Cyberscope

Audit Report

LopeCoin

March 2024

Network	BSC
Address	0x8baD5058E3Bbac27db03d38B09Bae918D9D7f976
Audited by	© cyberscope

Analysis

Critical Medium Minor / Informative Pass

Severity	Code	Description	Status
●	ST	Stops Transactions	Passed
●	OTUT	Transfers User's Tokens	Passed
●	ELFM	Exceeds Fees Limit	Passed
●	MT	Mints Tokens	Passed
●	BT	Burns Tokens	Passed
●	BC	Blacklists Addresses	Passed

Diagnostics

Critical Medium Minor / Informative

Severity	Code	Description	Status
	IDI	Immutable Declaration Improvement	Unresolved
	MTE	Misleading Transfer Event	Unresolved
	MEE	Missing Events Emission	Unresolved
	RTLF	Redundant Token Locking Functionality	Unresolved
	RVD	Redundant Variable Declaration	Unresolved
	L04	Conformance to Solidity Naming Conventions	Unresolved

Table of Contents

Review

Contract Name	LopeCoin
Compiler Version	v0.8.24+commit.e11b9ed9
Optimization	200 runs
Explorer	https://bscscan.com/address/0x8bad5058e3bbac27db03d38b09bae918d9d7f976
Address	0x8bad5058e3bbac27db03d38b09bae918d9d7f976
Network	BSC
Symbol	LOPE
Decimals	18
Total Supply	400,000,000,000,000
Badge Eligibility	Yes

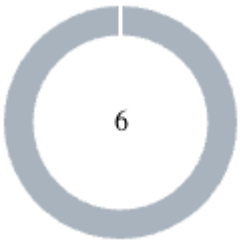
Audit Updates

Initial Audit	17 Mar 2024
Corrected Phase 2	19 Mar 2024

Source Files

Filename	SHA256
LopeCoin.sol	83d16ade38202a3ee973f4870062ea09a6a0c0bb9164993982e7ba1b661fba59

Findings Breakdown



Critical	0
Medium	0
Minor / Informative	6

Severity	Unresolved	Acknowledged	Resolved	Other
Critical	0	0	0	0
Medium	0	0	0	0
Minor / Informative	6	0	0	0

IDI - Immutable Declaration Improvement

Criticality	Minor / Informative
Location	LopeCoin.sol#L158
Status	Unresolved

Description

The contract declares state variables that their value is initialized once in the constructor and are not modified afterwards. The `immutable` is a special declaration for this kind of state variables that saves gas when it is defined.

```
_owner
```

Recommendation

By declaring a variable as immutable, the Solidity compiler is able to make certain optimizations. This can reduce the amount of storage and computation required by the contract, and make it more gas-efficient.

MTE - Misleading Transfer Event

Criticality	Minor / Informative
Location	LopeCoin.sol#L220
Status	Unresolved

Description

The `lockTokens` function in the contract emits a Transfer event, implying that tokens have been transferred from the sender to the contract. However, no such transfer occurs within the function. This discrepancy between the emitted event and the actual functionality of the function can be misleading to developers and users interacting with the contract.

```
emit Transfer(msg.sender, address(this), amount);
```

Recommendation

To ensure clarity and accuracy in contract events, the team is advised to update the `lockTokens` function to accurately reflect the actions taking place. If tokens are not being transferred to the contract, the team could consider emitting a different event that accurately describes the locking action, such as TokensLocked or similar. By aligning event emissions with actual contract actions, the contract can enhance transparency and facilitate easier understanding for all users.

MEE - Missing Events Emission

Criticality	Minor / Informative
Location	LopeCoin.sol#L168,173,178,183,190
Status	Unresolved

Description

The contract performs actions and state mutations from external methods that do not result in the emission of events. Emitting events for significant actions is important as it allows external parties, such as wallets or dApps, to track and monitor the activity on the contract. Without these events, it may be difficult for external parties to accurately determine the current state of the contract.

```
liquidityPoolAddress = _liquidityPoolAddress;
liquidityPoolPercentage = _percentage;
redistributionPercentage = _percentage;
charityWallets.push(CharityWallet(wallet));
charityWallets.pop();
```

Recommendation

It is recommended to include events in the code that are triggered each time a significant action is taking place within the contract. These events should include relevant details such as the user's address and the nature of the action taken. By doing so, the contract will be more transparent and easily auditable by external parties. It will also help prevent potential issues or disputes that may arise in the future.

RTLF - Redundant Token Locking Functionality

Criticality	Minor / Informative
Location	LopeCoin.sol#L210
Status	Unresolved

Description

The `lockTokens` function in the contract allows the owner and the liquidity pool address to lock their tokens for a specified period, but it does not integrate this functionality into the token transfer logic. Consequently, while these addresses can lock their tokens, there is no mechanism within the contract to enforce the lock or prevent transfers during the lock period. This renders the token locking functionality redundant and ineffective.

```
function lockTokens(uint256 amount, uint256 unlockTime) external {
    require(msg.sender == _owner || msg.sender == liquidityPoolAddress,
"Not authorized");
    require(amount <= balanceOf(msg.sender), "Insufficient balance");
    require(unlockTime > block.timestamp, "Unlock time must be in the
future");

    _locks[msg.sender].push(Lock({
        amount: amount,
        unlockTime: unlockTime
    }));

    emit Transfer(msg.sender, address(this), amount);
}
```

Recommendation

Considering the current state of the contract and its requirements, it's essential to reevaluate the necessity of the token locking functionality. If token locking is not a required feature, the team could consider removing the `lockTokens` function altogether to streamline the contract's codebase and reduce complexity. Alternatively, if token locking is deemed necessary, the team could integrate it into the transfer logic. By making a deliberate decision to either remove or integrate the token locking functionality based on the contract's requirements, the contract's functionality and efficiency can be optimized accordingly.

RVD - Redundant Variable Declaration

Criticality	Minor / Informative
Location	LopeCoin.sol#L156,157
Status	Unresolved

Description

There are code segments that could be optimized. A segment may be optimized so that it becomes a smaller size, consumes less memory, executes more rapidly, or performs fewer operations.

The contract declares certain variables that are not used in a meaningful way by the contract. As a result, these variables are redundant.

```
uint256 public liquidityPoolPercentage;
uint256 public redistributionPercentage;
```

Recommendation

The team is advised to take these segments into consideration and rewrite them so the runtime will be more performant. That way it will improve the efficiency and performance of the source code and reduce the cost of executing it.

L04 - Conformance to Solidity Naming Conventions

Criticality	Minor / Informative
Location	LopeCoin.sol#L166,171,176
Status	Unresolved

Description

The Solidity style guide is a set of guidelines for writing clean and consistent Solidity code. Adhering to a style guide can help improve the readability and maintainability of the Solidity code, making it easier for others to understand and work with.

The followings are a few key points from the Solidity style guide:

1. Use camelCase for function and variable names, with the first letter in lowercase (e.g., myVariable, updateCounter).
2. Use PascalCase for contract, struct, and enum names, with the first letter in uppercase (e.g., MyContract, UserStruct, ErrorEnum).
3. Use uppercase for constant variables and enums (e.g., MAX_VALUE, ERROR_CODE).
4. Use indentation to improve readability and structure.
5. Use spaces between operators and after commas.
6. Use comments to explain the purpose and behavior of the code.
7. Keep lines short (around 120 characters) to improve readability.

```
address _liquidityPoolAddress
uint256 _percentage
```

Recommendation

By following the Solidity naming convention guidelines, the codebase increased the readability, maintainability, and makes it easier to work with.
Find more information on the Solidity documentation
https://docs.soliditylang.org/en/v0.8.17/style-guide.html#naming-convention.

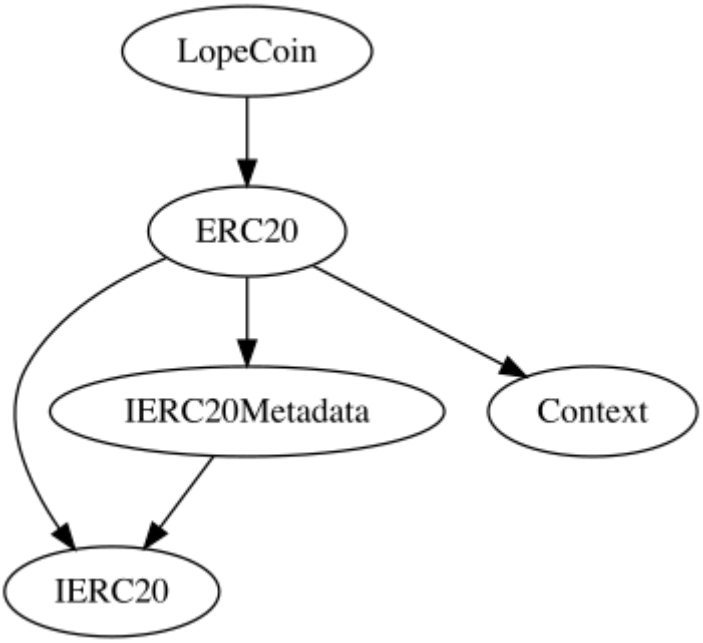
Functions Analysis

Contract	Type	Bases		
	Function Name	**Visibility**	**Mutability**	**Modifiers**
IERC20	Interface			
	totalSupply	External		-
	balanceOf	External		-
	transfer	External	✓	-
	allowance	External		-
	approve	External	✓	-
	transferFrom	External	✓	-
IERC20Metadata	Interface	IERC20		
	name	External		-
	symbol	External		-
	decimals	External		-
Context	Implementation			
	_msgSender	Internal		
	_msgData	Internal		
ERC20	Implementation	Context, IERC20, IERC20Metadata		

		Public	✓	-
	name	Public		-
	symbol	Public		-
	decimals	Public		-
	totalSupply	Public		-
	balanceOf	Public		-
	transfer	Public	✓	-
	allowance	Public		-
	approve	Public	✓	-
	transferFrom	Public	✓	-
	increaseAllowance	Public	✓	-
	decreaseAllowance	Public	✓	-
	_transfer	Internal	✓	
	_mint	Internal	✓	
	_burn	Internal	✓	
	_approve	Internal	✓	
LopeCoin	Implementation	ERC20		
		Public	✓	ERC20
	setLiquidityPoolAddress	External	✓	onlyOwner
	setLiquidityPoolPercentage	External	✓	onlyOwner
	setRedistributionPercentage	External	✓	onlyOwner
	addCharityWallet	Public	✓	onlyOwner

	removeCharityWalletByAddress	Public	✓	onlyOwner
	transferToCharity	Public	✓	onlyOwner
	getCharityWallets	Public		-
	lockTokens	External	✓	-
	getLockedTokens	Public		-
	_transfer	Internal	✓	
	burn	Public	✓	-

Inheritance Graph



Flow Graph


Legend
Internal Call
External Call
Defined Contract
Undefined Contract
ERC20
<Constructor>
name
symbol
decimals
totalSupply
transfer
allowance
transferFrom
approve
increaseAllowance
decreaseAllowance
_mint
_transfer
_approve
_msgSender
_burn
balanceOf
LopeCoin
transferToCharity
_mint
onlyOwner
setLiquidityPoolAddress
setLiquidityPoolPercentage
setRedistributionPercentage
addCharityWallet
removeCharityWalletByAddress
burn
getCharityWallets
<Constructor>
getLockedTokens
_transfer
lockTokens
Context
_msgSender
_msgData
IERC20Metadata (iface)
name
symbol
decimals
IERC20 (iface)
totalSupply
balanceOf
transfer
allowance
approve
transferFrom

Summary

LopeCoin contract implements a token mechanism. This audit investigates security issues, business logic concerns, and potential improvements. LopeCoin is an interesting project that has a friendly and growing community. The Smart Contract analysis reported no compiler errors or critical issues. The contract Owner can access some admin functions that can not be used in a malicious way to disturb the users' transactions.

Disclaimer

The information provided in this report does not constitute investment, financial or trading advice and you should not treat any of the document's content as such. This report may not be transmitted, disclosed, referred to or relied upon by any person for any purposes nor may copies be delivered to any other person other than the Company without Cyberscope's prior written consent. This report is not nor should be considered an "endorsement" or "disapproval" of any particular project or team. This report is not nor should be regarded as an indication of the economics or value of any "product" or "asset" created by any team or project that contracts Cyberscope to perform a security assessment. This document does not provide any warranty or guarantee regarding the absolute bug-free nature of the technology analyzed, nor do they provide any indication of the technologies proprietors' business, business model or legal compliance. This report should not be used in any way to make decisions around investment or involvement with any particular project. This report represents an extensive assessment process intending to help our customers increase the quality of their code while reducing the high level of risk presented by cryptographic tokens and blockchain technology.

Blockchain technology and cryptographic assets present a high level of ongoing risk Cyberscope's position is that each company and individual are responsible for their own due diligence and continuous security Cyberscope's goal is to help reduce the attack vectors and the high level of variance associated with utilizing new and consistently changing technologies and in no way claims any guarantee of security or functionality of the technology we agree to analyze. The assessment services provided by Cyberscope are subject to dependencies and are under continuing development. You agree that your access and/or use including but not limited to any services reports and materials will be at your sole risk on an as-is where-is and as-available basis Cryptographic tokens are emergent technologies and carry with them high levels of technical risk and uncertainty. The assessment reports could include false positives false negatives and other unpredictable results. The services may access and depend upon multiple layers of third parties.

About Cyberscope

Cyberscope is a blockchain cybersecurity company that was founded with the vision to make web3.0 a safer place for investors and developers. Since its launch, it has worked with thousands of projects and is estimated to have secured tens of millions of investors' funds.

Cyberscope is one of the leading smart contract audit firms in the crypto space and has built a high-profile network of clients and partners.

The Cyberscope team

https://www.cyberscope.io