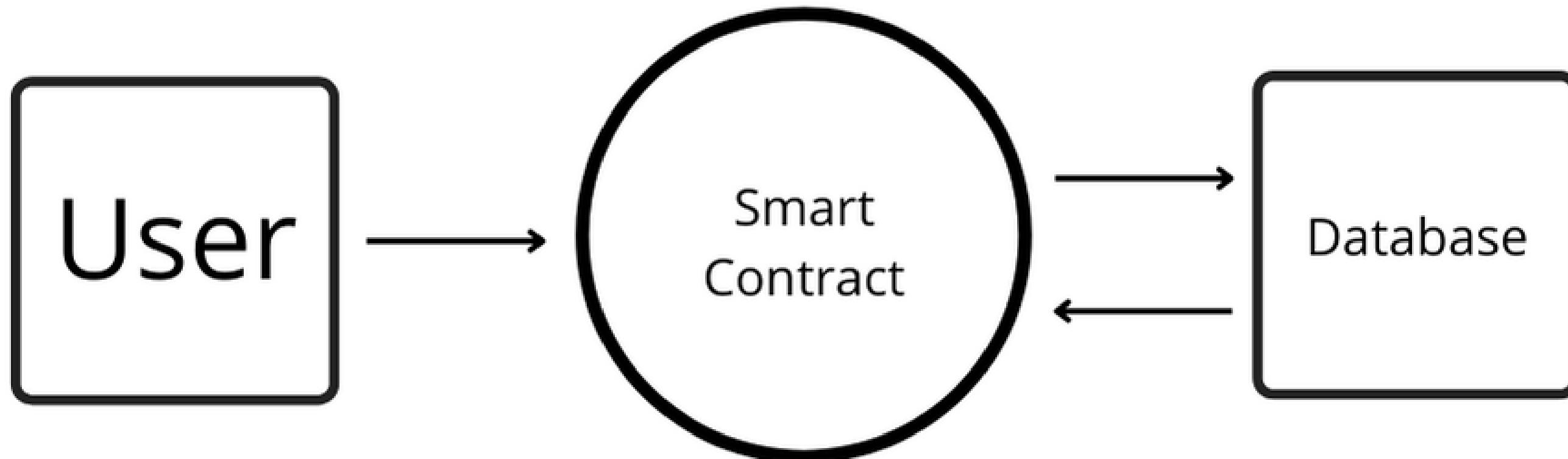
# ER Diagram

- The user has many required fields like email, address and password.
- User uses these fields to access the smart contract which is then connected with the asset.
- The assets contains fields like name , sha256 hash of QR, Identification details and owner address.



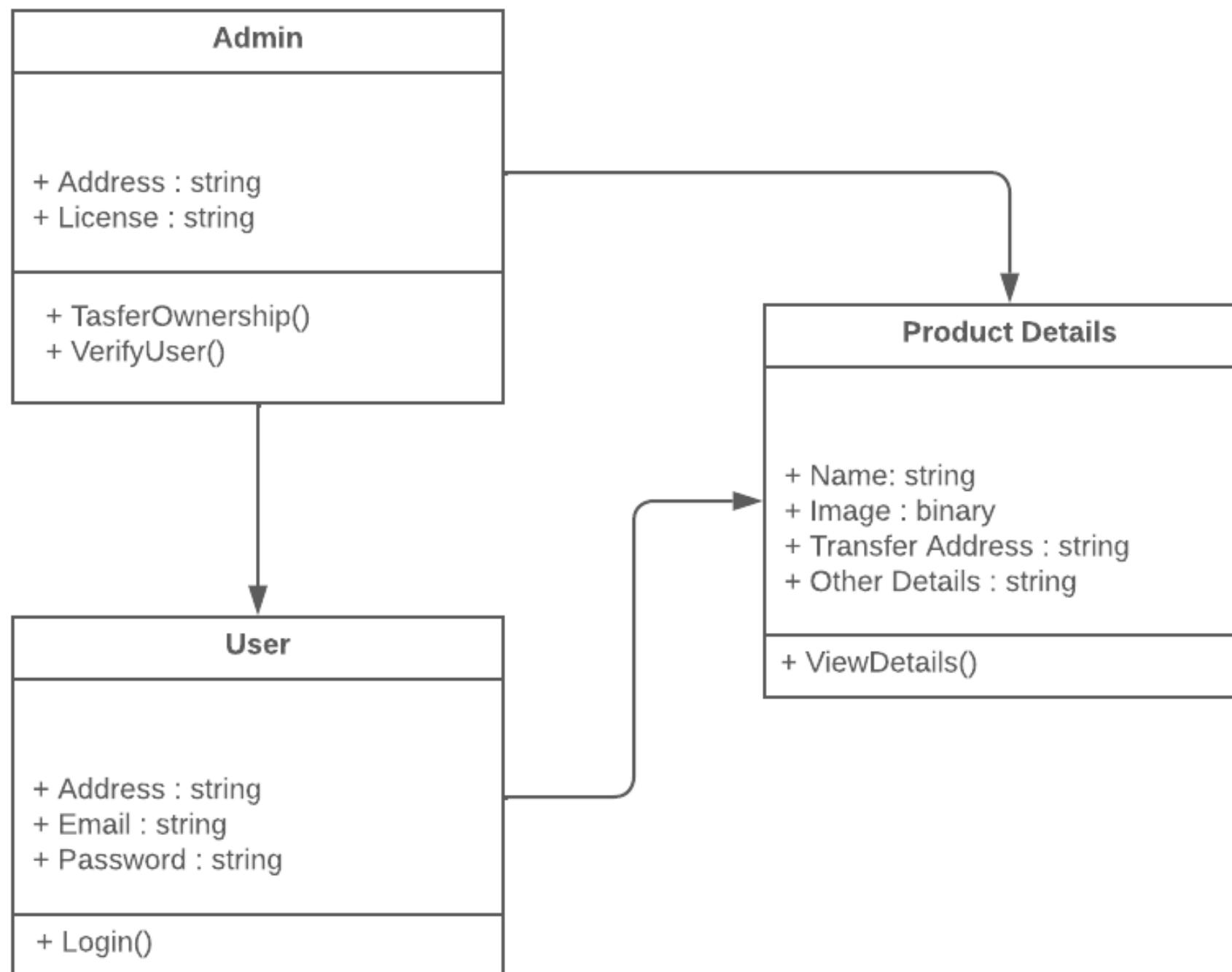
# DATA FLOW DIAGRAM

- The user communicated with the smart contract which further calls the database.
- The database in return communicated back with smart contract.



# CLASS DIAGRAM

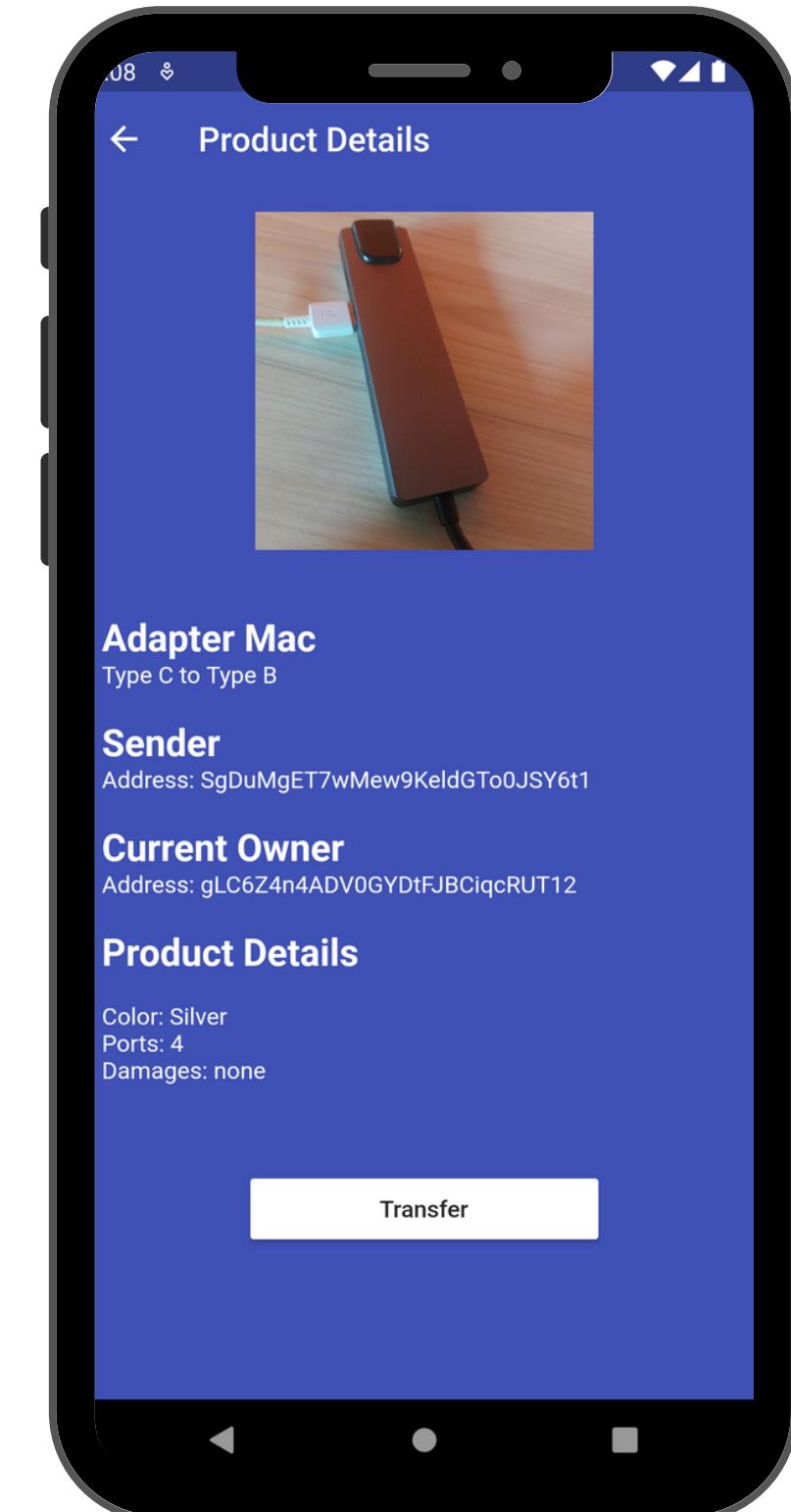
- The admin contains datas like address and license, which is connected with user which has address,email and password.
- Product Details has name, image in binary form, address that needs to be transferred and other details



# Module Description

## Flutter

- Blockchain is a backend process, but to let the user interact with blockchain we need a user interface.
- In this case we create a mobile app using a google's framework called Flutter.
- After successful installation, a flutter code is written to create the ui of the app which then will be accessed by the smart contact.



# Creating Smart Contract

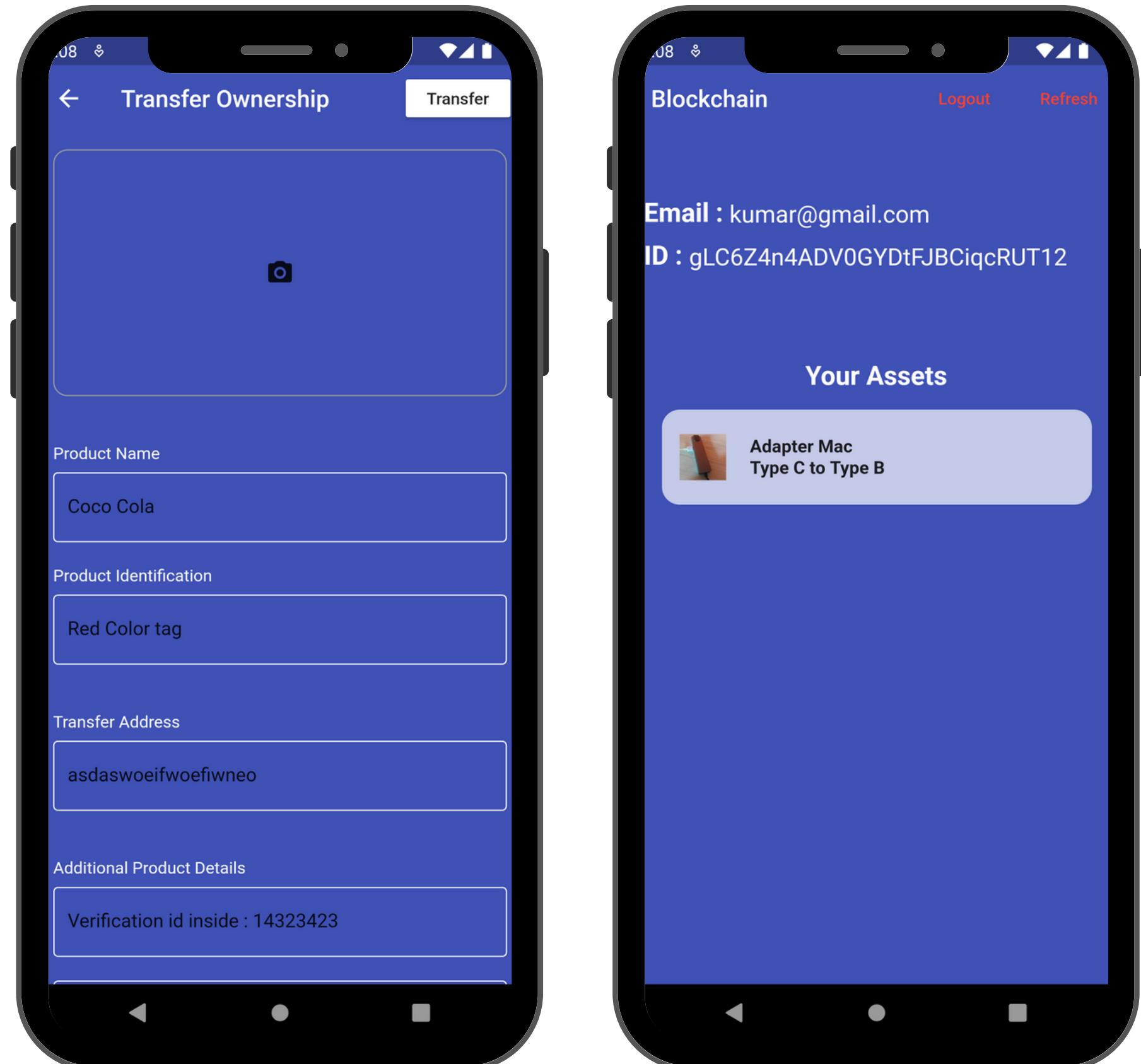
- Using a programming language called Solidity and an editor called Remix this can be done.
- Remix provides a stimulated blockchain environment for testing purposes with multiple accounts and 100 Ethers each.
- Ganache and Truffle can also be used to stimulate blockchain environment in local network

The screenshot shows the Remix IDE interface with the following transaction details:

TX HASH	FROM ADDRESS	TO CONTRACT ADDRESS	GAS USED	VALUE
0x55d56195e885be61a86c88a824c0630e99eb797de499c941836f6fa634924167	0x95a898AEC8550Dd06f2c2EBFE478D65789F4B8e1	0x752C79aDBf644ed40553e6d8F2a83EB913e2D760	67011	0
0x4efd4b341eb3a166dbca4b14a345cf2dab8cf436d8d241c3a6a16f3a1b005f8	0x95a898AEC8550Dd06f2c2EBFE478D65789F4B8e1	0xbE03b1d0A32D75Cd5B7353f42C142e758aF7828A	27513	0
0xe2318530758cdb399bf2f867fa57f1dbc9fc1478db35a9bd1a78a3c36a2a0bbd	0x95a898AEC8550Dd06f2c2EBFE478D65789F4B8e1	0x752C79aDBf644ed40553e6d8F2a83EB913e2D760	566507	0
0x91ba644e7398983744e16a665c781b0de7c55900861bafb866107eb51ff94e4a	0x95a898AEC8550Dd06f2c2EBFE478D65789F4B8e1	0xbE03b1d0A32D75Cd5B7353f42C142e758aF7828A	42513	0
0xf4308a4235e6bb7c286a9ca4bc2b2c303a7a407d3539749ccee203a255ea8235	0x95a898AEC8550Dd06f2c2EBFE478D65789F4B8e1	0xbE03b1d0A32D75Cd5B7353f42C142e758aF7828A	248854	0

# ASSIGNING OF OWNERSHIP

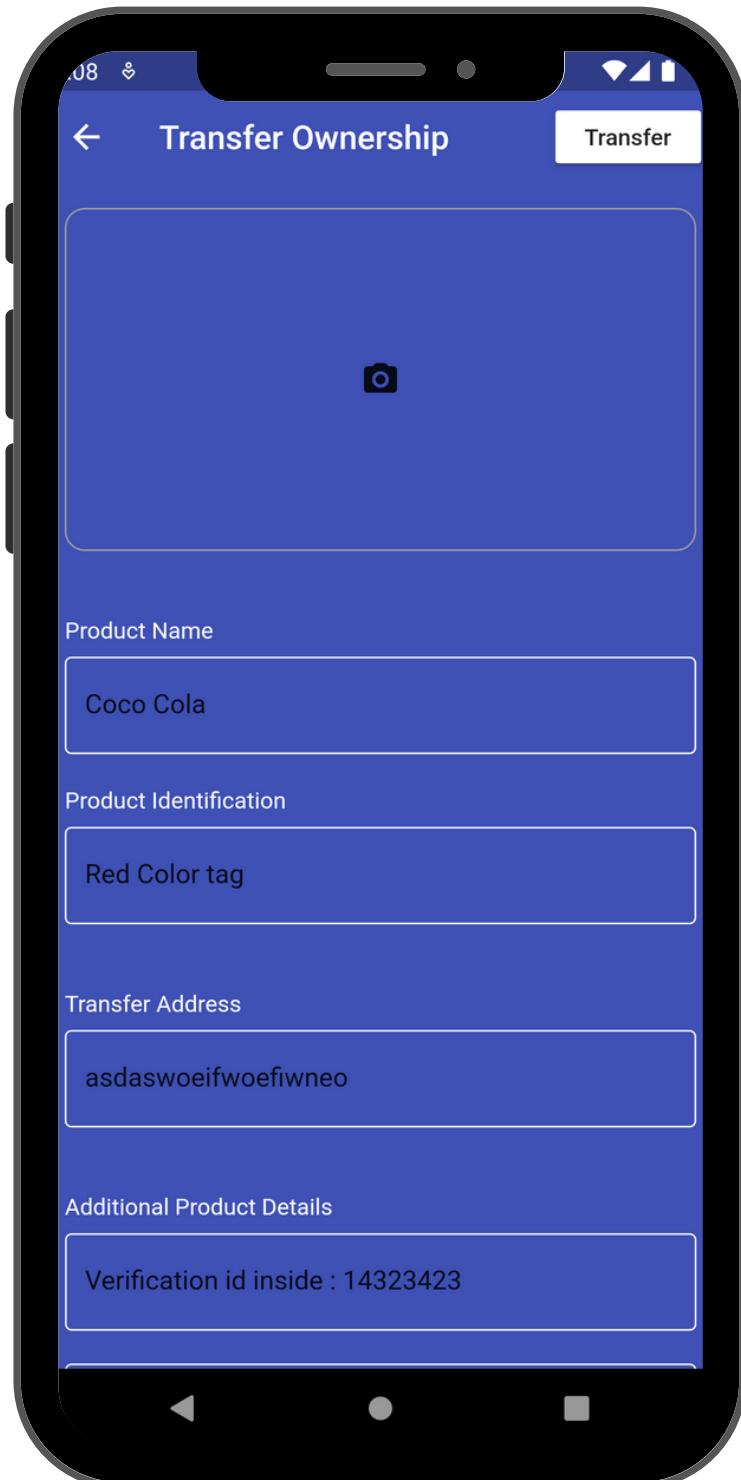
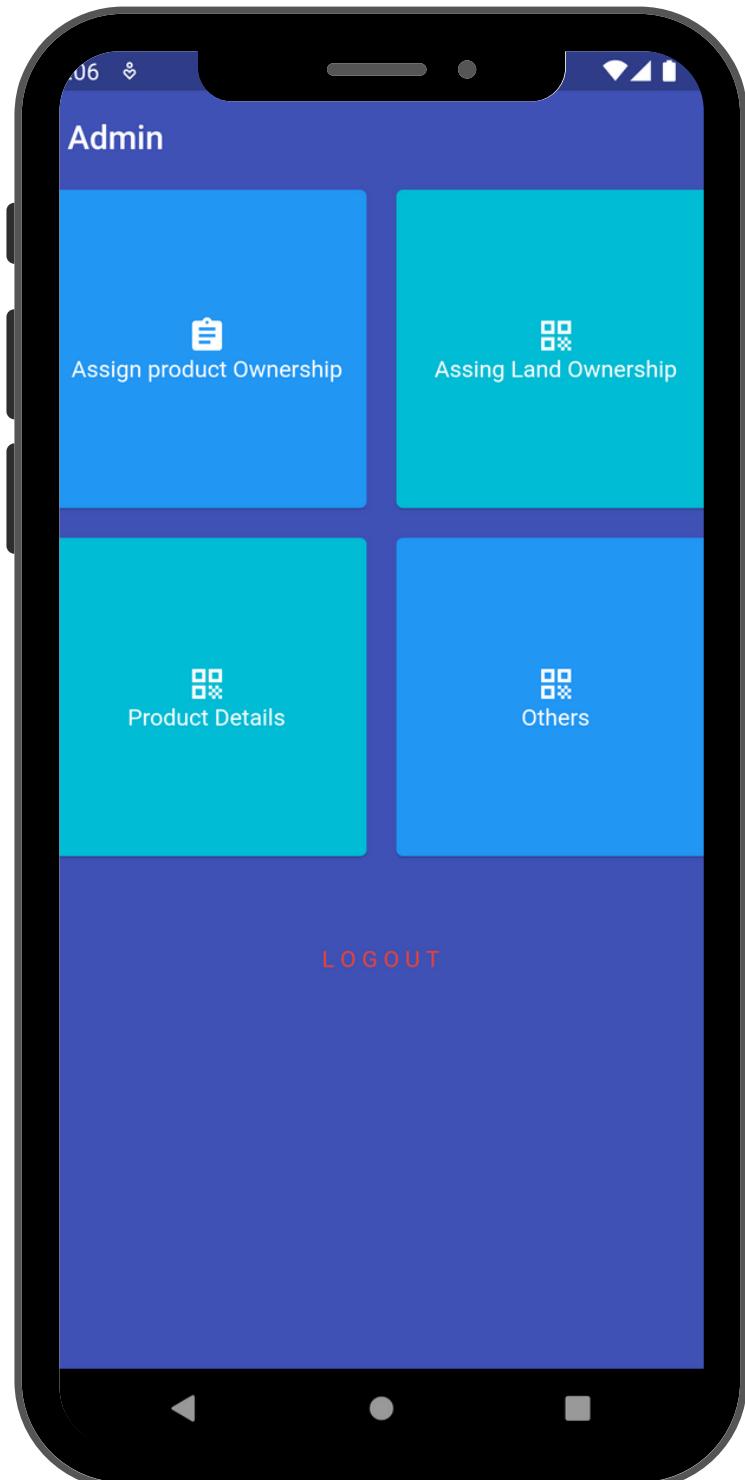
- From the app the admin can add the product details and assign the ownership to a particular address.
- First the data is hashed and stored in smart contract for the respective address.
- Then the remaining data is stored in database for additional data information of the product.
- Products is the hashed key which is assigned to the owner address id.



# Testing

S.NO	Action	Inputs	Expected Output	Actual Output	Test Result
1	Admin Login	hussain@admin.com	Response 200	Response 200	Pass
2	User Login	kumar@gmail.com	Response 200	Response 200	Pass
3	Add Product	Product Details	Item Added	Item Added	Pass
4	Scan Qr	 Adapter Mac	Product Details	Product Details	Pass

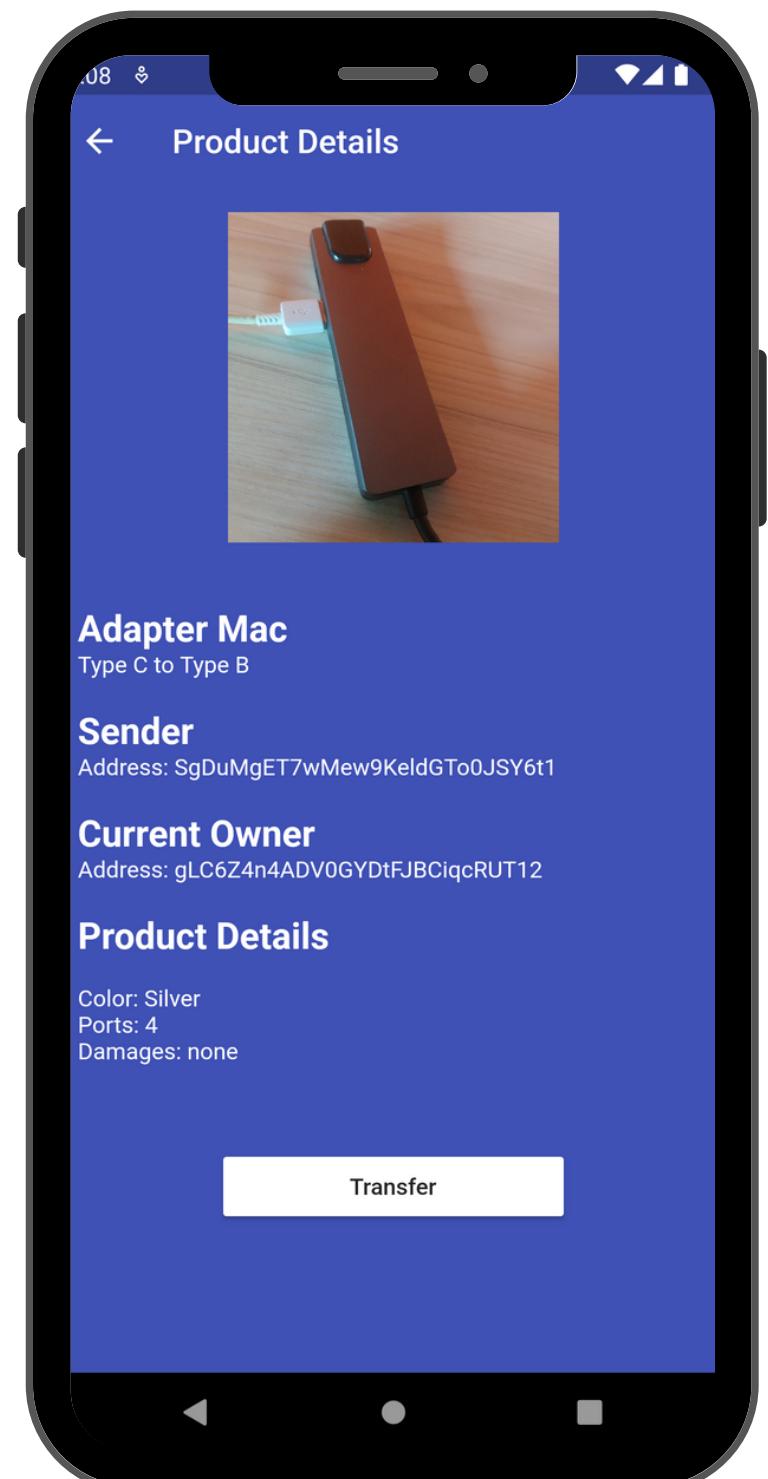
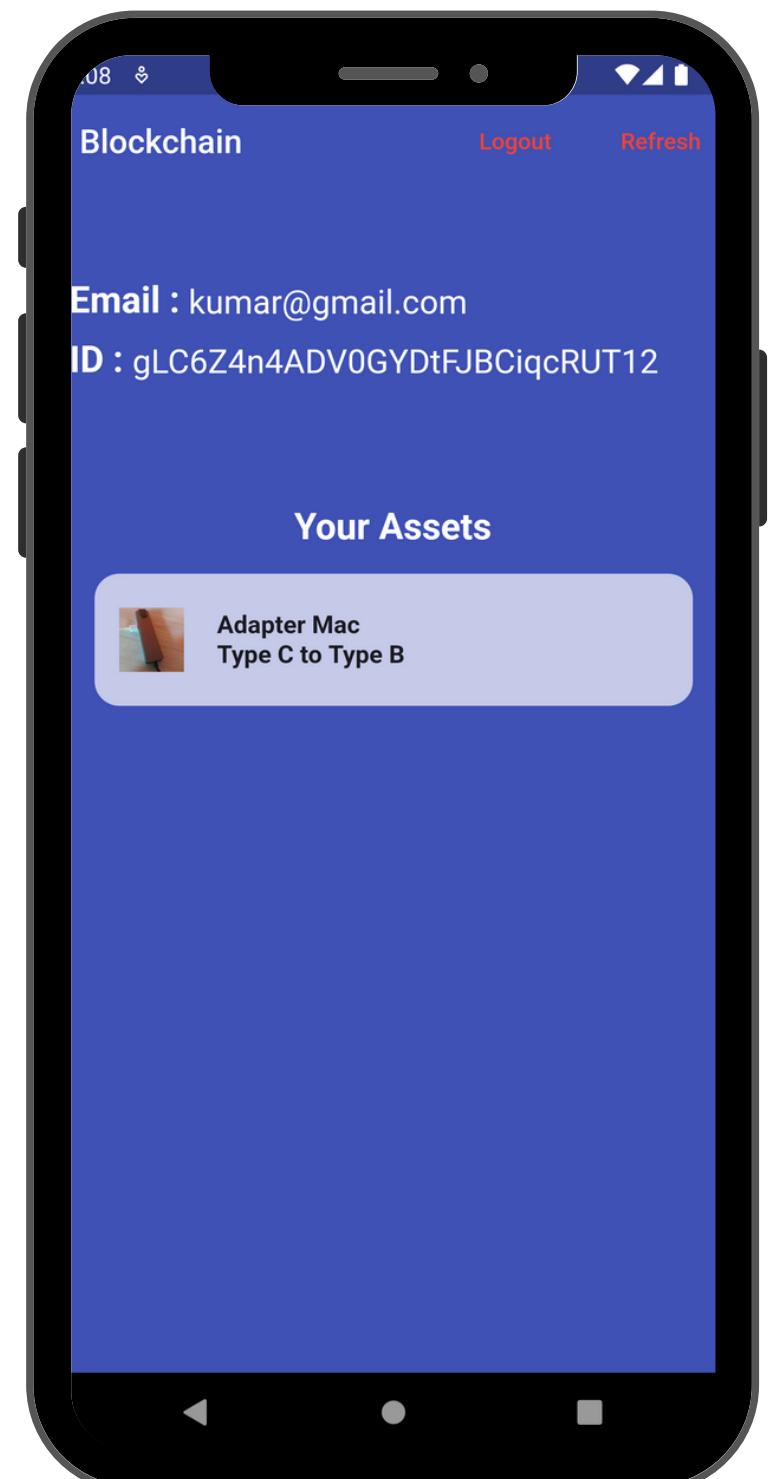
# Screen shots



- The screen shots is of the admin app.
- In the first app, the admin has various option to either assign a product ownership or landownership.
- Other options include viewing product details by scanning the qr.
- To transfer ownership the admin must fill in hte details and add a photo

# Screen shots

- The screen shots is of the user app.
- In the first app, the user can view his assigned assets which he owns.
- On clicking a particular product it is moves to the next screen.
- Here he can view the details of the asset and the sender address.



# Conclusion

- Thus an Blockchain based product anti counterfeiting application was successfully made. Following extensive testing, comparing results revealed that the model generates expected results which is an important strategy for application in open contexts.
- The application can be used in other business use case like supply chain management. With the future expansion of the model it can be more efficient.
- Future expansion of the system could include adding Bluetooth low energy devices to the product and an NFT based product identification software. Each asset can be assigned with a Bluetooth low energy device that would emit a radio wave which can be identified by the mobile application.
- That would further improve the authenticity and transparency and would help to ease the process of supply chain and management. Since the current model works on the QR code it can be further transformed to NFT for assets where bluetooth low energy can be used.

# References

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# Plagiarism Report



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Exclude URL:	NO			
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	Plagiarized Content	10%	Records Found	5
	Paraphrased Plagiarism	0		

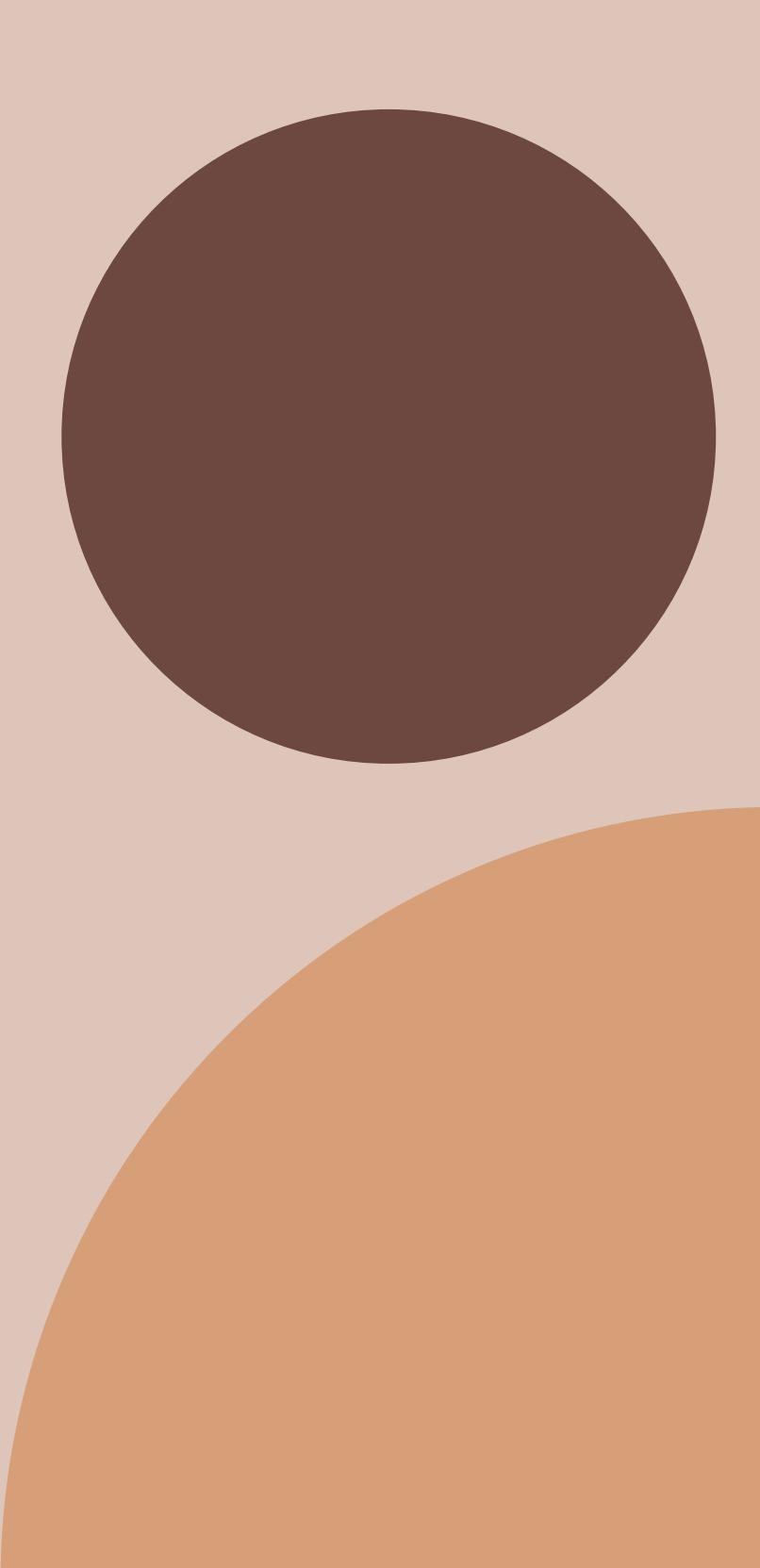
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### ABSTRACT

Nowadays with the advancement of technology people come up with new ways of duplicating a product and selling it for the same price as the original. Same is the case with land fraud as there are cases of forced land acquiring through fake documents. This project aims to solve this problem by providing a mobile application with Blockchain technology as the base architecture ensures that the contents of its data are tamper-proof. The mobile application displays a list of sources distributed by the product/country, so you can be sure that your end distributor is selling a genuine product. Blockchain guarantees transparency and reliability because the technology is decentralized over a shared network. That is, you cannot change the data. You can take ownership of land / real estate in the same application. In this case, large parties such as governments can act as a source to verify reliability and place data on the blockchain through applications. Therefore, a digital signature is assigned to the owner to ensure the security of the owner's ownership. As blockchain is a decentralized and distributed network there is no single point of failure, which makes it much harder to corrupt. Hacking into one part of the system cannot affect other parts. Hence it maintains the asset ownership of the user. The proposed system involves the use of a mobile application for the end user along with Blockchain technology in the backend as the base architecture ensures that the contents of its data are tamper proof.

### AIM OF THE PROJECT

This project aims to solve this problem by providing a mobile application with Blockchain technology as the base architecture ensures that the contents of its data are tamper-proof. The



Thank You