

CEGNINJA AUDITS



Security Assessment

Royalty Diplomat

Finance Token

October 18, 2022



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Assessment Summary

This report has been prepared for Royalty Diplomat Finance Token on the Binance Smart Chain network. CFGNINJA provides both client-centered and user-centered examination of the smart contracts and their current status when applicable. This report represents the security assessment made to find issues and vulnerabilities on the source code along with the current liquidity and token holder statistics of the protocol.

A comprehensive examination has been performed, utilizing Cross Referencing, Static Analysis, In-House Security Tools, and line-by-line Manual Review.






The auditing process pays special attention to the following considerations:

- Testing the smart contracts against both common and uncommon attack vectors.
- Inspecting liquidity and holders statistics to inform the current status to both users and client when applicable.
- Assessing the codebase to ensure compliance with current best practices and industry standards.
- Verifying contract functions that allow trusted and/or untrusted actors to mint, lock, pause, and transfer assets.
- Cross referencing contract structure and implementation against similar smart contracts produced by industry leaders
- Thorough line-by-line manual review of the entire codebase by industry experts.








Technical Findings Summary

Classification of Risk

Severity	Description
 Critical	Risks are those that impact the safe functioning of a platform and must be addressed before launch. Users should not invest in any project with outstanding critical risks.
 Major	Risks can include centralization issues and logical errors. Under specific circumstances, these major risks can lead to loss of funds and/or control of the project.
 Medium	Risks may not pose a direct risk to users' funds, but they can affect the overall functioning of a platform
 Minor	Risks can be any of the above but on a smaller scale. They generally do not compromise the overall integrity of the Project, but they may be less efficient than other solutions.
 Informational	Errors are often recommended to improve the code's style or certain operations to fall within industry best practices. They usually do not affect the overall functioning of the code.

Findings

Severity	Found	Pending	Resolved
 Critical	0	0	0
 Major	0	0	0
 Medium	0	0	0
 Minor	2	2	0
 Informational	1	1	0
Total	3	3	0



Project Overview

Token Summary

Parameter	Result
Address	0x790A2E213933B00cf81A2480385EfCd35D360AE8
Name	Royalty Diplomat Finance
Token Tracker	Royalty Diplomat Finance (\$RDF)
Decimals	18
Supply	1,000,000,000
Platform	Binance Smart Chain
compiler	v0.8.17+commit.8df45f5f
Contract Name	RDF
Optimization	Yes with 200 runs
LicenseType	MIT
Language	Solidity
Codebase	https://bscscan.com/address/0x790A2E213933B00cf81A2480385EfCd35D360AE8#code
Payment Tx	



Project Overview

Risk Analysis Summary

Parameter	Result
Buy Tax	12%
Sale Tax	12%
Is honeypot?	Clean
Can edit tax?	Yes
Is anti whale?	No
Is blacklisted?	No
Is whitelisted?	No
Holders	Clean
Security Score	97/100
Auditor Score	97/100
Confidence Level	High

The following quick summary it's added to the project overview; however, there are more details about the audit and its results. Please read every detail.



Main Contract Assessed Contract Name

Name	Contract	Live
Royalty Diplomat Finance	0x790A2E213933B00cf81A2480385EfCd35D360AE8	Yes

TestNet Contract Assessed Contract Name

Name	Contract	Live
Royalty Diplomat Finance	0x56ac9395c5d2619969C9c47b9E352874aBE6d5a1	Yes

Solidity Code Provided

SolID	File Sha-1	FileName
RDF	ec994be04495b7caeed01551f38897770fad121f	Lock.sol



Mint Check

The project owners of Royalty Diplomat Finance do not have a mint function in the contract, owner cannot mint tokens after initial deploy.

The Project has a Total Supply of 1,000,000,000 and cannot mint any more than the Max Supply.

Mint Notes:

Auditor Notes:

Project Owner Notes:



Fees Check

The project owners of Royalty Diplomat Finance do not have the ability to set fees higher than 25% .

The team May have fees defined; however, they can't set those fees higher than 25% or may not be able to configure the same.

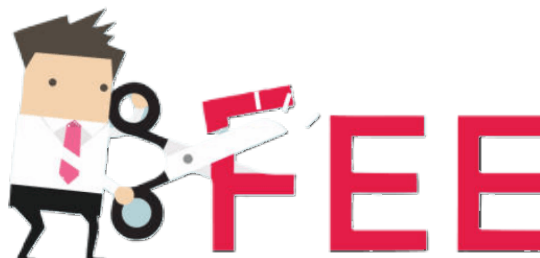
Tax Fee Notes:

Auditor Notes: The contract currently has 12% buy and 12% sale taxes, and cannot be set higher than 25%

Project Owner Notes: .



Fees can be changed up to a maximum of 25%



Blacklist Check

The project owners of Royalty Diplomat Finance do not have a blacklist function their contract.

The Project allow owners to transfer their tokens without any restrictions.

Token owner cannot blacklist the contract: Malicious or compromised owners can trap contracts relying on tokens with a blacklist.

Blacklist Notes:

Auditor Notes:

Project Owner Notes: undefined



MaxTx Check

**The Project Owners of Royalty Diplomat Finance
cannot set max tx amount**

**The Team allows any investors to swap, transfer or sell
their total amount if needed.**

MaxTX Notes:

Auditor Notes:

Project Owner Notes:

Project Has No MaxTX



Pause Trade Check

The Project Owners of Royalty Diplomat Finance don't have the ability to stop or pause trading.

The Team has done a great job to avoid stop trading, and investors has the ability to trade at any given time without any problems

Pause Trade Notes:

Auditor Notes: .

Project Owner Notes:



Owner can't pause trading



Contract Ownership

The contract ownership of Royalty Diplomat Finance is not currently renounced. The ownership of the contract grants special powers to the protocol creators, making them the sole addresses that can call sensible ownable functions that may alter the state of the protocol.

The current owner is the address
0x05f3ed48954e7674648c97087aa3bfeeaacde5ce
which can be viewed:
[HERE](#)

The owner wallet has the power to call the functions displayed on the privileged functions chart below, if the owner's wallet is compromised, they could exploit these privileges.

We recommend the team renounce ownership at the right time, if possible, or gradually migrate to a timelock with governing functionalities regarding transparency and safety considerations.

We recommend the team use a Multisignature Wallet if the contract is not going to be renounced; this will give the team more control over the contract.



Liquidity Ownership

The token does not have liquidity at the moment of the audit, block 22233302

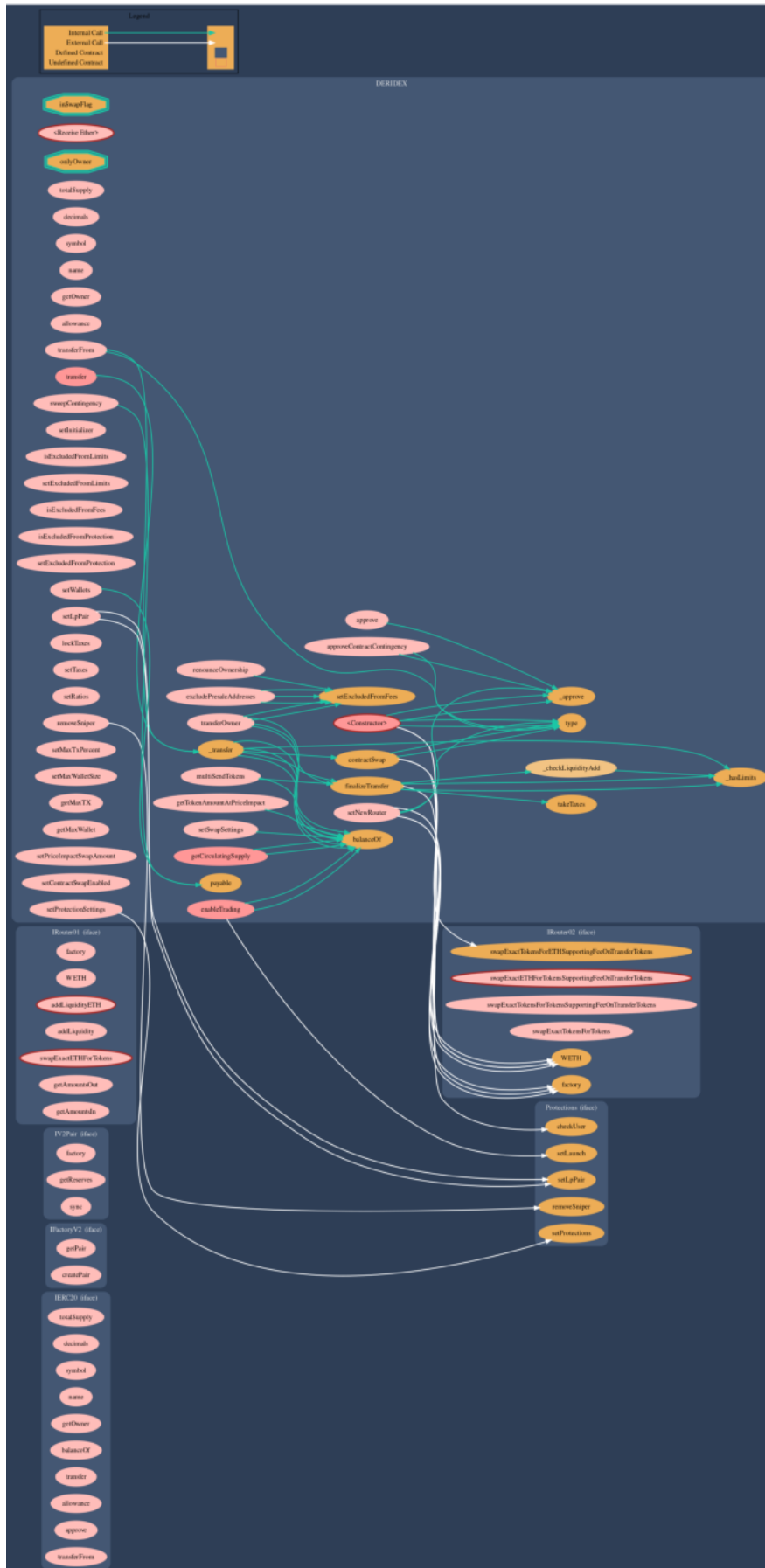
If liquidity is unlocked, then the token developers can do what is infamously known as 'rugpull'. Once investors start buying token from the exchange, the liquidity pool will accumulate more and more coins of established value (e.g., ETH or BNB or Tether). This is because investors are basically sending these tokens of value to the exchange, to get the new token. Developers can withdraw this liquidity from the exchange, cash in all the value and run off with it. Liquidity is locked by renouncing the ownership of liquidity pool (LP) tokens for a fixed time period, by sending them to a time-lock smart contract. Without ownership of LP tokens, developers cannot get liquidity pool funds back. This provides confidence to the investors that the token developers will not run away with the liquidity money. It is now a standard practice that all token developers follow, and this is what really differentiates a scam coin from a real one.

[Read More](#)



Call Graph

The contract for Royalty Diplomat Finance has the following call graph structure.



KYC Information

**The Project Owners of Royalty Diplomat Finance is not
KYC.**

KYC Information Notes:

Auditor Notes: Customer is KYC

Project Owner Notes:



Smart Contract Vulnerability Checks

ID	Severity	Name	File	location
SWC-100	Pass	Function Default Visibility	Lock.sol	L: 0 C: 0
SWC-101	Pass	Integer Overflow and Underflow.	Lock.sol	L: 0 C: 0
SWC-102	Pass	Outdated Compiler Version file.	Lock.sol	L: 0 C: 0
SWC-103	Low	A floating pragma is set.	Lock.sol	L: 2 C: 2
SWC-104	Pass	Unchecked Call Return Value.	Lock.sol	L: 0 C: 0
SWC-105	Pass	Unprotected Ether Withdrawal.	Lock.sol	L: 0 C: 0
SWC-106	Pass	Unprotected SELFDESTRUCT Instruction	Lock.sol	L: 0 C: 0
SWC-107	Pass	Read of persistent state following external call.	Lock.sol	L: 0 C: 0
SWC-108	Low	State variable visibility is not set..	Lock.sol	L: 11 C: 74,L: 14 C: 38,L: 23 C: 4
SWC-109	Pass	Uninitialized Storage Pointer.	Lock.sol	L: 0 C: 0
SWC-110	Pass	Assert Violation.	Lock.sol	L: 0 C: 0
SWC-111	Pass	Use of Deprecated Solidity Functions.	Lock.sol	L: 0 C: 0



ID	Severity	Name	File	location
SWC-112	Pass	Delegate Call to Untrusted Callee.	Lock.sol	L: 0 C: 0
SWC-113	Pass	Multiple calls are executed in the same transaction.	Lock.sol	L: 0 C: 0
SWC-114	Pass	Transaction Order Dependence.	Lock.sol	L: 0 C: 0
SWC-115	Pass	Authorization through tx.origin.	Lock.sol	L: 455 C: 15
SWC-116	Pass	A control flow decision is made based on The block.timestamp environment variable.	Lock.sol	L: 0 C: 0
SWC-117	Pass	Signature Malleability.	Lock.sol	L: 0 C: 0
SWC-118	Pass	Incorrect Constructor Name.	Lock.sol	L: 0 C: 0
SWC-119	Pass	Shadowing State Variables.	Lock.sol	L: 0 C: 0
SWC-120	Low	Potential use of block.number as source of randomness.	Lock.sol	L: 582 C: 49
SWC-121	Pass	Missing Protection against Signature Replay Attacks.	Lock.sol	L: 0 C: 0
SWC-122	Pass	Lack of Proper Signature Verification.	Lock.sol	L: 0 C: 0
SWC-123	Pass	Requirement Violation.	Lock.sol	L: 0 C: 0
SWC-124	Pass	Write to Arbitrary Storage Location.	Lock.sol	L: 0 C: 0
SWC-125	Pass	Incorrect Inheritance Order.	Lock.sol	L: 0 C: 0
SWC-126	Pass	Insufficient Gas Griefing.	Lock.sol	L: 0 C: 0



ID	Severity	Name	File	location
SWC-127	Pass	Arbitrary Jump with Function Type Variable.	Lock.sol	L: 0 C: 0
SWC-128	Pass	DoS With Block Gas Limit.	Lock.sol	L: 0 C: 0
SWC-129	Pass	Typographical Error.	Lock.sol	L: 0 C: 0
SWC-130	Pass	Right-To-Left-Override control character (U+202E).	Lock.sol	L: 0 C: 0
SWC-131	Pass	Presence of unused variables.	Lock.sol	L: 0 C: 0
SWC-132	Pass	Unexpected Ether balance.	Lock.sol	L: 0 C: 0
SWC-133	Pass	Hash Collisions with Multiple Variable Length Arguments.	Lock.sol	L: 0 C: 0
SWC-134	Pass	Message call with hardcoded gas amount.	Lock.sol	L: 0 C: 0
SWC-135	Pass	Code With No Effects (Irrelevant/Dead Code).	Lock.sol	L: 0 C: 0
SWC-136	Pass	Unencrypted Private Data On-Chain.	Lock.sol	L: 0 C: 0

We scan the contract for additional security issues using MYTHX and industry-standard security scanning tools.



Smart Contract Vulnerability Details

SWC-103 - Floating Pragma.

CWE-664: Improper Control of a Resource Through its Lifetime.

References:

Description:

Contracts should be deployed with the same compiler version and flags that they have been tested with thoroughly. Locking the pragma helps to ensure that contracts do not accidentally get deployed using, for example, an outdated compiler version that might introduce bugs that affect the contract system negatively.

Remediation:

Lock the pragma version and also consider known bugs (<https://github.com/ethereum/solidity/releases>) for the compiler version that is chosen.

Pragma statements can be allowed to float when a contract is intended for consumption by other developers, as in the case with contracts in a library or EthPM package. Otherwise, the developer would need to manually update the pragma in order to compile locally.

References:

Ethereum Smart Contract Best Practices - Lock pragmas to specific compiler version.



Smart Contract Vulnerability Details

SWC-108 - State Variable Default Visibility

CWE-710: Improper Adherence to Coding Standards

Description:

Labeling the visibility explicitly makes it easier to catch incorrect assumptions about who can access the variable.

Remediation:

Variables can be specified as being public, internal or private. Explicitly define visibility for all state variables.

References:

Ethereum Smart Contract Best Practices - Explicitly mark visibility in functions and state variables



Smart Contract Vulnerability Details

SWC-120 – Weak Sources of Randomness from Chain Attributes

CWE-330: Use of Insufficiently Random Values

Description:

Solidity allows for ambiguous naming of state variables when inheritance is used. Contract A with a variable x could inherit contract B that also has a state variable x defined. This would result in two separate versions of x, one of them being accessed from contract A and the other one from contract B. In more complex contract systems this condition could go unnoticed and subsequently lead to security issues.

Shadowing state variables can also occur within a single contract when there are multiple definitions on the contract and function level.

Remediation:

Using commitment scheme, e.g. RANDAO. Using external sources of randomness via oracles, e.g. Oraclize. Note that this approach requires trusting in oracle, thus it may be reasonable to use multiple oracles. Using Bitcoin block hashes, as they are more expensive to mine.

References:

How can I securely generate a random number in my smart contract?)

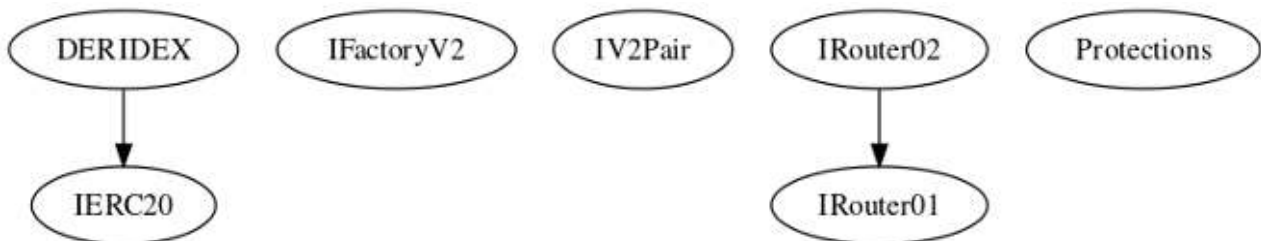
When can BLOCKHASH be safely used for a random number? When would it be unsafe?

The Run smart contract.



Inheritance

The contract for Royalty Diplomat Finance has the following inheritance structure.



Privileged Functions (onlyOwner)

Function Name	Parameters	Visibility
renounceOwnership		public
transferOwner	account (address)	external
clearStuckBalance	amountPercentage (uint256)	external
getBep20Tokens	_tokenAddress (address), amount (uint256)	external
updateBuyFees	reward (uint256), dev (uint256), liquidity (uint256), burn (uint256), jackpot (uint256)	external
updateSellFees	reward (uint256), dev (uint256), liquidity (uint256), burn (uint256), jackpot (uint256)	external
enableTrading		external
whitelistPreSale	_preSale (address)	external



Function Name	Parameters	Visibility
setIsDividendExempt	holder (address), exempt (bool)	external
setIsFeeExempt	holder (address), exempt (bool)	external
addAuthorizedWallets	holder (address), exempt (bool)	external
setDevWallet	_wallet (address)	external
setSwapBackSettings	_enabled (bool), _amount (uint256)	external



Assessment Results

- The contract was developed by RugFree Coins and has been peer-reviewed by Bladepool.
- The contract has 12% buy and Sale and can be increased up to 25%.
- Security Vulnerabilities have not been found and no major issues during the advance check and testing of the contract.
- No high-risk Exploits/Vulnerabilities Were Found in the Source Code.

Audit Passed





Smart Contract Advance Checks

ID	Severity	Name	Result	Status
\$RDF-01	Minor	Potential Sandwich Attacks.	Fail	Pending
\$RDF-02	Informational	Function Visibility Optimization	Fail	Pending
\$RDF-03	Minor	Lack of Input Validation.	Fail	Pending
\$RDF-04	Major	Centralized Risk In addLiquidity.	Pass	Resolved
\$RDF-05	Major	Missing Event Emission.	Pass	Resolved
\$RDF-06	Minor	Conformance with Solidity Naming Conventions.	Pass	Resolved
\$RDF-07	Major	State Variables could be Declared Constant.	Pass	Resolved
\$RDF-08	Major	Dead Code Elimination.	Pass	Resolved
\$RDF-09	Major	Third Party Dependencies.	Pass	Resolved
\$RDF-10	Major	Initial Token Distribution.	Pass	Resolved
\$RDF-11	Major	Modification of Math Library	Pass	Resolved
\$RDF-12	Major	Centralization Risks In The X Role	Pass	Resolved
\$RDF-13	Informational	Extra Gas Cost For User..	Pass	Resolved

During our assessment review, we manually check against the following test cases, this help us identify potential missing items from any automated tools. Is an additional safety measure to ensure the contract is safe and follow industry standards.



\$RDF-01 | Potential Sandwich Attacks.

Category	Severity	Location	Status
Security	 Minor	Lock.sol: 526,13	 Pending

Description

A sandwich attack might happen when an attacker observes a transaction swapping tokens or adding liquidity without setting restrictions on slippage or minimum output amount. The attacker can manipulate the exchange rate by frontrunning (before the transaction being attacked) a transaction to purchase one of the assets and make profits by back running (after the transaction being attacked) a transaction to sell the asset. The following functions are called without setting restrictions on slippage or minimum output amount, so transactions triggering these functions are vulnerable to sandwich attacks, especially when the input amount is large:

- swapExactTokensForETHSupportingFeeOnTransferTokens()
- addLiquidityETH()

Remediation



We recommend setting reasonable minimum output amounts, instead of 0, based on token prices when calling the aforementioned functions.

References:

What Are Sandwich Attacks in DeFi – and How Can You Avoid Them?.



\$RDF-02 | Function Visibility Optimization.

Category	Severity	Location	Status
Gas Optimization	 Informational	Lock.sol: 424,13	 Pending

Description

The following functions are declared as public and are not invoked in any of the contracts contained within the projects scope:

Function Name	Parameters	Visibility
name		public
symbol		public
decimals		public

The functions that are never called internally within the contract should have external visibility

Remediation



We advise that the function's visibility specifiers are set to external, and the array-based arguments change their data location from memory to calldata, optimizing the gas cost of the function.

References:

external vs public best practices.



\$RDF-03 | Lack of Input Validation.

Category	Severity	Location	Status
Volatile Code	 Minor	Lock.sol: 422,8	 Pending

Description

The given input is missing the check for the non-zero address.

Remediation

We advise the client to add the check for the passed-in values to prevent unexpected errors as below:

```
...  
    require(receiver != address(0), "Receiver is the zero address");  
...
```



Social Media Checks

Social Media	URL	Result
Twitter	https://twitter.com/_royaltyfinance	Pass
Instagram	https://instagram.com/royaltydiplomatfinance/	Pass
Website	http://royaltyfinance.co	Pass
Telegram	https://t.me/RDF_finance	Pass

We recommend to have 3 or more social media sources including a completed working websites.

Social Media Information Notes:

Auditor Notes: undefined

Project Owner Notes:



Appendix

Finding Categories

Centralization / Privilege

Centralization / Privilege findings refer to either feature logic or implementation of components that act against the nature of decentralization, such as explicit ownership or specialized access roles in combination with a mechanism to relocate funds.

Gas Optimization

Gas Optimization findings do not affect the functionality of the code but generate different, more optimal EVM opcodes resulting in a reduction on the total gas cost of a transaction.

Logical Issue

Logical Issue findings detail a fault in the logic of the linked code, such as an incorrect notion on how block.timestamp works.

Control Flow

Control Flow findings concern the access control imposed on functions, such as owner-only functions being invoke-able by anyone under certain circumstances.

Volatile Code

Volatile Code findings refer to segments of code that behave unexpectedly on certain edge cases that may result in a vulnerability.

Coding Style

Coding Style findings usually do not affect the generated byte-code but rather comment on how to make the codebase more legible and, as a result, easily maintainable.

Inconsistency

Inconsistency findings refer to functions that should seemingly behave similarly yet contain different code, such as a constructor assignment imposing different requirements on the input variables than a setter function.

Coding Best Practices

ERC 20 Coding Standards are a set of rules that each developer should follow to ensure the code meets a set of criteria and is readable by all the developers.



Disclaimer

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