CFG NINJA AUDITS

Security Assessment

CEO Token

February 18, 2023

Audit Status: Pass
Audit Edition: SAFU

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Assessment Summary

This report has been prepared for CEO 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.

Project Overview

Token Summary

Parameter	Result
Address	0x237ace23Ab2C36a004AA5e4fB134fe5c1cedF06c
Name	CEO
Token Tracker	CEO (CEO)
Decimals	18
Supply	10,000,000
Platform	Binance Smart Chain
compiler	v0.8.18+commit.87f61d96
Contract Name	CEO
Optimization	Yes with 200 runs
LicenseType	MIT
Language	Solidity
Codebase	https://bscscan.com/address/0x237ace23Ab2C36a004AA5e4fB134fe5c1cedF06c#code
Payment Tx	Corporate

Project Overview

Risk Analysis Summary

Parameter	Result
Buy Tax	3%
Sale Tax	3%
Is honeypot?	Clean
Can edit tax?	No
Is anti whale?	No
Is blacklisted?	No
Is whitelisted?	No
Holders	0
Confidence Level	Low

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.

Project Overview

Simulation Summary

Parameter	Result
Transfer From Owner	Pass
Transfer From Holder	Pass
Add Liquidity	Pass
Buy from Owner	Pass
Buy from Holder	Pass
Remove Liquidity	Pass
SwapAndLiquify	Pass
RemoveLiquidity	Pass
LaunchPad	PinkSale

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
CEO	0x237ace23Ab2C36a004AA5e4fB134fe5c1cedF06c	Yes

TestNet Contract Assessed
Contract Name

Name	Contract	Live
CEO	0x45914E3dbD111DCb3A65987770642Cf6F002f5AD	Yes

Solidity Code Provided

SolID	File Sha-1	FileName
CEO	e299b36b8625dc3ad9d8427385abc8a1b112819f	ceo.sol

Mint Check

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

The Project has a Total Supply of 10,000,000 and cannot mint any more than the Max Supply.

Mint Notes:

Auditor Notes:

Project Owner Notes:

Owner can't mint new coins

Fees Check

The project owners of CEO 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 0% buy and 0% sale taxes, and it cannot be set.

Project Owner Notes:

Blacklist Check

The project owners of CEO 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 CEO cannot set max tx amount

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

MaxTX Notes:

Auditor Notes: Customer has a max Wallet Configuration now.

Project Owner Notes:

Project Has No MaxTX

Pause Trade Check

The Project Owners of CEO 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 CEO 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 0xb74fd9e3580dc85ef8ea783bee1b12d0b356c906 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

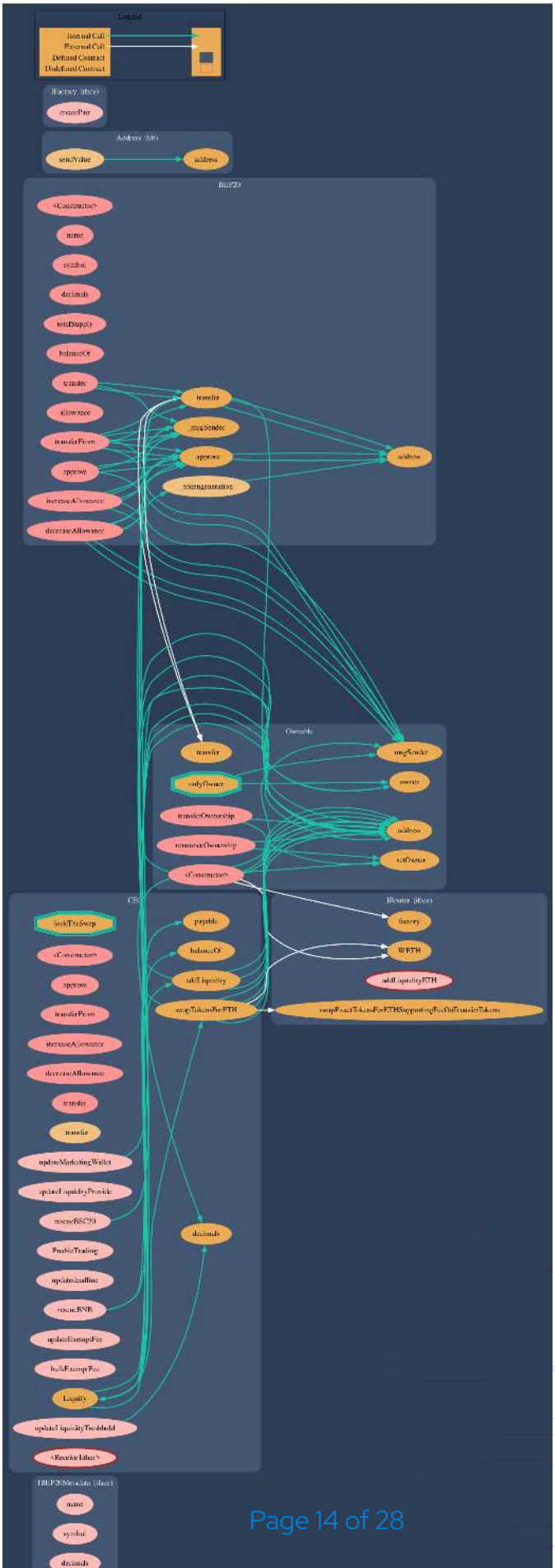
The token does not have liquidity at the moment of the audit, block 25769706

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 CEO has the following call graph structure.



KYC Information

The Project Owners of CEO is not KYC.

KYC Information Notes:

Auditor Notes:

Project Owner Notes:

Smart Contract Vulnerability Checks

The Smart Contract Weakness Classification Registry (SWC Registry) is an implementation of the weakness classification scheme proposed in EIP-1470. It is loosely aligned to the terminologies and structure used in the Common Weakness Enumeration (CWE) while overlaying a wide range of weakness variants that are specific to smart contracts.

ID	Severity	Name	File	location
SWC-100	Pass	Function Default Visibility	ceo.sol	L: 0 C: 0
SWC-101	Pass	Integer Overflow and Underflow.	ceo.sol	L: 0 C: 0
SWC-102	Pass	Outdated Compiler Version file.	ceo.sol	L: 0 C: 0
SWC-103	Low	A floating pragma is set.	ceo.sol	L: 7 C: 0
SWC-104	Pass	Unchecked Call Return Value.	ceo.sol	L: 0 C: 0
SWC-105	Pass	Unprotected Ether Withdrawal.	ceo.sol	L: 0 C: 0
SWC-106	Pass	Unprotected SELFDESTRUCT Instruction	ceo.sol	L: 0 C: 0
SWC-107	Pass	Read of persistent state following external call.	ceo.sol	L: 0 C: 0
SWC-108	Pass	State variable visibility is not set..	ceo.sol	L: 0 C: 0
SWC-109	Pass	Uninitialized Storage Pointer.	ceo.sol	L: 0 C: 0
SWC-110	Pass	Assert Violation.	ceo.sol	L: 0 C: 0

ID	Severity	Name	File	location
SWC-111	Pass	Use of Deprecated Solidity Functions.	ceo.sol	L: 0 C: 0
SWC-112	Pass	Delegate Call to Untrusted Callee.	ceo.sol	L: 0 C: 0
SWC-113	Pass	Multiple calls are executed in the same transaction.	ceo.sol	L: 0 C: 0
SWC-114	Pass	Transaction Order Dependence.	ceo.sol	L: 0 C: 0
SWC-115	Pass	Authorization through tx.origin.	ceo.sol	L: 0 C: 0
SWC-116	Pass	A control flow decision is made based on The block.timestamp environment variable.	ceo.sol	L: 0 C: 0
SWC-117	Pass	Signature Malleability.	ceo.sol	L: 0 C: 0
SWC-118	Pass	Incorrect Constructor Name.	ceo.sol	L: 0 C: 0
SWC-119	Pass	Shadowing State Variables.	ceo.sol	L: 0 C: 0
SWC-120	Low	Potential use of block.number as source of randonmness.	ceo.sol	L: 588 C: 12,L: 708 C: 24
SWC-121	Pass	Missing Protection against Signature Replay Attacks.	ceo.sol	L: 0 C: 0
SWC-122	Pass	Lack of Proper Signature Verification.	ceo.sol	L: 0 C: 0
SWC-123	Pass	Requirement Violation.	ceo.sol	L: 0 C: 0
SWC-124	Pass	Write to Arbitrary Storage Location.	ceo.sol	L: 0 C: 0
SWC-125	Pass	Incorrect Inheritance Order.	ceo.sol	L: 0 C: 0

ID	Severity	Name	File	location
SWC-126	Pass	Insufficient Gas Griefing.	ceo.sol	L: 0 C: 0
SWC-127	Pass	Arbitrary Jump with Function Type Variable.	ceo.sol	L: 0 C: 0
SWC-128	Pass	DoS With Block Gas Limit.	ceo.sol	L: 0 C: 0
SWC-129	Pass	Typographical Error.	ceo.sol	L: 0 C: 0
SWC-130	Pass	Right-To-Left-Override control character (U +202E).	ceo.sol	L: 0 C: 0
SWC-131	Pass	Presence of unused variables.	ceo.sol	L: 0 C: 0
SWC-132	Pass	Unexpected Ether balance.	ceo.sol	L: 0 C: 0
SWC-133	Pass	Hash Collisions with Multiple Variable Length Arguments.	ceo.sol	L: 0 C: 0
SWC-134	Pass	Message call with hardcoded gas amount.	ceo.sol	L: 0 C: 0
SWC-135	Pass	Code With No Effects (Irrelevant/Dead Code).	ceo.sol	L: 0 C: 0
SWC-136	Pass	Unencrypted Private Data On-Chain.	ceo.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-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:

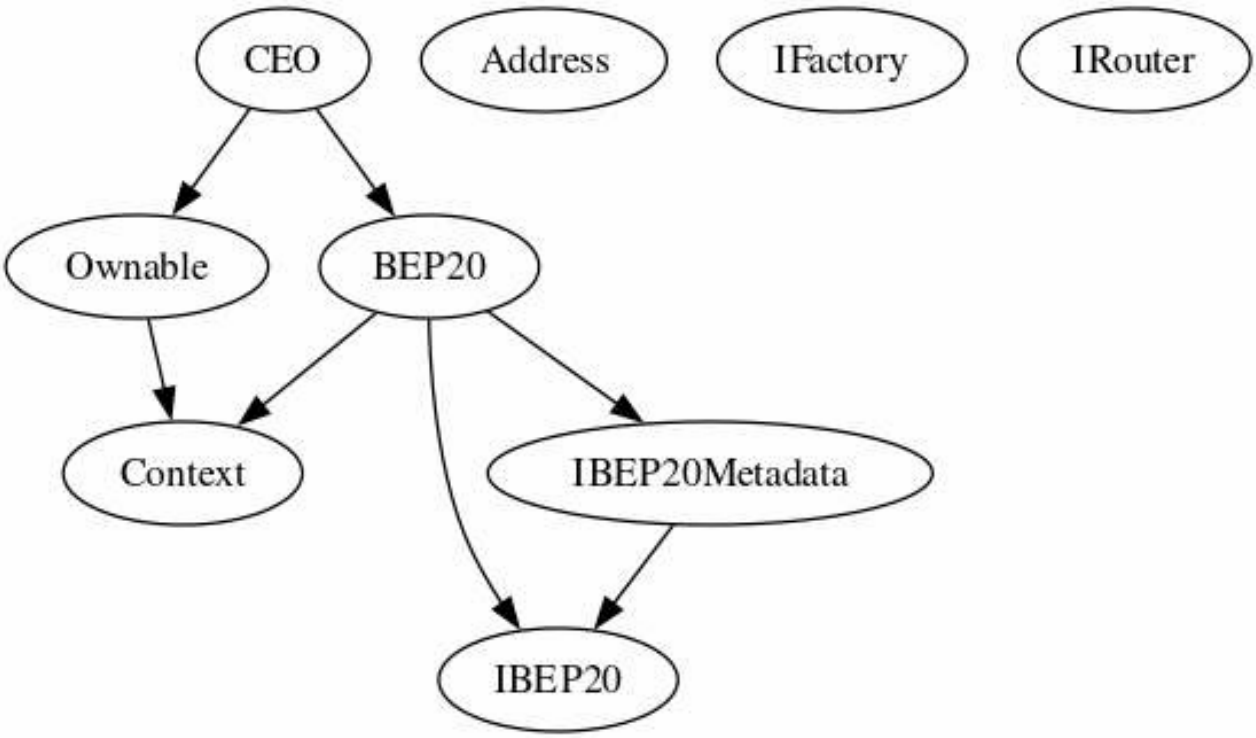
How can I securely generate a random number in my smart contract?)

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

The Run smart contract.

Inheritance

The contract for CEO has the following inheritance structure.



Privileged Functions (onlyOwner)

Please Note if the contract is Renounced none of this functions can be executed.

Function Name	Parameters	Visibility
renounceOwnership		public
transferOwnership	newOwner (address)	public
EnableTrading		external
updateWhitelist	address _address, bool state	external
bulkWhitelist	address[] memory accounts, bool state	external
rescueBNB	uint256 weiAmount	external
rescueBSC20	address tokenAdd, uint256 amount	external
bulkExemptFee	address[] memory accounts, bool state	external
updateExemptFee	address[] memory accounts, bool state	external
updateMarketingWallet	address newWallet	external

Function Name	Parameters	Visibility
updatedeadline	address newWallet	external
EnableTrading		external
updateLiquidityTreshhold	uint256 new_amount	external
updateLiquidityProvide	bool state	external

Social Media Checks

Social Media	URL	Result
Twitter	https://twitter.com/ceo_bsc	Pass
Other		Fail
Website	https://www.ceo-token.com	Pass
Telegram	https://t.me/CEOPortal	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:

Aduit Result

Final Audit Score

Review	Score
Security Score	80
Auditor Score	90

The Following Score System Has been Added to this page to help understand the value of the audit, the maximun score is 100, however to attain that value the project most pass and provide all the data needed for the assessment. Our Passing Score has been changed to 80 Points, if a project does not attain 80% is an automatic failure. Read our notes and final assessment below.

Audit Passed

Assessment Results

Important Notes:

- No Vulnerabilities or issues were found.
- customer purchases the basic audit package so there is no advance information on the contract improvement needed, just overall security of the same.
- The contract has no taxes, however, the customer has enabled trading and there is a whitelist to enable trade, this means there re holders that maybe able to trade before the launch of the token.
- Please DYOR on the project before making decisions.

Auditor Score =90
Audit Passed

Appendix

Finding Categories

Centralization / Privilege

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

Gas Optimization

Gas Optimization findings do not affect the functionality of the code but generate different, more optimalEVM 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 howblock.timestamp works.

Control Flow

Control Flow findings concern the access control imposed on functions, such as owner-only functionsbeing 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 mayresult in a vulnerability.

Coding Style

Coding Style findings usually do not affect the generated byte-code but rather comment on how to makethe 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 require statements on the input variables than a setterfunction.

Coding Best Practices

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

Disclaimer

CFGNINJA has conducted an independent security assessment to verify the integrity of and highlight any vulnerabilities or errors, intentional or unintentional, that may be present in the reviewed code for the scope of this assessment. This report does not constitute agreement, acceptance, or advocation for the Project, and users relying on this report should not consider this as having any merit for financial advice in any shape, form, or nature. The contracts audited do not account for any economic developments that the Project in question may pursue, and the veracity of the findings thus presented in this report relate solely to the proficiency, competence, aptitude, and discretion of our independent auditors, who make no guarantees nor assurance that the contracts are entirely free of exploits, bugs, vulnerabilities or deprecation of technologies.

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