

# Audit Report

# CoriBot

December 2023

Network BSC

Address 0x705ca67c29fad9f5afa5d086c66e6c9f96602a09

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# **Analysis**

CriticalMediumMinor / InformativePass

Severity	Code	Description	Status
•	ST	Stops Transactions	Passed
•	OTUT	Transfers User's Tokens	Passed
•	ELFM	Exceeds Fees Limit	Passed
•	MT	Mints Tokens	Passed
•	ВТ	Burns Tokens	Passed
•	ВС	Blacklists Addresses	Passed



# **Diagnostics**

CriticalMediumMinor / Informative

Severity	Code	Description	Status
•	RSW	Redundant Storage Writes	Unresolved
•	MEE	Missing Events Emission	Unresolved
•	RED	Redundant Event Declaration	Unresolved
•	PAV	Pair Address Validation	Unresolved
•	RC	Repetitive Calculations	Unresolved
•	CR	Code Repetition	Unresolved
•	DDP	Decimal Division Precision	Unresolved
•	RVD	Redundant Variable Declaration	Unresolved
•	RSML	Redundant SafeMath Library	Unresolved
•	L04	Conformance to Solidity Naming Conventions	Unresolved
•	L07	Missing Events Arithmetic	Unresolved
•	L09	Dead Code Elimination	Unresolved
•	L15	Local Scope Variable Shadowing	Unresolved
•	L16	Validate Variable Setters	Unresolved



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# Review

Contract Name	Coribot
Compiler Version	v0.8.19+commit.7dd6d404
Optimization	200 runs
Explorer	https://bscscan.com/address/0x705ca67c29fad9f5afa5d086c66 e6c9f96602a09
Address	0x705ca67c29fad9f5afa5d086c66e6c9f96602a09
Network	BSC
Symbol	CORI
Decimals	18
Total Supply	10,000,000

# **Audit Updates**

Initial Audit	17 Dec 2023
	https://github.com/cyberscope-io/audits/blob/main/coribot/v1/audit.pdf
Corrected Phase 2	27 Dec 2023

# **Source Files**

Filename	SHA256
Coribot.sol	a2b70a4b3207aa74f0d2d8a294ffd1dfc2e413d9eb150ac778c3860a09e 52237



# **Findings Breakdown**



Sev	erity	Unresolved	Acknowledged	Resolved	Other
•	Critical	0	0	0	0
•	Medium	0	0	0	0
	Minor / Informative	14	0	0	0



# **RSW - Redundant Storage Writes**

Criticality	Minor / Informative
Location	contracts/BEP20Token.sol#L1117,1159,1164,1192,1427,1482
Status	Unresolved

### Description

The contract modifies the state of the following variables without checking if their current value is the same as the one given as an argument. As a result, the contract performs redundant storage writes, when the provided parameter matches the current state of the variables, leading to unnecessary gas consumption and inefficiencies in contract execution.

```
limitsInEffect = false;
_isExcludedMaxTransactionAmount[updAds] = isEx;
swapEnabled = enabled;
_isExcludedFromFees[account] = excluded;
blacklistRenounced = true;
blacklisted[lpAddress] = true;
```

#### Recommendation

The team is advised to implement additional checks within to prevent redundant storage writes when the provided argument matches the current state of the variables. By incorporating statements to compare the new values with the existing values before proceeding with any state modification, the contract can avoid unnecessary storage operations, thereby optimizing gas usage.



## **MEE - Missing Events Emission**

Criticality	Minor / Informative
Location	contracts/BEP20Token.sol#L1117,1159,1164,1192,1427,1482
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.

```
limitsInEffect = false;
  _isExcludedMaxTransactionAmount[updAds] = isEx;
swapEnabled = enabled;
  _isExcludedFromFees[account] = excluded;
blacklistRenounced = true;
blacklisted[lpAddress] = true;
...
```

#### 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.



#### **RED - Redundant Event Declaration**

Criticality	Minor / Informative
Location	contracts/BEP20Token.sol#L1031
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 events in its code. However, these events are not emitted within the contract's functions. As a result, these declared events are redundant and serve no purpose within the contract's current implementation.

```
event UpdateUniswapV2Router(
    address indexed newAddress,
    address indexed oldAddress
);
```

#### 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.

#### **PAV - Pair Address Validation**

Criticality	Minor / Informative
Location	contracts/BEP20Token.sol#L1196
Status	Unresolved

### Description

The setAutomatedMarketMakerPair function allows any user to set any arbitrary value without validation to the automatedMarketMakerPairs mapping, which is supposed to hold Uniswap pair addresses. This lack of validation can lead to unintended behavior, including the potential disruption of the contract's intended functionality.

```
function setAutomatedMarketMakerPair(address pair, bool value)
public
onlyOwner
{
    require(
        pair != uniswapV2Pair,
        "The pair cannot be removed from automatedMarketMakerPairs"
    );

    _setAutomatedMarketMakerPair(pair, value);
}

function _setAutomatedMarketMakerPair(address pair, bool value)
private {
    automatedMarketMakerPairs[pair] = value;
    emit SetAutomatedMarketMakerPair(pair, value);
}
```

#### Recommendation

To mitigate the risks associated with the absence of address validation in the pair address argument, it is recommended to implement comprehensive address validation mechanisms. A recommended approach could be to verify pair existence in the decentralized application. Prior to interacting with the pair address contract, perform checks to verify the existence



and validity of the contract at the provided address. This can be achieved by querying the provider's contract or utilizing external libraries that provide contract verification services.

#### **RC - Repetitive Calculations**

Criticality	Minor / Informative
Location	contracts/BEP20Token.sol#L1401,1403
Status	Unresolved

### Description

The contract contains methods with multiple occurrences of the same calculation being performed. The calculation is repeated without utilizing a variable to store its result, which leads to redundant code, hinders code readability, and increases gas consumption. Each repetition of the calculation requires computational resources and can impact the performance of the contract, especially if the calculation is resource-intensive.

```
totalTokensToSwap - (tokensForLiquidity / 2)
```

#### Recommendation

To address this finding and enhance the efficiency and maintainability of the contract, it is recommended to refactor the code by assigning the calculation result to a variable once and then utilizing that variable throughout the method. By storing the calculation result in a variable, the contract eliminates the need for redundant calculations and optimizes code execution.

Refactoring the code to assign the calculation result to a variable has several benefits. It improves code readability by making the purpose and intent of the calculation explicit. It also reduces code redundancy, making the method more concise, easier to maintain, and gas effective. Additionally, by performing the calculation once and reusing the variable, the contract improves performance by avoiding unnecessary computations

# **CR - Code Repetition**

Criticality	Minor / Informative
Location	contracts/BEP20Token.sol#L1426,1437
Status	Unresolved

# Description

The contract contains repetitive code segments. There are potential issues that can arise when using code segments in Solidity. Some of them can lead to issues like gas efficiency, complexity, readability, security, and maintainability of the source code. It is generally a good idea to try to minimize code repetition where possible.



```
function blacklist(address addr) public onlyOwner {
       require(!blacklistRenounced, "Team has revoked blacklist
rights");
       require(
            addr != address(uniswapV2Pair) && addr !=
address(0x10ED43C718714eb63d5aA57B78B54704E256024E), // TODO : mainnet
             addr != address(uniswapV2Pair) && addr !=
address(0xD99D1c33F9fC3444f8101754aBC46c52416550D1),
            "Cannot blacklist token's v2 router or v2 pool."
       blacklisted[ addr] = true;
    function blacklistLiquidityPool(address lpAddress) public
onlyOwner {
       require(!blacklistRenounced, "Team has revoked blacklist
rights");
       require(
           lpAddress != address(uniswapV2Pair) && lpAddress !=
address(0x10ED43C718714eb63d5aA57B78B54704E256024E), // TODO : mainnet
             lpAddress != address(uniswapV2Pair) && lpAddress !=
address(0xD99D1c33F9fC3444f8101754aBC46c52416550D1),
            "Cannot blacklist token's v2 router or v2 pool."
       blacklisted[lpAddress] = true;
```

#### Recommendation

The team is advised to avoid repeating the same code in multiple places, which can make the contract easier to read and maintain. The authors could try to reuse code wherever possible, as this can help reduce the complexity and size of the contract. For instance, the contract could reuse the common code segments in an internal function in order to avoid repeating the same code in multiple places.

#### **DDP - Decimal Division Precision**

Criticality	Minor / Informative
Location	contracts/BEP20Token.sol#L1319,1326
Status	Unresolved

#### Description

Division of decimal (fixed point) numbers can result in rounding errors due to the way that division is implemented in Solidity. Thus, it may produce issues with precise calculations with decimal numbers.

Solidity represents decimal numbers as integers, with the decimal point implied by the number of decimal places specified in the type (e.g. decimal with 18 decimal places). When a division is performed with decimal numbers, the result is also represented as an integer, with the decimal point implied by the number of decimal places in the type. This can lead to rounding errors, as the result may not be able to be accurately represented as an integer with the specified number of decimal places.

Hence, the splitted shares will not have the exact precision and some funds may not be calculated as expected.

```
tokensForLiquidity += (fees * sellLiquidityFee) / sellTotalFees;
tokensForTeam += (fees * sellTeamFee) / sellTotalFees;
tokensForRevShare += (fees * sellRevShareFee) / sellTotalFees;

tokensForLiquidity += (fees * buyLiquidityFee) / buyTotalFees;
tokensForTeam += (fees * buyTeamFee) / buyTotalFees;
tokensForRevShare += (fees * buyRevShareFee) / buyTotalFees;
```

#### Recommendation

The team is advised to take into consideration the rounding results that are produced from the solidity calculations. The contract could calculate the subtraction of the divided funds in the last calculation in order to avoid the division rounding issue.

#### **RVD - Redundant Variable Declaration**

Criticality	Minor / Informative
Location	contracts/BEP20Token.sol#L988
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.

```
address public constant deadAddress = address(0xdead);
```

#### 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.

#### **RSML - Redundant SafeMath Library**

Criticality	Minor / Informative
Location	Coribot.sol
Status	Unresolved

### Description

SafeMath is a popular Solidity library that provides a set of functions for performing common arithmetic operations in a way that is resistant to integer overflows and underflows.

Starting with Solidity versions that are greater than or equal to 0.8.0, the arithmetic operations revert to underflow and overflow. As a result, the native functionality of the Solidity operations replaces the SafeMath library. Hence, the usage of the SafeMath library adds complexity, overhead and increases gas consumption unnecessarily.

```
library SafeMath {...}
```

#### Recommendation

The team is advised to remove the SafeMath library. Since the version of the contract is greater than 0.8.0 then the pure Solidity arithmetic operations produce the same result.

If the previous functionality is required, then the contract could exploit the unchecked { ... } statement.

Read more about the breaking change on https://docs.soliditylang.org/en/v0.8.16/080-breaking-changes.html#solidity-v0-8-0-breaking-changes.



# **L04 - Conformance to Solidity Naming Conventions**

Criticality	Minor / Informative
Location	Coribot.sol#L841,843,874,920,1021,1036,1041,1164,1165,1166,1176,117 7,1178,1426,1448
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.



#### 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.

## **L07 - Missing Events Arithmetic**

Criticality	Minor / Informative
Location	Coribot.sol#L1131,1140,1148,1168,1180
Status	Unresolved

### Description

Events are a way to record and log information about changes or actions that occur within a contract. They are often used to notify external parties or clients about events that have occurred within the contract, such as the transfer of tokens or the completion of a task.

It's important to carefully design and implement the events in a contract, and to ensure that all required events are included. It's also a good idea to test the contract to ensure that all events are being properly triggered and logged.

```
swapTokensAtAmount = newAmount
maxTransactionAmount = newNum * (10**18)
maxWallet = newNum * (10**18)
buyRevShareFee = _revShareFee
sellRevShareFee = _revShareFee
```

#### Recommendation

By including all required events in the contract and thoroughly testing the contract's functionality, the contract ensures that it performs as intended and does not have any missing events that could cause issues with its arithmetic.

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#### L09 - Dead Code Elimination

Criticality	Minor / Informative
Location	Coribot.sol#L472
Status	Unresolved

### Description

In Solidity, dead code is code that is written in the contract, but is never executed or reached during normal contract execution. Dead code can occur for a variety of reasons, such as:

- Conditional statements that are always false.
- Functions that are never called.
- Unreachable code (e.g., code that follows a return statement).

Dead code can make a contract more difficult to understand and maintain, and can also increase the size of the contract and the cost of deploying and interacting with it.

```
function _burn(address account, uint256 amount) internal
virtual {
    require(account != address(0), "ERC20: burn from the
zero address");

    _beforeTokenTransfer(account, address(0), amount);

    uint256 accountBalance = _balances[account];
...
}
_totalSupply -= amount;

emit Transfer(account, address(0), amount);

_afterTokenTransfer(account, address(0), amount);
}
```

#### Recommendation

To avoid creating dead code, it's important to carefully consider the logic and flow of the contract and to remove any code that is not needed or that is never executed. This can help improve the clarity and efficiency of the contract.

# L15 - Local Scope Variable Shadowing

Criticality	Minor / Informative
Location	Coribot.sol#L1074
Status	Unresolved

## Description

Local scope variable shadowing occurs when a local variable with the same name as a variable in an outer scope is declared within a function or code block. When this happens, the local variable "shadows" the outer variable, meaning that it takes precedence over the outer variable within the scope in which it is declared.

```
uint256 totalSupply = 10_000_000 * 1e18
```

#### Recommendation

It's important to be aware of shadowing when working with local variables, as it can lead to confusion and unintended consequences if not used correctly. It's generally a good idea to choose unique names for local variables to avoid shadowing outer variables and causing confusion.

#### L16 - Validate Variable Setters

Criticality	Minor / Informative
Location	Coribot.sol#L1212,1217
Status	Unresolved

## Description

The contract performs operations on variables that have been configured on user-supplied input. These variables are missing of proper check for the case where a value is zero. This can lead to problems when the contract is executed, as certain actions may not be properly handled when the value is zero.

```
revShareWallet = newRevShareWallet
teamWallet = newWallet
```

#### Recommendation

By adding the proper check, the contract will not allow the variables to be configured with zero value. This will ensure that the contract can handle all possible input values and avoid unexpected behavior or errors. Hence, it can help to prevent the contract from being exploited or operating unexpectedly.



# **Functions Analysis**

Contract	Туре	Bases		
	Function Name	Visibility	Mutability	Modifiers
Context	Implementation			
	_msgSender	Internal		
	_msgData	Internal		
Ownable	Implementation	Context		
		Public	1	-
	owner	Public		-
	renounceOwnership	Public	1	onlyOwner
	transferOwnership	Public	1	onlyOwner
	_transferOwnership	Internal	1	
IERC20	Interface			
	totalSupply	External		-
	balanceOf	External		-
	transfer	External	✓	-
	allowance	External		-
	approve	External	1	-
	transferFrom	External	✓	-



IERC20Metadat	Interface	IERC20		
	name	External		-
	symbol	External		-
	decimals	External		-
ERC20	Implementation	Context, IERC20, IERC20Meta data		
		Public	✓	-
	name	Public		-
	symbol	Public		-
	decimals	Public		-
	totalSupply	Public		-
	balanceOf	Public		-
	transfer	Public	<b>✓</b>	-
	allowance	Public		-
	approve	Public	<b>✓</b>	-
	transferFrom	Public	<b>✓</b>	-
	increaseAllowance	Public	<b>✓</b>	-
	decreaseAllowance	Public	<b>✓</b>	-
	_transfer	Internal	✓	
	_mint	Internal	✓	
	_burn	Internal	✓	



	_approve	Internal	✓	
	_beforeTokenTransfer	Internal	✓	
	_afterTokenTransfer	Internal	✓	
SafeMath	Library			
	tryAdd	Internal		
	trySub	Internal		
	tryMul	Internal		
	tryDiv	Internal		
	tryMod	Internal		
	add	Internal		
	sub	Internal		
	mul	Internal		
	div	Internal		
	mod	Internal		
	sub	Internal		
	div	Internal		
	mod	Internal		
IPancakeFactor y	Interface			
	feeTo	External		-
	feeToSetter	External		-
	getPair	External		-



	allPairs	External		-
	allPairsLength	External		-
	createPair	External	1	-
	setFeeTo	External	1	-
	setFeeToSetter	External	✓	-
IPancakePair	Interface			
	name	External		-
	symbol	External		-
	decimals	External		-
	totalSupply	External		-
	balanceOf	External		-
	allowance	External		-
	approve	External	✓	-
	transfer	External	✓	-
	transferFrom	External	✓	-
	DOMAIN_SEPARATOR	External		-
	PERMIT_TYPEHASH	External		-
	nonces	External		-
	permit	External	✓	-
	MINIMUM_LIQUIDITY	External		-
	factory	External		-
	token0	External		-



	token1	External		-
	getReserves	External		-
	price0CumulativeLast	External		-
	price1CumulativeLast	External		-
	kLast	External		-
	mint	External	✓	-
	burn	External	✓	-
	swap	External	✓	-
	skim	External	✓	-
	sync	External	✓	-
	initialize	External	✓	-
IPancakeRoute r02	Interface			
	factory	External		-
	WETH	External		-
	addLiquidity	External	✓	-
	addLiquidityETH	External	Payable	-
	swapExactTokensForTokensSupporting FeeOnTransferTokens	External	1	-
	swapExactETHForTokensSupportingFee OnTransferTokens	External	Payable	-
	swapExactTokensForETHSupportingFee OnTransferTokens	External	✓	-
Coribot	Implementation	ERC20, Ownable		

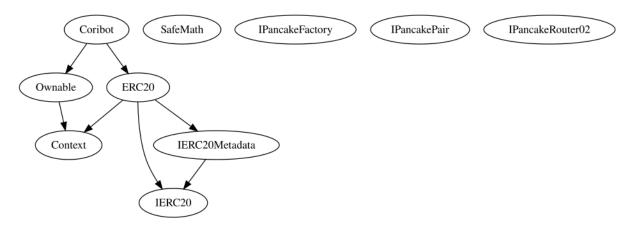


	Public	✓	ERC20
	External	Payable	-
removeLimits	External	✓	onlyOwner
updateSwapTokensAtAmount	External	✓	onlyOwner
updateMaxTxnAmount	External	1	onlyOwner
updateMaxWalletAmount	External	1	onlyOwner
excludeFromMaxTransaction	Public	✓	onlyOwner
updateSwapEnabled	External	✓	onlyOwner
updateBuyFees	External	✓	onlyOwner
updateSellFees	External	1	onlyOwner
excludeFromFees	Public	1	onlyOwner
setAutomatedMarketMakerPair	Public	1	onlyOwner
_setAutomatedMarketMakerPair	Private	1	
updateRevShareWallet	External	1	onlyOwner
updateTeamWallet	External	1	onlyOwner
isExcludedFromFees	Public		-
isBlacklisted	Public		-
_transfer	Internal	✓	
swapTokensForEth	Private	✓	
addLiquidity	Private	✓	
swapBack	Private	✓	
renounceBlacklist	Public	✓	onlyOwner
blacklist	Public	✓	onlyOwner

blacklistLiquidityPool	Public	✓	onlyOwner
unblacklist	Public	✓	onlyOwner

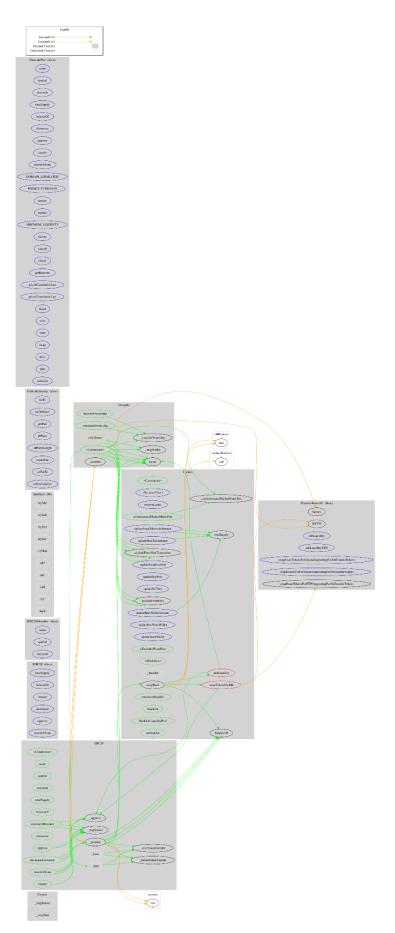


# **Inheritance Graph**





# Flow Graph



# **Summary**

CoriBot contract implements a token mechanism. This audit investigates security issues, business logic concerns, and potential improvements. CoriBot 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. There is also a limit of max 5% and 10% sell fees.

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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.

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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