Cyberscope

Audit Report

FROG

May 2023

Network	BSC
Address	0xDCD103Bc6D14829C39Afc9c10c9c373CE385D2C5
Audited by	© cyberscope

Table of Contents

Review

Contract Name	FROG
Compiler Version	v0.8.17+commit.8df45f5f
Optimization	200 runs
Explorer	https://bscscan.com/address/0xdcd103bc6d14829c39afc9c10c9c373ce385d2c5
Address	0xdcd103bc6d14829c39afc9c10c9c373ce385d2c5
Network	BSC
Symbol	FROG
Decimals	9
Total Supply	999.997.944

Audit Updates

Initial Audit	15 May 2023

Source Files

Filename	SHA256
FROG.sol	ad4b242eee5d93ff18ee2576df240981637e33544bf2811c168551dd4a70d3db

Findings Breakdown

Critical	0
Medium	0
Minor / Informative	11

Severity	Unresolved	Acknowledged	Resolved	Other
Critical	0	0	0	0
Medium	0	0	0	0
Minor / Informative	11	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
	MVN	Misleading Variables Naming	Unresolved
	VO	Variable Optimization	Unresolved
	RSML	Redundant SafeMath Library	Unresolved
	IDI	Immutable Declaration Improvement	Unresolved
	L02	State Variables could be Declared Constant	Unresolved
	L04	Conformance to Solidity Naming Conventions	Unresolved
	L07	Missing Events Arithmetic	Unresolved
	L09	Dead Code Elimination	Unresolved
	L16	Validate Variable Setters	Unresolved
	L17	Usage of Solidity Assembly	Unresolved
	L19	Stable Compiler Version	Unresolved

MVN - Misleading Variables Naming

Criticality	Minor / Informative
Location	FROG.sol#L469,473
Status	Unresolved

Description

Variables can have misleading names if their names do not accurately reflect the value they contain or the purpose they serve. The contract uses some variable names that are too generic or do not clearly convey the information stored in the variable. Misleading variable names can lead to confusion, making the code more difficult to read and understand.

The variables `_tBurnTotal` and `_BURN_FEE` do not accurately reflect the value they contain or the purpose they serve. The contract doesn't have any burn functionality.

```
uint256 private _tBurnTotal;
uint256 public    _BURN_FEE;
```

Recommendation

It's always a good practice for the contract to contain variable names that are specific and descriptive. The team is advised to keep in mind the readability of the code.

VO - Variable Optimization

Criticality	Minor / Informative
Location	FROG.sol#L458
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 variable `_DECIMALS` is represented in uint256 . The corresponding number is casted to uint8. Hence the implementation of the contract does not necessarily require the use of a uint256 data type.

```
uint256   private _DECIMALS;

function decimals() public view returns (uint8) {
    return uint8(_DECIMALS);
}
```

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.

The variable `_DECIMALS` could be represented to uint8.

RSML - Redundant SafeMath Library

Criticality	Minor / Informative
Location	FROG.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.

IDI - Immutable Declaration Improvement

Criticality	Minor / Informative
Location	FROG.sol#L480,481,482,483
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`.

```
_NAME
_SYMBOL
_DECIMALS
_DECIMALFACTOR
```

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	FROG.sol#L457,459,460
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 private _MAX = ~uint256(0)
uint256 private _GRANULARITY = 100
uint256 public Optimization =
303120006775239203005667890896945600
```

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	FROG.sol#L398,452,453,454,455,457,458,459,460,468,469,470,475,476,477,624
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 public _owner
string  private _NAME
string  private _SYMBOL
uint256   private _DECIMALS
address public FeeAddress
uint256 private _MAX = ~uint256(0)
uint256 private _DECIMALFACTOR
uint256 private _GRANULARITY = 100
uint256 public Optimization =
30312000677523920300566789089694560
uint256 public      _TAX_FEE
uint256 public     _BURN_FEE
uint256 public _CHARITY_FEE
uint256 private ORIG_TAX_FEE
uint256 private ORIG_BURN_FEE

...
```

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	FROG.sol#L626
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.

```
_TAX_FEE = _txFee* 100
```

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	FROG.sol#L268,295,321,331,346,356,361,828
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 isContract(address account) internal view returns
(bool) {
          // According to EIP-1052, 0x0 is the value returned
for not-yet created accounts
          // and
0xc5d2460186f7233c927e7db2dcc703c0e500b653ca82273b7bfad8045d85a
470 is returned
          // for accounts without code, i.e. 'keccak256('')'
          bytes32 codehash;
          bytes32 accountHash =
0xc5d2460186f7233c927e7db2dcc703c0e500b653ca82273b7bfad8045d85a
470;
          // solhint-disable-next-line no-inline-assembly
          assembly { codehash := extcodehash(account) }
          return (codehash != accountHash && codehash != 0x0);
      }

...
```

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.

L16 - Validate Variable Setters

Criticality	Minor / Informative
Location	FROG.sol#L492,493,495,620
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.

```
FeeAddress = _FeeAddress
_owner = tokenOwner
payable(service).transfer(msg.value)
FeeAddress = account
```

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.

L17 - Usage of Solidity Assembly

Criticality	Minor / Informative
Location	FROG.sol#L275,374
Status	Unresolved

Description

Using assembly can be useful for optimizing code, but it can also be error-prone. It's important to carefully test and debug assembly code to ensure that it is correct and does not contain any errors.

Some common types of errors that can occur when using assembly in Solidity include Syntax, Type, Out-of-bounds, Stack, and Revert.

```
assembly { codehash := extcodehash(account) }

assembly {
                      let returndata_size := mload(returndata)
                      revert(add(32, returndata),
returndata_size)
                  }
```

Recommendation

It is recommended to use assembly sparingly and only when necessary, as it can be difficult to read and understand compared to Solidity code.

L19 - Stable Compiler Version

Criticality	Minor / Informative
Location	FROG.sol#L3
Status	Unresolved

Description

The `^` symbol indicates that any version of Solidity that is compatible with the specified version (i.e., any version that is a higher minor or patch version) can be used to compile the contract. The version lock is a mechanism that allows the author to specify a minimum version of the Solidity compiler that must be used to compile the contract code. This is useful because it ensures that the contract will be compiled using a version of the compiler that is known to be compatible with the code.

```
pragma solidity ^0.8.2;
```

Recommendation

The team is advised to lock the pragma to ensure the stability of the codebase. The locked pragma version ensures that the contract will not be deployed with an unexpected version. An unexpected version may produce vulnerabilities and undiscovered bugs. The compiler should be configured to the lowest version that provides all the required functionality for the codebase. As a result, the project will be compiled in a well-tested LTS (Long Term Support) environment.

Functions Analysis

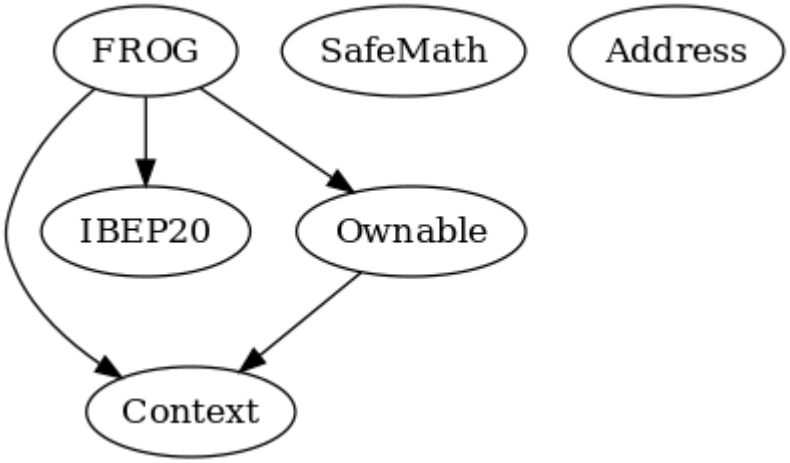
Contract	Type	Bases		
	Function Name	**Visibility**	**Mutability**	**Modifiers**
Context	Implementation			
	_msgSender	Internal		
	_msgData	Internal		
IBEP20	Interface			
	totalSupply	External		-
	balanceOf	External		-
	transfer	External	✓	-
	allowance	External		-
	approve	External	✓	-
	transferFrom	External	✓	-
SafeMath	Library			
	add	Internal		
	sub	Internal		
	sub	Internal		
	mul	Internal		
	div	Internal		

	div	Internal		
	mod	Internal		
	mod	Internal		
Address	Library			
	isContract	Internal		
	sendValue	Internal	✓	
	functionCall	Internal	✓	
	functionCall	Internal	✓	
	functionCallWithValue	Internal	✓	
	functionCallWithValue	Internal	✓	
	_functionCallWithValue	Private	✓	
Ownable	Implementation	Context		
	owner	Public		-
	renounceOwnership	Public	✓	onlyOwner
	transferOwnership	Public	✓	onlyOwner
FROG	Implementation	Context, IBEP20, Ownable		
		Public	Payable	-
	name	Public		-
	symbol	Public		-
	decimals	Public		-

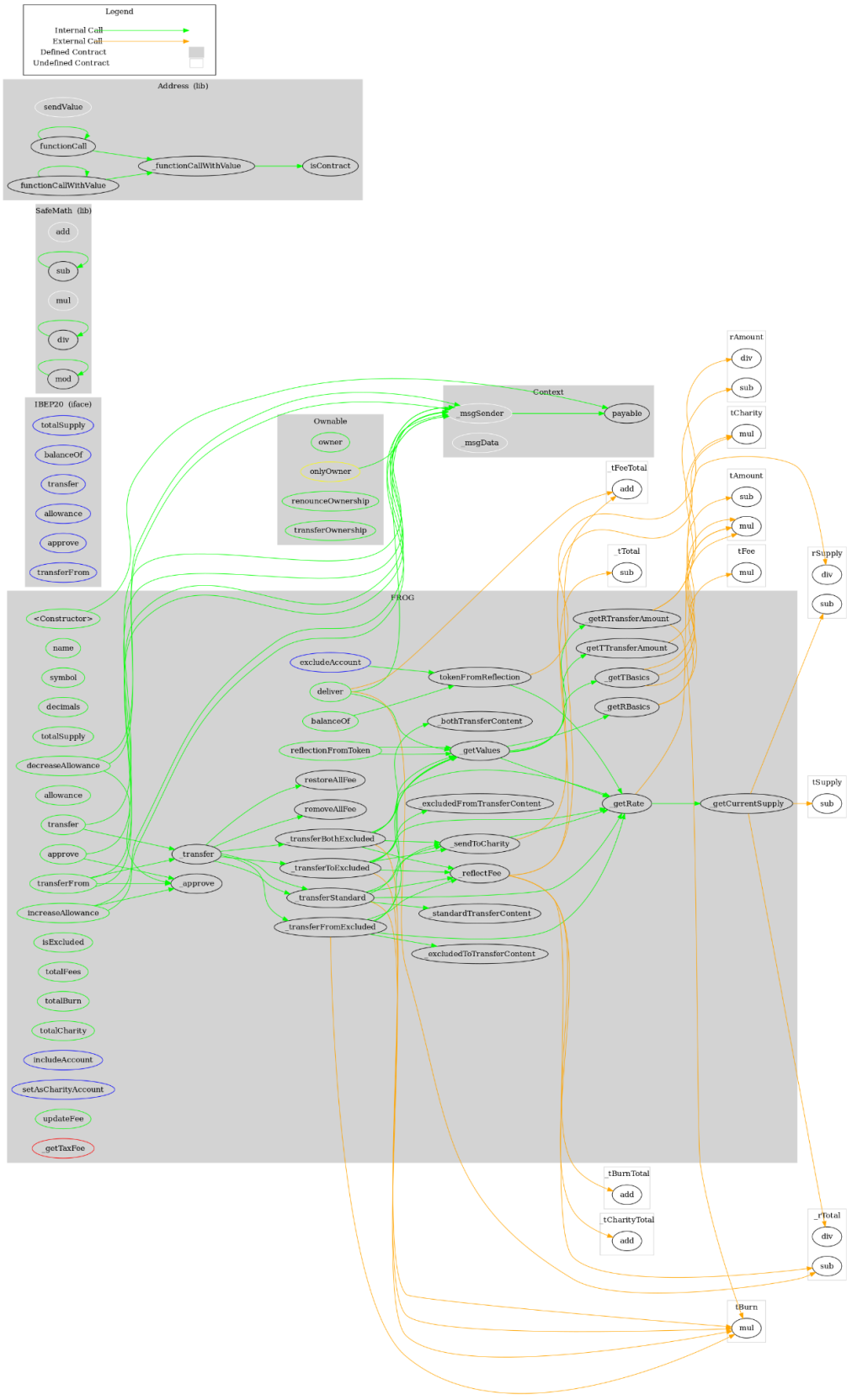
	totalSupply	Public		-
	balanceOf	Public		-
	transfer	Public	✓	-
	allowance	Public		-
	approve	Public	✓	-
	transferFrom	Public	✓	-
	increaseAllowance	Public	✓	-
	decreaseAllowance	Public	✓	-
	isExcluded	Public		-
	totalFees	Public		-
	totalBurn	Public		-
	totalCharity	Public		-
	deliver	Public	✓	-
	reflectionFromToken	Public		-
	tokenFromReflection	Public		-
	excludeAccount	External	✓	onlyOwner
	includeAccount	External	✓	onlyOwner
	setAsCharityAccount	External	✓	onlyOwner
	updateFee	Public	✓	onlyOwner
	_approve	Private	✓	
	_transfer	Private	✓	
	_transferStandard	Private	✓	
	_standardTransferContent	Private	✓	

	_transferToExcluded	Private	✓	
	_excludedFromTransferContent	Private	✓	
	_transferFromExcluded	Private	✓	
	_excludedToTransferContent	Private	✓	
	_transferBothExcluded	Private	✓	
	_bothTransferContent	Private	✓	
	_reflectFee	Private	✓	
	_getValues	Private		
	_getTBasics	Private		
	getTTransferAmount	Private		
	_getRBasics	Private		
	_getRTransferAmount	Private		
	_getRate	Private		
	_getCurrentSupply	Private		
	_sendToCharity	Private	✓	
	removeAllFee	Private	✓	
	restoreAllFee	Private	✓	
	_getTaxFee	Private		

Inheritance Graph



Flow Graph


Legend
Internal Call
External Call
Defined Contract
Undefined Contract
Address (lib)
sendValue
functionCall
_functionCallWithValue
isContract
functionCallWithValue
SafeMath (lib)
add
sub
mul
div
mod
IBEP20 (iface)
totalSupply
balanceOf
transfer
allowance
approve
transferFrom
Ownable
owner
onlyOwner
renounceOwnership
transferOwnership
Context
msgSender
payable
msgData
FROG
<Constructor>
name
symbol
decimals
totalSupply
decreaseAllowance
allowance
transfer
approve
transferFrom
increaseAllowance
isExcluded
totalFees
totalBurn
totalCharity
includeAccount
setAsCharityAccount
updateFee
getTaxFee
excludeAccount
deliver
balanceOf
reflectionFromToken
restoreAllFee
removeAllFee
transferBothExcluded
transferToExcluded
transferStandard
transferFromExcluded
tokenFromReflection
bothTransferContent
getValues
excludedFromTransferContent
sendToCharity
reflectFee
standardTransferContent
excludedToTransferContent
getRTransferAmount
getTTransferAmount
_getTBasics
getRBasics
getRate
getCurrentSupply
rAmount
div
sub
tCharity
mul
tFeeTotal
add
tAmount
sub
mul
tTotal
sub
tFee
mul
rSupply
div
sub
tSupply
sub
tBurnTotal
add
tCharityTotal
add
_rTotal
div
sub
tBurn
mul

Summary

FROG contract implements a token mechanism. This audit investigates security issues, business logic concerns, and potential improvements. FROG 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 are also fixed fees of 10% fees.

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The Cyberscope team

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