



CONTRACT WOLF

Blockchain Security - Smart Contract Audits

Security Assessment

March 21, 2022





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ContractWolf provides transparent report to all its "clients" and to its "clients participants" and will not claim any guarantee of bug-free code within it's **SMART CONTRACT**.

ContractWolf presence is to analyze, audit and assess the client's smart contract's code.

Each company or projects should be liable to its security flaws and functionalities.

Network

Binance Smart Chain (BEP20)

Website

<https://www.zzdao.me/>

Telegram

https://t.me/zz_dao

GitBook

https://zzdao.gitbook.io/untitled/@luxiaoxun_bot

Description

TBA

ContractWolf Engagement

21st of March 2022, ZuoZhuang engaged and agrees to audit their smart contract's code by **ContractWolf**. The goal of this engagement was to identify if there is a possibility of security flaws in the implementation of the contract or system.

ContractWolf will be focusing on contract issues and functionalities along with the projects claims from smart contract to their website, whitepaper and repository which has been provided by ZuoZhuang.

Logo



Contract link:

<https://bscscan.com/address/0xa7EB04A6d61189192237C815702Db082AE0fb973#code>

Risk Level Classification

Risk Level represents the classification or the probability that a certain function or threat that can exploit vulnerability and have an impact within the system or contract.

Risk Level is computed based on CVSS Version 3.0

| Level | Value | Vulnerability |
|---------------|-----------|---|
| Critical | 9 - 10 | An Exposure that can affect the contract functions in several events that can risk and disrupt the contract |
| High | 7 - 8.9 | An Exposure that can affect the outcome when using the contract that can serve as an opening in manipulating the contract in an unwanted manner |
| Medium | 4 - 6.9 | An opening that could affect the outcome in executing the contract in a specific situation |
| Low | 0.1 - 3.9 | An opening but doesn't have an impact on the functionality of the contract |
| Informational | 0 | An opening that consists of information's but will not risk or affect the contract |

Auditing Approach

Every line of code along with its functionalities will undergo manual review to check its security issues, quality, and contract scope of inheritance. The manual review will be done by our team that will document any issues that there were discovered.

Methodology

The auditing process follows a routine series of steps:

1. Code review that includes the following:

- Review of the specifications, sources, and instructions provided to ContractWolf to make sure we understand the size, scope, and functionality of the smart contract.
- Manual review of code, our team will have a process of reading the code line-by-line with the intention of identifying potential vulnerabilities and security flaws.

2. Testing and automated analysis that includes:

- Testing the smart contract functions with common test cases and scenarios, to ensure that it returns the expected results.

3. Best practices review, the team will review the contract with the aim to improve efficiency, effectiveness, clarifications, maintainability, security, and control within the smart contract.

4. Recommendations to help the project take steps to secure the smart contract.

Used Code from other Frameworks/Smart Contracts (Direct Imports)

Imported Packages

- SafeMath
- IBEP20
- Ownable
- IDEXRouter
- IDEXFactory
- GinPledge
- ZzNFT

Description

Optimization enabled: No

Version: v0.8.6

Decimal: 5

Symbol: \$Zz

Capabilities

Components

| Version | Contracts | Libraries | Interfaces | Abstract |
|---------|-----------|-----------|------------|----------|
| 1.0 | 1 | 1 | 5 | 1 |

Exposed Functions

| Version | Public | Private |
|---------|--------|---------|
| 1.0 | 11 | 2 |

| Version | External | Internal |
|---------|----------|----------|
| 1.0 | 47 | 22 |

State Variables

| Version | Total | Public |
|---------|-------|--------|
| 1.0 | 45 | 20 |

Capabilities

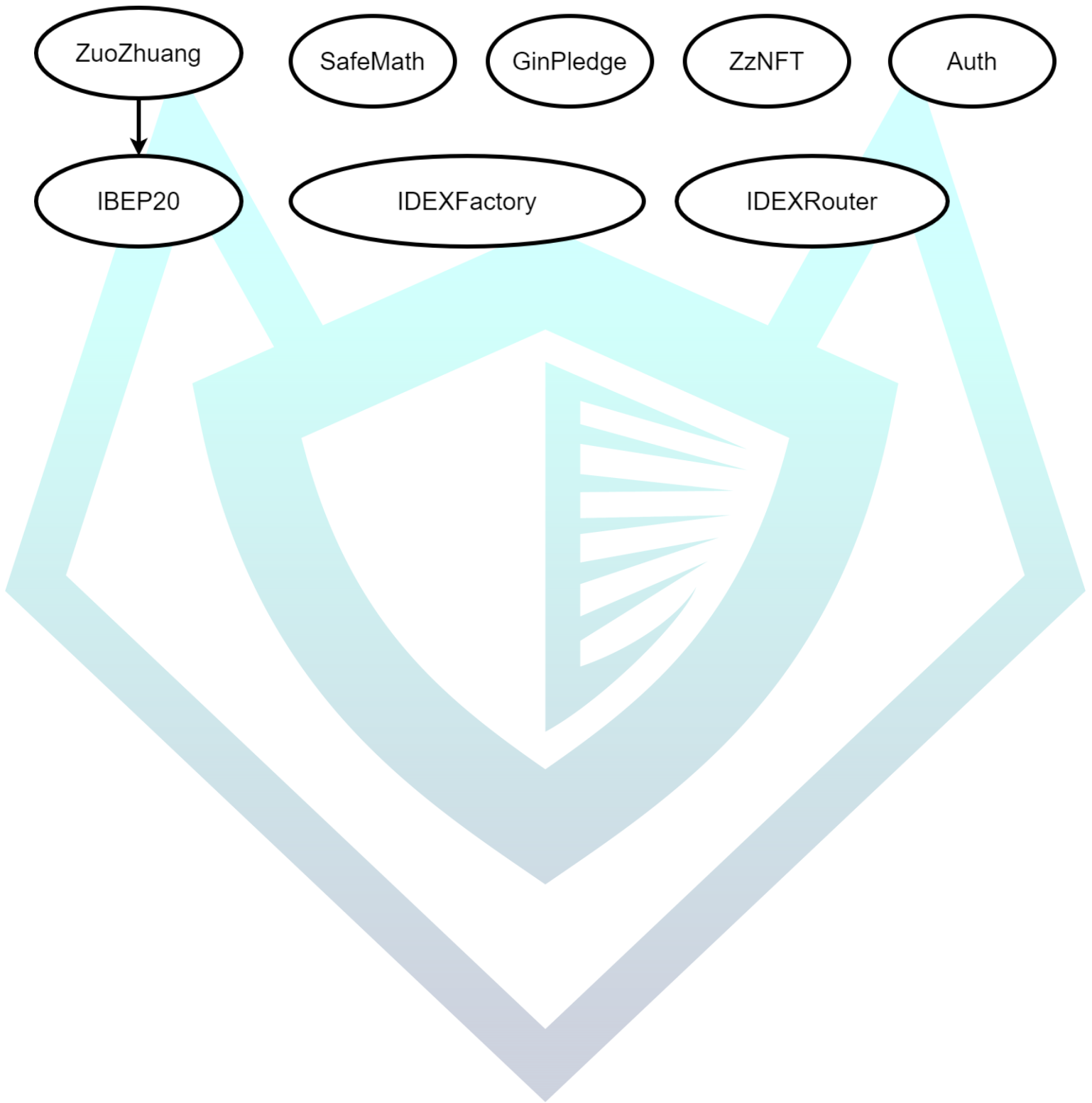
| Version | Solidity Versions Observed | Experimental Features | Can Receive Funds | Uses Assembly | Has Destroyable Contracts |
|---------|----------------------------|-----------------------|-------------------|---------------|---------------------------|
| 1.0 | ^0.8.6 | | Yes | No | No |

Scope of Work

ZuoZhuang's team provided us with the files that needs to be tested (Github, Bscscan, Etherscan, files, etc.). The scope of the audit is the main contract.



Inheritance Graph



Verify Claims

Correct implementation of Token Standard

| Tested | Verified |
|--------|----------|
| ✓ | ✗ |

| Function | Description | Exist | Tested | Verified |
|--------------|--|-------|--------|----------|
| TotalSupply | Information about the total coin or token supply | ✓ | ✓ | ✓ |
| BalanceOf | Details on the account balance from a specified address | ✓ | ✓ | ✓ |
| Transfer | An action that transfers a specified amount of coin or token to a specified address | ✓ | ✓ | ✓ |
| TransferFrom | An action that transfers a specified amount of coin or token from a specified address | ✓ | ✓ | ✓ |
| Approve | Provides permission to withdraw specified number of coin or token from a specified address | ✓ | ✓ | ✓ |

Optional implementation

| Function | Description | Exist | Tested | Verified |
|-------------------|---|-------|--------|----------|
| renounceOwnership | Owner renounce ownership for more trust | — | — | — |

Deployer cannot mint after initial deployment

| Statement | Exist | Tested | Verified | File |
|----------------------|-------|--------|----------|------|
| Deployer cannot mint | — | — | — | Main |

Max / Total supply: 9,999,799,999,757.552704

Deployer cannot block user

| Statement | Exist | Tested | Verified |
|----------------------------|-------|--------|----------|
| Deployer cannot block user | ✓ | ✓ | ✓ |

Deployer cannot burn

| Statement | Exist | Tested | Verified |
|----------------------|-------|--------|----------|
| Deployer cannot burn | ✓ | ✓ | ✓ |

Deployer cannot pause contract

| Statement | Exist | Tested | Verified |
|-----------------------|-------|--------|----------|
| Deployer cannot pause | ✓ | ✓ | ✓ |

Overall Checkup (Smart Contract Security)

| Tested | Verified |
|--------|----------|
| ✓ | ✓ |

Legend

| Attribute | Symbol |
|--------------------------|--------|
| Verified / Checked | ✓ |
| Partly Verified | X |
| Unverified / Not checked | 🚩 |
| Not Available | — |

Write Functions of Contract

1. addToInvitExemptList

2. approve

3. approveMax

4. authorize

5. launch

6. multiDiamondHand

7. multiRemoveFromDiamondHand

8. removeFromInvitExemptList

9. resetProtection

10. setFees

11. setGinPledgeAddress

12. setIsFeeExempt

13. setIsTxLimitExempt

14. setMaxHavAmount

15. setMinAirDropAmount

16. setNftAddress

17. setNftSwitch

18. setPair

19. setProtection

20. setSwapBackSettings

21. setTxLimit

22. setWaitTimestamp

23. swap

24. transfer

25. transferFrom

26. transferOwnership

27. unauthorize

SWC Attacks

| ID | Title | Relationships | Status |
|--------------------------------|---|---|--------|
| <u>SWC-136</u> | Unencrypted Private Data On-Chain | <u>CWE-767: Access to Critical Private Variable via Public Method</u> | PASSED |
| <u>SWC-135</u> | Code With No Effects | <u>CWE-1164: Irrelevant Code</u> | PASSED |
| <u>SWC-134</u> | Message call with hardcoded gas amount | <u>CWE-655: Improper Initialization</u> | PASSED |
| <u>SWC-133</u> | Hash Collisions with Multiple Variable Length Arguments | <u>CWE-294: Authentication Bypass by Capture-replay</u> | PASSED |
| <u>SWC-132</u> | Unexpected Ether balance | <u>CWE-667: Improper Locking</u> | PASSED |
| <u>SWC-131</u> | Presence of unused variables | <u>CWE-1164: Irrelevant Code</u> | PASSED |
| <u>SWC-130</u> | Right-To Left Override control character (U+202E) | <u>CWE-451: User Interface (UI) Misrepresentation of Critical Information</u> | PASSED |
| <u>SWC-129</u> | Typographical Error | <u>CWE-480: Use of Incorrect Operator</u> | PASSED |
| <u>SWC-128</u> | DoS With Block Gas Limit | <u>CWE-400: Uncontrolled Resource Consumption</u> | PASSED |

| | | | |
|--------------------------------|---|--|---------------|
| <u>SWC-127</u> | Arbitrary Jump with Function Type Variable | <u>CWE-695: Use of Low-Level Functionality</u> | PASSED |
| <u>SWC-126</u> | Insufficient Gas Griefing | <u>CWE-691: Insufficient Control Flow Management</u> | PASSED |
| <u>SWC-125</u> | Incorrect Inheritance Order | <u>CWE-696: Incorrect Behavior Order</u> | PASSED |
| <u>SWC-124</u> | Write to Arbitrary Storage Location | <u>CWE-123: Write-what-where Condition</u> | PASSED |
| <u>SWC-123</u> | Requirement Violation | <u>CWE-573: Improper Following of Specification by Caller</u> | PASSED |
| <u>SWC-122</u> | Lack of Proper Signature Verification | <u>CWE-345: Insufficient Verification of Data Authenticity</u> | PASSED |
| <u>SWC-121</u> | Missing Protection against Signature Replay Attacks | <u>CWE-347: Improper Verification of Cryptographic Signature</u> | PASSED |
| <u>SWC-120</u> | Weak Sources of Randomness from Chain Attributes | <u>CWE-330: Use of Insufficiently Random Values</u> | PASSED |
| <u>SWC-119</u> | Shadowing State Variables | <u>CWE-710: Improper Adherence to Coding Standards</u> | PASSED |
| <u>SWC-118</u> | Incorrect Constructor Name | <u>CWE-665: Improper Initialization</u> | PASSED |

| | | | |
|--------------------------------|--------------------------------------|---|---------------|
| <u>SWC-117</u> | Signature Malleability | <u>CWE-347: Improper Verification of Cryptographic Signature</u> | PASSED |
| <u>SWC-116</u> | Timestamp Dependence | <u>CWE-829: Inclusion of Functionality from Untrusted Control Sphere</u> | PASSED |
| <u>SWC-115</u> | Authorization through tx.origin | <u>CWE-477: Use of Obsolete Function</u> | PASSED |
| <u>SWC-114</u> | Transaction Order Dependence | <u>CWE-362: Concurrent Execution using Shared Resource with Improper Synchronization ('Race Condition')</u> | PASSED |
| <u>SWC-113</u> | DoS with Failed Call | <u>CWE-703: Improper Check or Handling of Exceptional Conditions</u> | PASSED |
| <u>SWC-112</u> | Delegate call to Untrusted Callee | <u>CWE-829: Inclusion of Functionality from Untrusted Control Sphere</u> | PASSED |
| <u>SWC-111</u> | Use of Deprecated Solidity Functions | <u>CWE-477: Use of Obsolete Function</u> | PASSED |
| <u>SWC-110</u> | Assert Violation | <u>CWE-670: Always-Incorrect Control Flow Implementation</u> | PASSED |
| <u>SWC-109</u> | Uninitialized Storage Pointer | <u>CWE-824: Access of Uninitialized Pointer</u> | PASSED |

| | | | |
|--------------------------------|--------------------------------------|---|-------------------|
| <u>SWC-108</u> | State Variable Default Visibility | <u>CWE-710: Improper Adherence to Coding Standards</u> | NOT PASSED |
| <u>SWC-107</u> | Reentrancy | <u>CWE-841: Improper Enforcement of Behavioral Workflow</u> | PASSED |
| <u>SWC-106</u> | Unprotected SELFDESTRUCT Instruction | <u>CWE-284: Improper Access Control</u> | PASSED |
| <u>SWC-105</u> | Unprotected Ether Withdrawal | <u>CWE-284: Improper Access Control</u> | PASSED |
| <u>SWC-104</u> | Unchecked Call Return Value | <u>CWE-252: Unchecked Return Value</u> | PASSED |
| <u>SWC-103</u> | Floating Pragma | <u>CWE-664: Improper Control of a Resource Through its Lifetime</u> | NOT PASSED |
| <u>SWC-102</u> | Outdated Compiler Version | <u>CWE-937: Using Components with Known Vulnerabilities</u> | PASSED |
| <u>SWC-101</u> | Integer Overflow and Underflow | <u>CWE-682: Incorrect Calculation</u> | PASSED |
| <u>SWC-100</u> | Function Default Visibility | <u>CWE-710: Improper Adherence to Coding Standards</u> | PASSED |

AUDIT PASSED

Low Issues

| | |
|---------------------------------------|---|
| A floating pragma is set. | L: 10 |
| State variable visibility is not set. | L: 221, 222, 224, 225, 226, 232, 237, 238, 239, 240, 241, 243, 244, 245, 246, 248, 249, 257, 258, 259, 260, 262, 263, 264, 265, 267, 268, 287 C: 12, 33, 54, 29, 32, 29, 30, 9, 12, 9 |

Audit Comments

- Deployer can set max transaction limit with an indefinite amount.
- Deployer can set and modify taxes/fees
- Deployer cannot mint after initial deployment
- Deployer cannot pause/lock the contract
- Deployer cannot renounce ownership





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