



# Smart Contract Audit

FOR  
**StitchInu**

DATED : 20 MAY 23'



# AUDIT SUMMARY

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**Project name** – StitchInu

**Date:** 20 May, 2023

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

**Audit Status:** **Passed with critical risk**

## Issues Found

Status	Critical	High	Medium	Low	Suggestion
Open	3	0	0	0	0
Acknowledged	0	0	0	0	0
Resolved	0	0	0	0	0

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# USED TOOLS

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## Tools:

**1. Manual Review:** The code has undergone a line-by-line review by the **Ace** team.

**2. ETH Test Network:** All tests were conducted on the ETH 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:

Contract has been tested on binance smart chain testnet which can be found in below link:

<https://testnet.bscscan.com/token/0x0aFA75d3FA82071FB1698672B52935693c4Bd6CC>

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# Token Information

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**Name :** Stitch Inu

**Symbol :** StitchInu

**Decimals:** 9

**Network:** Binance smart chain

**Token Type:** BEP20

**Token Address:**

0x47488a33DF28378a39d632B372E5a868750eb54  
5

**Owner:**

0xBAD8426a1A868115F996fF9DA11DCEfD5B0786Ed  
(at time of writing the audit)

**Deployer:** 0xBAD8426a1A868115F996fF9DA11DCEfD  
5B0786Ed

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# Token Information

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## **Fees:**

Buy Fees: 0-100%

Sell Fees: 0-100%

Transfer Fees: 0-100%

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**Fees Privilege:** Owner

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**Ownership :** Owned

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**Minting:** None

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**Max Tx Amount/ Max Wallet Amount:** 0-100%

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**Blacklist:** No

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**Other Privileges:-** Changing swap threshold - changing fees - changing trade limits

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# AUDIT METHODOLOGY

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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 is exercised 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.
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# VULNERABILITY CHECKLIST

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

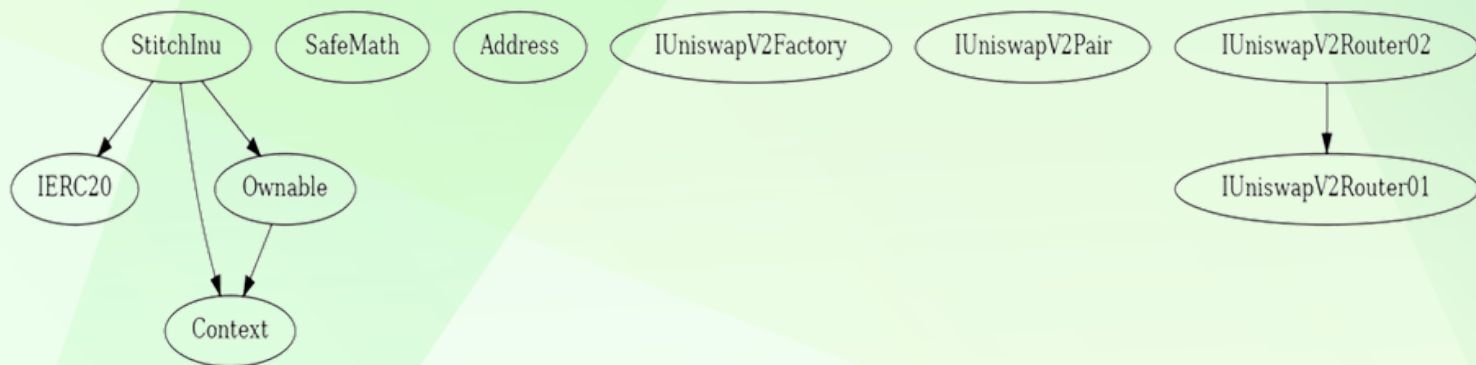
### Found

◆ Critical	3
◆ High-Risk	0
◆ Medium-Risk	0
◆ Low-Risk	0
◆ Gas Optimization / Suggestions	0



# INHERITANCE TREE

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## POINTS TO NOTE

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- Tax fee is initially set to 3%
  - Development fee is initially set to 3%
  - Liquidity fee is initially set to 0%
  - Contract owner can exclude and include addresses from rewards
  - Contract owner can exclude and include addresses from fees
  - Contract owner can set tax fee, development fee, and liquidity fee percentages
  - Contract owner can set the maximum transaction amount
  - Contract owner can enable or disable swap and liquify functionality
  - Swap and liquify is enabled by default
  - Maximum transaction amount is initially set to 1,000,000,000,000 tokens
  - Number of tokens to sell to add to liquidity is initially set to 1,000,000,000 tokens
  - Uniswap V2 router address is set to 0x10ED43C718714eb63d5aA57B78B54704E256024E
  - Development wallet address is set to 0x5A3018e513a929A6aa248dD3890573B6a2284a31
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## POINTS TO NOTE

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- Contract uses SafeMath library for arithmetic operations
  - Contract uses Address library for address-related functionalities
  - Contract is Ownable, meaning it has an owner with special privileges
  - Contract owner can renounce ownership or transfer ownership to another address
  - Contract owner can set the minimum tokens before swap
  - Contract owner can update the swap and liquify enabled status
  - Contract has a receive() function to accept incoming Ether
  - Contract has a lockTheSwap modifier to prevent reentrancy in swap and liquify function
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# CONTRACT ASSESMENT

Contract	Type	Bases			
└	**Function Name**	**Visibility**	**Mutability**	**Modifiers**	
**IERC20**   Interface					
└	totalSupply	External	!	NO	!
└	balanceOf	External	!	NO	!
└	transfer	External	!	NO	!
└	allowance	External	!	NO	!
└	approve	External	!	NO	!
└	transferFrom	External	!	NO	!
**SafeMath**   Library					
└	tryAdd	Internal	🔒		
└	trySub	Internal	🔒		
└	tryMul	Internal	🔒		
└	tryDiv	Internal	🔒		
└	tryMod	Internal	🔒		
└	add	Internal	🔒		
└	sub	Internal	🔒		
└	mul	Internal	🔒		
└	div	Internal	🔒		
└	mod	Internal	🔒		
└	sub	Internal	🔒		
└	div	Internal	🔒		
└	mod	Internal	🔒		
**Context**   Implementation					
└	_msgSender	Internal	🔒		
└	_msgData	Internal	🔒		
**Address**   Library					
└	isContract	Internal	🔒		
└	sendValue	Internal	🔒		
└	functionCall	Internal	🔒		
└	functionCall	Internal	🔒		
└	functionCallWithValue	Internal	🔒		
└	functionCallWithValue	Internal	🔒		
└	functionStaticCall	Internal	🔒		
└	functionStaticCall	Internal	🔒		
└	functionDelegateCall	Internal	🔒		
└	functionDelegateCall	Internal	🔒		
└	_verifyCallResult	Private	🔒		



# CONTRACT ASSESMENT

```
||||| |
| **Ownable** | Implementation | Context |||
| L | <Constructor> | Public ! | ● | NO ! |
| L | owner | Public ! | | NO ! |
| L | renounceOwnership | Public ! | ● | onlyOwner |
| L | transferOwnership | Public ! | ● | onlyOwner |
|||||
| **IUniswapV2Factory** | Interface | |||
| L | feeTo | External ! | | NO ! |
| L | feeToSetter | External ! | | NO ! |
| L | getPair | External ! | | NO ! |
| L | allPairs | External ! | | NO ! |
| L | allPairsLength | External ! | | NO ! |
| L | createPair | External ! | ● | NO ! |
| L | setFeeTo | External ! | ● | NO ! |
| L | setFeeToSetter | External ! | ● | NO ! |
|||||
| **IUniswapV2Pair** | Interface | |||
| L | name | External ! | | NO ! |
| L | symbol | External ! | | NO ! |
| L | decimals | External ! | | NO ! |
| L | totalSupply | External ! | | NO ! |
| L | balanceOf | External ! | | NO ! |
| L | allowance | External ! | | NO ! |
| L | approve | External ! | ● | NO ! |
| L | transfer | External ! | ● | NO ! |
| L | transferFrom | External ! | ● | NO ! |
| L | DOMAIN_SEPARATOR | External ! | | NO ! |
| L | PERMIT_TYPEHASH | External ! | | NO ! |
| L | nonces | External ! | | NO ! |
| L | permit | External ! | ● | NO ! |
| L | MINIMUM_LIQUIDITY | External ! | | NO ! |
| L | factory | External ! | | NO ! |
| L | token0 | External ! | | NO ! |
| L | token1 | External ! | | NO ! |
| L | getReserves | External ! | | NO ! |
| L | price0CumulativeLast | External ! | | NO ! |
| L | price1CumulativeLast | External ! | | NO ! |
| L | kLast | External ! | | NO ! |
| L | mint | External ! | ● | NO ! |
| L | burn | External ! | ● | NO ! |
| L | swap | External ! | ● | NO ! |
```



# CONTRACT ASSESMENT

```
| L | skim | External ! | ● | NO ! |
| L | sync | External ! | ● | NO ! |
| L | initialize | External ! | ● | NO ! |
|||||
| **IUniswapV2Router01** | Interface | |||
| L | factory | External ! | | NO ! |
| L | WETH | External ! | | NO ! |
| L | addLiquidity | External ! | ● | NO ! |
| L | addLiquidityETH | External ! | 💵 | NO ! |
| L | removeLiquidity | External ! | ● | NO ! |
| L | removeLiquidityETH | External ! | ● | NO ! |
| L | removeLiquidityWithPermit | External ! | ● | NO ! |
| L | removeLiquidityETHWithPermit | External ! | ● | NO ! |
| L | swapExactTokensForTokens | External ! | ● | NO ! |
| L | swapTokensForExactTokens | External ! | ● | NO ! |
| L | swapExactETHForTokens | External ! | 💵 | NO ! |
| L | swapTokensForExactETH | External ! | ● | NO ! |
| L | swapExactTokensForETH | External ! | ● | NO ! |
| L | swapETHForExactTokens | External ! | 💵 | NO ! |
| L | quote | External ! | | NO ! |
| L | getAmountOut | External ! | | NO ! |
| L | getAmountIn | External ! | | NO ! |
| L | getAmountsOut | External ! | | NO ! |
| L | getAmountsIn | External ! | | NO ! |
|||||
| **IUniswapV2Router02** | Interface | IUniswapV2Router01 |||
| L | removeLiquidityETHSupportingFeeOnTransferTokens | External ! | ● | NO ! |
| L | removeLiquidityETHWithPermitSupportingFeeOnTransferTokens | External ! | ● | NO ! |
| L | swapExactTokensForTokensSupportingFeeOnTransferTokens | External ! | ● | NO ! |
| L | swapExactETHForTokensSupportingFeeOnTransferTokens | External ! | 💵 | NO ! |
| L | swapExactTokensForETHSupportingFeeOnTransferTokens | External ! | ● | NO ! |
|||||
| **StitchInu** | Implementation | Context, IERC20, Ownable |||
| L | <Constructor> | Public ! | ● | NO ! |
| L | name | Public ! | | NO ! |
| L | symbol | Public ! | | NO ! |
| L | decimals | Public ! | | NO ! |
| L | totalSupply | Public ! | | NO ! |
| L | balanceOf | Public ! | | NO ! |
| L | transfer | Public ! | ● | NO ! |
| L | allowance | Public ! | | NO ! |
| L | approve | Public ! | ● | NO ! |
```

# CONTRACT ASSESMENT

transferFrom	Public !	●	NO !
increaseAllowance	Public !	●	NO !
decreaseAllowance	Public !	●	NO !
isExcludedFromReward	Public !		NO !
totalFees	Public !		NO !
deliver	Public !	●	NO !
reflectionFromToken	Public !		NO !
tokenFromReflection	Public !		NO !
excludeFromReward	Public !	●	onlyOwner
includeInReward	External !	●	onlyOwner
\_transferBothExcluded	Private 🔒	●	
excludeFromFee	Public !	●	onlyOwner
includeInFee	Public !	●	onlyOwner
setTaxFeePercent	External !	●	onlyOwner
setDevelopmentFeePercent	External !	●	onlyOwner
setLiquidityFeePercent	External !	●	onlyOwner
setMaxTxPercent	External !	●	onlyOwner
setSwapAndLiquifyEnabled	Public !	●	onlyOwner
<Receive Ether>	External !	💰	NO !
\_reflectFee	Private 🔒	●	
\_getValues	Private 🔒		
\_getTValues	Private 🔒		
\_getRValues	Private 🔒		
\_getRate	Private 🔒		
\_getCurrentSupply	Private 🔒		
\_takeLiquidity	Private 🔒	●	
\_takeDevelopment	Private 🔒	●	
calculateTaxFee	Private 🔒		
calculateDevelopmentFee	Private 🔒		
calculateLiquidityFee	Private 🔒		
removeAllFee	Private 🔒	●	
restoreAllFee	Private 🔒	●	
isExcludedFromFee	Public !		NO !
\_approve	Private 🔒	●	
\_transfer	Private 🔒	●	
swapAndLiquify	Private 🔒	●	lockTheSwap
swapTokensForEth	Private 🔒	●	
addLiquidity	Private 🔒	●	
\_tokenTransfer	Private 🔒	●	
\_transferStandard	Private 🔒	●	
\_transferToExcluded	Private 🔒	●	
\_transferFromExcluded	Private 🔒	●	



# CONTRACT ASSESMENT

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## ### Legend

Symbol	Meaning
:	:
●	Function can modify state
💰	Function is payable





# STATIC ANALYSIS

```
Variable StitchInu._takeDevelopment(uint256).rDevelopment (contracts/Token.sol#1017) is too similar to StitchInu._getTValues(uint256).tDevelopment (contracts/Token.sol#963)
Variable StitchInu._takeDevelopment(uint256).rDevelopment (contracts/Token.sol#1017) is too similar to StitchInu._getRValues(uint256,uint256,uint256,uint256,uint256).tDevelopment (contracts/Token.sol#974)
Variable StitchInu._getRValues(uint256,uint256,uint256,uint256,uint256).rDevelopment (contracts/Token.sol#980) is too similar to StitchInu._transferStandard(address,address,uint256).tDevelopment (contracts/Token.sol#1169)
Variable StitchInu._takeDevelopment(uint256).rDevelopment (contracts/Token.sol#1017) is too similar to StitchInu._transferToExcluded(address,address,uint256).tDevelopment (contracts/Token.sol#1191)
Variable StitchInu._transferToExcluded(address,address,uint256).rTransferAmount (contracts/Token.sol#1186) is too similar to StitchInu._transferStandard(address,address,uint256).tTransferAmount (contracts/Token.sol#1166)
Variable StitchInu._getRValues(uint256,uint256,uint256,uint256,uint256).rTransferAmount (contracts/Token.sol#981-983) is too similar to StitchInu._transferToExcluded(address,address,uint256).tTransferAmount (contracts/Token.sol#1188)
Variable StitchInu._getValues(uint256).rTransferAmount (contracts/Token.sol#940) is too similar to StitchInu._getTValues(uint256).tTransferAmount (contracts/Token.sol#964-966)
Variable StitchInu._getValues(uint256).rTransferAmount (contracts/Token.sol#940) is too similar to StitchInu._transferStandard(address,address,uint256).tTransferAmount (contracts/Token.sol#1166)
Variable StitchInu._transferFromExcluded(address,address,uint256).rTransferAmount (contracts/Token.sol#1209) is too similar to StitchInu._transferToExcluded(address,address,uint256).tTransferAmount (contracts/Token.sol#1188)
Variable StitchInu._getRValues(uint256,uint256,uint256,uint256,uint256).rTransferAmount (contracts/Token.sol#981-983) is too similar to StitchInu._transferStandard(address,address,uint256).tTransferAmount (contracts/Token.sol#1166)
Variable StitchInu._transferFromExcluded(address,address,uint256).rTransferAmount (contracts/Token.sol#1209) is too similar to StitchInu._transferStandard(address,address,uint256).tTransferAmount (contracts/Token.sol#1166)
Variable StitchInu._transferBothExcluded(address,address,uint256).rTransferAmount (contracts/Token.sol#872) is too similar to StitchInu._transferFromExcluded(address,address,uint256).tTransferAmount (contracts/Token.sol#1211)
Variable StitchInu._getValues(uint256).rTransferAmount (contracts/Token.sol#940) is too similar to StitchInu._transferBothExcluded(address,address,uint256).tTransferAmount (contracts/Token.sol#874)
Variable StitchInu._transferBothExcluded(address,address,uint256).rTransferAmount (contracts/Token.sol#872) is too similar to StitchInu._transferToExcluded(address,address,uint256).tTransferAmount (contracts/Token.sol#1188)
Variable StitchInu._getValues(uint256).rTransferAmount (contracts/Token.sol#940) is too similar to StitchInu._transferFromExcluded(address,address,uint256).tTransferAmount (contracts/Token.sol#1211)
Variable StitchInu._getValues(uint256).rTransferAmount (contracts/Token.sol#940) is too similar to StitchInu._getValues(uint256).tTransferAmount (contracts/Token.sol#935)
Variable StitchInu._getValues(uint256).rTransferAmount (contracts/Token.sol#940) is too similar to StitchInu._transferToExcluded(address,address,uint256).tTransferAmount (contracts/Token.sol#1188)
Variable StitchInu._transferBothExcluded(address,address,uint256).rTransferAmount (contracts/Token.sol#872) is too similar to StitchInu._transferStandard(address,address,uint256).tTransferAmount (contracts/Token.sol#1166)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#variable-names-too-similar

StitchInu.slitherConstructorVariables() (contracts/Token.sol#652-1224) uses literals with too many digits:
- tTotal = 4200000000000000000 * 10 ** 9 (contracts/Token.sol#664)
StitchInu.slitherConstructorVariables() (contracts/Token.sol#652-1224) uses literals with too many digits:
- maxTxAmount = 1000000000000000000 * 10 ** 9 (contracts/Token.sol#681)
StitchInu.slitherConstructorVariables() (contracts/Token.sol#652-1224) uses literals with too many digits:
- numTokensSellToAddToLiquidity = 1000000000 * 10 ** 9 (contracts/Token.sol#682)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#too-many-digits

StitchInu.decimals (contracts/Token.sol#669) should be constant
StitchInu.developmentWalletAddress (contracts/Token.sol#661-662) should be constant
StitchInu.name (contracts/Token.sol#667) should be constant
StitchInu.symbol (contracts/Token.sol#668) should be constant
StitchInu.tTotal (contracts/Token.sol#664) should be constant
StitchInu.numTokensSellToAddToLiquidity (contracts/Token.sol#682) should be constant
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-constant
```

## Static Analysis

an static analysis of the code were performed using slither. No issues were found



# FUNCTIONAL TESTING

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## 1- Adding liquidity (passed):

<https://testnet.bscscan.com/tx/0x2dfb91488258207abc4ade19e9e644f2498caeffae6928e00b76695905700eb0>

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

<https://testnet.bscscan.com/tx/0xe6dfea296bdd90de03a84476739e36240df433a8c40615fce63a7f5f99755be8>

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

<https://testnet.bscscan.com/tx/0x5868b32394610b740fa2c47e2cd5351309995d2c2207a5696dee3812b51dd75c>

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

<https://testnet.bscscan.com/tx/0xfebf8d3db996af9fa466663c8c70b2659f8bfda546f5cec0bd0b52aa074eaf90>

## 5- Buying when not excluded from fees ( 0-10% tax) (passed):

<https://testnet.bscscan.com/tx/0xaf6860b3a4bfb7e6d011ad9c51dde82aec89082221fc8fe8857bd879668258ca>

## 6- Selling when not excluded from fees ( 0-10% tax) (passed):

<https://testnet.bscscan.com/tx/0x0fa9002bc8f27388df3b0a8b03f4ed7763843ec9c71a04fb7a22f21c27d36bd0>

## 7- Transferring when not excluded from fees (0% tax) (passed):

<https://testnet.bscscan.com/tx/0xcafca8d6ed4265fa22c94a83356d5d9c3749670bf281eeaa7b11c455b35472ca>

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# FUNCTIONAL TESTING

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

**Marketing BNB – Auto-liquidity**

<https://testnet.bscscan.com/tx/0x0fa9002bc8f27388df3b0a8b03f4ed7763843ec9c71a04fb7a22f21c27d36bd0>

# FUNCTIONAL TESTING

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**Category:** Centralization

**Subject:** Excessive fees

**Severity:** **Critical**

**Overview:**

Owner is able to set buy/sell/transfer fees up to 100%

**Code:**

- setTaxFeePercent(uint256 taxFee)
- setDevelopmentFeePercent(uint256 developmentFee)
- setLiquidityFeePercent(uint256 liquidityFee)

**Suggestion:**

Implement a limit for max amount of buy/sell/transfer fees.

Buy + sell fees  $\leq$  25%

Transfer fees  $\leq$  5%

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# FUNCTIONAL TESTING

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**Category:** Centralization

**Subject:** Limits

**Severity:** Critical

**Overview:**

The contract has an owner can set limit max number of tokens that can be transferred/bought/sold. This limit can be set to 0 which disables all sells/buys/transfers for all the holders except owner.

**Code:**

- setMaxTxPercent(uint256 maxTxPercent)

**Suggestion:**

Ensure that max tx is within a safe range :  
$$\text{total supply} / 1000 \leq \text{max Tx} \leq \text{total supply} / 100$$



# FUNCTIONAL TESTING

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**Category:** Centralization

**Subject:** Invalid numTokensSellToAddToLiquidity

**Severity:** Critical

**Overview:**

swap & liquify threshold is constant and can not be changed later, but its set to  $10000000000 * 10^{18}$  which is in invalid value and never will be reached.

**Code:**

- setMaxTxPercent(uint256 maxTxPercent)

**Suggestion:**

Change numTokensSellToAddToLiquidity to  $10000000000 * 10^9$



# DISCLAIMER

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# ABOUT AUDITACE

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We specialize in providing thorough and reliable audits for Web3 projects. With a team of experienced professionals, we use cutting-edge technology and rigorous methodologies to evaluate the security and integrity of blockchain systems. We are committed to helping our clients ensure the safety and transparency of their digital assets and transactions.



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**<https://github.com/Audit-Ace>**

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