auditace.tech

AuditAce
FROM INCEPTION TO SUCCESS

# Smart Contract Audit

FOR

# Madagascar Inu

DATED : 28 June 23'

# AUDIT SUMMARY

**Project name** – Madagascar Inu

**Date**: 28 June, 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 | 0 | 0 |
| Acknowledged | 0 | 0 | 0 | 0 | 0 |
| Resolved | 0 | 0 | 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 done on BSC Test network, each test has its transaction has attached to it.

**3- Slither : Static Analysis**

**Testnet Link:** all tests were done using this contract, tests are done on BSC Testnet

https://testnet.bscscan.com/token/0xd0079045b14ffa7BDC19c835d1435cf093C3B9Ed

# Token Information

**Token Name** : Madagascar Inu

**Token Symbol**: Madagascar

**Decimals**: 18

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

**Token Address:**
0x98EEA212185c938d96f8f8E15adb3E2589c8a8e4

**Checksum:**
0e1f69c085696ce5c8a7d768d2e4347715e8d041

**Owner:**
0xd92B4752c176CB4fB5AF112b1B3e1C63D9724e1e

# TOKEN OVERVIEW

**Fees:**

Buy Fees: 0-10%

Sell Fees: 0-10%

Transfer Fees: 0%

**Fees Privilige:** Owner

**Ownership** : Owned

**Minting:** No mint function

**Max Tx Amount/ Max Wallet Amount: none**

**Blacklist: No**

**Other Priviliges**:

- initial distribution of tokens
- including or excluding from fees
- changing swap threshold
- 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

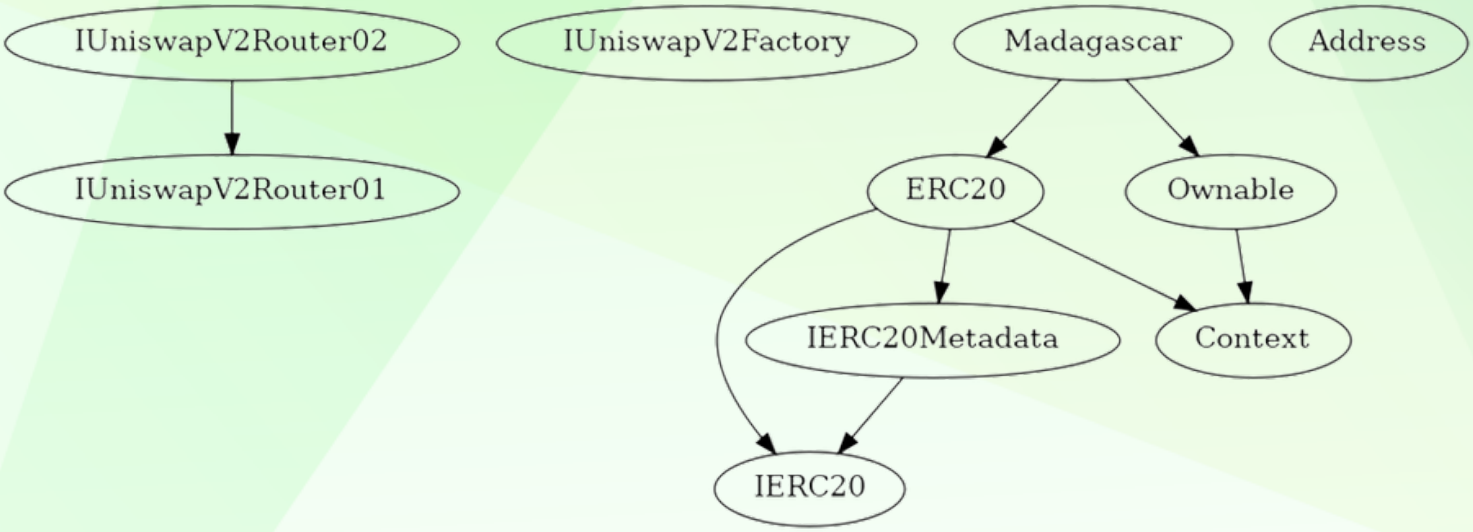
# CLASSIFICATION OF RISK

| 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 | 0 |
| Medium-Risk | 0 |
| Low-Risk | 0 |
| Gas Optimization / Suggestions | 0 |

# INHERITANCE TREE



# POINTS TO NOTE

- Owner is able to set buy/sell tax up to 10% each
- Owner is not able to set fee on transfers
- Owner is not able to blacklist an arbitrary address.
- Owner is not able to set max wallet/transfer/buy/sell
- Owner is not able to mint new tokens

# CONTRACT ASSESMENT

| Contract | Type | Bases | | |
|:---|:---|:---|:---|:---|
| └ | **Function Name** | **Visibility** | **Mutability** | **Modifiers** |
| | | | | |
| **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❗ |
| └ | swapETHForExactTokens | External ❗ | 💵 | NO❗ |
| └ | quote | External ❗ | | NO❗ |
| └ | getAmountOut | External ❗ | | NO❗ |
| └ | getAmountIn | External ❗ | | NO❗ |
| └ | getAmountsOut | External ❗ | | NO❗ |
| └ | getAmountsIn | External ❗ | | NO❗ |
| | | | | |
| **IUniswapV2Router02** | Interface | IUniswapV2Router01 ||| |
| └ | removeLiquidityETHSupportingFeeOnTransferTokens | External ❗ | 🛑 | NO❗ |
| └ | removeLiquidityETHWithPermitSupportingFeeOnTransferTokens | External ❗ | 🛑 | NO❗ |
| └ | swapExactTokensForTokensSupportingFeeOnTransferTokens | External ❗ | 🛑 | NO❗ |
| └ | swapExactETHForTokensSupportingFeeOnTransferTokens | External ❗ | 💵 | NO❗ |
| └ | swapExactTokensForETHSupportingFeeOnTransferTokens | 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❗ |
| | | | | |

# CONTRACT ASSESMENT

| **IERC20** | Interface | |||
| └ | totalSupply | External ❗ | | |NO❗ |
| └ | balanceOf | External ❗ | | |NO❗ |
| └ | transfer | External ❗ | 🛑 | |NO❗ |
| └ | allowance | External ❗ | | |NO❗ |
| └ | approve | External ❗ | 🛑 | |NO❗ |
| └ | transferFrom | External ❗ | 🛑 | |NO❗ |
||||||
| **IERC20Metadata** | Interface | IERC20 |||
| └ | name | External ❗ | | |NO❗ |
| └ | symbol | External ❗ | | |NO❗ |
| └ | decimals | External ❗ | | |NO❗ |
||||||
| **Context** | Implementation | |||
| └ | _msgSender | Internal 🔒 | | | |
| └ | _msgData | Internal 🔒 | | | |
||||||
| **ERC20** | Implementation | Context, IERC20, IERC20Metadata |||
| └ | <Constructor> | Public ❗ | 🛑 | |NO❗ |
| └ | name | Public ❗ | | |NO❗ |
| └ | symbol | Public ❗ | | |NO❗ |
| └ | decimals | Public ❗ | | |NO❗ |
| └ | totalSupply | Public ❗ | | |NO❗ |
| └ | balanceOf | Public ❗ | | |NO❗ |
| └ | transfer | Public ❗ | 🛑 | |NO❗ |
| └ | allowance | Public ❗ | | |NO❗ |
| └ | approve | Public ❗ | 🛑 | |NO❗ |
| └ | transferFrom | Public ❗ | 🛑 | |NO❗ |
| └ | increaseAllowance | Public ❗ | 🛑 | |NO❗ |
| └ | decreaseAllowance | Public ❗ | 🛑 | |NO❗ |
| └ | _transfer | Internal 🔒 | 🛑 | | |
| └ | _mint | Internal 🔒 | 🛑 | | |
| └ | _burn | Internal 🔒 | 🛑 | | |
| └ | _approve | Internal 🔒 | 🛑 | | |
| └ | _spendAllowance | Internal 🔒 | 🛑 | | |
| └ | _beforeTokenTransfer | Internal 🔒 | 🛑 | | |
| └ | _afterTokenTransfer | Internal 🔒 | 🛑 | | |
||||||
| **Ownable** | Implementation | Context |||
| └ | <Constructor> | Public ❗ | 🛑 | |NO❗ |
| └ | owner | Public ❗ | | |NO❗ |
| └ | _checkOwner | Internal 🔒 | | | |

# CONTRACT ASSESMENT

| └ | renounceOwnership | Public ❗ | 🛑 | onlyOwner |
| └ | transferOwnership | Public ❗ | 🛑 | onlyOwner |
| └ | _transferOwnership | Internal 🔒 | 🛑 | |
||||||
| **Address** | Library | |||
| └ | isContract | Internal 🔒 | | |
| └ | sendValue | Internal 🔒 | 🛑 | |
| └ | functionCall | Internal 🔒 | 🛑 | |
| └ | functionCall | Internal 🔒 | 🛑 | |
| └ | functionCallWithValue | Internal 🔒 | 🛑 | |
| └ | functionCallWithValue | Internal 🔒 | 🛑 | |
| └ | functionStaticCall | Internal 🔒 | | |
| └ | functionStaticCall | Internal 🔒 | | |
| └ | functionDelegateCall | Internal 🔒 | 🛑 | |
| └ | functionDelegateCall | Internal 🔒 | 🛑 | |
| └ | verifyCallResultFromTarget | Internal 🔒 | | |
| └ | verifyCallResult | Internal 🔒 | | |
| └ | _revert | Private 🔐 | | |
||||||
| **Madagascar** | Implementation | ERC20, Ownable |||
| └ | <Constructor> | Public ❗ | 🛑 | ERC20 |
| └ | <Receive Ether> | External ❗ | 💵 | NO❗ |
| └ | claimStuckTokens | External ❗ | 🛑 | onlyOwner |
| └ | excludeFromFees | External ❗ | 🛑 | onlyOwner |
| └ | isExcludedFromFees | Public ❗ | | NO❗ |
| └ | changeMarketingWallet | External ❗ | 🛑 | onlyOwner |
| └ | _transfer | Internal 🔒 | 🛑 | |
| └ | setSwapEnabled | External ❗ | 🛑 | onlyOwner |
| └ | setMarketingFee | External ❗ | 🛑 | onlyOwner |
| └ | setSwapTokensAtAmount | External ❗ | 🛑 | onlyOwner |
| └ | swapAndSendMarketing | Private 🔐 | 🛑 | |

### Legend

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

# STATIC ANALYSIS

```
Address._revert(bytes,string) (contracts/Token.sol#1002-1014) is never used and should be removed
Address.functionCall(address,bytes) (contracts/Token.sol#864-866) is never used and should be removed
Address.functionCall(address,bytes,string) (contracts/Token.sol#874-879) is never used and should be removed
Address.functionCallWithValue(address,bytes,uint256) (contracts/Token.sol#892-894) is never used and should be removed
Address.functionCallWithValue(address,bytes,uint256,string) (contracts/Token.sol#902-909) is never used and should be removed
Address.functionDelegateCall(address,bytes) (contracts/Token.sol#942-944) is never used and should be removed
Address.functionDelegateCall(address,bytes,string) (contracts/Token.sol#952-958) is never used and should be removed
Address.functionStaticCall(address,bytes) (contracts/Token.sol#917-919) is never used and should be removed
Address.functionStaticCall(address,bytes,string) (contracts/Token.sol#927-934) is never used and should be removed
Address.isContract(address) (contracts/Token.sol#815-821) is never used and should be removed
Address.verifyCallResult(bool,bytes,string) (contracts/Token.sol#990-1000) is never used and should be removed
Address.verifyCallResultFromTarget(address,bool,bytes,string) (contracts/Token.sol#966-982) is never used and should be removed
Context._msgData() (contracts/Token.sol#327-329) is never used and should be removed
ERC20._burn(address,uint256) (contracts/Token.sol#604-620) is never used and should be removed
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#dead-code

Pragma version>=0.6.2 (contracts/Token.sol#11) allows old versions
Pragma version>=0.6.2 (contracts/Token.sol#135) allows old versions
Pragma version>=0.5.0 (contracts/Token.sol#183) allows old versions
Pragma version^0.8.0 (contracts/Token.sol#204) allows old versions
Pragma version^0.8.0 (contracts/Token.sol#283) allows old versions
Pragma version^0.8.0 (contracts/Token.sol#310) allows old versions
Pragma version^0.8.0 (contracts/Token.sol#335) allows old versions
Pragma version^0.8.0 (contracts/Token.sol#697) allows old versions
Pragma version^0.8.1 (contracts/Token.sol#779) allows old versions
Pragma version^0.8 (contracts/Token.sol#1019) is too complex
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 Address.sendValue(address,uint256) (contracts/Token.sol#839-844):
        - (success) = recipient.call{value: amount}() (contracts/Token.sol#842)
Low level call in Address.functionCallWithValue(address,bytes,uint256,string) (contracts/Token.sol#902-909):
        - (success,returndata) = target.call{value: value}(data) (contracts/Token.sol#907)
Low level call in Address.functionStaticCall(address,bytes,string) (contracts/Token.sol#927-934):
        - (success,returndata) = target.staticcall(data) (contracts/Token.sol#932)
Low level call in Address.functionDelegateCall(address,bytes,string) (contracts/Token.sol#952-958):
        - (success,returndata) = target.delegatecall(data) (contracts/Token.sol#956)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#low-level-calls

Function IUniswapV2Router01.WETH() (contracts/Token.sol#15) is not in mixedCase
Parameter Madagascar.changeMarketingWallet(address)._marketingWallet (contracts/Token.sol#1111) is not in mixedCase
Parameter Madagascar.setSwapEnabled(bool)._enabled (contracts/Token.sol#1160) is not in mixedCase
Parameter Madagascar.setMarketingFee(uint256,uint256)._marketingFeeOnBuy (contracts/Token.sol#1165) is not in mixedCase
Parameter Madagascar.setMarketingFee(uint256,uint256)._marketingFeeOnSell (contracts/Token.sol#1165) is not in mixedCase
Variable Madagascar.USDT (contracts/Token.sol#1039) 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#20) is too similar to IUniswapV2Router01.addLiquidit
y(address,address,uint256,uint256,uint256,uint256,address,uint256).amountBDesired (contracts/Token.sol#21)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#variable-names-too-similar

Madagascar.USDT (contracts/Token.sol#1039) should be constant
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-constant

Madagascar.creator (contracts/Token.sol#1029) should be immutable
Madagascar.uniswapV2Pair (contracts/Token.sol#1025) should be immutable
Madagascar.uniswapV2Router (contracts/Token.sol#1024) 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

**Router (PCS V2):**
0xD99D1c33F9fC3444f8101754aBC46c52416550D1

All the functionalities have been tested, no issues were found

**1- Adding liquidity (passed):**
https://testnet.bscscan.com/tx/0xabee97bd9957324fce3cdb06b5478f63fbf072193461c9120fa5a1b0f0d836ca

**2- Buying when excluded (0% tax) (passed):**
https://testnet.bscscan.com/tx/0x694c6c294c74d35c867f2bca4c2b4b835c087d5e2adebba7f2d3b9f89bf87d62

**3- Selling when excluded (0% tax) (passed):**
https://testnet.bscscan.com/tx/0xef23f145f03191eb46b27ae9a766d2b6c9b149f3922af68bd23c58690c6ce908

**4- Transferring when excluded (0% tax) (passed):**
https://testnet.bscscan.com/tx/0x30e7d4621f4f59f202c2ecfb8a5364f1d41a8616c6dfc7fe9a76ba13134d9a7e

**5- Buying when not excluded from fees (0-10% tax) (passed):**
https://testnet.bscscan.com/tx/0xb3b569b373d47f2f79593c0ed40b4c35903f34b310b68f27588b17e918646aa0

**6- Selling when not excluded from fees (0-10% tax) (passed):**
https://testnet.bscscan.com/tx/0x9d746d48d0249b1d6ff187d21b328840eef24af8435fbf2e1ab2871315def536

# FUNCTIONAL TESTING

**7- Transferring when not excluded from fees (0% tax) (passed):**
https://testnet.bscscan.com/tx/0x0b94094ee7b45842fd162e68249e202d9bc56af7eeaedb9daf8332c1739879aa

**8-Internal swap (Marketing wallet receiving USDT)(passed):**
https://testnet.bscscan.com/address/0xd92b4752c176cb4fb5af112b1b3e1c63d9724e1e#tokentxns

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