

Smart Contract Audit

FOR

Alpha Rabbit

DATED: 11 Mar 23'



AUDIT SUMMARY

Project name - Alpha Rabbit

Date: 11 March, 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	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/address/0x2a3f52a0c4 718B221aF00465bf3173b4cF65EC50



Token Information

Token Name: Alpha Rabbit

Token Symbol: ARabbit

Decimals: 8

Token Supply: 10,000,000

Token Address:

0x1Cb918D7c342a78C059E0DdF42009E91DeD99767

Checksum:

fc821212eb014466f904b05bb162159baaca2466

Owner:

0x72745Cc2a6461Ee1a03529Dd977F4Aa47d20D4Da (at time of writing the audit)



TOKEN OVERVIEW

Fees:

Buy Fees: 3% currently

Sell Fees: 3% currently

Transfer Fees: 1% currently

Fees Privilige: Owner

Ownership: Owned

Minting: No mint function

Max Tx Amount: yes, 0.1% of total supply as safeguard

Blacklist: No

Other Priviliges: including and excluding form fee - changing distirbution settings (min tokens to be eligible, cooldown between claims etc)



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-byline 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





CLASSIFICATION OF RISK

Severity

- Critical
- High-Risk
- Medium-Risk
- Low-Risk
- Gas Optimization
 /Suggestion

Description

These vulnerabilities could be exploited easily and can lead to asset loss, data loss, asset, or data manipulation. They should be fixed right away.

A vulnerability that affects the desired outcome when using a contract, or provides the opportunity to use a contract in an unintended way.

A vulnerability that could affect the desired outcome of executing the contract in a specific scenario.

A vulnerability that does not have a significant impact on possible scenarios for the use of the contract and is probably subjective.

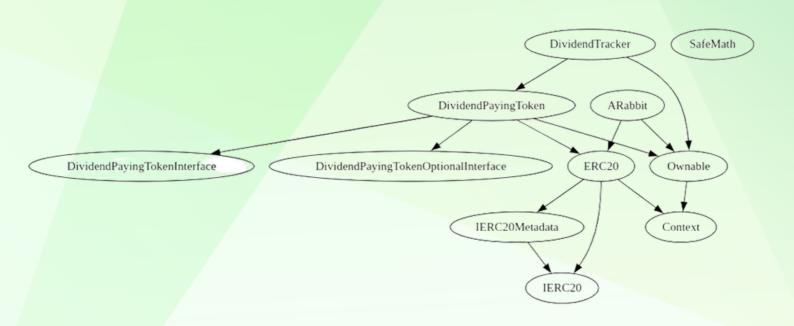
A vulnerability that has an informational character but is not affecting any of the code.

Findings

Severity	Found
◆ Critical	0
♦ High-Risk	0
◆ Medium-Risk	1
♦ Low-Risk	0
Gas Optimization /Suggestions	0



INHERITANCE TREE





POINTS TO NOTE

- Owner is not able to set buy fee more than 10%
- Owner is not able to set sell fee more than 10%
- Owner is not able to set transfer fee more than 2%
- Owner is able to set max buy/sell amount, but not less than 0.1% of total supply
- · Owner is not able to blacklist an arbitrary wallet
- Owner is not able to disable trades
- Owner is not able to mint new tokens



TOKEN DISTRIBUTION

It should be noted that the owner currently holds 100% of the total supply. However, information about the distribution of these tokens is not available, and it is recommended that investors exercise caution when considering this aspect.



```
| Contract |
                Type
                              Bases
<mark>|;-----:|;-----:|;-----:</mark>-;|;------;|;-----:|;
       | **Function Name** | **Visibility** | **Mutability** | **Modifiers** |
111111
| **Context** | Implementation | | | |
| | msgData | Internal 🦰 | | |
\Pi\Pi\Pi\Pi
**Ownable** | Implementation | Context | | |
| L | <Constructor> | Public | | ( NO | |
| L | owner | Public | | NO | |
📙 renounceOwnership | Public 📗 🛑 | onlyOwner |
🖊 | transferOwnership | Public 📗 | 🍥 | onlyOwner |
| L | transferOwnership | Internal 🖺 | 🛑 | |
\Pi\Pi\Pi\Pi
| **SafeMath** | Library | | | | |
| L | add | Internal 🦰 | | | |
| L | sub | Internal 🦰 | | | |
| L | sub | Internal 🦰 | | | |
| L | mul | Internal 🦰 | | | |
| L | div | Internal 🦰 | | |
| L | div | Internal 🦰 | | |
| L | mod | Internal 🦰 | | |
| L | mod | Internal 🦰 | | | |
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| **SafeMathInt** | Library | | | | |
| L | mul | Internal 🦰 | | |
| L | div | Internal 🦲 | | |
| L | sub | Internal 🦰 | | | |
| L | add | Internal 🦰 | | | |
| L | abs | Internal 🦰 | | |
| L | toUint256Safe | Internal 🦰 | | |
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| **SafeMathUint** | Library | |||
| L | toInt256Safe | Internal 🦰 | | |
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| **IterableMapping** | Library | | | | |
| L | get | Internal 🦰 | | |
| L | getIndexOfKey | Internal 🦲 | | |
| L | getKeyAtIndex | Internal 🦰 | | |
| L | size | Internal 🦰 | | | |
| L | set | Internal 🦰 | 🛑 | |
```



```
| L | remove | Internal 🦰 | 🛑 | |
\Pi\Pi\Pi\Pi
**IUniswapV2Factory** | Interface | |||
| L | feeTo | External | | | NO | |
| | | feeToSetter | External | | | NO
| | getPair | External | | NO | | |
| L | allPairs | External | | NO | |
| | allPairsLength | External | | NO | |
| L | createPair | External | | | NO | |
| L | setFeeTo | External | | | NO | |
| L | setFeeToSetter | External | | | NO | |
11/11/1
**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 | |
| L | skim | External | | | NO | |
| L | sync | External | | | NO | |
| L | initialize | External | | | NO | |
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```



```
| **IUniswapV2Router01** | Interface | | | | | | | |
| L | factory | External | | NO | |
| L | WETH | External | | NO | |
| L | addLiquidity | External | | | | NO | |
| | addLiquidityETH | External | | | | | NO | |
| L | removeLiquidity | External | | | NO | |
| | removeLiquidityETH | External | | | NO | |
| L | removeLiquidityWithPermit | External | | | NO | |
| | removeLiquidityETHWithPermit | External | | | NO | |
| | swapExactTokensForTokens | External | | | NO | |
| L | swapTokensForExactTokens | External | | | NO | |
📙 | swapExactETHForTokens | External 👢 | 🔤 | NO 📗
| L | swapTokensForExactETH | External | | 🛑 | NO | |
| L | swapExactTokensForETH | External | | | NO | |
| L | swapETHForExactTokens | External | | I NO | |
| L | quote | External | | | NO | |
| L | getAmountOut | External | | NO | |
| | getAmountin | External | NO |
| L | getAmountsOut | External | | NO | |
| L | getAmountsIn | External | | NO | |
\mathbf{H}
| **IUniswapV2Router02** | Interface | IUniswapV2Router01 | | | | | |
| L | removeLiquidityETHSupportingFeeOnTransferTokens | External | | | NO | |
| | removeLiquidityETHWithPermitSupportingFeeOnTransferTokens | External | | | | NO | |
IIIIIII
| **IERC20** | Interface | | | | | |
| L | totalSupply | External | | NO | |
| L | balanceOf | External | | NO | |
| L | allowance | External | | | NO | |
| L | transfer | External | | | NO | |
| L | approve | External | | | NO | |
| L | transferFrom | External | | | NO | |
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| **IERC20Metadata** | Interface | IERC20 | | | |
| L | name | External | | NO | |
| L | symbol | External | | NO | |
| L | decimals | External | | NO | |
IIIIIII
| **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 | |
| | decreaseAllowance | Public | | | | NO | |
| L | _transfer | Internal 🦰 | 🛑 | |
| L | _mint | Internal 🦲 | 🦲 | |
| L | _burn | Internal 🦰 | 🛑 | |
| L | approve | Internal 🦲 | 🛑 | |
| L | beforeTokenTransfer | Internal 🦰 | 🛑 | |
\Pi\Pi\Pi\Pi\Pi
| **DividendPayingTokenInterface** | Interface | | | | | |
| L | dividendOf | External | | NO | |
| L | withdrawDividend | External | | | NO | |
\mathbf{H}\mathbf{H}\mathbf{H}\mathbf{H}
| **DividendPayingTokenOptionalInterface** | Interface | | | | |
| L | withdrawableDividendOf | External | | NO | |
| L | withdrawnDividendOf | External | | NO | |
| L | accumulativeDividendOf | External | | NO | |
\mathbf{H}
| **DividendPayingToken** | Implementation | ERC20, Ownable, DividendPayingTokenInterface,
DividendPayingTokenOptionalInterface | | |
| L | <Constructor> | Public | | ( ) | ERC20 |
| L | distributeDividends | Public | | ( ) | onlyOwner |
| L | withdrawDividend | Public | | ( NO | |
| L | _withdrawDividendOfUser | Internal 🦰 | 🛑 | |
| L | dividendOf | Public | | NO | |
| L | withdrawableDividendOf | Public | | NO |
| L | withdrawnDividendOf | Public | | NO | |
| L | accumulativeDividendOf | Public | | NO | |
| L | _transfer | Internal 🦰 | 🛑 | |
| L | _mint | Internal 🦲 | 🛑 | |
| L | _burn | Internal 🦰 | 🛑 | |
| L | _setBalance | Internal 🦰 | 🛑 | |
111111
```



```
**DividendTracker** | Implementation | Ownable, DividendPayingToken | | |
| Constructor> | Public | | DividendPayingToken | | | |
| L | _transfer | Internal 🦰 | | |
| | withdrawDividend | Public | | NO | |
| updateMinimumTokenBalanceForDividends | External | | 🛑 | onlyOwner |
| | excludeFromDividends | External | | | | onlyOwner |
| L | updateClaimWait | External | | | | onlyOwner |
| L | setLastProcessedIndex | External | | | | onlyOwner |
| L | getLastProcessedIndex | External | | | NO | |
| L | getNumberOfTokenHolders | External | | | NO | |
| | getAccount | Public | | NO | |
| | getAccountAtIndex | Public | | NO | |
| L | canAutoClaim | Private 🦰 | | |
| L | setBalance | External | | | | onlyOwner |
| L | process | Public | | ( NO | |
| L | processAccount | Public | | | | onlyOwner |
\mathbf{H}
| **ARabbit** | Implementation | ERC20, Ownable | | | | |
| L | <Constructor> | Public | | IIII | ERC20 |
| L | <Receive Ether> | External | | I I INO | |
| L | sendBNB | Internal 🦲 | 🛑 | |
| L | _setAutomatedMarketMakerPair | Private 🥙 | 📵 | |
| L | isExcludedFromFees | Public | | NO | |
| L | updateBuyFees | External | | | onlyOwner |
| L | updateSellFees | External | | | | onlyOwner |
| L | updateTransferFees | External | | | | onlyOwner |
| L | changeTreasuryWallet | External | | | | onlyOwner |
| L | enableTrading | External | | | | onlyOwner |
| L | _transfer | Internal 🦰 | 🛑 | |
| L | swapAndLiquify | Private 🞒 | 🛑 | |
| L | swapAndSendDividends | Private 🖺 | 🛑 | |
| L | setSwapTokensAtAmount | External | | | | onlyOwner |
| L | updateMinimumBalanceForDividends | External | | | | onlyOwner |
| L | getClaimWait | External | | NO | |
| L | getTotalDividendsDistributed | External | | NO | |
| L | withdrawableDividendOf | Public | | NO | |
```



```
| L | dividendTokenBalanceOf | Public | | NO | | |
| L | totalRewardsEarned | Public | | NO | |
| L | excludeFromDividends | External | | | | onlyOwner |
| | getAccountDividendsInfo | External | | NO | |
| | getAccountDividendsInfoAtIndex | External | | NO | |
| L | processDividendTracker | External | | | NO | |
| L | claim | External | | | NO | |
| L | claimAddress | External | | | | onlyOwner |
| L | getLastProcessedIndex | External | | NO | |
getNumberOfDividendTokenHolders | External | | NO | |
🖊 | setEnableMaxTransactionLimit | External 🛮 | 🛑 | onlyOwner |
| L | setMaxTransactionAmounts | External | | | | onlyOwner |
| L | excludeFromMaxTransactionLimit | External | | | | onlyOwner |
| L | isExcludedFromMaxTransaction | Public | | NO | |
| Symbol | Meaning |
|:-----|
   | Function can modify state |
  Function is payable |
```



STATIC ANALYSIS

```
Context. augustal (contracts/Takes.collata-10) is ever read and should be removed
Juriand-Englanders manners and state 1200 (contracts/Tokes.sole/100 180) is never used and should be removed
Juriand-Englanders and read and should be removed
Jurianders and read and should be removed
Jurianders and read and should be removed
Jurianders and should be removed
Jurianders and read and should be removed
Jurianders and read and should be removed
Jurianders and sh
```

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/0xe8bfd2b079d7ab21db8469e980af10bf45f7bebb53abd64fea28443b4a8d2adc

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

https://testnet.bscscan.com/tx/0x66d6a58b5791228470270f4675 b310e9299b2973b52a406bcf11556a5882ba10

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

https://testnet.bscscan.com/tx/0x0e35b6a65d3812610650876ef4 36e64fd98c4e277f69ad5e33fd48fd7bdc0ed2

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

https://testnet.bscscan.com/tx/0xadfd82a81760c8948caaa58c59ccb1df1e2b632c003084993b977c9da970c27e



FUNCTIONAL TESTING

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

https://testnet.bscscan.com/tx/0x06aaba0b1da68713a7d6cf53e36d61fff7e6f7f07ece3105d28f5750f2257939

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

https://testnet.bscscan.com/tx/0x1c57879162ed0646988ed45900 6bcc677b029ad89e6e7f94ce7dd6ab75567d96

7- Transferring when not excluded from fees (1% tax) (passed):

https://testnet.bscscan.com/tx/0xd2d865168db59c9c4788ad5569 bf7f3b742779ed72e0d585d2e2bd74d408f439

8-Internal swap (passed):

marketing wallet received ETH

https://testnet.bscscan.com/address/0x92eaec51919f655615d749 66edd4227bd774b01c#internaltx

9- Auto liquidity (passed):

https://testnet.bscscan.com/token/0x5c47f1dec9189bdb1819eea8a6f9c00bf862ea52?

10- Reflections (passed):

Dividend tracker sending rewards

https://testnet.bscscan.com/address/0x8cf66127cee266f4427b05b166584a70ad0acc0d#tokentxns



MANUAL TESTING

Issue: Owner must enable trading first

Type: Logical

Function: enableTrading

Line: ---

Severity: Medium - Informational

Overview

:Owner must enable trading in order for everyone to be able to trade, this means if trading is not enabled no one would be able to transfer/buy/sell tokens.

Since this token is developed by safu dev, enabling trades is guaranteed.

```
function enableTrading() external onlyOwner {
    require(!tradingEnabled, "Trading already enabled.");
    tradingEnabled = true;
}
```



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