A MINI PROJECT REPORT ON

DEFINANCE APPLICATION

*Submitted in partial fulfillment of requirement for the award of the degree of*

## BACHELOR OF TECHNOLOGY

*In*

## COMPUTER SCIENCE AND ENGINEERING



*Submitted by*

**AKSHAYA CHANCHALA(19BD1A05C3)**

**A PEARL PRIYANKA(19BD1A05C4)**

**ASVITHA REDDY(19BD1A05CD)**

**RAHUL SINGARAPU(19BD1A05DL)**

## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING KESHAV MEMORIAL INSTITUTE OF TECHNOLOGY

### (Approved by AICTE, Affiliated to JNTUH) Narayanaguda, Hyderabad, Telangana-29

**2022-23**

# CERTIFICATE

This is to certified that seminar work entitled “**DEFINANCE APPLICATION**” is a bonafide work carried out in the seventh semester by “**AKSHAYA CHANCHALA 19BD1A05C3**” in partial fulfillment for the award of Bachelor of Technology in “**COMPUTER SCIENCE & ENGINEERING”** from JNTU Hyderabad during the academic year 2022 – 2023 who carried out the seminar work under the guidance of **“MR. CHALLA SUNDEEP BABU”** and no part of this work has been submitted earlier for the award of any degree.

**TS INCHARGE INTERNAL EXAMINER**

**HEAD OF THE DEPARTMENT**



|  |  |  |
| --- | --- | --- |
|  | **INDEX** |  |
| **Table of Contents**  **Abstract** |  | **Page No.**  **i** |
| **List of figures** |  | **ii** |
| 1. **Introduction** |  | **1** |
| 1. **Literature Survey** |  | **3** |
| **3. Architecture / working principle** |  | **5** |
| **4. Advantages** |  | **15** |
| **5. Disadvantages** |  | **17** |
| **6. Applications** |  | **18** |
| **7. Use Cases** |  | **19** |
| **8. Conclusion** |  | **21** |
| **9. References** |  | **22** |



# ABSTRACT

Blockchain is a shared, distributed and permanent database that is shared among multiple nodes in a computer network. They record data in such a way that it makes it almost impossible to modify or hack the system. Blockchains also play a crucial role in cryptocurrency systems, such as [Bitcoin](https://www.investopedia.com/terms/b/bitcoin.asp), for maintaining a secure and decentralized record of transactions. The goal of blockchain is to allow digital information to be recorded and distributed, but not edited. In this way, a blockchain is the foundation for immutable ledgers, or records of transactions that cannot be altered, deleted, or destroyed.

Decentralized finance (De-Fi) is an emerging financial technology based on secure distributed ledgers similar to those used by cryptocurrencies. The system removes the control banks and institutions have on money, financial products, and financial services. Decentralized applications (also known as “DApps”) provide services similar to those offered by typical consumer applications, but they use blockchain technology to grant users more control over their data by eliminating the need for centralized intermediaries to manage the data, thus making the service “decentralized.” DApps built on Ethereum use blockchain technology under the hood to connect users directly. [Blockchains](https://coindesk.com/learn/blockchain-101/what-is-blockchain-technology) are a way to tie together a distributed system, where each user has a copy of the records. With blockchains under the hood, users don't have to go through a third party, meaning they don't have to give up control of their data to someone else. De-Fi applications give users more control over their money through personal wallets and trading services that cater to individuals.



## List of Figures Page No.

|  |  |
| --- | --- |
| **1. Logo of AWS** | **2** |
| **2. Global Infrastructure of AWS** | **6** |
| **3. Services offered by AWS Cloud Platform** | **8** |
| **4. Types of Cloud Computing Models** | **16** |

**CHAPTER -1**

**INTRODUCTION**

**1.1 Purpose of Project**

Decentralized finance applications are designed to overcome these risks by distributing power and control among a network of users. This can provide a number of benefits, such as increased security, resilience, and transparency.

The need for decentralized finance applications arises from the fact that traditional financial institutions are centralized. This means that they are subject to the risks associated with centralization, such as single points of failure and the potential for corruption.

The application is a decentralized finance app which allows users to exchange one form of crypto into another. To carry out the transactions, the applications does not charge any fee.

This application takes crypto funds from its users. These funds are stored in liquidity pools with each pool containing different pairs of cryptocurrencies. This platform uses blockchain-based smart contracts to facilitate the decentralized trading of many different digital assets. Pairs of digital assets are swapped via liquidity pools, which use smart contracts to automatically rebalance after every trade.

We use smart contracts in order to carry out exchanges in this application. Smart contracts enable asset trading that may be cheaper and more efficient.

**1.2 Problems with Existing System**

When it comes to cryptocurrency exchanges, there are mainly two types of exchanges, centralized exchange and decentralized exchange.

Centralized crypto exchanges that act as a middleman between the buyer and the seller and make money through commissions and transaction fees. Popular CE service providers are Finance, Coinbase etc.

These centralized exchanges take your personal information in order to carry out a simple exchange transaction. Plus they often charge a very high transaction fee for carrying out the exchange.

The main problem with CE is that most CEs will hold your private keys and will only allow you to buy or sell assets instead of you having control over your funds. Users of decentralized exchanges do not need to transfer their assets to a third party. Therefore, there is no risk of a company or organization being hacked, and users are assured of greater safety from hacking, failure, fraud, or theft.

We are here trying to build an application which is decentralized and allows users to exchange one form of crypto into another. For carrying out the transactions, the applications does not charge any fee.

**1.3 Proposed System**

The main idea behind the proposed system is to allow users to exchange one form of crypto currency to another and allows a decentralized form of exchange without any authority present.

The proposed system would address the following issues:

The need for users to trust centralized exchanges when using decentralized exchange apps. The proposed system would provide the following benefits: A single interface for managing your decentralized exchange apps. No need to trust centralized exchanges when using decentralized exchange apps. The ability to interact with decentralized exchange apps directly from website The proposed system would be built on top of the Ethereum blockchain and would use smart contracts to facilitate transactions.

CREX is designed to be as user friendly as possible, with a simple interface that allows users to easily swap between tokens. There is no need to set up an account or login, and the process is designed to be as seamless as possible.

The way CREX achieves liquidity is by allowing users to add their own liquidity to the pool. When a user wants to trade a token, they can do so directly from the pool. The trade is then settled between the user and the pool, with the pool providing the liquidity. This system is different from a traditional exchange, where trades are settled between two users. With CREX there is always someone to trade with you, as long as there is liquidity in the pool. This makes CREX a much more liquid platform than a traditional exchange.

If you're tired of going through a lengthy signup process for crypto exchanges CREX will feel like a breath of fresh air. You don't need to provide personal information or create an account. All you do is connect your crypto wallet, and you're ready to trade crypto.

Now, the fact that CREX doesn't require any personal information also has its drawbacks. You can't use it to buy crypto with fiat money, and there's the possibility of regulatory issues. But from a convenience and privacy standpoint, CREX is great.

A decentralized exchange is an online platform that allows users to trade cryptocurrencies or other digital assets without the need for a central authority. Decentralized exchanges are powered by blockchain technology and often allow for peer-to-peer trading

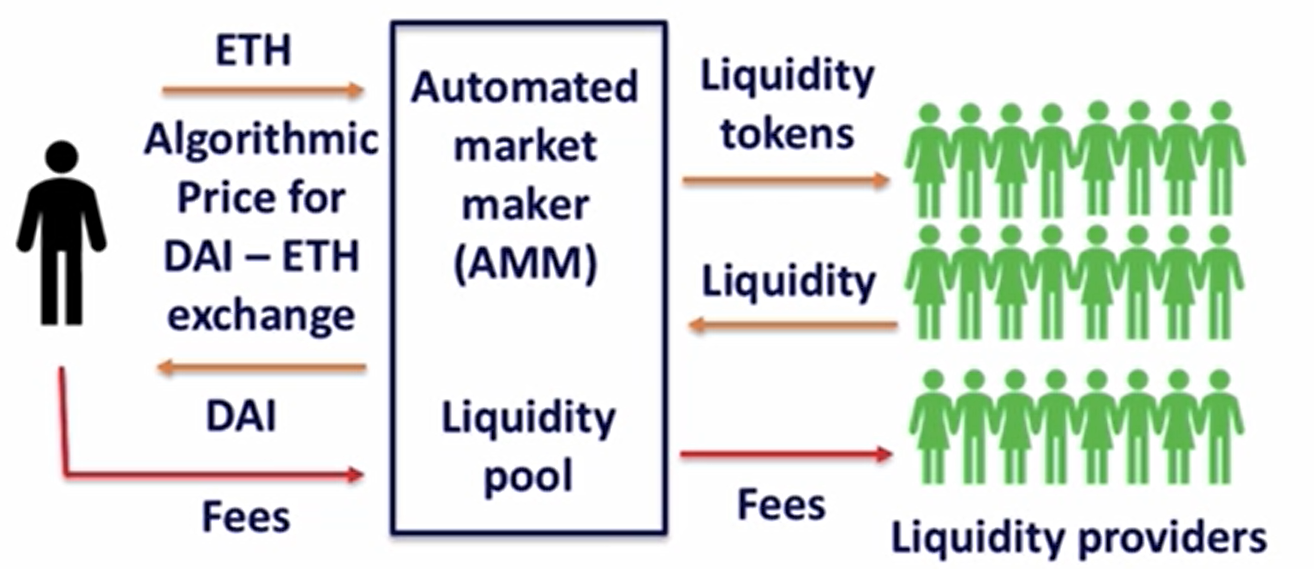
**1.4 Scope of the Project**

The main problem with CE is that most CEs will hold your private keys and will only allow you to buy or sell assets instead of you having control over your funds. Users of decentralized exchanges do not need to transfer their assets to a third party. Therefore, there is no risk of a company or organization being hacked, and users are assured of greater safety from hacking, failure, fraud, or theft.

This is application is being built on the Ethereum network, and it allows you to carry out exchanges amongst the combinations of native cryptocurrencies, ERC20 and stable coins. It solves the problem of trusting a platform with sensitive information

* Maintains anonymity and carry out the action of exchange of currency
* The exchange rate is decided by the smart contract (which cannot be altered) thus making it authority free.
* Easier user interface

**1.5 Architecture Diagram**



A centralized agency like Binance is generally used to exchange ETH and DAI.

Binance is a market maker. They exchange ETH they for a certain amount of DAI. They quote the price, they are a market maker and the customer is the price payer.

They are a centralized agency and they provide the liquidity

But in this application, There is no central agency that provides liquidity, it is an example of an AMM. The liquidity is provided by a community of individuals, firms and agents. All of these agents are holding this ETH-DAI pair. They hold both Ether and they hold DAI. The ETH & DAI of one currency can be exchanged into another form of crypto-currency. These agents are liquidity providers because they take the Ether and DAI holdings and they put it in a smart contract which is the liquidity pool. So liquidity pool is nothing but a smart contract which holds diff balancing of tokens.

In this example the smart contract is holding balances of ETH and DAI. Those balances have been provided by the liquidity providers in exchange just to keep track of how much liquidity they've provided, these liquidity providers will get liquidity tokens. It is just like an accounting unit.

**1.6.Technologies Used :**

**1.6.1 Ethereum Network**

Ethereum is a decentralized blockchain platform that establishes a peer-to-peer network that securely executes and verifies application code, called smart contracts. Smart contracts allow participants to transact with each other without a trusted central authority.

Transaction records are immutable, verifiable, and securely distributed across the network, giving participants full ownership and visibility into transaction data.

Ethereum offers an extremely flexible platform on which to build decentralized applications using the native Solidity scripting language and Ethereum Virtual Machine.

The Ethereum platform was launched in 2015 by Buterin and Joe Lubin, founder of the blockchain software company ConsenSys.

The founders of Ethereum were among the first to consider the full potential of blockchain technology beyond just enabling the secure virtual payment method.

Since the launch of Ethereum, ether as a cryptocurrency has risen to become the second-largest cryptocurrency by market value. It is outranked only by Bitcoin.

Ethereum owners use wallets to store their ether. A wallet is a digital interface that lets you access your ether stored on the blockchain. Your wallet has an address, which is similar to an email address in that it is where users send ether, much like they would an email.

Ether is not actually stored in your wallet. Your wallet holds private keys you use as you would a password when you initiate a transaction. You receive a private key for each ether you own. This key is essential for accessing your ether. That's why you hear so much about securing keys using different storage methods

**1.6.2 Crypto Wallet**

A cryptocurrency wallet is a digital or physical wallet that stores your private keys and allows you to interact with different blockchain to access your funds.

Crypto wallets keep your private keys – the passwords that give you access to your cryptocurrencies – safe and accessible, allowing you to send and receive cryptocurrencies like Bitcoin and Ethereum.

keys prove your ownership of your digital money and allow you to make transactions. If you lose your private keys, you lose access to your money.

Crypto wallets range from simple-to-use apps to more complex security solutions. The main types of wallets you can choose from include:

Paper wallets: Keys are written on a physical medium like paper and stored in a safe place. This of course makes using your crypto harder, because as digital money it can only be used on the internet.

Hardware wallets: Keys are stored in a thumb-drive device that is kept in a safe place and only connected to a computer when you want to use your crypto. The idea is to try to balance security and convenience.

Online wallets: Keys are stored in an app or other software – look for one that is protected by two-step encryption. This makes sending, receiving, and using your crypto as easy as using any online bank account, payment system, or brokerage.

Each type has its tradeoffs. Paper and hardware wallets are harder for malicious users to access because they are stored offline, but they are limited in function and risk being lost or destroyed. Online wallets offered by a major exchange like Coinbase are the simplest way to get started in crypto and offer a balance of security and easy access. (Because your private info is online, your protection against hackers is only as good as your wallet provider's security – so make sure you look for features like two-factor verification.)

**1.6.3 ERC 20 Token**

An ERC20 token is a digital asset that is used to represent ownership or a stake in something. In most cases, ERC20 tokens are created on the Ethereum blockchain and represent a wide variety of assets, including but not limited to:

-Cryptocurrencies

-Fiat currencies

-Precious metals

-Commodities

-Real estate

-Digital assets

-Collectibles.

"Token" and "Cryptocurrency" are often used interchangeably; all cryptocurrencies are tokens, but not all tokens are cryptocurrencies. Tokens often represent assets and rights that are external to a blockchain. Token, in the context of ERC-20 compliance, simply means a blockchain representation of something that meets the standards set by the Ethereum community to be considered a smart contract standard-compliant token.x

ERC-20 allows different smart-contract enabled tokens a way to be exchanged. Tokens, in this regard, are a representation of an asset, right, ownership, access, cryptocurrency, or anything else that is not unique in and of itself but can be transferred. The standard allows tokens representing one of these factors—along with smart contracts—to be exchanged for a token that represents another. Smart contracts are conditions written into the coding that execute different aspects of a transaction between parties.

Smart contracts were becoming more popular in 2015, but several issues needed to be addressed. Because anyone could make a token, many were being created. However, there wasn't a way to ensure that all of the different tokens could be created, used, or exchanged. Without a standardized methodology for tokens, every application would need its own token, and users would need to find a way to convert them back and forth between the hundreds of apps being developed.

Plenty of well-known digital currencies use the ERC-20 standard. Some popular examples are:

Tether USD (USDT)

USD Coin (USDC)

Shiba Inu (SHIB)

Binance USD (BUSD)

BNB (BNB)

DAI Stablecoin (DAI)

HEX (HEX)

Bitfinex LEO (LEO)

MAKER (MKR)

**1.6.4 Netlify**

Netlify is a cloud platform for static websites and apps. It provides a simple, git-based workflow for deploying and managing modern web projects.

Netlify Is Less Expensive, and You Get a Faster Site. Netlify Build Enables Developers to Build With Any Integration. There are hundreds of static website hosts companies; but, our favorite is Netlify. Why do we prefer Netlify over its competitors might you ask? Netlify makes it super easy for developers to host websites, in a way that is scalable and secure.

The best thing about Netlify is that it selects the best CDN and distributes content. This results in pre-built websites that load faster than on traditional hosting networks. Instead of loading the site for each visit, the visitor gets a pre-loaded version straight from the closest server. This sharply reduces load times.

Take advantage of all their products such as:

Netlify Build - Build, deploy, and manage modern web projects using a Git workflow for web development

Netlify Dev - Imagine the productivity boost of being able to locally test your site generator, API integrations, serverless functions, and edge rules, all in a single development server. That’s Netlify Dev: a powerful way to build and test modern web apps on your local machine.

Netlify Edge - A new type of application delivery network custom-designed for blazing-fast sites and modern workflows. On top of that, you can also include powerful add-ons such as analytics, functions, identity, forms, and more. Netlify makes it easy to build and deploy a feature-rich site at the click of a button!

**CHAPTER -2**

**LITERATURE SURVEY**

1. The author show that DeFi has distinct properties in terms of efficiency, transparency, accessibility and composability . Therefore, DeFi can potentially contribute to a more robust and transparent financial infrastructure.

**(Schär, Fabian. 2021.**

**“Decentralized Finance: On Blockchain - and Smart**

**Contract-Based Financial Markets.”)**

- This article highlights opportunities and potential risks of the DeFi ecosystem. I propose a multi-layered framework to analyze the implicit architecture and the various DeFi building blocks,including token standards, decentralized exchanges,decentralized debt markets, blockchain derivatives, and on-chain asset management protocols.I conclude that DeFi still is a niche market with certain risks but that it also has interesting properties in terms of efficiency, transparency,accessibility, and composability.

- DeFi consists of numerous highly interoperable protocols and application every individual can verify all transactions and data is readily available for users and researchers to analyze.On the one hand, developers are using smart contracts and the decentralized settlement layer to create trustless versions of traditional financial instruments. On the other hand, they are creating entirely new financial instruments that could not be realized without the underlying public blockchainSmart contracts can have security issues that may allow for unintended usage, and scalability issues limit the number of users.However, if these issues can be solved, DeFi may lead to a paradigm shift in the financial industry and potentially contribute toward a more robust,open, and transparent financial infrastructure.

**2.** The authors state that while the DeFi architecture has the potential to reduce transaction costs,

similar to the traditional financial system, there are several layers where rents can accumulate due to endogenous constraints to competition. They show that the permissionless and pseudonymous design of DeFi generates challenges for enforcing tax compliance,anti-money laundering laws, and preventing financial malfeasance.

**(Makarov and Schoar,2021**

**"Cryptocurrencies and decentralized finance (DeFi)")**

- The paper explains how decentralized finance works and the mechanics behind it, such as the security protocols of different cryptocurrency blockchains and smart contracts (embedded computer code that automatically executes transactions when predetermined conditions are met). The authors lay out potential benefits and challenges of the new system, including the difficulty of providing effective consumer financial protections.

1. The author defined DeFi as the provision of financial services in a decentralized environment enabled by blockchain technology. The author further explained that DeFi puts the data of all financial transactions in the hands of users and it is solely up to users to decide how deeply they process data in a blockchain environmen

**(T Katona, 2021**

**"Decentralized finance: the possibilities of a blockchain “money lego”")**

- With the adoption of blockchain technology, initiatives to provide financial, investment and insurance services to a wide range of users in a decentralized manner have emerged. But can decentralized finance be the alternative to the traditional financial system, or has it only created another "technology playground" for users who are biasedly enthusiastic about crypto-assets? The study examines the key definitions of decentralized finance and then synthesizes them to formulate a new, more complete definition. This is followed by a presentation of the different layers of decentralized finance and their prevalence, as well as an analysis of its benefits and risks.

- In the conclusions, the author finds that decentralized finance has the potential to provide financial services with an open, transparent and robust infrastructure, and has the possibility of reaching a broad range of users with its basic financial services. However, this requires further development of the sector and effective management of emerging risks

1. DeFi does not eliminate financial intermediation;rather, DeFi enables financial intermediation to be performed in new ways

**(Grassi et al.,2022**

**"Do we still need financial intermediation? The case of decentralized**

**finance–DeFi.")**

- Decentralized ﬁnance (DeFi), enabled by blockchain, could bring about a new ﬁnancial system,where peers will interact directly, with little or no place for traditional intermediation. However, some crucial tasks cannot be left solely to an algorithm and, consequently, most DeFi applications still require human decisions. The aim of this research is to assess the role of intermediation in the light of DeFi, analysing how humans and algorithms will interact.

- DeFi does not eliminate ﬁnancial intermediation, but enables it to be performed in new ways,where decentralization means that no single entity can hold too much power or monopoly. DeFi has, however,inherited risks from the underlying technologies that unintentionally facilitate illegal behaviour and can hamper the authorities’supervision. The complex duality algorithm- vs human-based actions will not be solved indisputably in favour of the former, as DeFi solutions can range from requiring algorithms to play a dominant role, to enabling greater human interaction by actively involving more people.