AuditAce

FROM INCEPTION TO SUCCESS

Smart Contract Audit

FOR

METADOGE2

DATED : 10 July 23'

FUNCTIONAL TESTING

Centralization – Enabling Trades

Severity: **High**

function: enableTrading

Status: Not Resolved

Overview:

Owner of the contract must enable trades manually for investors, otherwise no one would be able to buy/sell/transfer their tokens.

```
function enableTrading() external onlyOwner {
    require(!isTradingEnabled, "Trading already enabled");
    isTradingEnabled = true;
    emit _enableTrading();
}
```

Suggestion

Its suggested to either enable trades prior to presale, or transfer ownership of the contract to a certified pinsksale safu developer to guearanee enabling of trades.

AUDIT SUMMARY

Project name – METADOGE2

Date: 10 July, 2023

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

Audit Status: **Passed with High Risk**

Issues Found

Status	Critical	High	Medium	Low	Suggestion
Open	0	1	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 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/0xC0B7a79Bd06fc7FE3F2607c07f397b26244Ec4fa

Token Information

Token Name : META DOGE 2.0

Token Symbol: METADOGE2

Decimals: 9

Token Supply:100,000,000

Token Address:
0x30Ab698F605a277F129cFc754De309D344Bd92e6

Checksum:
f1bc1e948b9029e1f5028ecd3146efdbd6f0e4bc

Owner:
0xf5F2a0255310F97eda5ed25D6cB23c34e6a1B5Ea
(at time of writing the audit)

Deployer:
0xf5F2a0255310F97eda5ed25D6cB23c34e6a1B5Ea

TOKEN OVERVIEW

Fees:

Buy Fees: 0%

Sell Fees: 5%

Transfer Fees: 0%

Fees Privilege: Immutable Fees

Ownership: owned

Minting: none

Max Tx Amount/ Max Wallet Amount: Yes

Blacklist: No

Other Privileges: - enabling trades

- Initial distribution of the tokens

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

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

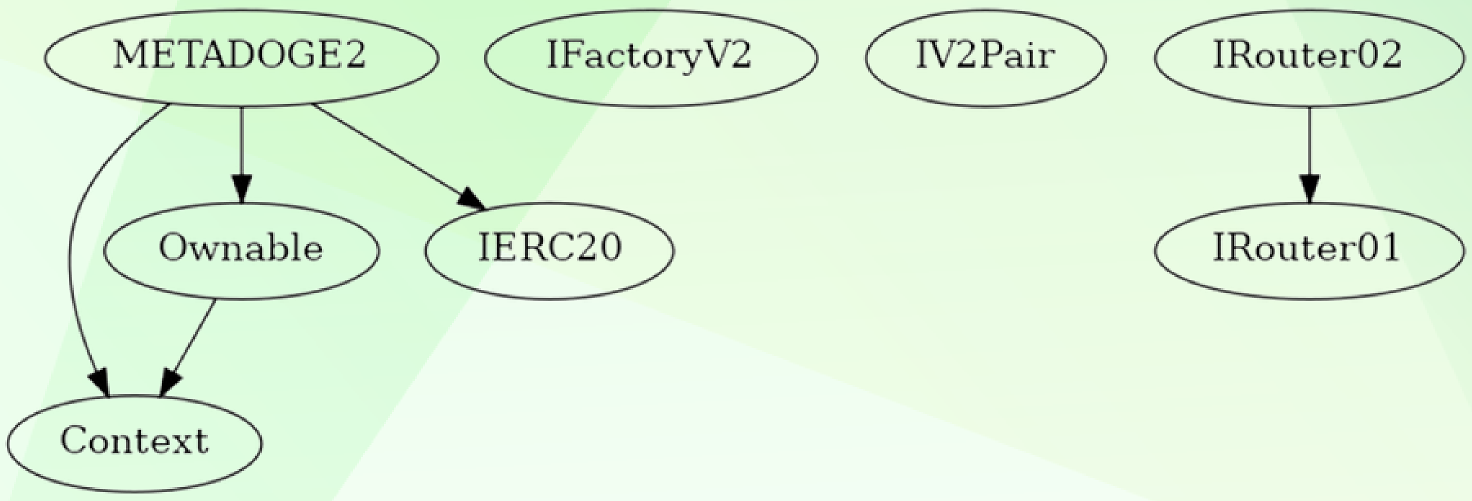
CLASSIFICATION OF RISK

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	0
🟦 Gas Optimization / Suggestions	0

INHERITANCE TREE



POINTS TO NOTE

- Owner is not change current fees (5% buy / 0% sell / 0% transfer)
- Owner is not able to blacklist an address
- Owner is not able to disable buy/sell/transfers
- Owner is not able to set max wallet limit and minimum wallet limits
- Owner is not able to mint new tokens
- Owner must enable trades manually

CONTRACT ASSESMENT

```
| Contract |        Type        |       Bases      |                  |                 |
|:----------:|:-------------------:|:----------------:|:----------------:|:---------------:|
|    └     |  **Function Name**  |  **Visibility**  |  **Mutability**  |  **Modifiers**  |
||||||
| **Context** | Implementation |  |||
| └ | <Constructor> | Public ❗️ | 🛑  |NO ❗️ |
| └ | _msgSender | Internal 🔒 |   | |
| └ | _msgData | Internal 🔒 |   | |
||||||
| **Ownable** | Implementation | Context |||
| └ | <Constructor> | Public ❗️ | 🛑  |NO ❗️ |
| └ | owner | Public ❗️ |   |NO ❗️ |
| └ | renounceOwnership | Public ❗️ | 🛑  | onlyOwner |
| └ | transferOwnership | Public ❗️ | 🛑  | onlyOwner |
| └ | _setOwner | Private 🔐 | 🛑  | |
||||||
| **IFactoryV2** | Interface |  |||
| └ | getPair | External ❗️ |   |NO ❗️ |
| └ | createPair | External ❗️ | 🛑  |NO ❗️ |
||||||
| **IV2Pair** | Interface |  |||
| └ | factory | External ❗️ |   |NO ❗️ |
| └ | getReserves | External ❗️ |   |NO ❗️ |
| └ | sync | External ❗️ | 🛑  |NO ❗️ |
||||||
| **IRouter01** | Interface |  |||
| └ | factory | External ❗️ |   |NO ❗️ |
| └ | WETH | External ❗️ |   |NO ❗️ |
| └ | addLiquidityETH | External ❗️ |  💵 |NO ❗️ |
| └ | addLiquidity | External ❗️ | 🛑  |NO ❗️ |
| └ | swapExactETHForTokens | External ❗️ |  💵 |NO ❗️ |
| └ | getAmountsOut | External ❗️ |   |NO ❗️ |
| └ | getAmountsIn | External ❗️ |   |NO ❗️ |
||||||
| **IRouter02** | Interface | IRouter01 |||
| └ | swapExactTokensForETHSupportingFeeOnTransferTokens | External ❗️ | 🛑  |NO ❗️ |
| └ | swapExactETHForTokensSupportingFeeOnTransferTokens | External ❗️ |  💵 |NO ❗️ |
| └ | swapExactTokensForTokensSupportingFeeOnTransferTokens | External ❗️ | 🛑  |NO ❗️ |
| └ | swapExactTokensForTokens | External ❗️ | 🛑  |NO ❗️ |
||||||
| **IERC20** | Interface |  |||
| └ | totalSupply | External ❗️ |   |NO ❗️ |
| └ | decimals | External ❗️ |   |NO ❗️ |
| └ | symbol | External ❗️ |   |NO ❗️ |
```

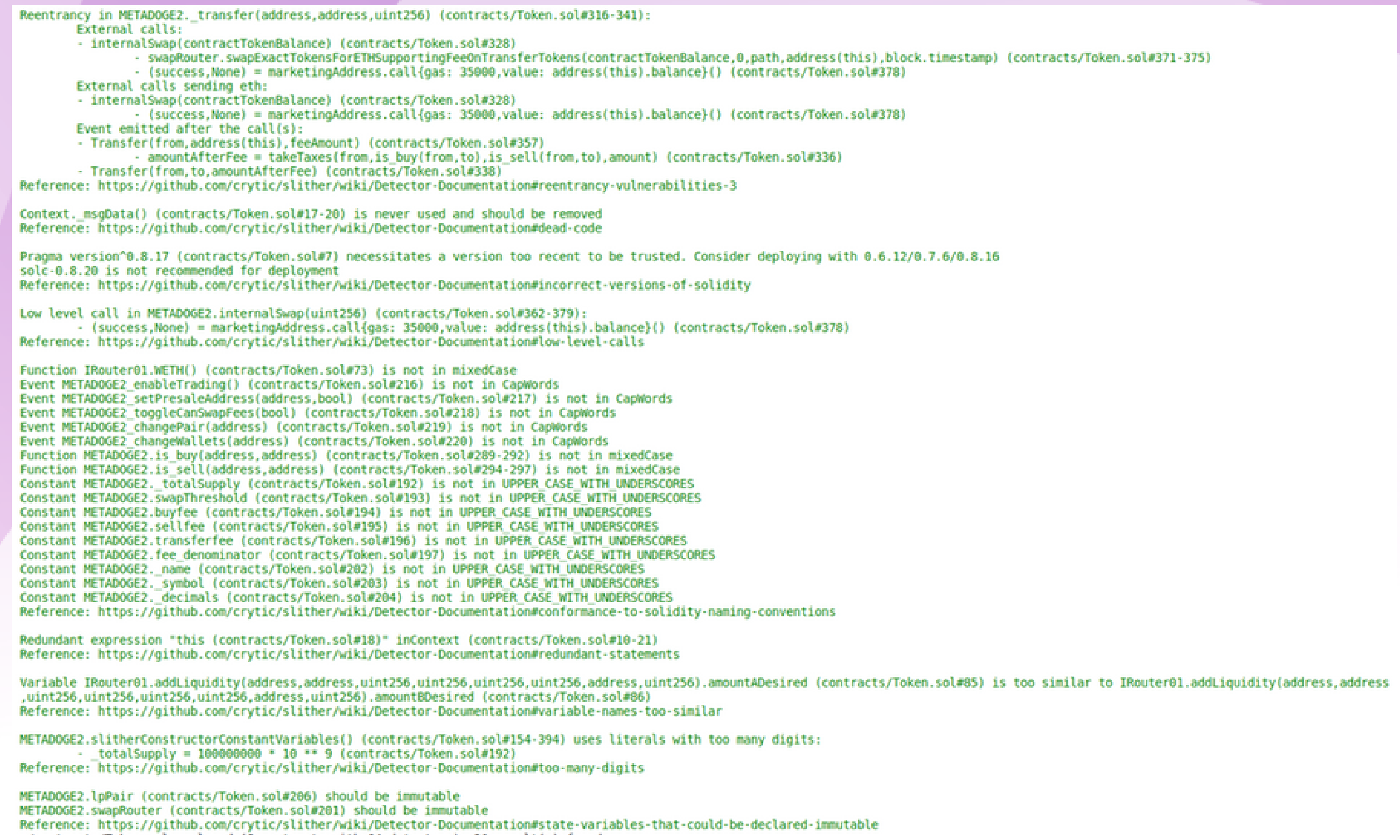
CONTRACT ASSESMENT

```
| └ | name | External ❗ |  |NO ❗ |
| └ | getOwner | External ❗ |  |NO ❗ |
| └ | balanceOf | External ❗ |  |NO ❗ |
| └ | transfer | External ❗ | 🛑 |NO ❗ |
| └ | allowance | External ❗ |  |NO ❗ |
| └ | approve | External ❗ | 🛑 |NO ❗ |
| └ | transferFrom | External ❗ | 🛑 |NO ❗ |
||||||
| **METADOGE2** | Implementation | Context, Ownable, IERC20 |||
| └ | totalSupply | External ❗ |  |NO ❗ |
| └ | decimals | External ❗ |  |NO ❗ |
| └ | symbol | External ❗ |  |NO ❗ |
| └ | name | External ❗ |  |NO ❗ |
| └ | getOwner | External ❗ |  |NO ❗ |
| └ | allowance | External ❗ |  |NO ❗ |
| └ | balanceOf | Public ❗ |  |NO ❗ |
| └ | <Constructor> | Public ❗ | 🛑 |NO ❗ |
| └ | <Receive Ether> | External ❗ | 💵 |NO ❗ |
| └ | transfer | Public ❗ | 🛑 |NO ❗ |
| └ | approve | External ❗ | 🛑 |NO ❗ |
| └ | _approve | Internal 🔒 | 🛑 | |
| └ | transferFrom | External ❗ | 🛑 |NO ❗ |
| └ | isNoFeeWallet | External ❗ |  |NO ❗ |
| └ | setNoFeeWallet | Public ❗ | 🛑 | onlyOwner |
| └ | isLimitedAddress | Internal 🔒 |  | |
| └ | is_buy | Internal 🔒 |  | |
| └ | is_sell | Internal 🔒 |  | |
| └ | canSwap | Internal 🔒 |  | |
| └ | changeLpPair | External ❗ | 🛑 | onlyOwner |
| └ | toggleCanSwapFees | External ❗ | 🛑 | onlyOwner |
| └ | _transfer | Internal 🔒 | 🛑 | |
| └ | changeWallets | External ❗ | 🛑 | onlyOwner |
| └ | takeTaxes | Internal 🔒 | 🛑 | |
| └ | internalSwap | Internal 🔒 | 🛑 | inSwapFlag |
| └ | setPresaleAddress | External ❗ | 🛑 | onlyOwner |
| └ | enableTrading | External ❗ | 🛑 | onlyOwner |

### Legend

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

STATIC ANALYSIS



```
Reentrancy in METADOGE2._transfer(address,address,uint256) (contracts/Token.sol#316-341):
        External calls:
        - internalSwap(contractTokenBalance) (contracts/Token.sol#328)
                - swapRouter.swapExactTokensForETHSupportingFeeOnTransferTokens(contractTokenBalance,0,path,address(this),block.timestamp) (contracts/Token.sol#371-375)
                - (success,None) = marketingAddress.call{gas: 35000,value: address(this).balance}() (contracts/Token.sol#378)
        External calls sending eth:
        - internalSwap(contractTokenBalance) (contracts/Token.sol#328)
                - (success,None) = marketingAddress.call{gas: 35000,value: address(this).balance}() (contracts/Token.sol#378)
        Event emitted after the call(s):
        - Transfer(from,address(this),feeAmount) (contracts/Token.sol#357)
                - amountAfterFee = takeTaxes(from,is_buy(from,to),is_sell(from,to),amount) (contracts/Token.sol#336)
        - Transfer(from,to,amountAfterFee) (contracts/Token.sol#338)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#reentrancy-vulnerabilities-3

Context._msgData() (contracts/Token.sol#17-20) 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#7) 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 METADOGE2.internalSwap(uint256) (contracts/Token.sol#362-379):
        - (success,None) = marketingAddress.call{gas: 35000,value: address(this).balance}() (contracts/Token.sol#378)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#low-level-calls

Function IRouter01.WETH() (contracts/Token.sol#73) is not in mixedCase
Event METADOGE2_enableTrading() (contracts/Token.sol#216) is not in CapWords
Event METADOGE2_setPresaleAddress(address,bool) (contracts/Token.sol#217) is not in CapWords
Event METADOGE2_toggleCanSwapFees(bool) (contracts/Token.sol#218) is not in CapWords
Event METADOGE2_changePair(address) (contracts/Token.sol#219) is not in CapWords
Event METADOGE2_changeWallets(address) (contracts/Token.sol#220) is not in CapWords
Function METADOGE2.is_buy(address,address) (contracts/Token.sol#289-292) is not in mixedCase
Function METADOGE2.is_sell(address,address) (contracts/Token.sol#294-297) is not in mixedCase
Constant METADOGE2._totalSupply (contracts/Token.sol#192) is not in UPPER_CASE_WITH_UNDERSCORES
Constant METADOGE2.swapThreshold (contracts/Token.sol#193) is not in UPPER_CASE_WITH_UNDERSCORES
Constant METADOGE2.buyfee (contracts/Token.sol#194) is not in UPPER_CASE_WITH_UNDERSCORES
Constant METADOGE2.sellfee (contracts/Token.sol#195) is not in UPPER_CASE_WITH_UNDERSCORES
Constant METADOGE2.transferfee (contracts/Token.sol#196) is not in UPPER_CASE_WITH_UNDERSCORES
Constant METADOGE2.fee_denominator (contracts/Token.sol#197) is not in UPPER_CASE_WITH_UNDERSCORES
Constant METADOGE2._name (contracts/Token.sol#202) is not in UPPER_CASE_WITH_UNDERSCORES
Constant METADOGE2._symbol (contracts/Token.sol#203) is not in UPPER_CASE_WITH_UNDERSCORES
Constant METADOGE2._decimals (contracts/Token.sol#204) is not in UPPER_CASE_WITH_UNDERSCORES
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#conformance-to-solidity-naming-conventions

Redundant expression "this (contracts/Token.sol#18)" inContext (contracts/Token.sol#10-21)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#redundant-statements

Variable IRouter01.addLiquidity(address,address,uint256,uint256,uint256,uint256,address,uint256).amountADesired (contracts/Token.sol#85) is too similar to IRouter01.addLiquidity(address,address
,uint256,uint256,uint256,uint256,address,uint256).amountBDesired (contracts/Token.sol#86)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#variable-names-too-similar

METADOGE2.slitherConstructorConstantVariables() (contracts/Token.sol#154-394) uses literals with too many digits:
        - _totalSupply = 100000000 * 10 ** 9 (contracts/Token.sol#192)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#too-many-digits

METADOGE2.lpPair (contracts/Token.sol#206) should be immutable
METADOGE2.swapRouter (contracts/Token.sol#201) 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

1- Adding liquidity (passed):
https://testnet.bscscan.com/tx/0x7ccd11ee8592d61a13aa9fad7c70e30ff16e57ff0e1796b04b7b5bb6534af382

2- Buying when excluded from fees (0% tax) (passed):
https://testnet.bscscan.com/tx/0x244b38d6302738a466913ceffacbe069a8b5684b2aecda1a1177f8cfab17071e

3- Selling when excluded from fees (0% tax) (passed):
https://testnet.bscscan.com/tx/0x2ca510c32952695990a4c8d12fceae2ed4abf898cd62c5088f4fe1efda6d3103

4- Transferring when excluded from fees (0% tax) (passed):
https://testnet.bscscan.com/tx/0xd14bc462f790f6f5b96d46d1416b9877a0111580b1004b02da3f4b4c385683b9

5- Buying(0% tax) (passed):
https://testnet.bscscan.com/tx/0xe620c6963fb3ec2b38b94e4d8cc03b86b7b257d61ebedf61ec09a1a37b2fc209

6- Selling (5% tax) (passed):
https://testnet.bscscan.com/tx/0x962b38225c61462503066923 8e72fdaaa574e0a27c5a8916ac220a829da0ea7c

FUNCTIONAL TESTING

4- Transferring (0% tax) (passed):
https://testnet.bscscan.com/tx/0xfcaa7ecc43e4210b2e2ea9b92ce9946097c513687784f9c8c7d9a9a5b867866c

4- Internal swap (ETH sent to marketing wallet) (passed):
https://testnet.bscscan.com/address/0xC150d340dC05c73EBB35373dC5E06354bC6B95B3#internaltx

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