



# Smart Contract Audit

FOR

## MARVIN2

DATED : 25 July 23'



# AUDIT SUMMARY

**Project name - MARVIN2**

**Date:** 25 July, 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	1	0	0
Acknowledged	0	0	0	0	0
Resolved	0	1	0	0	0



# USED TOOLS

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## 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/0x4f5B2f23FD3D80CF351a1395D76C393BA91c79dB>

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# Token Information

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**Token Name :** Marvin Inu 2.0

**Token Symbol:** MARVIN2

**Decimals:** 18

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

**Token Address:**

0x9D485B1223575143ee163E2D01D6e6253d91C5C1

**Checksum:**

de280849954e23ad5712d9c73009d1d67a5cbf18

**Owner:**

0x3aFe11dd902FbC9cAEfeb594BA4721d042Db5fAb

**Deployer:**

0x3aFe11dd902FbC9cAEfeb594BA4721d042Db5fAb

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# TOKEN OVERVIEW

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## Fees:

Buy Fees: 0-3%

Sell Fees: 0-3%

Transfer Fees: 0%

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**Fees Privilege:** Owner

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**Ownership:** owned

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**Minting:** No mint function

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

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**Blacklist:** No

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**Other Privileges:** Initial distribution of the tokens

- enabling trades
  - modifying fees
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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.

# VULNERABILITY CHECKLIST



Return values of low-level calls



**Gasless Send**



Private modifier



Using block.timestamp



Multiple Sends



Re-entrancy



Using Suicide



Tautology or contradiction



Gas Limit and 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



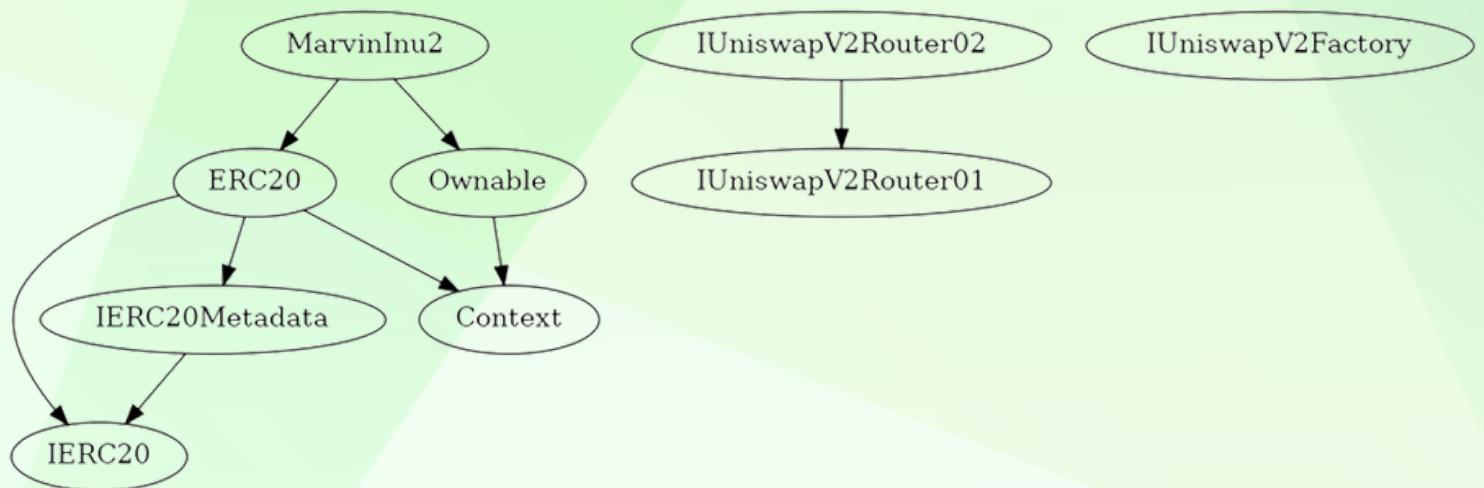
# CLASSIFICATION OF RISK

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	1
◆ Low-Risk	0
◆ Gas Optimization / Suggestions	0

# INHERITANCE TREE





## POINTS TO NOTE

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- Owner is able to update buy and sell fees (0-3%)
- Owner is not able to set fee on transfers
- Owner is not able to blacklist an arbitrary address.
- Owner is not able to disable trades
- Owner is not able to mint new tokens
- Owner is not able to set maximum wallet and maximum buy/sell limits
- Owner must enable trades manually



# CONTRACT ASSESSMENT

Contract	Type	Bases				
	L	**Function Name**	**Visibility**	**Mutability**	**Modifiers**	
		**IERC20**   Interface				
	L	totalSupply   External	!	NO	!	
	L	balanceOf   External	!	NO	!	
	L	transfer   External	!	○	NO	!
	L	allowance   External	!	NO	!	
	L	approve   External	!	○	NO	!
	L	transferFrom   External	!	○	NO	!
		**IERC20Metadata**   Interface	IERC20			
	L	name   External	!	NO	!	
	L	symbol   External	!	NO	!	
	L	decimals   External	!	NO	!	
		**Context**   Implementation				
	L	_msgSender   Internal	○			
	L	_msgData   Internal	○			
		**ERC20**   Implementation	Context, IERC20, IERC20Metadata			
	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	!
	L	transferFrom   Public	!	○	NO	!
	L	increaseAllowance   Public	!	○	NO	!
	L	decreaseAllowance   Public	!	○	NO	!
	L	_transfer   Internal	○	○		
	L	_mint   Internal	○	○		
	L	_burn   Internal	○	○		
	L	_approve   Internal	○	○		
	L	_spendAllowance   Internal	○	○		
	L	_beforeTokenTransfer   Internal	○	○		
	L	_afterTokenTransfer   Internal	○	○		

# CONTRACT ASSESSMENT

```
| **Ownable** | Implementation | Context | | | |
| L | <Constructor> | Public ! | [ ] | NO ! |
| L | owner | Public ! | [ ] | NO ! |
| L | _checkOwner | Internal [ ] | [ ] |
| L | renounceOwnership | Public ! | [ ] | onlyOwner |
| L | transferOwnership | Public ! | [ ] | onlyOwner |
| L | _transferOwnership | Internal [ ] | [ ] |
|||||||
| **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 ! |
|||||||
| **IUniswapV2Factory** | Interface | |
| L | feeTo | External ! | [ ] | NO ! |
| L | feeToSetter | External ! | [ ] | NO ! |
| L | getPair | External ! | [ ] | NO ! |
| L | allPairs | External ! | [ ] | NO ! |
```



# CONTRACT ASSESSMENT

```
| L | allPairsLength | External ! | NO ! |
| L | createPair | External ! | ○ | NO !
| L | setFeeTo | External ! | ○ | NO !
| L | setFeeToSetter | External ! | ○ | NO !
||||| |
| **MarvinInu2** | Implementation | ERC20, Ownable ||
| L | <Constructor> | Public ! | ○ | ERC20 |
| L | airdropToWallets | External ! | ○ | onlyOwner |
| L | <Receive Ether> | External ! | ⚡ | NO !
| L | enableTrading | External ! | ○ | onlyOwner | |
| L | _transfer | Internal 🔒 | ○ |||
| L | swapBack | Private 🔑 | ○ |||
| L | swapTokensForBNB | Internal 🔒 | ○ |||
| L | safeTransferBNB | Internal 🔒 | ○ |||
| L | addLiquidity | Private 🔑 | ○ |||
| L | excludeFromFees | Public ! | ○ | onlyOwner |
| L | _setAutomatedMarketMakerPair | Private 💳 | ○ |||
| L | setAutomatedMarketMakerPair | External ! | ○ | onlyOwner |
| L | updateBuyFees | External ! | ○ | onlyOwner |
| L | updateSellFees | External ! | ○ | onlyOwner |
| L | updateDevelopmentWallet | External ! | ○ | onlyOwner |
| L | updateTeamWallet | External ! | ○ | onlyOwner |
| L | updateLiquidityWallet | External ! | ○ | onlyOwner |
| L | updateSwapTokensAtAmount | External ! | ○ | onlyOwner |
```

### ### Legend

Symbol	Meaning
-----	-----
○	Function can modify state
⚡	Function is payable



# STATIC ANALYSIS

Different versions of Solidity are used:

- Version used: ['>=0.5.0', '>=0.6.2', '^0.8.0', '^0.8.17']
- >=0.5.0 (contracts/Token.sol#774)
- >=0.6.2 (contracts/Token.sol#583)
- >=0.6.2 (contracts/Token.sol#723)
- ^0.8.0 (contracts/Token.sol#87)
- ^0.8.0 (contracts/Token.sol#114)
- ^0.8.0 (contracts/Token.sol#139)
- ^0.8.0 (contracts/Token.sol#502)
- ^0.8.17 (contracts/Token.sol#8)
- ^0.8.17 (contracts/Token.sol#797)

Reference: <https://github.com/crytic/slither/wiki/Detector-Documentation#different-pragma-directives-are-used>

Context.\_msgData() (contracts/Token.sol#131-133) is never used and should be removed

ERC20.\_burn(address,uint256) (contracts/Token.sol#409-425) is never used and should be removed

Reference: <https://github.com/crytic/slither/wiki/Detector-Documentation#dead-code>

Pragma version^0.8.17 (contracts/Token.sol#8) necessitates a version too recent to be trusted. Consider deploying with 0.6.12/0.7.6/0.8.16

Pragma version^0.8.0 (contracts/Token.sol#87) allows old versions

Pragma version^0.8.0 (contracts/Token.sol#114) allows old versions

Pragma version^0.8.0 (contracts/Token.sol#139) allows old versions

Pragma version^0.8.0 (contracts/Token.sol#502) allows old versions

Pragma version>=0.6.2 (contracts/Token.sol#583) allows old versions

Pragma version>=0.6.2 (contracts/Token.sol#723) allows old versions

Pragma version>=0.5.0 (contracts/Token.sol#774) allows old versions

Pragma version^0.8.17 (contracts/Token.sol#797) necessitates a version too recent to be trusted. Consider deploying with 0.6.12/0.7.6/0.8.16

solc-0.8.20 is not recommended for deployment

Reference: <https://github.com/crytic/slither/wiki/Detector-Documentation#incorrect-versions-of-solidity>

Low level call in MarvinInu2.safeTransferBNB(address,uint256) (contracts/Token.sol#972-975):

- (success) = to.call{value: value}(new bytes(0)) (contracts/Token.sol#973)

Reference: <https://github.com/crytic/slither/wiki/Detector-Documentation#low-level-calls>

Function IUniswapV2Router01.WETH() (contracts/Token.sol#588) is not in mixedCase

Event MarvinInu2developmentWalletUpdated(address,address) (contracts/Token.sol#831) is not in CapWords

Parameter MarvinInu2.updateBuyFees(uint256,uint256,uint256).\_developmentFee (contracts/Token.sol#1006) is not in mixedCase

Parameter MarvinInu2.updateBuyFees(uint256,uint256,uint256).\_liquidityFee (contracts/Token.sol#1006) is not in mixedCase

Parameter MarvinInu2.updateBuyFees(uint256,uint256,uint256).\_teamFee (contracts/Token.sol#1006) is not in mixedCase

Parameter MarvinInu2.updateSellFees(uint256,uint256).\_developmentFee (contracts/Token.sol#1014) is not in mixedCase

Parameter MarvinInu2.updateSellFees(uint256,uint256).\_liquidityFee (contracts/Token.sol#1014) is not in mixedCase

Reference: <https://github.com/crytic/slither/wiki/Detector-Documentation#conformance-to-solidity-naming-conventions>

Variable IUniswapV2Router01.addLiquidity(address,address,uint256,uint256,uint256,uint256,address,uint256).amountADesired (contracts/Token.sol#593) is too similar to IUniswapV2Router01.addLiquidity(address,address,uint256,uint256,uint256,uint256,address,uint256).amountBDesired (contracts/Token.sol#594)

Reference: <https://github.com/crytic/slither/wiki/Detector-Documentation#variable-names-too-similar>

MarvinInu2.constructor(uint256) (contracts/Token.sol#835-861) uses literals with too many digits:

- swapTokensAtAmount = (initialSupply \* 1) / 100000 (contracts/Token.sol#854)

MarvinInu2.updateSwapTokensAtAmount(uint256) (contracts/Token.sol#1039-1044) uses literals with too many digits:

- require(bool,string)(newAmount >= (totalSupply() \* 1) / 100000,Swap amount cannot be lower than 0.001% total supply.) (contracts/Token.sol#1040)

Reference: <https://github.com/crytic/slither/wiki/Detector-Documentation#too-many-digits>

**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/0x3b4624f0978d9fad3cb43670c6bbd15c57794943f416f608d7078934c226718c>

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

<https://testnet.bscscan.com/tx/0xddb350b36e1614721dc90729a2fbc4d5087599867002dd5aa01a676e7f99e187>

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

<https://testnet.bscscan.com/tx/0xddb350b36e1614721dc90729a2fbc4d5087599867002dd5aa01a676e7f99e187>

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

<https://testnet.bscscan.com/tx/0x2f0d8a0d5eec50e1256e140ac9a2efd49ebd2cbb885aa2a684ac38d45ee607ab>

## 5- Buying when not excluded from fees (0-3% tax) (**passed**):

<https://testnet.bscscan.com/tx/0x121367953cd09bc59b8be6cd7c663e9c26c8a9d9edf5d9a9fb44678a52e82097>

## 6- Selling when not excluded from fees (0-3% tax) (**passed**):

<https://testnet.bscscan.com/tx/0xfd806e3b5870c5d4eb65e9a2bbaf9641a4ee918569ce6a13f7bd2a9d6a247e9f>



# FUNCTIONAL TESTING

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

<https://testnet.bscscan.com/tx/0x43c7739f0304b25a59cd8ce2d8555ef4e56b9594c1830dbbb28d3ec097e1ee03>

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

<https://testnet.bscscan.com/tx/0xfd806e3b5870c5d4eb65e9a2bbaf9641a4ee918569ce6a13f7bd2a9d6a247e9f>



# High Risk

## Centralization – swaps are disabled by default

**Severity:** High

**function:** enableTrading

**Status:** Resolved

### Overview:

The smart contract owner must enable trades for holders. If trading remain disabled, no one would be able to buy/sell/transfer tokens.

```
function enableTrading() external onlyOwner {  
    require(!tradingActive, "Cannot enable trading again");  
    tradingActive = true;  
    swapEnabled = true;  
    tradingBlock = block.number;  
}
```

### Suggestion

To mitigate this centralization issue, we propose the following options:

1. Renounce Ownership: Consider relinquishing control of the smart contract by renouncing ownership. This would remove the ability for a single entity to manipulate the router, reducing centralization risks.
2. Multi-signature Wallet: Transfer ownership to a multi-signature wallet. This would require multiple approvals for any changes to the mainRouter, adding an additional layer of security and reducing the centralization risk.
3. Transfer ownership to a trusted and valid 3<sup>rd</sup> party in order to guarantee enabling of the trades



# Medium Risk

## Centralization – EOA receiving LP tokens

**Severity:** Medium

**function:** addLiquidityETH

**Status:** Not Resolved

### Overview:

an EOA (liquidityAddress) is receiving LP tokens generated from auto-liquidity. This accumulated tokens could be used to remove a portion of liquidity pool.

```
uniswapV2Router.addLiquidityETH{value: bnbAmount}(  
    address(this),  
    tokenAmount,  
    0, // slippage is unavoidable  
    0, // slippage is unavoidable  
    liquidityAddress,  
    block.timestamp  
)
```

### Suggestion

Its suggested to burn or lock new LP tokens.



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# ABOUT AUDITACE

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