Cyberscope

# Audit Report

# CatCEO

May 2023

Network BSC

Address 0xB3d8D3A81294Ad36F51f18964825082d0f30398b

Audited by © cyberscope

# Table of Contents

# Review

| | |
|---|---|
| **Contract Name** | CatCEO |
| **Compiler Version** | v0.8.19+commit.7dd6d404 |
| **Optimization** | 200 runs |
| **Explorer** | https://bscscan.com/address/0xb3d8d3a81294ad36f51f18964825082d0f30398b |
| **Address** | 0xb3d8d3a81294ad36f51f18964825082d0f30398b |
| **Network** | BSC |
| **Symbol** | CCEO |
| **Decimals** | 9 |
| **Total Supply** | 420.000.000.000.000.000 |

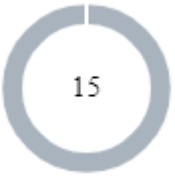
## Audit Updates

| | |
|---|---|
| **Initial Audit** | 08 May 2023 |

## Source Files

| | |
|---|---|
| **Filename** | SHA256 |
| **CatCEO.sol** | 582932e98adbcfde0614b645b082eaf542439abedadd804a8abb544c81d29685 |

# Findings Breakdown




| | |
|---|---|
| Critical | 0 |
| Medium | 0 |
| Minor / Informative | 15 |

| Severity | Unresolved | Acknowledged | Resolved | Other |
|---|---|---|---|---|
| Critical | 0 | 0 | 0 | 0 |
| Medium | 0 | 0 | 0 | 0 |
| Minor / Informative | 15 | 0 | 0 | 0 |

# Analysis

Critical Medium Minor / Informative Pass

| Severity | Code | Description | Status |
|---|---|---|---|
| | ST | Stops Transactions | Passed |
| | OCTD | Transfers Contract's Tokens | Passed |
| | OTUT | Transfers User's Tokens | Passed |
| | ELFM | Exceeds Fees Limit | Passed |
| | ULTW | Transfers Liquidity to Team Wallet | Passed |
| | MT | Mints Tokens | Passed |
| | BT | Burns Tokens | Passed |
| | BC | Blacklists Addresses | Passed |

# Diagnostics

Critical Medium Minor / Informative

| Severity | Code | Description | Status |
|---|---|---|---|
| | DDP | Decimal Division Precision | Unresolved |
| | PVC | Price Volatility Concern | Unresolved |
| | RDM | Revert Descriptive Message | Unresolved |
| | RSML | Redundant SafeMath Library | Unresolved |
| | RSK | Redundant Storage Keyword | Unresolved |
| | IDI | Immutable Declaration Improvement | Unresolved |
| | L02 | State Variables could be Declared Constant | Unresolved |
| | L04 | Conformance to Solidity Naming Conventions | Unresolved |
| | L05 | Unused State Variable | Unresolved |
| | L07 | Missing Events Arithmetic | Unresolved |
| | L09 | Dead Code Elimination | Unresolved |
| | L14 | Uninitialized Variables in Local Scope | Unresolved |
| | L15 | Local Scope Variable Shadowing | Unresolved |
| | L16 | Validate Variable Setters | Unresolved |

| | | | |
|---|---|---|---|
| ● | L20 | Succeeded Transfer Check | Unresolved |

# DDP - Decimal Division Precision

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | CatCEO.sol#L1094,1100 |
| **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.

The rewards and the marketing fees will not be splitted as expected.

```
if((marketingFeeOnBuy + marketingFeeOnSell) > 0) {
    uint256 marketingBNB = newBalance * (marketingFeeOnBuy +
marketingFeeOnSell) / bnbShare;
    sendBNB(payable(marketingWallet), marketingBNB);
    emit SendMarketing(marketingBNB);
}

if((rewardsFeeOnBuy + rewardsFeeOnSell) > 0) {
    uint256 rewardBNB = newBalance * (rewardsFeeOnBuy +
rewardsFeeOnSell) / bnbShare;
    swapAndSendDividends(rewardBNB);
}
```

## Recommendation

The contract could calculate the subtraction of the divided funds in the last calculation in order to avoid the division rounding issue.

# PVC - Price Volatility Concern

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | CatCEO.sol#L1057 |
| **Status** | Unresolved |

## Description

The contract accumulates tokens from the taxes to swap them for ETH. The variable `swapTokensAtAmount` sets a threshold where the contract will trigger the swap functionality. If the variable is set to a big number, then the contract will swap a huge amount of tokens for ETH.

It is important to note that the price of the token representing it, can be highly volatile. This means that the value of a price volatility swap involving Ether could fluctuate significantly at the triggered point, potentially leading to significant price volatility for the parties involved.

```
bool canSwap = contractTokenBalance >= swapTokensAtAmount;

if( canSwap &&
    !swapping &&
    automatedMarketMakerPairs[to] &&
    totalBuyFee + totalSellFee > 0
) {
```

## Recommendation

The contract could ensure that it will not sell more than a reasonable amount of tokens in a single transaction. A suggested implementation could check that the maximum amount should be less than a fixed percentage of the total supply. Hence, the contract will guarantee that it cannot accumulate a huge amount of tokens in order to sell them.

# RDM - Revert Descriptive Message

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | CatCEO.sol#L602,653,725 |
| **Status** | Unresolved |

## Description

The `revert()` function is used to halt the execution of a contract and revert any changes made to the contract's state. The contract does not provide a descriptive message to the `revert()` function.

```
require(totalSupply() > 0);
require(false);
require(!excludedFromDividends[account]);
```

## Recommendation

The team is suggested to provide a descriptive message to the `revert()` function. This message can be used to provide additional context about the error that occurred or to explain why the contract execution was halted. This can be useful for debugging and for providing more information to users that interact with the contract.

## RSML - Redundant SafeMath Library

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | CatCEO.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.

## RSK - Redundant Storage Keyword

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | CatCEO.sol#L175,179,186,190 |
| **Status** | Unresolved |

### Description

The contract uses the `storage` keyword in a view function. The `storage` keyword is used to persist data on the contract's storage. View functions are functions that do not modify the state of the contract and do not perform any actions that cost gas (such as sending a transaction). As a result, the use of the `storage` keyword in view functions is redundant.

```
Map storage map
```

### Recommendation

It is generally considered good practice to avoid using the `storage` keyword in view functions because it is unnecessary and can make the code less readable.

# IDI - Immutable Declaration Improvement

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | CatCEO.sol#L949,950,951,953,955,956,957,959,961,963,969,970 |
| **Status** | Unresolved |

## Description

The contract is using variables that initialize them only in the constructor. The other functions are not mutating the variables. These variables are not defined as `immutable`.

```
burnFeeOnBuy
marketingFeeOnBuy
rewardsFeeOnBuy
totalBuyFee
burnFeeOnSell
marketingFeeOnSell
rewardsFeeOnSell
totalSellFee
marketingWallet
dividendTracker
uniswapV2Router
uniswapV2Pair
```

## 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.

## L02 - State Variables could be Declared Constant

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | CatCEO.sol#L926 |
| **Status** | Unresolved |

### Description

State variables can be declared as constant using the constant keyword. This means that the value of the state variable cannot be changed after it has been set. Additionally, the constant variables decrease gas consumption of the corresponding transaction.

```
uint256 public gasForProcessing = 300_000
```

### Recommendation

Constant state variables can be useful when the contract wants to ensure that the value of a state variable cannot be changed by any function in the contract. This can be useful for storing values that are important to the contract's behavior, such as the contract's address or the maximum number of times a certain function can be called. The team is advised to add the constant keyword to state variables that never change.

## L04 - Conformance to Solidity Naming Conventions

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | CatCEO.sol#L253,254,271,291,584,631,635,639,643,715,749 |
| **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.

```
function DOMAIN_SEPARATOR() external view returns (bytes32);
function PERMIT_TYPEHASH() external pure returns (bytes32);
function MINIMUM_LIQUIDITY() external pure returns (uint);
function WETH() external pure returns (address);
uint256 constant internal magnitude = 2**128
address _owner
uint256 _newMinimumBalance
address _account
```

### 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.

## L05 - Unused State Variable

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | CatCEO.sol#L122 |
| **Status** | Unresolved |

### Description

An unused state variable is a state variable that is declared in the contract, but is never used in any of the contract's functions. This can happen if the state variable was originally intended to be used, but was later removed or never used.

Unused state variables can create clutter in the contract and make it more difficult to understand and maintain. They can also increase the size of the contract and the cost of deploying and interacting with it.

```
int256 private constant MAX_INT256 = ~(int256(1) << 255)
```

### Recommendation

To avoid creating unused state variables, it's important to carefully consider the state variables that are needed for the contract's functionality, and to remove any that are no longer needed. This can help improve the clarity and efficiency of the contract.

## L07 - Missing Events Arithmetic

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | CatCEO.sol#L738,1169 |
| **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.

```
lastProcessedIndex = index
swapTokensAtAmount = newAmount
```

### 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.

# L09 - Dead Code Elimination

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | CatCEO.sol#L149,648,1005 |
| **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 abs(int256 a) internal pure returns (int256) {
        require(a != MIN_INT256);
        return a < 0 ? -a : a;
    }

function _transfer(address from, address to, uint256 value)
internal virtual override {
...
        magnifiedDividendCorrections[from] =
magnifiedDividendCorrections[from].add(_magCorrection);
        magnifiedDividendCorrections[to] =
magnifiedDividendCorrections[to].sub(_magCorrection);
    }

function isContract(address account) internal view returns
(bool) {
        return account.code.length > 0;
    }
```

## 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.

## L14 - Uninitialized Variables in Local Scope

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | CatCEO.sol#L1062,1137 |
| **Status** | Unresolved |

### Description

Using an uninitialized local variable can lead to unpredictable behavior and potentially cause errors in the contract. It's important to always initialize local variables with appropriate values before using them.

```
uint256 burnTokens
uint256 lastProcessedIndex
uint256 iterations
uint256 claims
```

### Recommendation

By initializing local variables before using them, the contract ensures that the functions behave as expected and avoid potential issues.

## L15 - Local Scope Variable Shadowing

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | CatCEO.sol#L593,631,635,639,643 |
| **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.

```
string memory _name
string memory _symbol
address _owner
```

### 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** | CatCEO.sol#L594 |
| **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.

```
rewardToken = _rewardToken
```

### 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.

## L20 - Succeeded Transfer Check

| | |
|---|---|
| **Criticality** | Minor / Informative |
| **Location** | CatCEO.sol#L1002 |
| **Status** | Unresolved |

### Description

According to the ERC20 specification, the transfer methods should be checked if the result is successful. Otherwise, the contract may wrongly assume that the transfer has been established.

```
ERC20token.transfer(msg.sender, balance)
```

### Recommendation

The contract should check if the result of the transfer methods is successful. The team is advised to check the SafeERC20 library from the Openzeppelin library.

# Functions Analysis

| Contract | Type | Bases | | |
|---|---|---|---|---|
| | **Function Name** | **Visibility** | **Mutability** | **Modifiers** |
| | | | | |
| **Context** | Implementation | | | |
| | _msgSender | Internal | | |
| | _msgData | Internal | | |
| | | | | |
| **Ownable** | Implementation | Context | | |
| | | Public | ✓ | - |
| | owner | Public | | - |
| | renounceOwnership | Public | ✓ | onlyOwner |
| | transferOwnership | Public | ✓ | onlyOwner |
| | _transferOwnership | Internal | ✓ | |
| | | | | |
| **SafeMath** | Library | | | |
| | add | Internal | | |
| | sub | Internal | | |
| | sub | Internal | | |
| | mul | Internal | | |
| | div | Internal | | |
| | div | Internal | | |

| | | | | |
|---|---|---|---|---|
| | mod | Internal | | |
| | mod | Internal | | |
| | | | | |
| **SafeMathInt** | Library | | | |
| | mul | Internal | | |
| | div | Internal | | |
| | sub | Internal | | |
| | add | Internal | | |
| | abs | Internal | | |
| | toUint256Safe | Internal | | |
| | | | | |
| **SafeMathUint** | Library | | | |
| | toInt256Safe | Internal | | |
| | | | | |
| **IterableMapping** | Library | | | |
| | get | Public | | - |
| | getIndexOfKey | Public | | - |
| | getKeyAtIndex | Public | | - |
| | size | Public | | - |
| | set | Public | ✓ | - |
| | remove | Public | ✓ | - |
| | | | | |
| **IUniswapV2Factory** | Interface | | | |

| | | | | |
|---|---|---|---|---|
| | feeTo | External | | - |
| | feeToSetter | External | | - |
| | getPair | External | | - |
| | allPairs | External | | - |
| | allPairsLength | External | | - |
| | createPair | External | ✓ | - |
| | setFeeTo | External | ✓ | - |
| | setFeeToSetter | External | ✓ | - |
| | | | | |
| **IUniswapV2Pair** | 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 | ✓ | - |
| | | | | |
| **IUniswapV2Router01** | Interface | | | |
| | factory | External | | - |
| | WETH | External | | - |
| | addLiquidity | External | ✓ | - |
| | addLiquidityETH | External | Payable | - |
| | removeLiquidity | External | ✓ | - |
| | removeLiquidityETH | External | ✓ | - |
| | removeLiquidityWithPermit | External | ✓ | - |

| | | | | |
|---|---|---|---|---|
| | removeLiquidityETHWithPermit | External | ✓ | - |
| | swapExactTokensForTokens | External | ✓ | - |
| | swapTokensForExactTokens | External | ✓ | - |
| | swapExactETHForTokens | External | Payable | - |
| | swapTokensForExactETH | External | ✓ | - |
| | swapExactTokensForETH | External | ✓ | - |
| | swapETHForExactTokens | External | Payable | - |
| | quote | External | | - |
| | getAmountOut | External | | - |
| | getAmountIn | External | | - |
| | getAmountsOut | External | | - |
| | getAmountsIn | External | | - |
| | | | | |
| **IUniswapV2Router02** | Interface | IUniswapV2 Router01 | | |
| | removeLiquidityETHSupportingFeeOnTransferTokens | External | ✓ | - |
| | removeLiquidityETHWithPermitSupportingFeeOnTransferTokens | External | ✓ | - |
| | swapExactTokensForTokensSupportingFeeOnTransferTokens | External | ✓ | - |
| | swapExactETHForTokensSupportingFeeOnTransferTokens | External | Payable | - |
| | swapExactTokensForETHSupportingFeeOnTransferTokens | External | ✓ | - |
| | | | | |
| **IERC20** | Interface | | | |
| | totalSupply | External | | - |

| | | | | |
|---|---|---|---|---|
| | balanceOf | External | | - |
| | allowance | External | | - |
| | transfer | External | ✓ | - |
| | approve | External | ✓ | - |
| | transferFrom | External | ✓ | - |
| | | | | |
| **IERC20Metadata** | Interface | IERC20 | | |
| | name | External | | - |
| | symbol | External | | - |
| | decimals | External | | - |
| | | | | |
| **ERC20** | Implementation | Context, IERC20, IERC20Metadata | | |
| | | Public | ✓ | - |
| | name | Public | | - |
| | symbol | Public | | - |
| | decimals | Public | | - |
| | totalSupply | Public | | - |
| | balanceOf | Public | | - |
| | transfer | Public | ✓ | - |
| | allowance | Public | | - |
| | approve | Public | ✓ | - |
| | transferFrom | Public | ✓ | - |

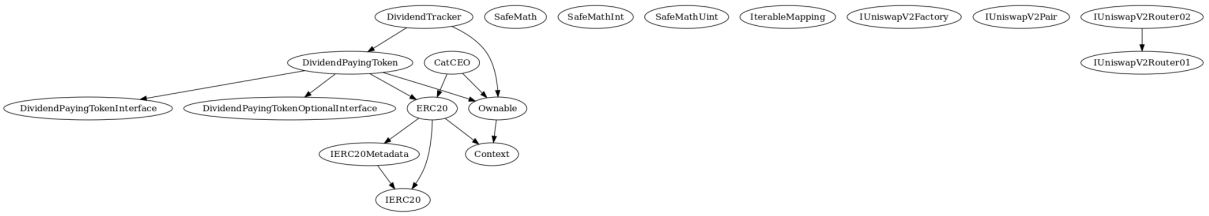
| | | | | |
|---|---|---|---|---|
| | increaseAllowance | Public | ✓ | - |
| | decreaseAllowance | Public | ✓ | - |
| | _transfer | Internal | ✓ | |
| | _mint | Internal | ✓ | |
| | _burn | Internal | ✓ | |
| | _approve | Internal | ✓ | |
| | _beforeTokenTransfer | Internal | ✓ | |
| | | | | |
| **DividendPayingTokenInterface** | Interface | | | |
| | dividendOf | External | | - |
| | withdrawDividend | External | ✓ | - |
| | | | | |
| **DividendPayingTokenOptionalInterface** | Interface | | | |
| | withdrawableDividendOf | External | | - |
| | withdrawnDividendOf | External | | - |
| | accumulativeDividendOf | External | | - |
| | | | | |
| **DividendPayingToken** | Implementation | ERC20, Ownable, DividendPayingTokenInterface, DividendPayingTokenOptionalInterface | | |
| | | Public | ✓ | ERC20 |
| | distributeDividends | Public | ✓ | onlyOwner |

| | | | | |
|---|---|---|---|---|
| | withdrawDividend | Public | ✓ | - |
| | _withdrawDividendOfUser | Internal | ✓ | |
| | dividendOf | Public | | - |
| | withdrawableDividendOf | Public | | - |
| | withdrawnDividendOf | Public | | - |
| | accumulativeDividendOf | Public | | - |
| | _transfer | Internal | ✓ | |
| | _mint | Internal | ✓ | |
| | _burn | Internal | ✓ | |
| | _setBalance | Internal | ✓ | |
| | | | | |
| **DividendTracker** | Implementation | Ownable, DividendPayingToken | | |
| | | Public | ✓ | DividendPayingToken |
| | _transfer | Internal | | |
| | withdrawDividend | Public | | - |
| | updateMinimumTokenBalanceForDividends | External | ✓ | onlyOwner |
| | excludeFromDividends | External | ✓ | onlyOwner |
| | updateClaimWait | External | ✓ | onlyOwner |
| | setLastProcessedIndex | External | ✓ | onlyOwner |
| | getLastProcessedIndex | External | | - |
| | getNumberOfTokenHolders | External | | - |
| | getAccount | Public | | - |

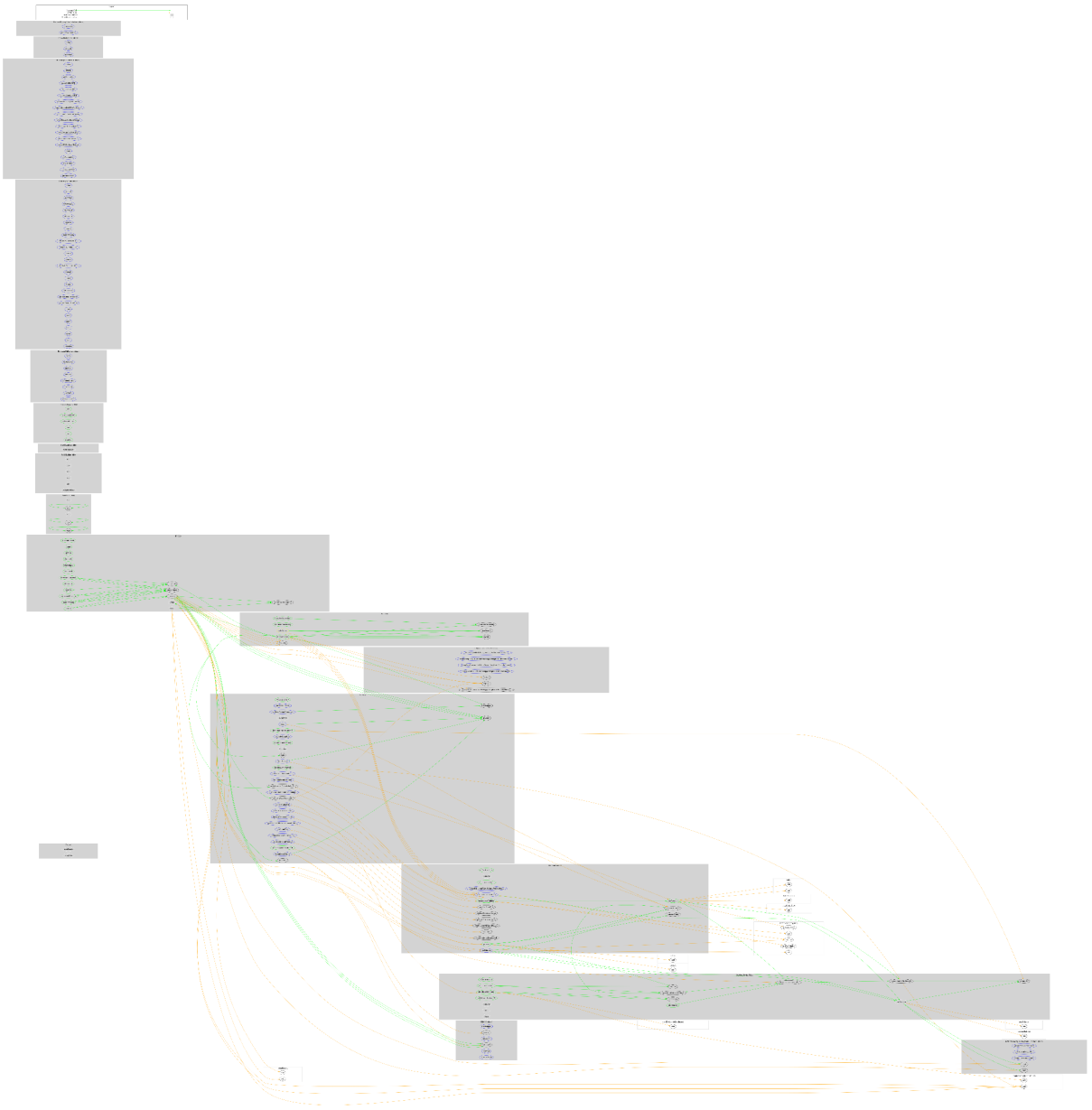
| | | | | |
|---|---|---|---|---|
| | getAccountAtIndex | Public | | - |
| | canAutoClaim | Private | | |
| | setBalance | External | ✓ | onlyOwner |
| | process | Public | ✓ | - |
| | processAccount | Public | ✓ | onlyOwner |
| | | | | |
| **CatCEO** | Implementation | ERC20, Ownable | | |
| | | Public | Payable | ERC20 |
| | | External | Payable | - |
| | claimStuckTokens | External | ✓ | onlyOwner |
| | isContract | Internal | | |
| | sendBNB | Internal | ✓ | |
| | _setAutomatedMarketMakerPair | Private | ✓ | |
| | excludeFromFees | External | ✓ | onlyOwner |
| | isExcludedFromFees | Public | | - |
| | _transfer | Internal | ✓ | |
| | swapAndSendDividends | Private | ✓ | |
| | setSwapTokensAtAmount | External | ✓ | onlyOwner |
| | updateClaimWait | External | ✓ | onlyOwner |
| | getClaimWait | External | | - |
| | getTotalDividendsDistributed | External | | - |
| | withdrawableDividendOf | Public | | - |
| | dividendTokenBalanceOf | Public | | - |

| | | | | |
|---|---|---|---|---|
| | totalRewardsEarned | Public | | - |
| | excludeFromDividends | External | ✓ | onlyOwner |
| | getAccountDividendsInfo | External | | - |
| | getAccountDividendsInfoAtIndex | External | | - |
| | processDividendTracker | External | ✓ | - |
| | claim | External | ✓ | - |
| | claimAddress | External | ✓ | onlyOwner |
| | getLastProcessedIndex | External | | - |
| | setLastProcessedIndex | External | ✓ | onlyOwner |
| | getNumberOfDividendTokenHolders | External | | - |

# Inheritance Graph



# Flow Graph



# Summary

CatCEO contract implements a token mechanism. This audit investigates security issues, business logic concerns, and potential improvements. CatCEO 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 fixed fee of 5%.

# Disclaimer

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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.

# 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**

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