soken

SMART CONTRACT SECURITY AUDIT

Mastiff Inu

November, 2021

Website: soken.io

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Disclaimer

This is a comprehensive report based on our automated and manual examination of cybersecurity vulnerabilities and framework flaws. We took into consideration smart contract based algorithms, as well. Reading the full analysis report is essential to build your understanding of project's security level. It is crucial to take note, though we have done our best to perform this analysis and report, that you should not rely on the our research and cannot claim what it states or how we created it. Before making any judgments, you have to conduct your own independent research. We will discuss this in more depth in the following disclaimer - please read it fully.

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Security analysis is based only on the smart contracts. No applications or operations were reviewed for security. No product code has been reviewed.

Procedure

Our analysis contains following steps:

1. Project Analysis;

2. Manual analysis of smart contracts:
- Deploying smart contracts on any of the network(Ropsten/Rinkeby) using Remix IDE
- Hashes of all transaction will be recorded
- Behaviour of functions and gas consumption is noted, as well.

3. Unit Testing:
- Smart contract functions will be unit tested on multiple parameters and under multiple conditions to ensure that all paths of functions are functioning as intended.
- In this phase intended behaviour of smart contract is verified.
- In this phase, we would also ensure that smart contract functions are not consuming unnecessary gas.
- Gas limits of functions will be verified in this stage.

4. Automated Testing:
- Mythril
- Oyente
- Manticore
- Solgraph

Terminology

We categorize the finding into 4 categories based on their vulnerability:

- Low-severity issue — less important, must be analyzed
- Medium-severity issue — important, needs to be analyzed and fixed
- High-severity issue —important, might cause vulnerabilities, must be analyzed and fixed
- Critical-severity issue —serious bug causes, must be analyzed and fixed.

Limitations

The security audit of Smart Contract cannot cover all vulnerabilities. Even if no vulnerabilities are detected in the audit, there is no guarantee that future smart contracts are safe. Smart contracts are in most cases safeguarded against specific sorts of attacks. In order to find as many flaws as possible, we carried out a comprehensive smart contract audit. Audit is a document that is not legally binding and guarantees nothing.

Token Contract Details for 13.11.2021

Contract Name: **MastiffInu**

Deployed address: **0x91d0D7349e98b52eDB8628645B8E1bb5f290a4C9**

Total Supply: **1,000,000,000,000,000**

Token Tracker: **MINU**

Decimals: **9**

Token holders: **5,448**

Transactions count: **17,152**

Top 100 holders dominance: **72.95%**

Audit Details

Project Name: **Mastiff Inu**

Language: **Solidity**

Compiler Version: **v0.8.4**

Blockchain: **BSC**

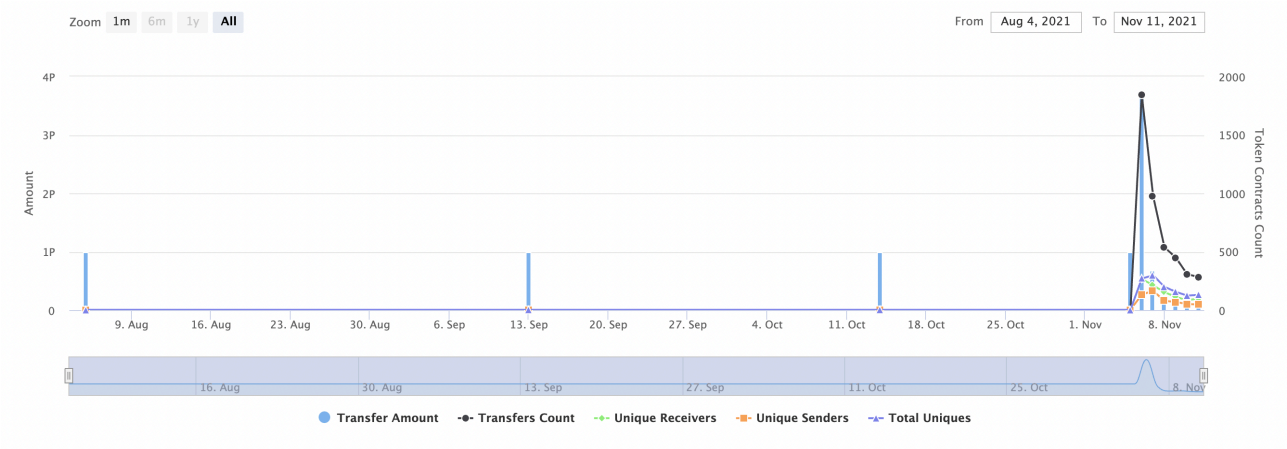
Social Profiles

Project Website: **https://mastiffinu.org/**

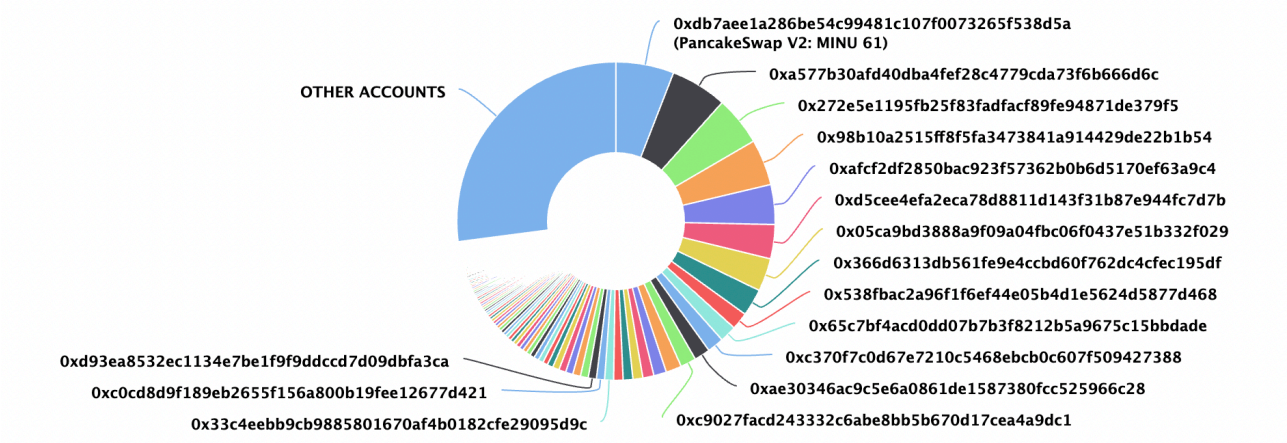
Project Twitter: **https://twitter.com/MastiffInu**

Project Telegram: **https://t.me/mastiffinuofficial**

Token Analytics



MINU Token Distribution



MINU Top Holders

Rank	Address	Quantity (Token)	Percentage
1	PancakeSwap V2: MINU 61	58,973,115,899,156.21086464	5.8973%
2	0xa577b30afd40dba4fef28c4779cda73f6b666d6c	57,333,051,932,962.866157207	5.7333%
3	0x272e5e1195fb25f83fadfacf89fe94871de379f5	50,048,640,902,079.691276484	5.0049%
4	0x98b10a2515ff8f5fa3473841a914429de22b1b54	46,759,966,887,863.430582978	4.6760%
5	0xafcf2df2850bac923f57362b0b6d5170ef63a9c4	40,427,884,392,306.554788372	4.0428%
6	0xd5cee4efa2eca78d8811d143f31b87e944fc7d7b	34,698,319,182,465.170416336	3.4698%
7	0x05ca9bd3888a9f09a04fbc06f0437e51b332f029	33,524,574,084,546.983126249	3.3525%
8	0x366d6313db561fe9e4ccbd60f762dc4cfec195df	27,690,242,802,012.453813924	2.7690%
9	0x538fbac2a96f1f6ef44e05b4d1e5624d5877d468	17,461,262,233,067.93312603	1.7461%
10	0x65c7bf4acd0dd07b7b3f8212b5a9675c15bbdade	17,070,144,310,482.324781331	1.7070%

Swap Analysis

✔ Token is sellable (not a honeypot)

✘ Buy fee is less than 5% (10%)

✘ Sell fee is less than 5% (9.8%)

Contract Analysis

✔ Verified contract source

✘ No prior similar token contracts

✔ Source does not contain a proxy contract

✔ Source does not contain a pausable contract

✘ Ownership renounced or source does not contain an owner contract.

✔ Owner wallet contains less than 5% of token supply (1.67%)

✔ Creator wallet contains less than 5% of token supply (0%)

✘ All other holders possess less than 5% of token supply

✔ Adequate liquidity present (140.43 BNB)

✘ At least 95% of liquidity burned/locked (56.95%)

Contract Function Details

+ [Lib] SafeMath
- [Int] add
- [Int] sub
- [Int] sub
- [Int] mul
- [Int] div
- [Int] div
- [Int] mod
- [Int] mod

+ Context.sol
- [Int] _msgSender
- [Int] _msgData

+ Ownable is Context (Context)
- [Pub] owner
- [Pub] renounceOwnership
- [Pub] transferOwnership
- [Pub] lock
- [Pub] unlock

+ [Int] IUniswapV2Factory
- [Ext] feeTo
- [Ext] feeToSetter
- [Ext] getPair
- [Ext] allPairs
- [Ext] allPairsLength
- [Ext] createPair #
- [Ext] setFeeTo #
- [Ext] setFeeToSetter #

+ [Int] IUniswapV2Pair
- [Ext] name
- [Ext] symbol
- [Ext] decimals
- [Ext] totalSupply
- [Ext] balanceOf
- [Ext] allowance
- [Ext] approve #
- [Ext] transfer #
- [Ext] transferFrom #
- [Ext] DOMAIN_SEPARATOR

- [Ext] PERMIT_TYPEHASH
- [Ext] nonces
- [Ext] permit #
- [Ext] MINIMUM_LIQUIDITY
- [Ext] factory
- [Ext] token0
- [Ext] token1
- [Ext] getReserves
- [Ext] price0CumulativeLast
- [Ext] price1CumulativeLast
- [Ext] kLast
- [Ext] mint
- [Ext] burn #
- [Ext] swap #
- [Ext] skim #
- [Ext] sync #
- [Ext] initialize #

+ [Int] IUniswapV2Router01
- [Ext] factory
- [Ext] WETH
- [Ext] addLiquidity #
- [Ext] addLiquidityETH ($)
- [Ext] removeLiquidity #
- [Ext] removeLiquidityETH #
- [Ext] removeLiquidityWithPermit #
- [Ext] removeLiquidityETHWithPermit #
- [Ext] swapExactTokensForTokens #
- [Ext] swapTokensForExactTokens #
- [Ext] swapExactETHForTokens ($)
- [Ext] swapTokensForExactETH #
- [Ext] swapExactTokensForETH #
- [Ext] swapETHForExactTokens ($)
- [Ext] quote
- [Ext] getAmountOut
- [Ext] getAmountIn
- [Ext] getAmountsOut
- [Ext] getAmountsIn

+ [Int] IUniswapV2Router02 is IUniswapV2Router01
- [Ext] removeLiquidityETHSupportingFeeOnTransferTokens ($)
- [Ext] removeLiquidityETHWithPermitSupportingFeeOnTransferTokens
- [Ext] swapExactTokensForTokensSupportingFeeOnTransferTokens
- [Ext] swapExactETHForTokensSupportingFeeOnTransferTokens
- [Ext] swapExactTokensForETHSupportingFeeOnTransferTokens

+ [Int] IBEP20.sol
- [Ext] totalSupply
- [Ext] balanceOf
- [Ext] transfer
- [Ext] allowance
- [Ext] approve
- [Ext] transferFrom

+ MastiffInu is Context, IBEP20, Ownable
- [Pub] name
- [Pub] symbol
- [Pub] decimals
- [Pub] totalSupply
- [Pub] balanceOf
- [Pub] transfer
- [Pub] allowance
- [Pub] approve
- [Pub] transferFrom
- [Pub] increaseAllowance
- [Pub] decreaseAllowance
- [Pub] isExcludedFromReward
- [Pub] totalFees
- [Pub] deliver
- [Pub] reflectionFromToken
- [Pub] tokenFromReflection
- [Pub] excludeFromReward
- [Pub] includeInReward
- [Ext] setMarketWallet
- [Ext] setExcludedFromFee
- [Ext] setTaxFeePercent
- [Ext] setLiquidityFeePercent
- [Ext] setPercentageOfLiquidityForMarketing
- [Ext] setMaxTxPercent
- [Ext] setCharityFeePercent
- [Pub] setSwapAndLiquifyEnabled
- [Ext] prepareForPreSale
- [Ext] afterPreSale
- [Ext] resetValues
- [Ext] setUniswapRouter
- [Ext] setUniswapPair
- [Ext] setExcludedFromAutoLiquidity
- [Prv] _reflectFee
- [Prv] _getValues
- [Prv] _getTValues

- [Prv] _getRValues
- [Prv] _getRate
- [Prv] _getCurrentSupply
- [Prv] takeTransactionFee
- [Prv] calculateFee
- [Pub] isExcludedFromFee
- [Prv] _approve
- [Prv] _transfer
- [Prv] swapAndLiquify
- [Prv] swapTokensForBnb
- [Prv] addLiquidity
- [Prv] _tokenTransfer
- [Prv] _transferStandard
- [Prv] _transferBothExcluded
- [Prv] _transferToExcluded
- [Prv] _transferFromExcluded
- [Prv] _transferToExcluded
- [Prv] _transferFromExcluded

Vulnerabilities checking

Issue Description	Checking Status
Compiler Errors	Completed
Delays in Data Delivery	Completed
Re-entrancy	Completed
Transaction-Ordering Dependence	Completed
Timestamp Dependence	Completed
Shadowing State Variables	Completed
DoS with Failed Call	Completed
DoS with Block Gas Limit	Low-severity issues
Outdated Complier Version	Completed
Assert Violation	Completed
Use of Deprecated Solidity Functions	Completed
Integer Overflow and Underflow	Completed
Function Default Visibility	Completed
Malicious Event Log	Completed
Math Accuracy	Completed
Design Logic	Completed
Fallback Function Security	Completed
Cross-function Race Conditions	Completed
Safe Zeppelin Module	Completed

Security Issues

1) Volatile Code:

The return values of functions *swapExactTokensForETHSupportingFeeOnTransferTokens* and *addLiquidityETH* are not properly handled.

Recommendation:

We recommend using variables to receive the return value of the functions mentioned above and handle both success and failure cases if needed by the business logic.

2) Out of Gas issue:

```
function includeInReward(address account) external onlyOwner() {
    require(_isExcluded[account], "Account is already excluded");
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (_excluded[i] == account) {
            _excluded[i] = _excluded[_excluded.length - 1];
            _tOwned[account] = 0;
            _isExcluded[account] = false;
            _excluded.pop();
            break;
        }
    }
}
```

The function includeInRewards() uses the loop to find and remove addresses from the _excluded list. Function will be aborted with OUT_OF_GAS exception if there will be a long excluded addresses list.

3) Out of Gas issue:

```
function _getCurrentSupply() private view returns (uint256, uint256) {
    uint256 rSupply = _rTotal;
    uint256 tSupply = _tTotal;
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (_rOwned[_excluded[i]] > rSupply || _tOwned[_excluded[i]] > tSupply) return (_rTotal, _tTotal);
        rSupply = rSupply.sub(_rOwned[_excluded[i]]);
        tSupply = tSupply.sub(_tOwned[_excluded[i]]);
    }
    if (rSupply < _rTotal.div(_tTotal)) return (_rTotal, _tTotal);
    return (rSupply, tSupply);
}
```

The function _getCurrentSupply also uses the loop for evaluating total supply. It also could be aborted with OUT_OF_GAS exception if there will be a long excluded addresses list.

Recommendation:

Use EnumerableSet instead of array or do not use long arrays.

Conclusion

Low-severity issues exist within smart contracts. Smart contracts are free from any critical or high-severity issues.

NOTE: Please check the disclaimer above and note, that audit makes no statements or warranties on business model, investment attractiveness or code sustainability.

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