SMART CONTRACT AUDITS AND BLOCKCHAIN SECURITY

SAFUAUDIT

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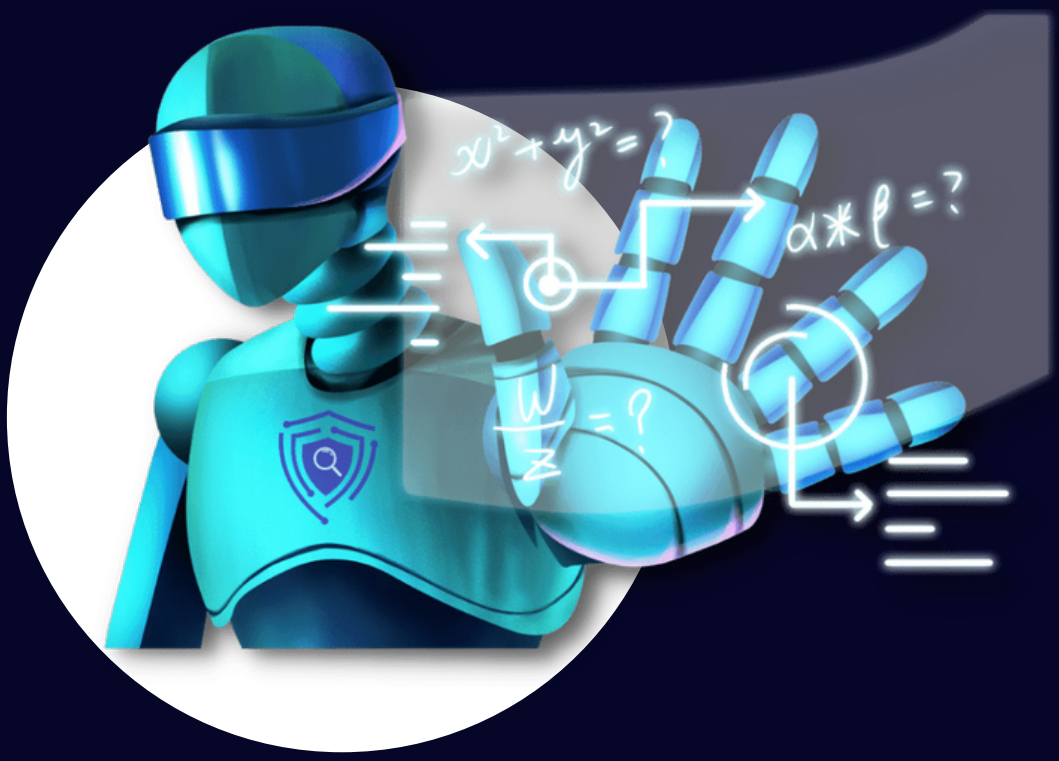

PROJECT: ZHU

DATE: August 22, 2022

www.safuaudit.com

INTRODUCTION

Client	Zhu (ZHU)
Language	Solidity
Contract address	0xB1f242C45425299C072e0540ebf673a83ECf47Ef
Owner	0xfD3e8353D9D083CF18A50A604AEF7A01A50A1d29
Deployer	0x35aE7bF8c1983ce1e9823b7D87E4C2105322Bc17
SHA1-Hash	60abaaaeaafb879bf10adc2fd55586e050a1486b
Decimals	9
Supply	500,000,000,000
Platform	Binance Smart Chain & Ethereum
Compiler	v0.8.15+commit.e14f2714
Optimization	Yes with 200 runs
Website	https://zhu.gold/
Telegram	https://t.me/ZhuToken
Twitter	https://twitter.com/ZhuToken

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APPROACH

Audit Details

Our comprehensive audit report provides a full overview of the audited system's architecture, smart contract codebase, and details on any vulnerabilities found within the system.

Audit Goals

The audit goal is to ensure that the project is built to protect investors and users, preventing potentially catastrophic vulnerabilities after launch, that lead to scams and rugpulls.

Code Quality

Our analysis includes both automatic tests and manual code analysis for the following aspects:

- Exploits
- Back-doors
- Vulnerability
- Accuracy
- Readability

Tools

- Remix IDE
- Mythril
- Open Zeppelin Code Analyzer
- Solidity Code Complier
- Hardhat

RISK CLASSIFICATION

CRITICAL

Issues on this level are critical to the smart contract's performance/functionality and should be fixed before moving to a live environment.

MEDIUM

Issues on this level could potentially bring problems and should eventually be fixed.

MINOR

Issues on this level are minor details and warning that can remain unfixed but would be better fixed at some point in the future

INFORMATIONAL

Information level is to offer suggestions for improvement of efficacity or security for features with a risk free factor.

OVERVIEW

Fees

- Buy Fees: 6%
- Sell Fees: 6%

Fees privileges

- Can't set fees

Ownership

- Owned

Minting

- No mint function

Max Tx Amount

- Can't set max Tx amount

Pause function

- Can't pause trading

Blacklist

- Can't blacklist

Other privileges

- Can exclude from fees
- Can exclude from rewards
- Can burn

CONTRACT INSPECTION 🔎

Imported contracts or frameworks used:

Context	Implementation			
IERC20	Interface			
Address	Library			
Ownable	Implementation	Context		
IUniswapV2Factory	Interface			
IUniswapV2Pair	Interface			
IUniswapV2Router01	Interface			
IUniswapV2Router02	Interface	IUniswapV2Router01		
Zhu	Implementation	Context, IERC20, Ownable		

Tested Contract File:

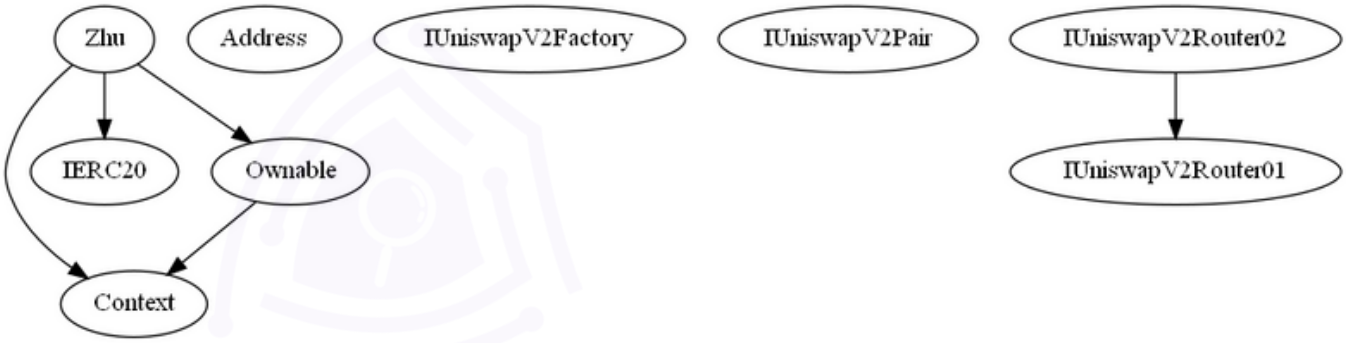
File Name	SHA-1 Hash
Zhu.sol	60abaaaeaafb879bf10adc2fd55586e050a1486b

Zhu	Implementation	Context, IERC20, Ownable		
└	<Constructor>	Public ❗	🔴	NO ❗
└	name	Public ❗		NO ❗
└	symbol	Public ❗		NO ❗
└	decimals	Public ❗		NO ❗
└	totalSupply	Public ❗		NO ❗
└	balanceOf	Public ❗		NO ❗
└	transfer	Public ❗	🔴	NO ❗
└	allowance	Public ❗		NO ❗
└	approve	Public ❗	🔴	NO ❗
└	transferFrom	Public ❗	🔴	NO ❗
└	increaseAllowance	Public ❗	🔴	NO ❗
└	decreaseAllowance	Public ❗	🔴	NO ❗
└	isExcludedFromReward	Public ❗		NO ❗
└	minimumTokensBeforeSwapAmount	Public ❗		NO ❗
└	reflectionFromToken	External ❗		NO ❗
└	tokenFromReflection	Public ❗		NO ❗
└	excludeFromReward	External ❗	🔴	isAuth
└	includeInReward	External ❗	🔴	isAuth
└	_approve	Private 🔐	🔴	
└	enableTrading	External ❗	🔴	isAuth
└	renounceSafuDev	External ❗	🔴	NO ❗
└	_transfer	Private 🔐	🔴	
└	swapAndLiquify	Public ❗	🔴	lockTheSwap
└	swapTokensForEth	Private 🔐	🔴	
└	addLiquidity	Private 🔐	🔴	
└	_tokenTransfer	Private 🔐	🔴	
└	setSaleFee	Private 🔐	🔴	
└	countUpFeeShare	Private 🔐	🔴	
└	_transferStandard	Private 🔐	🔴	
└	_transferToExcluded	Private 🔐	🔴	
└	_transferFromExcluded	Private 🔐	🔴	

└	_transferBothExcluded	Private 🔐	🔴	
└	_reflectFee	Private 🔐	🔴	
└	_getValues	Private 🔐		
└	_getTValues	Private 🔐		
└	_getRValues	Private 🔐		
└	_getRate	Private 🔐		
└	_getCurrentSupply	Private 🔐		
└	_takeLiquidity	Private 🔐	🔴	
└	calculateRefFee	Private 🔐		
└	calculateLiquidityFee	Private 🔐		
└	removeAllFee	Private 🔐	🔴	
└	restoreAllFee	Private 🔐	🔴	
└	isExcludedFromFee	External ❗		NO ❗
└	setExcludeFromFee	External ❗	🔴	isAuth
└	includeInFee	External ❗	🔴	isAuth
└	setNumTokensSellToAddToLiquidity	External ❗	🔴	isAuth
└	setwalletMarketingAddress	External ❗	🔴	onlyOwner
└	setwalletVentureAddress	External ❗	🔴	onlyOwner
└	setwalletTeamAddress	External ❗	🔴	onlyOwner
└	setwalletReserveAddress	External ❗	🔴	onlyOwner
└	setSwapAndLiquifyEnabled	External ❗	🔴	isAuth
└	transferToAddressETH	Private 🔐	🔴	
└	<Receive Ether>	External ❗	💵	NO ❗
└	swapETHForTokens	Private 🔐	🔴	
└	manualBurn	External ❗	🔴	isAuth

Symbol	Meaning
🛑	Function can modify state
💵	Function is payable
🔐	Private function
🔒	Internal function
NO❗	Function has no modifier

INHERITANCE TREE



Inheritance is a feature of the object-oriented programming language. It is a way of extending the functionality of a program, used to separate the code, reduces the dependency, and increases the re-usability of the existing code. Solidity supports inheritance between smart contracts, where multiple contracts can be inherited into a single contract.

MANUAL FUNCTIONS ANALYSIS

The contract is verified to check if functions do and work as they should and malicious code is not inserted.

	Tested	Result
Transfer	Yes	Passed
Total Supply	Yes	Passed
Buy Back	Yes	N/A
Burn	Yes	Passed
Mint	Yes	N/A
Rebase	Yes	N/A
Pause	Yes	N/A
Blacklist	Yes	N/A
Lock	Yes	Passed
Max Transaction	Yes	N/A
Transfer Ownership	Yes	Passed
Renounce Ownership	Yes	Passed

VULNERABILITIES TEST

ID	Description	
V-01	Function Default Visibility	Passed
V-02	Integer Overflow and Underflow	Passed
V-03	Outdated Compiler Version	Passed
V-04	Floating Pragma	Minor
V-05	Unchecked Call Return Value	Passed
V-06	Unprotected Ether Withdrawal	Passed
V-07	Unprotected SELF-DESTRUCT Instruction	Passed
V-08	Re-entrancy	Passed
V-09	State Variable Default Visibility	Minor
V-10	Uninitialized Storage Pointer	Passed
V-11	Assert Violation	Passed
V-12	Use of Deprecated Solidity Functions	Passed
V-13	Delegate Call to Untrusted Callee	Passed
V-14	DoS with Failed Call	Passed
V-15	Transaction Order Dependence	Passed
V-16	Authorization through tx.origin	Passed
V-17	Block values as a proxy for time	Passed

V-18	Signature Malleability	**Passed**
V-19	Incorrect Constructor Name	**Passed**
V-20	Shadowing State Variables	**Passed**
V-21	Weak Sources of Randomness from Chain Attributes	**Passed**
V-22	Missing Protection against Signature Replay Attacks	**Passed**
V-23	Lack of Proper Signature Verification	**Passed**
V-24	Requirement Violation	**Passed**
V-25	Write to Arbitrary Storage Location	**Passed**
V-26	Incorrect Inheritance Order	**Passed**
V-27	Insufficient Gas Griefing	**Passed**
V-28	Arbitrary Jump with Function Type Variable	**Passed**
V-29	DoS With Block Gas Limit	**Passed**
V-30	Typographical Error	**Passed**
V-31	Right-To-Left-Override control character (U+202E)	**Passed**
V-32	Presence of unused variables	**Passed**
V-33	Unexpected Ether balance	**Passed**
V-34	Hash Collisions With Multiple Variable Length Arguments	**Passed**
V-35	Message call with the hardcoded gas amount	**Passed**
V-36	Code With No Effects (Irrelevant/Dead Code)	**Passed**
V-37	Unencrypted Private Data On-Chain	**Passed**

FINDINGS

ID	Category	Issue	Severity
CE-OF	Centralization	Owner Accessible Functions	Minor
V-01	Vulnerabilities	Floating Pragma	Minor
V-02	Vulnerabilities	State Variable Default Visibility	Minor

CE-OF: Owner Accessible Functions

Description

The owner has permission through onlyOwner modifier to the following:

1. renounceOwnership()
2. transferOwnership()
3. lock()
4. setwalletMarketingAddress()
5. setwalletVentureAddress()
6. setwalletTeamAddress()
7. setwalletReserveAddress()

The role OnlyOwner has authority over the above functions that can manipulate the project functionality without restrictions. Any compromise to the owner account may allow a hacker to take advantage of this authority.

Recommendation

- We advise the client to carefully manage the privilege accounts' private key to avoid any potential risks of being hacked.
- Renounce Ownership at some point in time.

V-01: Floating Pragma

Line #6

```
pragma solidity ^0.8.15;
```

Description

Contracts should be deployed with the same compiler version and flags that they have been tested with thoroughly. Locking the pragma helps to ensure that contracts do not accidentally get deployed using, for example, an outdated compiler version that might introduce bugs that affect the contract system negatively.

Recommendation

- Lock the pragma version and also consider known bugs (https://github.com/ethereum/solidity/releases) for the compiler version that is chosen.

V-02: State Variable Default Visibility

Line #420, #421, #422, #423, #424, #425, #442

```
uint256 _saleRefFee = 1;
uint256 _saleLiquidityFee = 1;
uint256 _saleReserveFee = 1;
uint256 _saleTeamFee = 1;
uint256 _saleMarketingFee = 1;
uint256  saleDcaFee = 1;
bool inSwapAndLiquify;
```

Description

Labeling the visibility explicitly makes it easier to catch incorrect assumptions about who can access the variable.

Recommendation

Variables can be specified as being public, internal or private. Explicitly define visibility for all state variables.

WEBSITE

Website	https://zhu.gold/
Domain Registry	https://www.namecheap.com/
Domain Expiry Date	2023-08-17
Response Code	500
SSL Checker and HTTPS Test	Passed
Deprecated HTML tags	Passed
Robots.txt	Informative
Sitemap Test	Informative
SEO Friendly URL	Passed
Responsive Test	Passed
JS Error Test	Passed
Console Errors Test	Informative
Site Loading Speed Test	4.68 seconds
HTTP2 Test	Passed
Safe Browsing Test	Passed

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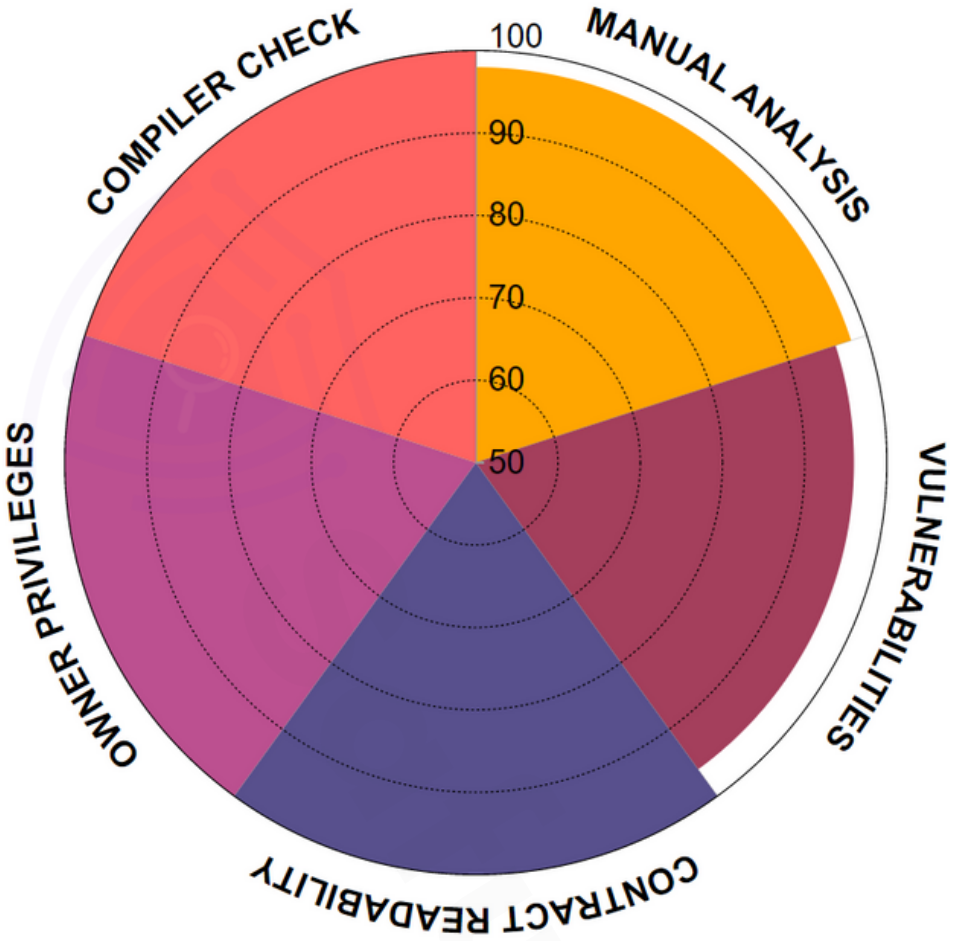
The purpose of the audit is to analyze the on-chain smart contract source code and to provide a basic overview of the project.

While we have used all the information available to us for this straightforward investigation, you should not rely on this report only — we recommend proceeding with several independent audits Be aware that smart contracts deployed on a blockchain aren't secured enough against external vulnerability or a hack. Be aware that active smart contract owner privileges constitute an elevated impact on the smart contract safety and security. Therefore, SafuAudit does not guarantee the explicit security of the audited smart contract. The analysis of the security is purely based on the smart contracts alone. No applications or operations were reviewed for security. No product code has been reviewed.

RATING



Manual Analysis

Vulnerabilities

Contract Readability

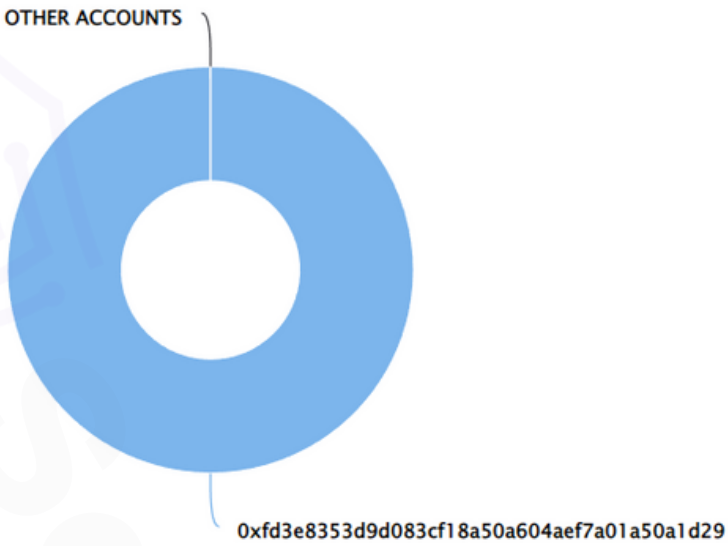
Owner Privileges

Compiler Check

Final Score: **98.8**

SUMMARY

Top 10 holders



Rank	Address	Quantity (Token)	Percentage
1	0xfd3e8353d9d083cf18a50a604aef7a01a50a1d29	500,000,000,000	100.0000%

CONCLUSION

Project Zhu (ZHU) does not contain any severe issues or risk characteristics.

SafuAudit has tested the security based on manual and automated tests.

Please note that we don't offer any warranties for business model.

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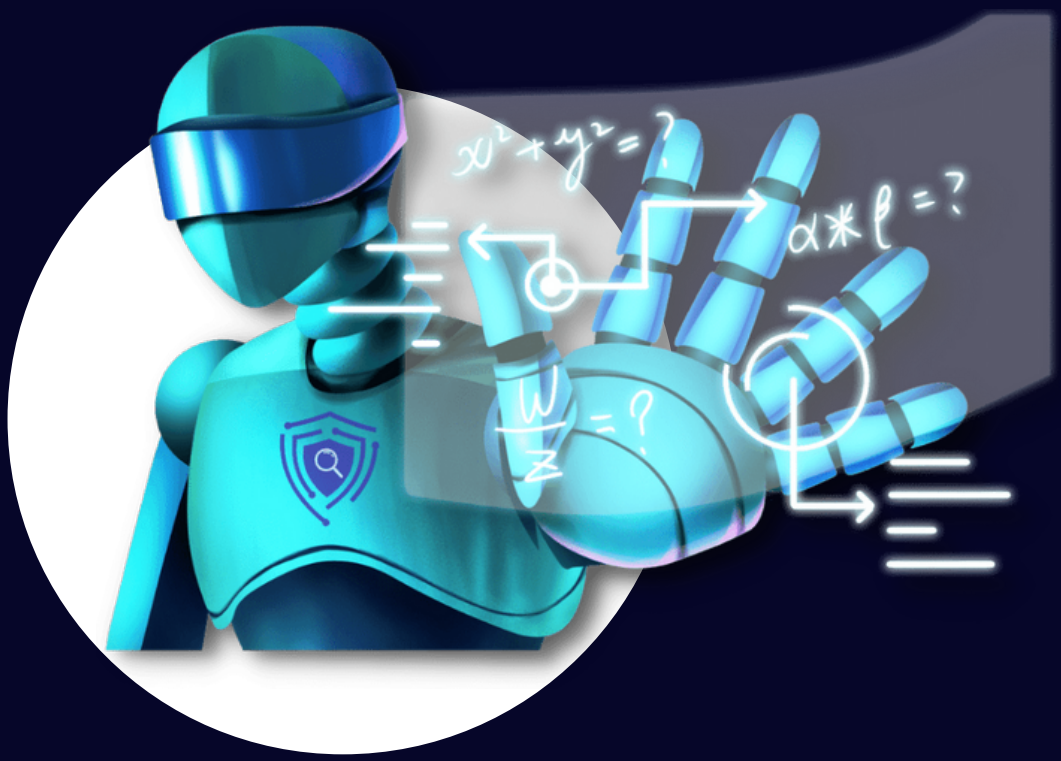

"Only in growth, reform, and change, paradoxically enough, is true security to be found."

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