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Comparing the characteristics of blockchains via building a NFT marketplace

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ABSTRACT

Blockchain is a ground-breaking technology that will soon have a significant positive impact on our commercial environment. Non-Fungible Token is referred to as NFT. A digital representation of a real-world item, such as music, art, in-game items, or films, can be referred to as an NFT. They are typically exchanged online using various cryptocurrencies. Different from fungible tokens that are bought or sold on numerous centralised or decentralised exchanges, non-fungible tokens transacted on an NFT marketplace. NFTs are unique. Every NFT has a digital signature that prevents them from being altered for another NFT. Each has a unique value based on a number of variables, including metadata, creator,features, etc.

The NFT marketplace, which gives users a platform to create and exchange Non-Fungible Tokens, is meant to be at the centre of all the fantastic use cases for NFTs. The software will be compared to other well-known systems like Opensea, etc., whose major transaction volume is on the Ethereum blockchain network. In this endeavour, we will focus on establishing an NFT Marketplace using the Internet computer. We would interact with the internet computer using Motoko, and the front end of the application would be made with Reactjs.

INTRODUCTION

Smart contracts hold Non-Fungible Tokens, a non-exchangeable data unit, on the blockchain. However, the use of the blockchain technology in this manner was not the first. In the beginning, blockchain technology was only used for financial and business transactions; however, recent research has shown that it is much more adaptable. This is due to the high level of transparency provided by blockchain technology. For instance, it is simple and quick to track the global total of currencies and transactions. There is no need for a central authority to approve or carry out activities because it is a peer-to-peer system. NFT tokens cannot be altered because of their inherent value and distinctive characteristics. It is distinct from tokens that can be manipulated. NFT can be anything you find online, including music, games, and visual art. Digital representations of ownership of anything that is fundamentally uncommon and one-of-a-kind, such as a work of art, a piece of music, a collection, an item from a video game, or real estate, include nonfungible tokens or a digital signature that prevents trading. NFT markets are platforms for storing, displaying, exchanging, and issuing NFTs. NFT can be sold by artists through specialized marketplaces. Potential buyers can quickly make an offer or purchase NFTs by searching for them on the NFT Marketplace.

The term "fungible" was first used in the literature on accounting and economics. Anything that can be substituted with a similar or identical item is referred to as this. Because they are thought to be of equal worth, regardless of whether they are the same quantities of paper money or precious metals, traditional forms of currency are appealing as a means of trade. A five-dollar bill can be exchanged for five one-dollar notes because the two currencies are interchangeable. Common shares, financial options, bills of exchange, and regulated commodities are all examples of fungible assets.

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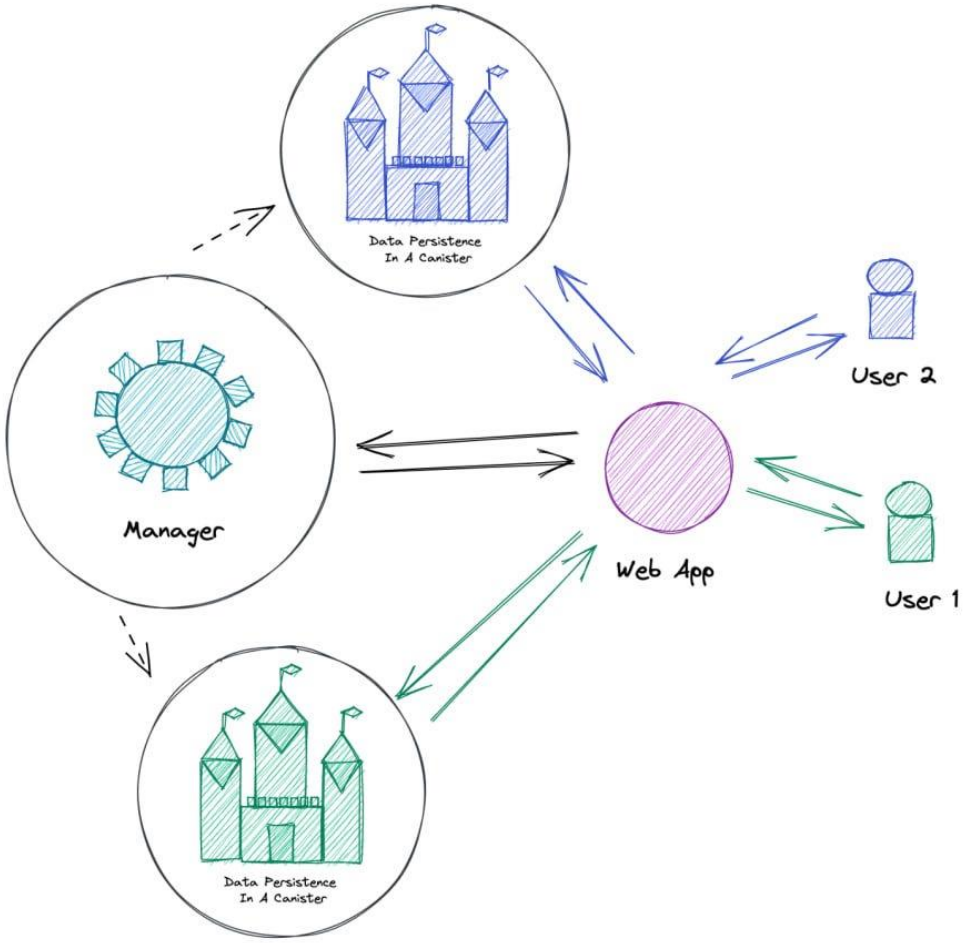
On the other hand, a person's car may be considered a non-fungible asset because a friend who borrows a friend's car cannot repay the loan by giving the friend their own car. Each baseball card is a great example of a nonfungible asset because it has unique characteristicthat either make it.



EXISTING SYSTEM

The current method under consideration is based on the Ethereum blockchain.Due to the fact that Ethereum is based on a public blockchain, anybody may join the network as a user, developer, or miner. As the platform's native token, Ethereum uses the cryptocurrency Ether (ETH). In the Ethereum ecosystem, ETH is employed in a variety of ways, including as a form of payment for transaction fees, a reward for miners, and a means of trade. Front ends for Ethereum smart contracts are often hosted on centralised servers like AWS. The necessity for Oracles, Rollups, and off-chain or side-chain Processing solutions stems from the fact that Eth will always be constrained by what Solidity can perform on chain.

PROPOSED SYSTEM

The overall goal of the problem statement is to create an NFT marketplace that can test and compare various blockchains to determine which one is best for NFT-based applications. Our goal is to use the application to build an NFT Marketplace on an Internet computer and compare it to popular systems like Opensea and others, whose significant exchange volume is on the Ethereum blockchain network. We would build the application's front end with Reactjs and Motoko as a language for interacting with the internet computer. ICP is capable of doing anything. It's an alternative to AWS. Icp is able to host everything on the chain. ICP is a fully functional web server that can take over all of the existing web services and hosting services. ICP aims to offer a novel approach to decentralized application hosting and blockchain scalability.

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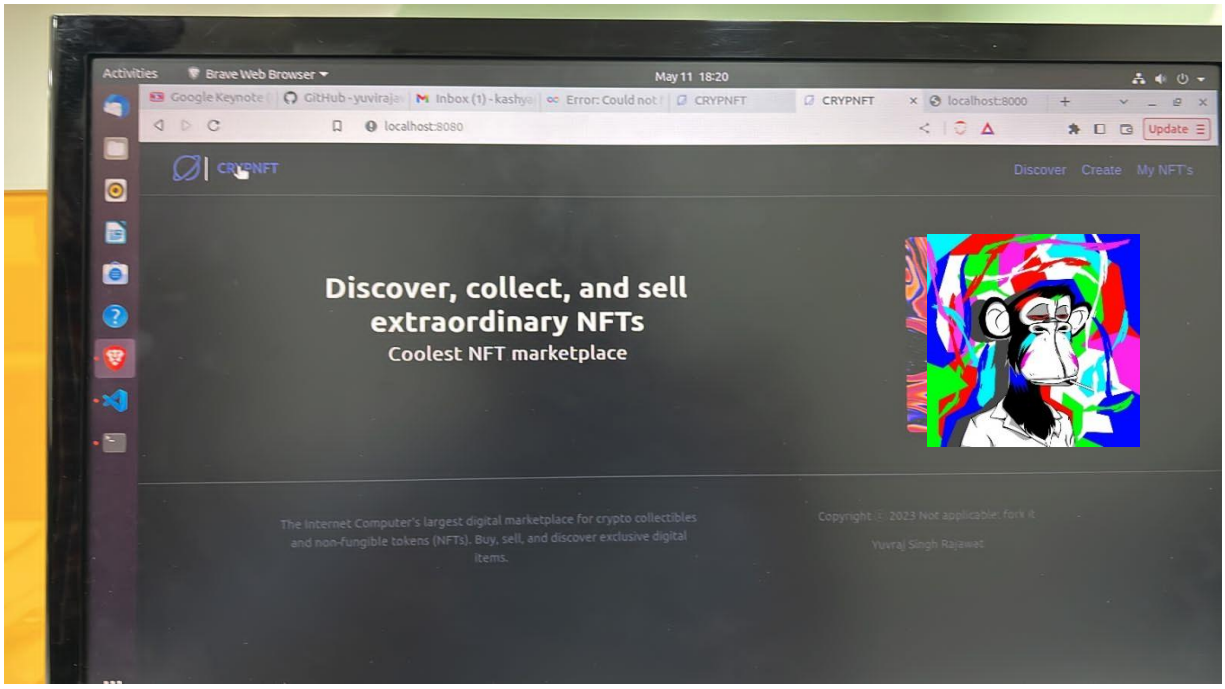
Performance Comparison

Parameter	Ethereum	Cardano	Solana	Internet computer
Transaction speed	15-20 tps	2tps	2k-3k tps	11,500 tps
Transaction time taken	14 minutes	10-60 minutes	21-46 seconds	1 second
Scalability	Not scalable	Not scalable	Not scalable	scalable
Storage cost	$73000000/gb	Insufficient storage	$1000000/gb	$5/gb

RESULTS AND DISCUSSION



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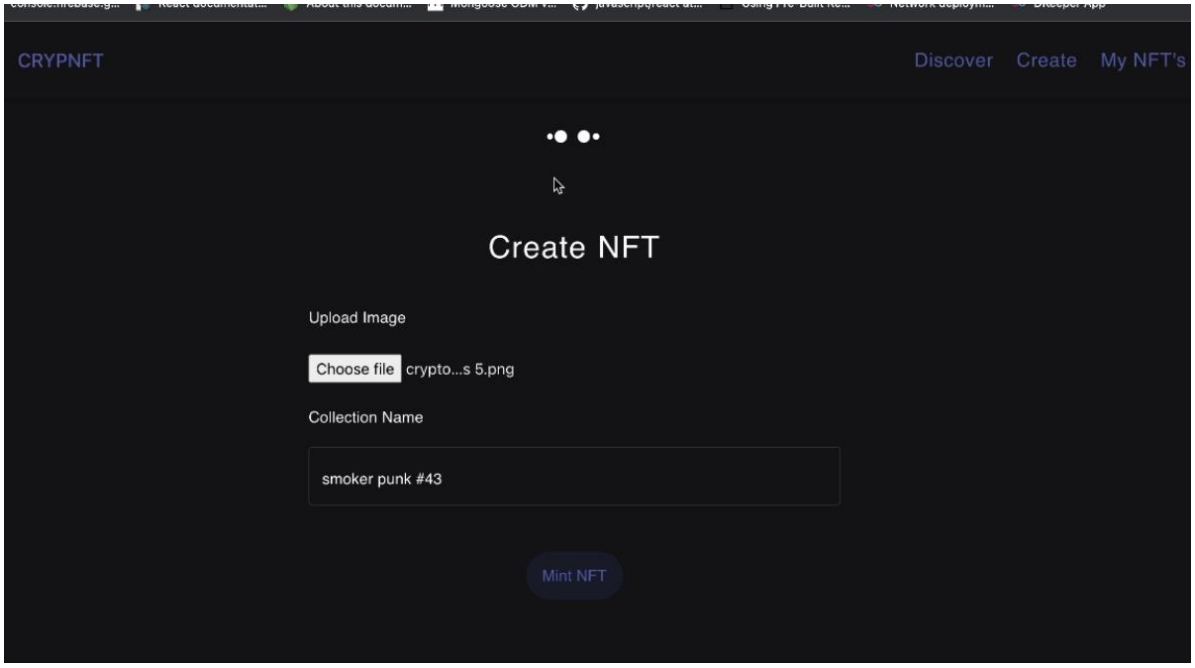

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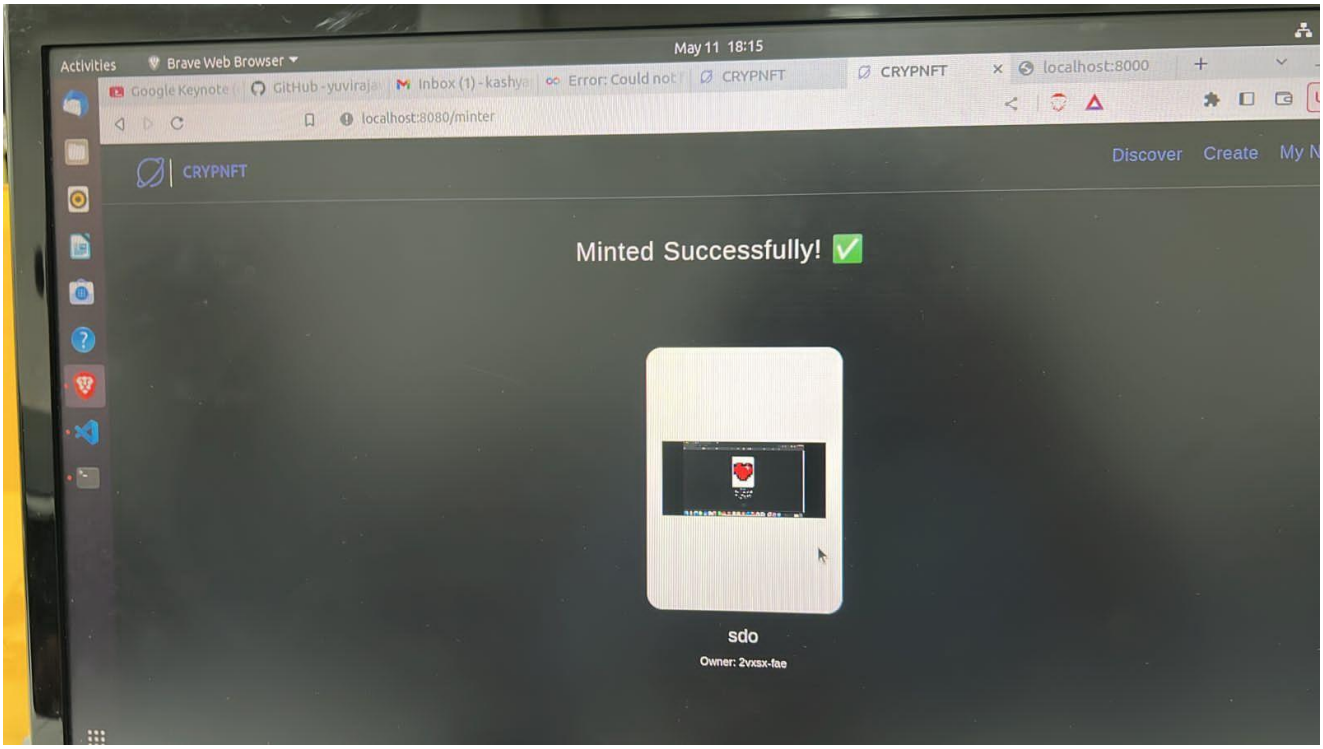

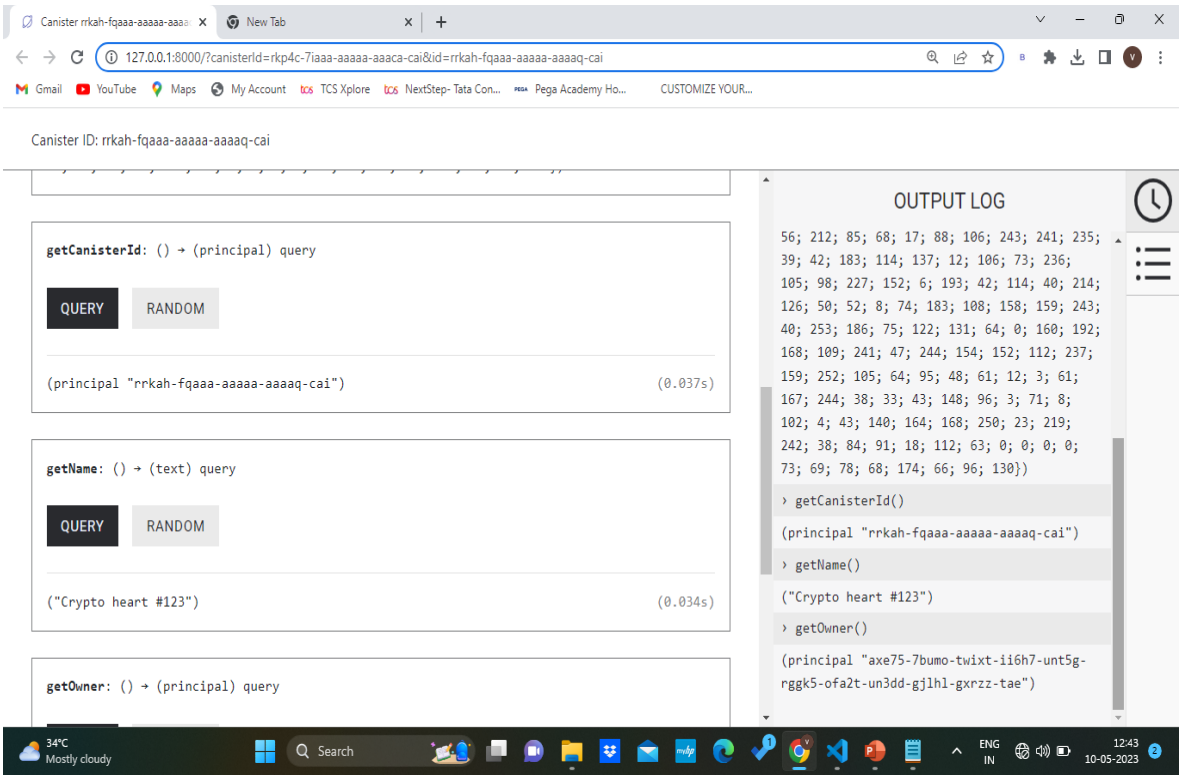

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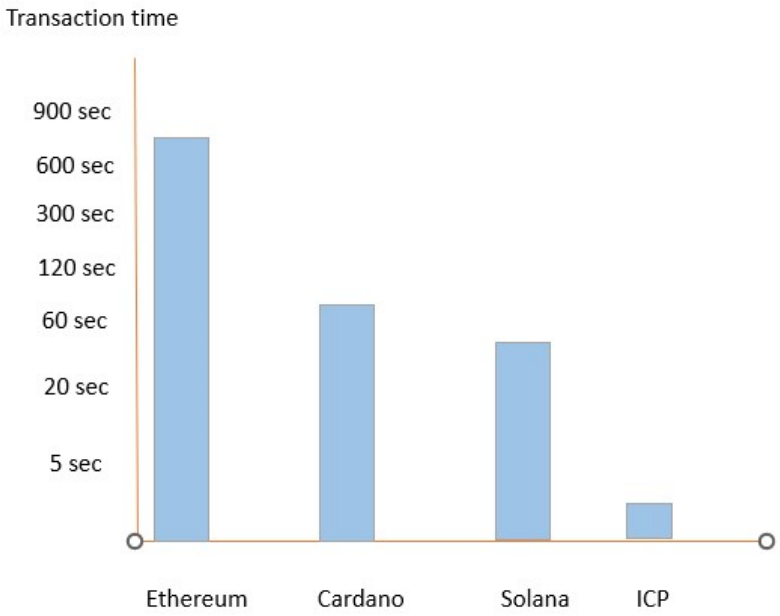
PERFORMANCE GRAPH



CONCLUSION

This study aims to build an NFT marketplace on an Internet computer (ICP) in an effort to create a scalable and high-throughput application. It will examine major issues like transaction fees and transaction times, among others. It is developed with reactjs to be responsive so that it can be viewed in a browser on any device commonly used for such purposes. It is hosted on the internet. As the name suggests, the application serves as a marketplace for selling and buying digital or other possessions, transferring full ownership to the buyer, and recording the transaction on a blockchain—in this case, Internet Computer—that cannot be changed. For those who are more interested in learning more about the technology in depth, comprehensive guides and a number of other articles would be made available on the website to make it easier to use.

ACKNOWLEDGEMENT

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