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AuditAce
FROM INCEPTION TO SUCCESS

# Smart Contract Audit

FOR

# Floki CFO

DATED : 28 April 23'

# AUDIT SUMMARY

**Project name** – Floki CFO

**Date**: 28 April, 2023

**Scope of Audit-** Audit Ace was consulted to conduct the smart contract audit of the solidity source codes.

**Audit Status: Passed**

## Issues Found

| Status | Critical | High | Medium | Low | Suggestion |
|---|---|---|---|---|---|
| Open | 0 | 0 | 0 | 1 | 0 |
| Acknowledged | 0 | 0 | 0 | 0 | 0 |
| Resolved | 0 | 1 | 0 | 0 | 0 |

# USED TOOLS

## Tools:

**1- Manual Review:**
A line by line code review has been performed by audit ace team.

**2- BSC Test Network:** All tests were conducted on the BSC Test network, and each test has a corresponding transaction attached to it. These tests can be found in the "Functional Tests" section of the report.

**3- Slither :**
The code has undergone static analysis using Slither.

**Testnet version:**
The tests were performed using the contract deployed on the BSC Testnet, which can be found at the following address:
https://testnet.bscscan.com/token/0x6a86431caa88145cc62d17d77b380e14c66fefaa

# Token Information

**Token Name** : Floki CFO

**Token Symbol**: Floki CFO

**Decimals:** 18

**Token Supply**: 1,000,000,000

**Token Address:** --

**Checksum:**
dc79657f9a05c62539ce3f14295ca67fdceb31db

**Owner:**
--
**(at the time of writing the audit)**

**Deployer:** --

# TOKEN OVERVIEW

**Fees:**

Buy Fees: up to 10%

Sell Fees: up to 10%

Transfer Fees: up to 10%

**Fees Privilege:** Owner

**Ownership**: Owned by safu dev for 14 days

**Minting:** No mint function

**Max Tx Amount/ Max Wallet Amount:** No

**Blacklist:** No

**Other Privileges**: modifying swap threshold - toggling internal swap - excluding wallets from fee - including wallets in fee - modifying fees

# AUDIT METHODOLOGY

The auditing process will follow a routine as special considerations by Auditace:

- Review of the specifications, sources, and instructions provided to Auditace to make sure the contract logic meets the intentions of the client without exposing the user's funds to risk.
- Manual review of the entire codebase by our experts, which is the process of reading source code line-by-line in an attempt to identify potential vulnerabilities.
- Specification comparison is the process of checking whether the code does what the specifications, sources, and instructions provided to Auditace describe.
- Test coverage analysis determines whether the test cases are covering the code and how much code isexercised when we run the test cases.
- Symbolic execution is analysing a program to determine what inputs cause each part of a program to execute.
- Reviewing the codebase to improve maintainability, security, and control based on the established industry and academic practices.

# VULNERABILITY CHECKLIST

- [x] Return values of low-level calls
- [x] Private modifier
- [x] Multiple Sends
- [x] Using Suicide
- [x] Gas Limitand Loops
- [x] Address hardcoded
- [x] Exception Disorder
- [x] Using inline assembly
- [x] Divide before multiply
- [x] Missing Zero Address Validation
- [x] Compiler version not fixed
- [x] **Gasless Send**
- [x] Using block.timestamp
- [x] Re-entrancy
- [x] Tautology or contradiction
- [x] Timestamp Dependence
- [x] Revert/require functions
- [x] Use of tx.origin
- [x] Integer overflow/underflow
- [x] Dangerous strict equalities
- [x] Using SHA3
- [x] Using throw

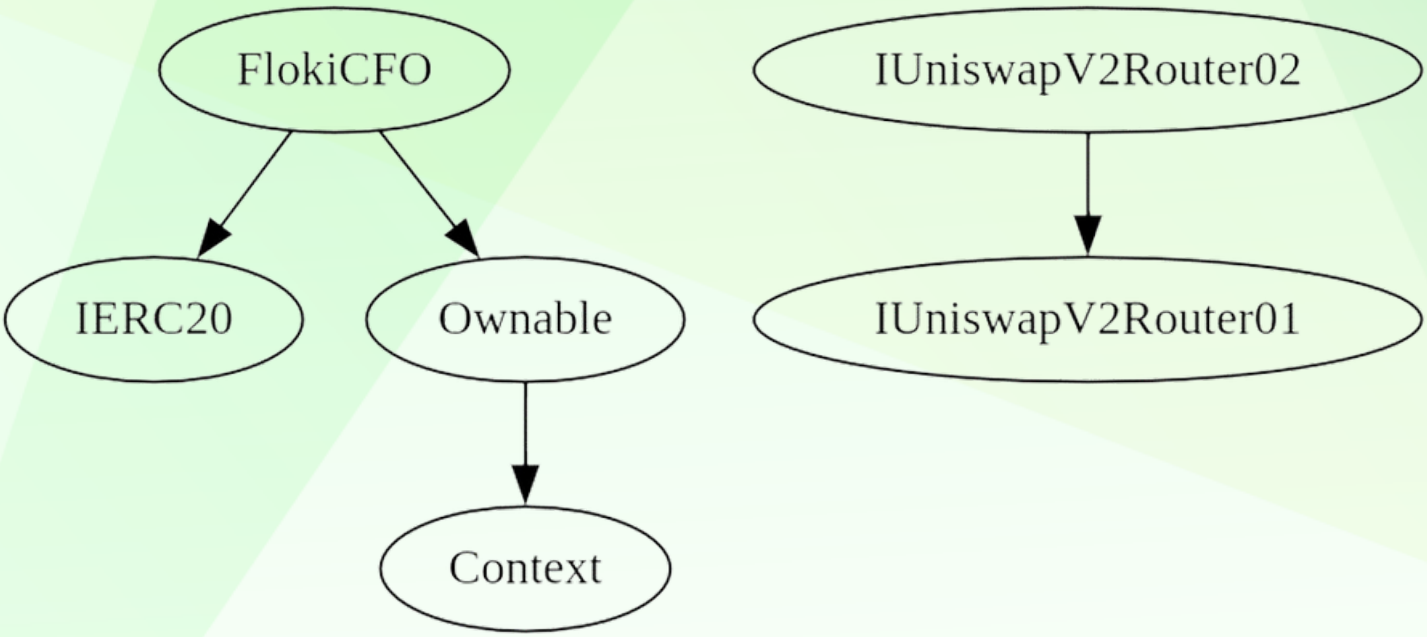
# CLASSIFICATION OF RISK

| Severity | Description |
| --- | --- |
| Critical | These vulnerabilities could be exploited easily and can lead to asset loss, data loss, asset, or data manipulation. They should be fixed right away. |
| High-Risk | A vulnerability that affects the desired outcome when using a contract, or provides the opportunity to use a contract in an unintended way. |
| Medium-Risk | A vulnerability that could affect the desired outcome of executing the contract in a specific scenario. |
| Low-Risk | A vulnerability that does not have a significant impact on possible scenarios for the use of the contract and is probably subjective. |
| Gas Optimization /Suggestion | A vulnerability that has an informational character but is not affecting any of the code. |

# Findings

| Severity | Found |
| --- | --- |
| Critical | 0 |
| High-Risk | 1 |
| Medium-Risk | 0 |
| Low-Risk | 1 |
| Gas Optimization / Suggestions | 0 |

# INHERITANCE TREE



# POINTS TO NOTE

- Owner is able to change buy/sell/transfer each one up to 10%
- Owner is not able to change fees until 7 days after launch
- Owner is not able to set max buy/sell/transfer/hold amount
- Owner is not able to blacklist an arbitrary wallet
- Owner is not able to disable trades
- Owner has to enable trades manually for holders
- Owner is not able to mint new tokens
- Token has FlokiCEO and RedFloki rewards with auto-distribution
- Fees are used for rewards and marketing

# CONTRACT ASSESMENT

| Contract | Type | Bases | | |
|:---|:---|:---|:---|:---|
| └ | **Function Name** | **Visibility** | **Mutability** | **Modifiers** |
| **FlokiCFO** | Implementation | IERC20, Ownable | | |
| └ | <Constructor> | Public ❗ | 🛑 | NO ❗ |
| └ | <Receive Ether> | External ❗ | 💵 | NO ❗ |
| └ | totalSupply | External ❗ | | NO ❗ |
| └ | name | Public ❗ | | NO ❗ |
| └ | symbol | Public ❗ | | NO ❗ |
| └ | decimals | Public ❗ | | NO ❗ |
| └ | balanceOf | Public ❗ | | NO ❗ |
| └ | allowance | External ❗ | | NO ❗ |
| └ | approve | Public ❗ | 🛑 | NO ❗ |
| └ | _approve | Internal 🔒 | 🛑 | |
| └ | approveMax | External ❗ | 🛑 | NO ❗ |
| └ | transfer | External ❗ | 🛑 | NO ❗ |
| └ | transferFrom | External ❗ | 🛑 | NO ❗ |
| └ | _transferFrom | Internal 🔒 | 🛑 | |
| └ | takeFee | Internal 🔒 | 🛑 | |
| └ | _basicTransfer | Internal 🔒 | 🛑 | |
| └ | shouldTakeFee | Internal 🔒 | | |
| └ | shouldDoContractSwap | Internal 🔒 | | |
| └ | isRewardExcluded | Public ❗ | | NO ❗ |
| └ | isFeeExcluded | Public ❗ | | NO ❗ |
| └ | doContractSwap | Internal 🔒 | 🛑 | swapping |
| └ | swapTokensForTokens | Private 🔐 | 🛑 | |
| └ | swapTokensForEth | Private 🔐 | 🛑 | |
| └ | setIsDividendExempt | External ❗ | 🛑 | onlyOwner |
| └ | setIsFeeExempt | External ❗ | 🛑 | onlyOwner |
| └ | setDoContractSwap | External ❗ | 🛑 | onlyOwner |
| └ | setDistributionCriteria | External ❗ | 🛑 | onlyOwner |
| └ | setDistributorSettings | External ❗ | 🛑 | onlyOwner |
| └ | changeMarketingWallet | External ❗ | 🛑 | onlyOwner |
| └ | changeBuyFees | External ❗ | 🛑 | onlyOwner |
| └ | changeSellFees | External ❗ | 🛑 | onlyOwner |
| └ | enableTrading | External ❗ | 🛑 | onlyOwner |
| └ | setAuthorizedWallets | External ❗ | 🛑 | onlyOwner |
| └ | rescueBNB | External ❗ | 🛑 | onlyOwner |
| └ | changeGetFeesOnTransfer | External ❗ | 🛑 | onlyOwner |
| └ | changeRouter | External ❗ | 🛑 | onlyOwner |
| └ | changePair | External ❗ | 🛑 | onlyOwner |

# CONTRACT ASSESMENT

|||||||
| **Ownable** | Implementation | Context |||
| └ | <Constructor> | Public ❗ | 🛑 |NO ❗ |
| └ | owner | Public ❗ | |NO ❗ |
| └ | _checkOwner | Internal 🔒 | | |
| └ | renounceOwnership | Public ❗ | 🛑 | onlyOwner |
| └ | transferOwnership | Public ❗ | 🛑 | onlyOwner |
| └ | _transferOwnership | Internal 🔒 | 🛑 | |
|||||||
| **Context** | Implementation | |||
| └ | _msgSender | Internal 🔒 | | |
| └ | _msgData | Internal 🔒 | | |
|||||||
| **IERC20** | Interface | |||
| └ | totalSupply | External ❗ | |NO ❗ |
| └ | balanceOf | External ❗ | |NO ❗ |
| └ | transfer | External ❗ | 🛑 |NO ❗ |
| └ | allowance | External ❗ | |NO ❗ |
| └ | approve | External ❗ | 🛑 |NO ❗ |
| └ | transferFrom | External ❗ | 🛑 |NO ❗ |
|||||||
| **IUniswapV2Router02** | Interface | IUniswapV2Router01 |||
| └ | removeLiquidityETHSupportingFeeOnTransferTokens | External ❗ | 🛑 |NO ❗ |
| └ | removeLiquidityETHWithPermitSupportingFeeOnTransferTokens | External ❗ | 🛑 |NO ❗ |
| └ | swapExactTokensForTokensSupportingFeeOnTransferTokens | External ❗ | 🛑 |NO ❗ |
| └ | swapExactETHForTokensSupportingFeeOnTransferTokens | External ❗ | 💵 |NO ❗ |
| └ | swapExactTokensForETHSupportingFeeOnTransferTokens | External ❗ | 🛑 |NO ❗ |
|||||||
| **IUniswapV2Router01** | Interface | |||
| └ | factory | External ❗ | |NO ❗ |
| └ | WETH | External ❗ | |NO ❗ |
| └ | addLiquidity | External ❗ | 🛑 |NO ❗ |
| └ | addLiquidityETH | External ❗ | 💵 |NO ❗ |
| └ | removeLiquidity | External ❗ | 🛑 |NO ❗ |
| └ | removeLiquidityETH | External ❗ | 🛑 |NO ❗ |
| └ | removeLiquidityWithPermit | External ❗ | 🛑 |NO ❗ |
| └ | removeLiquidityETHWithPermit | External ❗ | 🛑 |NO ❗ |
| └ | swapExactTokensForTokens | External ❗ | 🛑 |NO ❗ |
| └ | swapTokensForExactTokens | External ❗ | 🛑 |NO ❗ |
| └ | swapExactETHForTokens | External ❗ | 💵 |NO ❗ |
| └ | swapTokensForExactETH | External ❗ | 🛑 |NO ❗ |
| └ | swapExactTokensForETH | External ❗ | 🛑 |NO ❗ |

# CONTRACT ASSESMENT

| └ | swapETHForExactTokens | External ❗ | 💵 |NO ❗ |
| └ | quote | External ❗ | |NO ❗ |
| └ | getAmountOut | External ❗ | |NO ❗ |
| └ | getAmountIn | External ❗ | |NO ❗ |
| └ | getAmountsOut | External ❗ | |NO ❗ |
| └ | getAmountsIn | External ❗ | |NO ❗ |
||||||
| **IUniswapV2Factory** | Interface | |||
| └ | feeTo | External ❗ | |NO ❗ |
| └ | feeToSetter | External ❗ | |NO ❗ |
| └ | getPair | External ❗ | |NO ❗ |
| └ | allPairs | External ❗ | |NO ❗ |
| └ | allPairsLength | External ❗ | |NO ❗ |
| └ | createPair | External ❗ | 🛑 |NO ❗ |
| └ | setFeeTo | External ❗ | 🛑 |NO ❗ |
| └ | setFeeToSetter | External ❗ | 🛑 |NO ❗ |
||||||
| **IDividendDistributor** | Interface | |||
| └ | setDistributionCriteria | External ❗ | 🛑 |NO ❗ |
| └ | setShare | External ❗ | 🛑 |NO ❗ |
| └ | deposit | External ❗ | 🛑 |NO ❗ |
| └ | process | External ❗ | 🛑 |NO ❗ |
| └ | purge | External ❗ | 🛑 |NO ❗ |
||||||
| **DividendDistributor** | Implementation | IDividendDistributor |||
| └ | <Constructor> | Public ❗ | 🛑 |NO ❗ |
| └ | <Receive Ether> | External ❗ | 💵 |NO ❗ |
| └ | setDistributionCriteria | External ❗ | 🛑 | onlyToken |
| └ | purge | External ❗ | 🛑 | onlyToken |
| └ | setShare | External ❗ | 🛑 | onlyToken |
| └ | deposit | External ❗ | 🛑 | onlyToken |
| └ | process | External ❗ | 🛑 | onlyToken |
| └ | shouldDistribute | Internal 🔒 | | |
| └ | distributeDividend | Internal 🔒 | 🛑 | |
| └ | claimDividend | External ❗ | 🛑 |NO ❗ |
| └ | getUnpaidEarnings | Public ❗ | |NO ❗ |
| └ | getHolderDetails | Public ❗ | |NO ❗ |
| └ | getCumulativeDividends | Internal 🔒 | | |
| └ | getLastProcessedIndex | External ❗ | |NO ❗ |
| └ | getNumberOfTokenHolders | External ❗ | |NO ❗ |
| └ | getShareHoldersList | External ❗ | |NO ❗ |

# CONTRACT ASSESMENT

| └ | totalDistributedRewards | External ❗ | | |NO ❗ |
| └ | addShareholder | Internal 🔒 | 🛑 | | |
| └ | removeShareholder | Internal 🔒 | 🛑 | | |

Legend

| Symbol | Meaning |
|:--------:|-----------|
| 🛑 | Function can modify state |
| 💵 | Function is payable |

# STATIC ANALYSIS

```
Reentrancy in FlokiCFO._transferFrom(address,address,uint256) (contracts/fceo/Untitled-1.sol#886-946):
        External calls:
        - doContractSwap() (contracts/fceo/Untitled-1.sol#898)
                - address(marketingWallet).transfer(swappedTokens) (contracts/fceo/Untitled-1.sol#1050)
        State variables written after the call(s):
        - _balances[sender] = _balances[sender] - amount (contracts/fceo/Untitled-1.sol#902)
        - _balances[recipient] = _balances[recipient] + amountReceived (contracts/fceo/Untitled-1.sol#907)
        - amountReceived = takeFee(sender,recipient,amount) (contracts/fceo/Untitled-1.sol#904-906)
                - _balances[address(this)] = _balances[address(this)] + feeToken (contracts/fceo/Untitled-1.sol#958)
        Event emitted after the call(s):
        - Transfer(sender,address(this),feeToken) (contracts/fceo/Untitled-1.sol#959)
                - amountReceived = takeFee(sender,recipient,amount) (contracts/fceo/Untitled-1.sol#904-906)
        - Transfer(sender,recipient,amountReceived) (contracts/fceo/Untitled-1.sol#944)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#reentrancy-vulnerabilities-4

Variable IUniswapV2Router01.addLiquidity(address,address,uint256,uint256,uint256,uint256,address,uint256).amountADesired (contracts/fceo/Untitled-1.sol#100) is too similar to IUniswapV2Router01.a
ddLiquidity(address,address,uint256,uint256,uint256,uint256,address,uint256).amountBDesired (contracts/fceo/Untitled-1.sol#101)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#variable-names-too-similar

FlokiCFO.slitherConstructorVariables() (contracts/fceo/Untitled-1.sol#700-1212) uses literals with too many digits:
        - _totalSupply = 1000000000 * (10 ** _decimals) (contracts/fceo/Untitled-1.sol#711)
FlokiCFO.slitherConstructorVariables() (contracts/fceo/Untitled-1.sol#700-1212) uses literals with too many digits:
        - distributorGas = 500000 (contracts/fceo/Untitled-1.sol#742)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#too-many-digits

DividendDistributor.initialized (contracts/fceo/Untitled-1.sol#319) is never used in DividendDistributor (contracts/fceo/Untitled-1.sol#291-507)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#unused-state-variable

DividendDistributor.dividendsPerShareAccuracyFactor (contracts/fceo/Untitled-1.sol#312) should be constant
DividendDistributor.initialized (contracts/fceo/Untitled-1.sol#319) should be constant
FlokiCFO.DEAD (contracts/fceo/Untitled-1.sol#701) should be constant
FlokiCFO.FLOKICEO (contracts/fceo/Untitled-1.sol#705) should be constant
FlokiCFO.REDFLOKI (contracts/fceo/Untitled-1.sol#704) should be constant
FlokiCFO.ZERO (contracts/fceo/Untitled-1.sol#702) should be constant
FlokiCFO._totalSupply (contracts/fceo/Untitled-1.sol#711) should be constant
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-constant

DividendDistributor.REWARD (contracts/fceo/Untitled-1.sol#300) should be immutable
DividendDistributor._token (contracts/fceo/Untitled-1.sol#292) should be immutable
FlokiCFO.flokiCEODividendTracker (contracts/fceo/Untitled-1.sol#740) should be immutable
FlokiCFO.redFlockiDividendTracker (contracts/fceo/Untitled-1.sol#739) should be immutable
FlokiCFO.swapThreshold (contracts/fceo/Untitled-1.sol#746) should be immutable
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-immutable
```

**Result => A static analysis of contract's source code has been performed using slither,**

**No major issues were found in the output**

# FUNCTIONAL TESTING

**1- Adding liquidity (passed):**

https://testnet.bscscan.com/tx/0xd8e7c9d87d4b1d729f174fba8564ac1fa83de1d0a4242676e5167d6ba606cba2

**2- Buying when excluded from fees (0% tax) (passed):**

https://testnet.bscscan.com/tx/0xea69583efdb3c5f792584eea0c6aff00f91a7c84ad2f8f58c0d348073e34e69a

**3- Selling when excluded from fees (0% tax) (passed):**

https://testnet.bscscan.com/tx/0x2cce2adb5505938df5017f0b6b4eac40f05614d693a298caffffa21bba6b5010

**4- Transferring when excluded from fees (0% tax) (passed):**

https://testnet.bscscan.com/tx/0xbf69018352809fac05d2c5ab2de090e0fcec5f3d0536d7a18322def9d046f7f2

**5- Buying when not excluded from fees( up to 10% tax (7 days after launch)) (passed):**

https://testnet.bscscan.com/tx/0x094a778775617b9ce9580618c739ec2ed138bda9adabd295b266614df20fd909

**6- Selling when not excluded from fees (up to 10% tax) (passed):**

https://testnet.bscscan.com/tx/0x7c2850dafdceded78af5304b3f4b836431fa5efbfcb263e11d42dd30d3c61e1c

# FUNCTIONAL TESTING

**7- Transferring when not excluded from fees (10% tax) (passed):**

https://testnet.bscscan.com/tx/0xfd009357a9973f1a64ee15a598928cd61eb06030e0d51a44a25ac3e499bd88d5

**8- Internal swap (passed):**

**Marketing wallet received BNB**

https://testnet.bscscan.com/address/0x2433e36dc7d27606d9e863b5194380e2be42a720#internaltx

**9- Rewards Distribution (passed):**

Both dividend trackers distributed rewards between holders

https://testnet.bscscan.com/tx/0x7c2850dafdceded78af5304b3f4b836431fa5efbfcb263e11d42dd30d3c61e1c

# MANUAL TESTING

## Centralization - Owner Must Enable Trades

**Severity:** High / Informational

**Function:** enableTrading

**Lines:** 492

**Status:** Resolved (Contract is owned by safu developer)

**Overview:**

The owner is required to enable trading for investors. If trading remains disabled, token holders will not have the ability to buy, sell, or transfer their tokens.

```
function enableTrading() external onlyOwner {
    isTradeEnabled = true;
    listingTime = block.timestamp;
}
```

**Recommendation:**

While the presence of this function is considered a feature rather than a flaw, it is crucial to highlight the centralization risk it inherently poses. To address this issue and ensure the enablement of trades, one possible solution would be to transfer the contract's ownership to a trusted third party, such as a Pinksale Safu developer. This would help mitigate the centralization risk associated with this function.

# MANUAL TESTING

## Logical – Lack of withdraw function for ERC20 tokens

**Severity:** Low

**Status:** Not Resolved

**Overview:**

The present contract implementation does not include a function that allows the owner to retrieve ERC20 tokens that have become stranded within the contract.

**Recommendation:**

Create a function which enables owner to withdraw stuck ERC20 tokens from the contract

```
function rescueTokens(address _token) public onlyOwner {
        IERC20(_token).transfer(msg.sender,
        IERC20(_token).balanceOf(address(this));
}
```

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