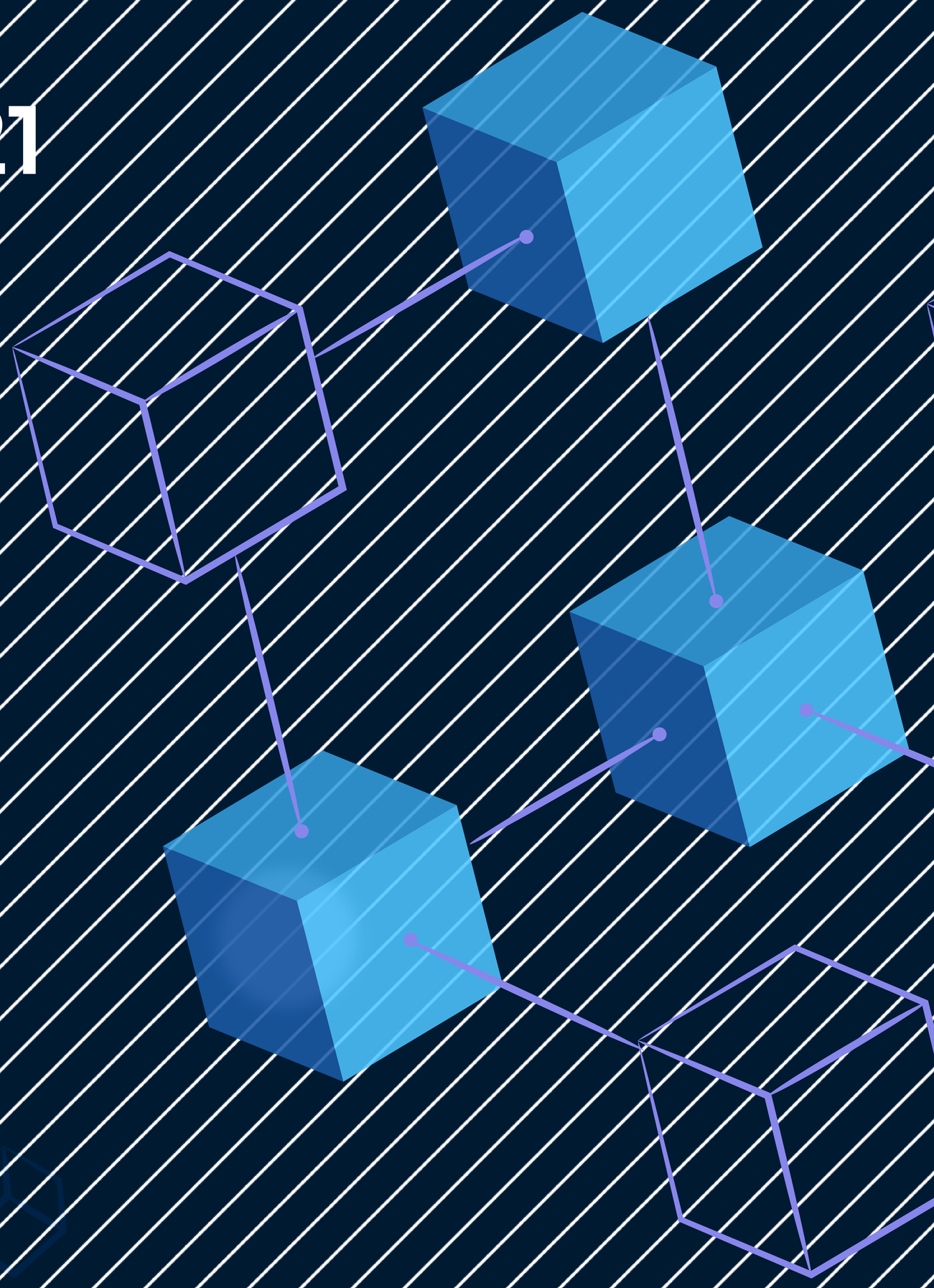
QuillAudits

# Audit Report
# December, 2021



For

# Contents

## Scope of the Audit

The scope of this audit was to analyze and document the EXIP TOKEN smart contract codebase for quality, security, and correctness.

## Checked Vulnerabilities

We have scanned the smart contract for commonly known and more specific vulnerabilities. Here are some of the commonly known vulnerabilities that we considered:

- Re-entrancy
- Timestamp Dependence
- Gas Limit and Loops
- DoS with Block Gas Limit
- Transaction-Ordering Dependence
- Use of tx.origin
- Exception disorder
- Gasless send
- Balance equality
- Byte array
- Transfer forwards all gas
- BEP20 API violation
- Malicious libraries
- Compiler version not fixed
- Redundant fallback function
- Send instead of transfer
- Style guide violation
- Unchecked external call
- Unchecked math
- Unsafe type inference
- Implicit visibility level

# Techniques and Methods

Throughout the audit of smart contract, care was taken to ensure:

- The overall quality of code.
- Use of best practices.
- Code documentation and comments match logic and expected behaviour.
- Token distribution and calculations are as per the intended behaviour mentioned in the whitepaper.
- Implementation of BEP-20 token standards.
- Efficient use of gas.
- Code is safe from re-entrancy and other vulnerabilities.

The following techniques, methods and tools were used to review all the smart contracts.

**Structural Analysis**
In this step, we have analysed the design patterns and structure of smart contracts. A thorough check was done to ensure the smart contract is structured in a way that will not result in future problems.

**Static Analysis**
Static analysis of smart contracts was done to identify contract vulnerabilities. In this step, a series of automated tools are used to test the security of smart contracts.

**Code Review / Manual Analysis**
Manual analysis or review of code was done to identify new vulnerabilities or verify the vulnerabilities found during the static analysis. Contracts were completely manually analysed, their logic was checked and compared with the one described in the whitepaper. Besides, the results of the automated analysis were manually verified.

**Gas Consumption**
In this step, we have checked the behaviour of smart contracts in production. Checks were done to know how much gas gets consumed and the possibilities of optimization of code to reduce gas consumption.

**Tools and Platforms used for Audit**
Remix IDE, Truffle, Truffle Team, Solhint, Mythril, Slither, Solidity statistic analysis, Theo.

# Issue Categories

Every issue in this report has been assigned to a severity level. There are four levels of severity, and each of them has been explained below.

| Risk-level | Description |
|---|---|
| High | A high severity issue or vulnerability means that your smart contract can be exploited. Issues on this level are critical to the smart contract's performance or functionality, and we recommend these issues be fixed before moving to a live environment. |
| Medium | The issues marked as medium severity usually arise because of errors and deficiencies in the smart contract code. Issues on this level could potentially bring problems, and they should still be fixed. |
| Low | Low-level severity issues can cause minor impact and or are just warnings that can remain unfixed for now. It would be better to fix these issues at some point in the future. |
| Informational | These are severity issues that indicate an improvement request, a general question, a cosmetic or documentation error, or a request for information. There is low-to-no impact. |

## Number of issues per severity

| Type | High | Medium | Low | Informational |
|---|---|---|---|---|
| Open | 0 | 0 | 0 | 0 |
| Acknowledged | 0 | 0 | 0 | 0 |
| Closed | 0 | 0 | 2 | 0 |

# Introduction

During the period of **December 9,2021 to December 15, 2021** - QuillAudits Team performed a security audit for EXIP TOKEN smart contracts.
The code for the audit was taken from following the official link:

**File:** EXIPTOKEN.sol

**Smart Contract Online Code:** https://bscscan.com/address/0x5a351f5B989125f0F076123D9e4b57Ab043C5e3A#code

| V | Date | Contract Address |
|---|---|---|
| 1 | 10/12/2021 | 0x6f9c537A340FB9397967d91dca4764C6f6d26D28 |
| 2 | 15/12/2021 | 0x5a351f5B989125f0F076123D9e4b57Ab043C5e3A |

# Issues Found – Code Review / Manual Testing

## High severity issues

No issues were found.

## Medium severity issues

No issues were found.

## Low severity issues

1. **Renounce Ownership**

   **Description**
   Usually, the contract's owner is the account that deploys the contract. As a result, the owner is able to perform certain privileged activities on his behalf. The renounceOwnership function is used in smart contracts to renounce ownership. Otherwise, if the contract's ownership has not been transferred previously, it will never have an Owner, which is risky.

   **Remediation**
   It is advised that the Owner cannot call renounceOwnership without first transferring ownership to a different address. Additionally, if a multi-signature wallet is utilized, executing the renounceOwnership method for two or more users should be confirmed. Alternatively, the Renounce Ownership functionality can be disabled by overriding it.
   Refer this post for additional info - https://www.linkedin.com/posts/razzor_github-razzorsecrazzorsec-contracts-activity-6873251560864968705-HOS8

   **Status:** Fixed

### 2. Outdated and Floating Compiler Version (SWC 102)

**Description**
Using an outdated compiler version can be problematic especially if there are publicly disclosed bugs and issues that affect the current compiler version.
Also the compiler version should be fixed and a floating compiler version must be avoided.

**Remediation**
It is recommended to use a recent and fixed version of the Solidity compiler, which is Version 0.8.10

**Status:** Fixed

## Informational issues

No issues were found.

# Functional test

**File:** EXIPTOKEN.sol

| Function Names | Testing results |
|---|---|
| pause | Passed |
| unpause | Passed |
| _beforeTokenTransfer | Passed |
| name | Passed |
| symbol | Passed |
| decimals | Passed |
| totalSupply | Passed |
| balanceOf | Passed |
| transfer | Passed |
| allowance | Passed |
| approve | Passed |
| transferFrom | Passed |
| increaseAllowance | Passed |
| decreaseAllowance | Passed |
| _transfer | Passed |
| _mint | Passed |
| _burn | Passed |
| _approve | Passed |
| _beforeTokenTransfer | Passed |

**File:** SAFEOWN.sol

| Function Names | Testing results |
| --- | --- |
| proposeOwnership | Passed |
| acceptOwnership | Passed |
| renounceOwnership | Passed |
| retainOwnership | Passed |
| getOwner | Passed |
| pause | Passed |
| unpause | Passed |

# Automated Tests

## Slither

```
INFO:Detectors:
AccessControl._setRoleAdmin(bytes32,bytes32) (EXIPTOKEN.sol#751-754) is never used and should be removed
Context._msgData() (EXIPTOKEN.sol#118-121) is never used and should be removed
ERC20._burn(address,uint256) (EXIPTOKEN.sol#371-382) is never used and should be removed
Strings.toHexString(uint256) (EXIPTOKEN.sol#457-468) is never used and should be removed
Strings.toString(uint256) (EXIPTOKEN.sol#432-452) is never used and should be removed
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#dead-code
INFO:Detectors:
Pragma version^0.8.0 (EXIPTOKEN.sol#3) necessitates a version too recent to be trusted. Consider deploying with 0.6.12/0.7.6
Pragma version^0.8.0 (EXIPTOKEN.sol#534) necessitates a version too recent to be trusted. Consider deploying with 0.6.12/0.7.6
solc-0.8.0 is not recommended for deployment
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#incorrect-versions-of-solidity
INFO:Detectors:
Constant Strings.alphabet (EXIPTOKEN.sol#427) is not in UPPER_CASE_WITH_UNDERSCORES
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#conformance-to-solidity-naming-conventions
INFO:Detectors:
Redundant expression "this (EXIPTOKEN.sol#119)" inContext (EXIPTOKEN.sol#113-122)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#redundant-statements
INFO:Detectors:
EXIPTOKEN.constructor(address) (EXIPTOKEN.sol#859-862) uses literals with too many digits:
        - _mint(admin,2100000 * 10 ** decimals()) (EXIPTOKEN.sol#861)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#too-many-digits
INFO:Detectors:
name() should be declared external:
        - ERC20.name() (EXIPTOKEN.sol#176-178)
symbol() should be declared external:
        - ERC20.symbol() (EXIPTOKEN.sol#184-186)
totalSupply() should be declared external:
        - ERC20.totalSupply() (EXIPTOKEN.sol#208-210)
balanceOf(address) should be declared external:
        - ERC20.balanceOf(address) (EXIPTOKEN.sol#215-217)
transfer(address,uint256) should be declared external:
        - ERC20.transfer(address,uint256) (EXIPTOKEN.sol#227-230)
allowance(address,address) should be declared external:
        - ERC20.allowance(address,address) (EXIPTOKEN.sol#235-237)
approve(address,uint256) should be declared external:
        - ERC20.approve(address,uint256) (EXIPTOKEN.sol#246-249)
transferFrom(address,address,uint256) should be declared external:
        - ERC20.transferFrom(address,address,uint256) (EXIPTOKEN.sol#264-272)
increaseAllowance(address,uint256) should be declared external:
        - ERC20.increaseAllowance(address,uint256) (EXIPTOKEN.sol#286-289)
decreaseAllowance(address,uint256) should be declared external:
        - ERC20.decreaseAllowance(address,uint256) (EXIPTOKEN.sol#305-311)
grantRole(bytes32,address) should be declared external:
        - AccessControl.grantRole(bytes32,address) (EXIPTOKEN.sol#689-691)
revokeRole(bytes32,address) should be declared external:
        - AccessControl.revokeRole(bytes32,address) (EXIPTOKEN.sol#702-704)
renounceRole(bytes32,address) should be declared external:
        - AccessControl.renounceRole(bytes32,address) (EXIPTOKEN.sol#720-724)
pause() should be declared external:
        - EXIPTOKEN.pause() (EXIPTOKEN.sol#864-867)
unpause() should be declared external:
        - EXIPTOKEN.unpause() (EXIPTOKEN.sol#869-872)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#public-function-that-could-be-declared-external
INFO:Slither:EXIPTOKEN.sol analyzed (11 contracts with 75 detectors), 26 result(s) found
INFO:Slither:Use https://crytic.io/ to get access to additional detectors and Github integration
```

### Results

No major issues were found. Some false positive errors were reported by the tool. All the other issues have been categorized above according to their level of severity.

# SOLIDITY STATIC ANALYSIS

SOLIDITY STATIC ANALYSIS

contracts/EXIPTOKEN.sol

Security

**Transaction origin:**

INTERNAL ERROR in module Transaction origin: can't convert undefined to object
Pos: not available

**Check-effects-interaction:**

INTERNAL ERROR in module Check-effects-interaction: can't convert undefined to object
Pos: not available

**Inline assembly:**

INTERNAL ERROR in module Inline assembly: can't convert undefined to object
Pos: not available

**Block timestamp:**

INTERNAL ERROR in module Block timestamp: can't convert undefined to object
Pos: not available

**Low level calls:**

INTERNAL ERROR in module Low level calls: can't convert undefined to object
Pos: not available

**Selfdestruct:**

INTERNAL ERROR in module Selfdestruct: can't convert undefined to object
Pos: not available

Gas & Economy

**This on local calls:**

INTERNAL ERROR in module This on local calls: can't convert undefined to object
Pos: not available

**Delete dynamic array:**

INTERNAL ERROR in module Delete dynamic array: can't convert undefined to object
Pos: not available

**For loop over dynamic array:**

INTERNAL ERROR in module For loop over dynamic array: can't convert undefined to object
Pos: not available

**Ether transfer in loop:**

INTERNAL ERROR in module Ether transfer in loop: can't convert undefined to object
Pos: not available

ERC

**ERC20:**

INTERNAL ERROR in module ERC20: can't convert undefined to object
Pos: not available

Miscellaneous

**Constant/View/Pure functions:**

INTERNAL ERROR in module Constant/View/Pure functions: can't convert undefined to object
Pos: not available

**Similar variable names:**

INTERNAL ERROR in module Similar variable names: can't convert undefined to object
Pos: not available

**No return:**

INTERNAL ERROR in module No return: can't convert undefined to object
Pos: not available

**Guard conditions:**

INTERNAL ERROR in module Guard conditions: can't convert undefined to object
Pos: not available

**String length:**

INTERNAL ERROR in module String length: can't convert undefined to object
Pos: not available

## SOLHINT LINTER

```
 contracts/EXIPTOKEN.sol:8:1: Error: Compiler version ^0.8.0 does  not satisfy the r semver requirement

 contracts/EXIPTOKEN.sol:85:1: Error: Compiler version ^0.8.0 does not satisfy the r semver requirement

 contracts/EXIPTOKEN.sol:110:1: Error: Compiler version ^0.8.0 does not satisfy the r semver requirement

 contracts/EXIPTOKEN.sol:134:1: Error: Compiler version ^0.8.0 does not satisfy the r semver requirement

 contracts/EXIPTOKEN.sol:178:5: Error: Explicitly mark visibility in function (Set ignoreConstructors to true if using solidity >=0.7.0)

 contracts/EXIPTOKEN.sol:429:94: Error: Code contains empty blocks

 contracts/EXIPTOKEN.sol:434:1: Error: Compiler version ^0.8.0 does not satisfy the r semver requirement

 contracts/EXIPTOKEN.sol:439:30: Error: Constant name must be in capitalized SNAKE_CASE

 contracts/EXIPTOKEN.sol:501:1: Error: Compiler version ^0.8.0 does not satisfy the r semver requirement

 contracts/EXIPTOKEN.sol:525:1: Error: Compiler version ^0.8.0 does not satisfy the r semver requirement

 contracts/EXIPTOKEN.sol:551:1: Error: Compiler version ^0.8.0 does not satisfy the r semver requirement

 contracts/EXIPTOKEN.sol:790:1: Error: Compiler version ^0.8.0 does not satisfy the r semver requirement

 contracts/EXIPTOKEN.sol:816:5: Error: Explicitly mark visibility in function (Set ignoreConstructors to true if using solidity >=0.7.0)


 contracts/EXIPTOKEN.sol:878:1: Error: Compiler version ^0.8.0 does not satisfy the r semver requirement

 contracts/EXIPTOKEN.sol:884:5: Error: Explicitly mark visibility in function (Set ignoreConstructors to true if using solidity >=0.7.0)
```

# Closing Summary

Overall, smart contracts are very well written and adhere to guidelines.

No instances of Integer Overflow and Underflow vulnerabilities or Back-Door Entry were found in the contract, but relying on other contracts might cause Reentrancy Vulnerability.

Low Severity Issues found during the Audit,which have been Fixed by the EXIP Team.

# Disclaimer

Quillhash audit is not a security warranty, investment advice, or an endorsement of the EXIP TOKEN platform. This audit does not provide a security or correctness guarantee of the audited smart contracts. The statements made in this document should not be interpreted as investment or legal advice, nor should its authors be held accountable for decisions made based on them. Securing smart contracts is a multistep process. One audit cannot be considered enough. We recommend that the EXIP TOKEN Team put in place a bug bounty program to encourage further analysis of the smart contract by other third parties.

# Audit Report
# December, 2021

For

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