

AMITY
UNIVERSITY
— PATNA —

TemporalHodl

“HODL with Precision, Save with Vision: TemporalHodl!”

(A Project Work Based on Summer Industrial Training Program)

Submitted By:

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Submitted To:

AMITY INSTITUTE OF INFORMATION TECHNOLOGY

Under Supervision of:

Amity University Patna

CERTIFICATE

This is to certify that the project entitled “_____” submitted to **Amity institute of information Technology, Amity University, Patna** in partial fulfillment of the requirement for the completion of a project based on Summer Industrial Training Program on “**Blockchain and Cyber Security**” in BCA III Semester, is a bonafide record of the work carried out by Ms. / Mr. _____, _____ having enrollment no _____, _____ under my supervision during the academic year 2023-2024.

Date:

.....

(Signature of the guide)

AIIT, Amity University Patna

DECLARATION

I hereby declare that the project report entitled “**TemporalHodl**” Submitted to **Amity institute of information Technology, Amity University, Patna** in partial fulfillment of the requirement for the project based on Summer Industrial Training Program on “**Blockchain and Cyber Security**” in BCA III Semester, is an authentic and original work carried out by me/us, under the supervision of my/our guide _____, Amity Institute of Information Technology, Amity University Patna.

Name	Enrollment No.	Role	Sign.
Angel	A45304822012		

ACKNOWLEDGEMENT

First of all, we would like to pay our humble respect to the almighty God for his grace and mercy by which we are able to complete this project.

We would like to thank **AMITY INSTITUTE OF TECHNOLOGY** for providing us the task to develop **ETH WALLET (TemporalHodl)** for my Summer Industrial Training Program Project. At the same time, we pay our special thanks to _____, under whose able guidance this work has been completed at their organization.

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Date:

Signature.....

Name: -

Enrollment No.

ABSTRACT

Cryptocurrencies have revolutionized the world of finance, introducing new opportunities for investment and wealth creation. As the popularity of digital assets, particularly Ethereum, continues to soar, the need for secure and innovative savings solutions has become more pressing. In response to this growing demand, **TemporalHodl** emerges as a cutting-edge Ethereum wallet that promises to reshape the landscape of cryptocurrency savings.

TemporalHodl introduces a novel Ethereum wallet that revolutionizes the concept of saving in the cryptocurrency realm. Inspired by the popular "HODL" strategy, **TemporalHodl** combines precision and vision to empower users in managing their digital assets wisely. The platform's innovative time-lock feature allows users to secure their Ethereum holdings and maximize their gains by refraining from impulsive selling during market fluctuations.

With **TemporalHodl**, users gain control over the timing of their savings, unlocking the potential for long-term growth while reducing exposure to short-term volatility. The platform's user-friendly interface and robust security measures ensure a seamless and secure experience, making it accessible to both experienced crypto enthusiasts and newcomers alike.

The concept of **TemporalHodl** and its mission to redefine Ethereum savings. By fostering a community of responsible and forward-thinking investors, **TemporalHodl** opens a gateway to a future where financial prudence meets the boundless potential of the blockchain ecosystem. As users "**HODL with precision and save with vision**", TemporalHodl paves the way for a new era of sustainable and rewarding cryptocurrency investments.

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1. INTRODUCTION

Blockchain technology has emerged as a groundbreaking innovation with far-reaching implications across various industries. At its core, blockchain is *a decentralized and immutable digital ledger* that enables secure and transparent record-keeping of transactions and data. Its potential to revolutionize traditional financial systems and processes has captured the attention of investors, businesses, and technology enthusiasts worldwide.

In the context of our project, **TemporalHodl**, blockchain plays a pivotal role in enabling the creation of a time-controlled Ethereum wallet with a focus on revolutionizing cryptocurrency savings. By harnessing the power of blockchain, *TemporalHodl* introduces an innovative approach to managing digital assets, where users can strategically lock their Ethereum holdings for specific time periods.

The decentralized nature of the blockchain ensures that TemporalHodl operates without a central authority, providing users with full control over their assets. Transactions conducted within the wallet are recorded on the blockchain, creating an immutable and tamper-proof record of each user's time-locked holdings.

The immutability of blockchain technology enhances the security and trustworthiness of TemporalHodl. Once users initiate a time-lock transaction, the data is cryptographically secured and cannot be altered or tampered with by any external party. This feature assures users that their assets will be safely held and remain inaccessible until the specified time period elapses.

Moreover, blockchain's transparency ensures that users can verify the status of their time-locked Ethereum holdings at any given time. Publicly available on the blockchain network, these records provide a transparent view of the platform's activities, reinforcing trust and accountability.

By leveraging the capabilities of blockchain technology, TemporalHodl empowers users to navigate the volatile cryptocurrency market with confidence and foresight. Through strategic time-locking, investors can shield themselves from impulsive decisions during market fluctuations and instead embrace a disciplined and long-term approach to their cryptocurrency holdings.

In the following sections, we will delve deeper into the innovative features and mechanics of TemporalHodl, exploring how blockchain serves as the underlying foundation for a secure, transparent, and forward-thinking Ethereum savings platform. As we embark on this journey to redefine cryptocurrency savings, blockchain technology acts as the bedrock upon which **TemporalHodl** paves the way for a new era of intelligent and sustainable investment strategies.

Why this particular topic chosen?

Cryptocurrencies have revolutionized the world of finance, introducing new opportunities for investment and wealth creation. As the popularity of digital assets, particularly Ethereum, continues to soar, the need for secure and innovative savings solutions has become more pressing. In response to this growing demand, **TemporalHodl** emerges as a cutting-edge Ethereum wallet that promises to reshape the landscape of cryptocurrency savings.

Inspired by the time-tested "**HODL**" strategy, which encourages long-term asset holding over impulsive trading, **TemporalHodl** takes this concept to a new level with its unique time-controlled feature. By fusing precision and vision, the platform empowers users to navigate the volatile crypto market with confidence and wisdom. Through the strategic time-lock mechanism, investors can safeguard their Ethereum holdings, mitigating the impact of short-term price fluctuations, and positioning themselves for optimal long-term gains.

We delve into the revolutionary features and philosophy behind TemporalHodl. The platform not only enables users to maximize their savings potential but also instills a sense of financial responsibility and forward-thinking among its community of users. By fostering an ecosystem of prudent and knowledgeable investors, **TemporalHodl** is poised to lead the way towards a future where the limitless potential of blockchain technology converges with intelligent and sustainable cryptocurrency investments.

With a focus on user-friendliness and security, **TemporalHodl** welcomes crypto enthusiasts of all levels, from seasoned traders to those venturing into the world of digital assets for the first time. Through an intuitive interface and robust security measures, the platform ensures a seamless and secure experience, instilling confidence in users to embrace the power of long-term asset accumulation.

TemporalHodl emerges as a beacon of innovation in the realm of Ethereum savings, providing a gateway to a new era of financial prudence and prosperity. As users embrace the platform's motto, "**HODL with precision and save with vision,**" TemporalHodl sets forth on a journey to redefine cryptocurrency savings and usher in a future where intelligent, time-controlled investments unlock the boundless potential of the blockchain ecosystem.

2. Objective of the Project

TemporalHodl's main objective is to revolutionize the concept of saving in the cryptocurrency realm through its innovative time-controlled Ethereum wallet. Inspired by the proven '**HODL**' strategy, TemporalHodl combines precision and vision to empower users in managing their digital assets wisely. The platform's unique time-lock feature allows users to secure their Ethereum holdings and maximize their gains by refraining from impulsive selling during market fluctuations.

The objectives of the TemporalHodl project can be outlined as follows:

- ✓ **Develop a Time-Lock Mechanism:** The primary objective of the project is to design and implement a secure and efficient time-lock mechanism within the Ethereum wallet. This mechanism will allow users to lock their Ethereum holdings for specific time periods, preventing impulsive selling during market fluctuations and encouraging a long-term investment approach.
- ✓ **Enhance User Experience:** The project aims to create a user-friendly interface that caters to both experienced cryptocurrency enthusiasts and newcomers. The platform should be intuitive, easy to navigate, and provide clear instructions on utilizing the time-lock feature effectively.
- ✓ **Ensure Robust Security:** Security is of utmost importance in the cryptocurrency space. The project strives to implement state-of-the-art security measures to protect user assets and personal information from potential threats and unauthorized access.
- ✓ **Optimize Savings Potential:** TemporalHodl aims to help users maximize their savings potential by strategically managing their Ethereum holdings through the time-lock feature. By encouraging a disciplined approach to holding assets, the project seeks to enable users to achieve long-term growth and financial stability.
- ✓ **Foster a Responsible Community:** The project endeavors to create a community of responsible and forward-thinking investors. By promoting the concept of "HODL with precision and save with vision," TemporalHodl seeks to instill a culture of prudent financial decision-making and discourage short-term speculative behavior.
- ✓ **Educate Users on Financial Planning:** TemporalHodl aims to provide educational resources and guidance on financial planning and investment strategies within the cryptocurrency space. By empowering users with knowledge, the project aims to improve overall financial literacy and promote informed decision-making.
- ✓ **Conduct Thorough Testing and Auditing:** To ensure the reliability and effectiveness of the time-lock mechanism and the platform as a whole, the project will conduct extensive testing and external auditing. This step aims to identify and resolve any potential vulnerabilities or issues before the official launch.
- ✓ **Scale for Future Growth:** The project should be scalable to accommodate potential growth in user demand and increased adoption. Preparing the platform for scalability ensures that it can handle a larger user base and transaction volume without compromising on performance and security.

Throughout this project, we have focused on ensuring accuracy, efficiency, and ease of use. We have implemented the necessary Blockchain algorithms and mechanism, optimized performance, and developed a user-friendly interface to provide a seamless experience for users.

3. SYSTEM REQUIREMENTS & HARDWARE DETAILS

➤ SOFTWARE REQUIREMENTS:

The major software requirements of the project are as follows:

Language: - Solidity

Editor: - Remix IDE

Operating System: - Windows/MAC/Linux

Compiler: - Solidity Compiler

(*program is also compatible with online compiler)

➤ HARDWARE REQUIREMENTS:

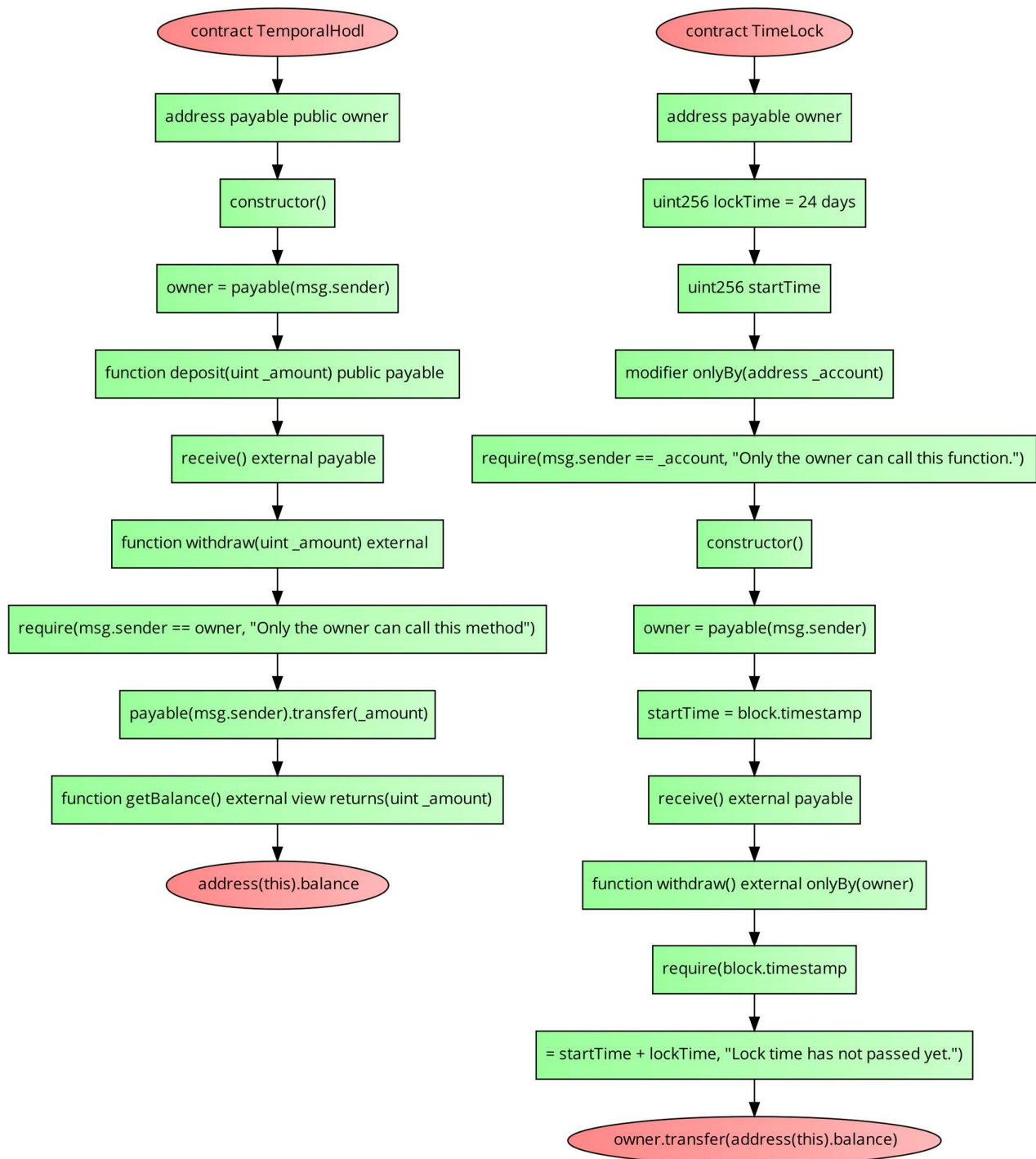
The hardware requirements that map towards the software are as follows:

RAM: - 4GB (minimum)

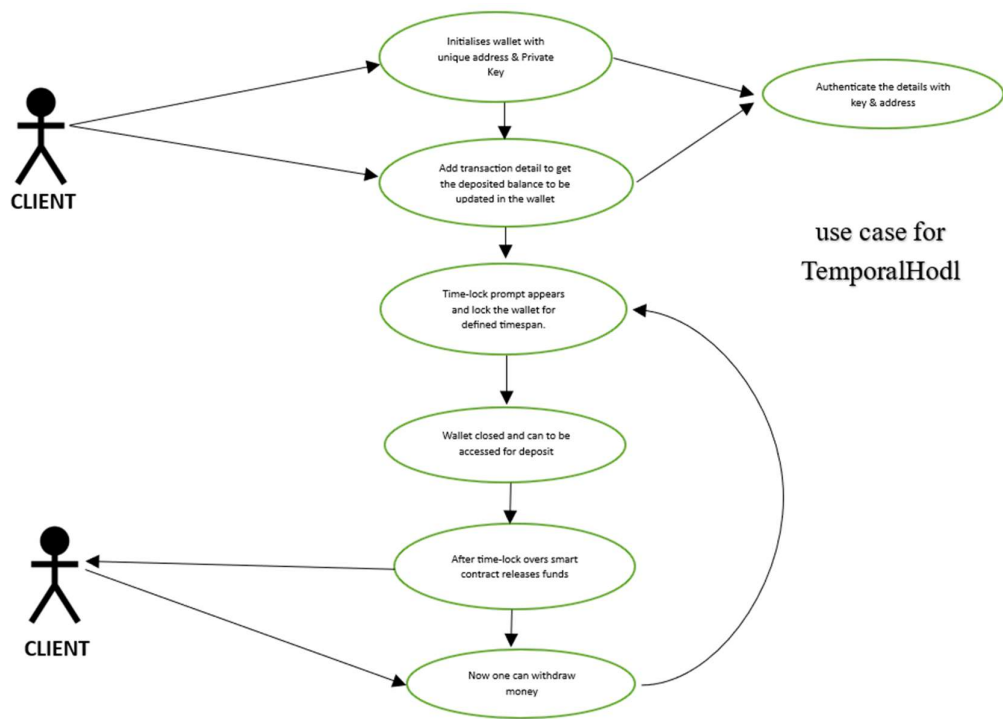
Processor: - i5(minimum)

4. Data – Flow, Use-Case, Algorithms, UML Diagram

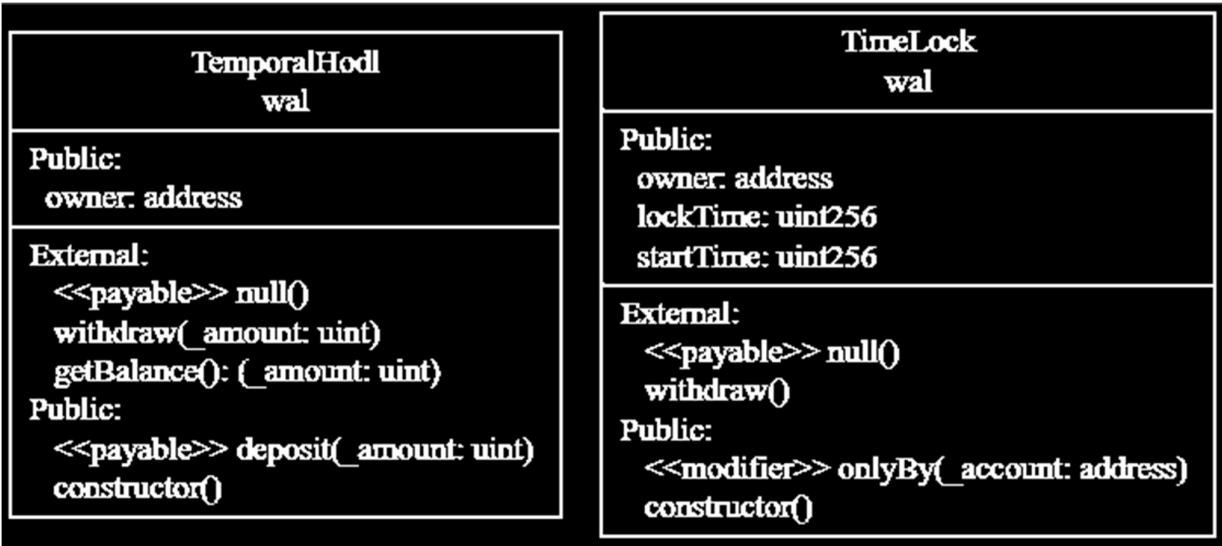
Data Flow



Use-Case Diagram for the project:



UML Diagram



Algorithm for TemporalHodl contract:

1. Start
2. Initialize owner with the address of the contract deployer
3. Function deposit(uint _amount):
 - 3.1. Receive ETH from the sender
 - 3.2. Update the contract balance with the received amount
4. Function withdraw(uint _amount):
 - 4.1. Check if the sender is the owner of the contract
 - 4.2. Transfer the specified amount of ETH to the owner
5. Function getBalance():
 - 5.1. Return the current balance of the contract
6. End

Algorithm for TimeLock contract:

1. Start
2. Initialize owner with the address of the contract deployer
3. Initialize lockTime with 24 days (or a specified period)
4. Initialize startTime with the current timestamp
5. Function withdraw():
 - 5.1. Check if the sender is the owner of the contract
 - 5.2. Check if the lock time has passed (current time \geq startTime + lockTime)
 - 5.3. Transfer all ETH in the contract to the owner
6. End

5. Implementation (source code)

```
// SPDX-License-Identifier: MIT
pragma solidity 0.8.18;
contract TemporalHodl {
    address payable public owner;
    constructor() {
        owner = payable(msg.sender);
    }
    function deposit(uint _amount) public payable {
    }
    receive() external payable{}
    function withdraw(uint _amount) external{
        require(msg.sender == owner, "Only the owner can call this method");
        payable(msg.sender).transfer(_amount);
    }
    function getBalance() external view returns(uint _amount){
        return address(this).balance;
    }
}

contract TimeLock {
    address payable owner;
    uint256 lockTime = 24 days;
    uint256 startTime;
    modifier onlyBy(address _account) {
        require(msg.sender == _account, "Only the owner can call this function.");
    }
    constructor() {
        owner = payable(msg.sender);
        startTime = block.timestamp;
    }
    receive() external payable {}
    function withdraw() external onlyBy(owner) {
        require(block.timestamp >= startTime + lockTime, "Lock time has not passed yet.");
        owner.transfer(address(this).balance);
    }
}
```

6. TESTING

Deployed Contracts

TEMPORALHODL AT 0X358...D5E

Balance: 0 ETH

deposit

uint256 _amount

withdraw

uint256 _amount

getBalance

owner

Low level interactions

CALLDATA

Transact

0

☐ listen on all transactions

creation of TemporalHodl pending...

✓ [vm] from: 0x5B3...eddC4 to: TemporalHodl.(constructor) value: 0 wei data: 0x608...20033 logs: 0 hash: 0x3c3...ddd9d

status true Transaction mined and execution succeed

transaction hash 0x3c3dc0c8396c909d643c0e2d45a05a900b2cbc0c95bb5ab71e7498fa148ddd9d

block hash 0x300ec42cfba17c84799203d445feabef421d845ca77d259cad0101de4789df29

block number 7

contract address 0x358AA13c52544ECCEF680ADD0f801012ADAD5eE3

from 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4

to TemporalHodl.(constructor)

gas 323309 gas

transaction cost 281204 gas

Transactions recorded 4

Deployed Contracts

TEMPORALHODL AT 0XD91...391

Balance: 49.9999999999999999958 ETH

deposit

50

withdraw

42

getBalance

owner

Low level interactions

CALLDATA

Transact

creation of TemporalHodl pending...

✓ [vm] from: 0x5B3...eddC4 to: TemporalHodl.(constructor) value: 0 wei data: 0x608...20033 logs: 0 hash: 0xd3a...2ddb5

transact to TemporalHodl.deposit pending ...

✓ [vm] from: 0x5B3...eddC4 to: TemporalHodl.deposit(uint256) 0xd91...39138 value: 0 wei data: 0xb6b...00032 logs: 0 hash: 0xec2...0c6d6

transact to TemporalHodl.deposit pending ...

✓ [vm] from: 0x5B3...eddC4 to: TemporalHodl.deposit(uint256) 0xd91...39138 value: 5000000000000000000 wei data: 0xb6b...00032 logs: 0 hash: 0xe69...41a6f

call to TemporalHodl.getBalance

CALL [call] from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4 to: TemporalHodl.getBalance() data: 0x120...65fe0

transact to TemporalHodl.withdraw pending ...

✓ [vm] from: 0x5B3...eddC4 to: TemporalHodl.withdraw(uint256) 0xd91...39138 value: 0 wei data: 0x2e1...0002a logs: 0 hash: 0xb84...db11c

call to TemporalHodl.owner

CALL [call] from: 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4 to: TemporalHodl.owner() data: 0x8da...5cb5b

Debug

Debug

Debug

Debug

Debug

Debug

7. Conclusion

TemporalHodl marks a significant milestone in the world of cryptocurrency savings, presenting an innovative and forward-thinking Ethereum wallet that harnesses the power of time-controlled investments. Through its revolutionary time-lock feature, TemporalHodl empowers users to navigate the dynamic crypto market with precision and vision, promoting a long-term and disciplined approach to asset management.

By leveraging blockchain technology, **TemporalHodl** ensures a secure, transparent, and tamper-proof environment, where users have full control over their Ethereum holdings. The platform's user-friendly interface welcomes both seasoned crypto enthusiasts and newcomers, fostering a community of responsible investors united by a shared commitment to intelligent financial planning.

As users embrace the platform's motto, "**HODL with precision and save with vision**," **TemporalHodl** paves the way for a future where prudence meets potential, and sustainable cryptocurrency investments lead to enduring prosperity. By redefining the landscape of cryptocurrency savings, **TemporalHodl** heralds a new era of responsible and rewarding investment strategies.

Throughout the project, we have endeavoured to deliver a robust and scalable platform, catering to the diverse needs of our users. The careful implementation and thorough testing ensure that **TemporalHodl** operates seamlessly, instilling trust and confidence in our community of users.

Looking ahead, **TemporalHodl** remains committed to continuous improvement, incorporating valuable feedback from our users and staying at the forefront of blockchain innovations. Our vision is to build a global ecosystem of responsible and informed investors who harness the potential of blockchain technology for a prosperous financial future.

As we conclude this chapter, we extend our gratitude to our team, partners, and the vibrant community that has contributed to **TemporalHodl's** success. With our sights set on a future shaped by sustainable investments and cutting-edge blockchain solutions, we remain steadfast in our mission to reshape the world of cryptocurrency savings, one time-locked investment at a time.