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Smart Contract Audits | KYC

PALLADIUM

Security Assessment

Day of Defeat NFT

January 14, 2023

Table of Contents

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Assessment Summary

This report has been prepared for Day of Defeat NFT on the BNB Chain network. AegisX 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.

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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.
ℹ️ 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	1	0	1
🟡 Medium	1	0	1
🟢 Minor	1	0	1
ℹ️ Informational	0	0	0
Total	3	0	3

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Project Overview

Contract Summary

Parameter	Result
Address	
Name	Day of Defeat
Token Tracker	Day of Defeat (DODNFT)
Decimals	
Supply	10000
Platform	BNB Chain
compiler	v0.8.0^
Contract Name	DayofdefeatNFT
Optimization	
LicenseType	MIT
Language	Solidity
Codebase	Solidity file provided by the project team.
Payment Tx	

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Project Overview

Risk Analysis Summary

Parameter	Result
Buy Tax	0%
Sale Tax	0%
Is honeypot?	Clean
Can edit tax?	No
Is anti whale?	Yes
Is blacklisted?	No
Is whitelisted?	Yes
Holders	
Security Score	94
Auditor Score	89
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.

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Main Contract Assessed
Contract Name

Name	Contract	Live
Day of Defeat		No

TestNet Contract Assessed
Contract Name

Name	Contract	Live
Day of Defeat	0x516Fcb9bf890720B922943F15316CB6a711423Cb	No

Solidity Code Provided

SolID	File Sha-1	FileName
DayofdefeatNFT	545c6dfecc4b1a41fcbff59cff6825b2695c52cc	DayofdefeatNFT.sol

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Mint Check

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

The Project has a Total Supply of 10000 and cannot mint any more than the Max Supply.

Mint Notes:

Auditor Notes: A mint function does exist as it is a NFT contract.

Project Owner Notes:

Owner can't mint new coins

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Fees Check

The project owners of Day of Defeat 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 does not have a tax implemented on the contract.

Project Owner Notes:

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Blacklist Check

The project owners of Day of Defeat 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: The contract does not have a blacklist function.

Project Owner Notes:

MaxTx Check

The Project Owners of Day of Defeat cannot set max tx amount

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

MaxTX Notes:

Auditor Notes: Does not have a max tx limit but does have a max mint function.

Project Owner Notes:

Project has
no MaxTX

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Pause Trade Check

The Project Owners of Day of Defeat 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: Does not have a pause trade function.

Project Owner Notes:

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Contract Ownership

The contract Day of Defeat is not live yet.

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Liquidity Ownership

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

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 Day of Defeat has the following call graph structure.
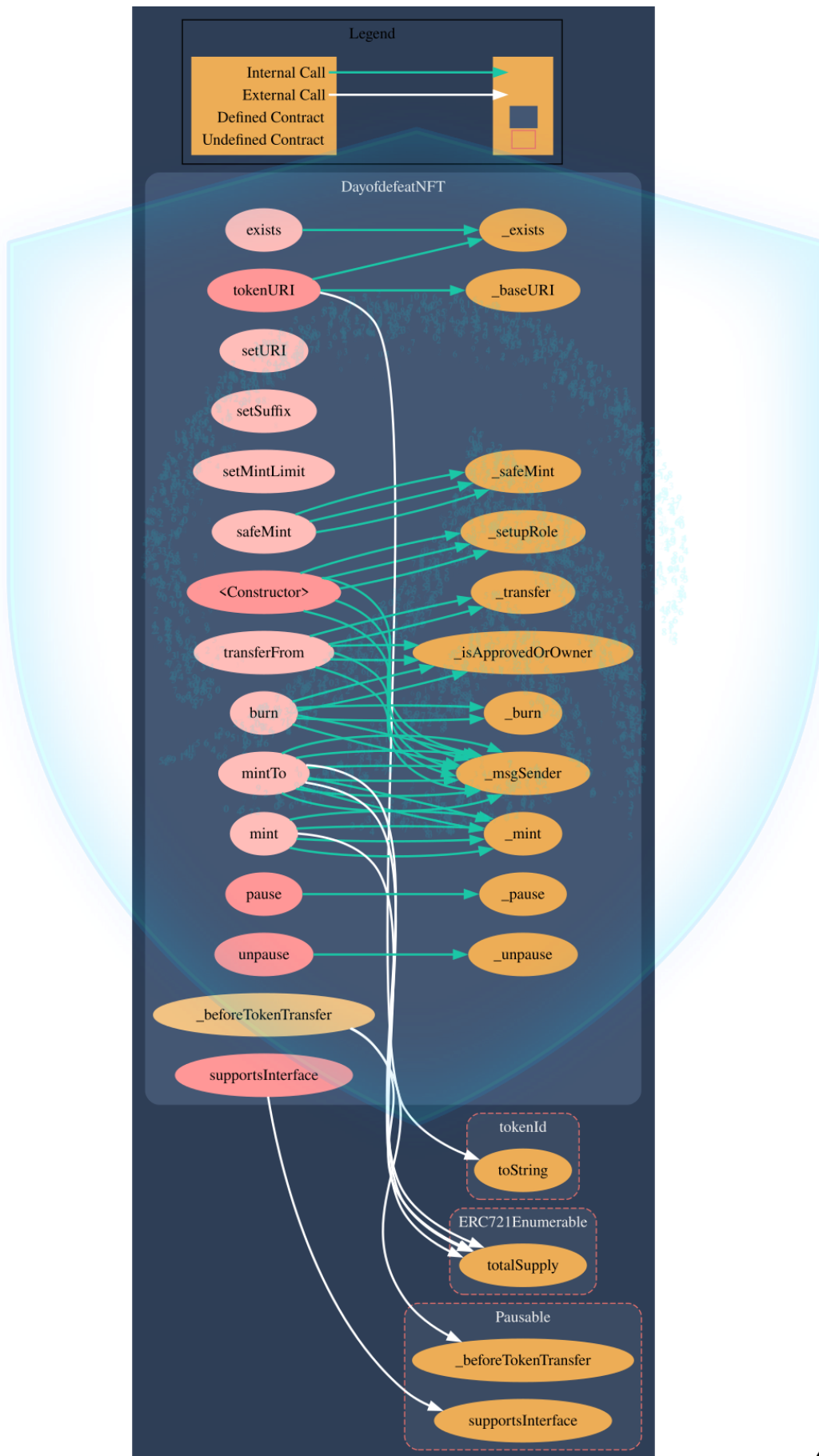
KYC Information

The Project Owners of Day of Defeat are not KYC'd. .

The owner wallet has the power to call the functions displayed on the priviliged functions chart below, if the owner wallet is compromised this privileges could be exploited.

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

KYC Information Notes:

Auditor Notes:

Project Owner Notes:

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Smart Contract Vulnerability Checks

ID	Severity	Name	File	location
SWC-100	Pass	Function Default Visibility	DayofdefeatNFT.sol	L: 0 C: 0
SWC-101	Pass	Integer Overflow and Underflow.	DayofdefeatNFT.sol	L: 0 C: 0
SWC-102	Pass	Outdated Compiler Version file.	DayofdefeatNFT.sol	L: 0 C: 0
SWC-103	Low	A floating pragma is set.	DayofdefeatNFT.sol	IAccessControl, L: 2 C: 1
SWC-104	Pass	Unchecked Call Return Value.	DayofdefeatNFT.sol	L: 0 C: 0
SWC-105	Pass	Unprotected Ether Withdrawal.	DayofdefeatNFT.sol	L: 0 C: 0
SWC-106	Pass	Unprotected SELFDESTRUCT Instruction	DayofdefeatNFT.sol	L: 0 C: 0
SWC-107	Pass	Read of persistent state following external call.	DayofdefeatNFT.sol	L: 0 C: 0
SWC-108	Pass	State variable visibility is not set..	DayofdefeatNFT.sol	L: 0 C: 0
SWC-109	Pass	Uninitialized Storage Pointer.	DayofdefeatNFT.sol	L: 0 C: 0
SWC-110	Pass	Assert Violation.	DayofdefeatNFT.sol	L: 0 C: 0
SWC-111	Pass	Use of Deprecated Solidity Functions.	DayofdefeatNFT.sol	L: 0 C: 0

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

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

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

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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.

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Inheritance

The contract for Day of Defeat has the following inheritance structure.

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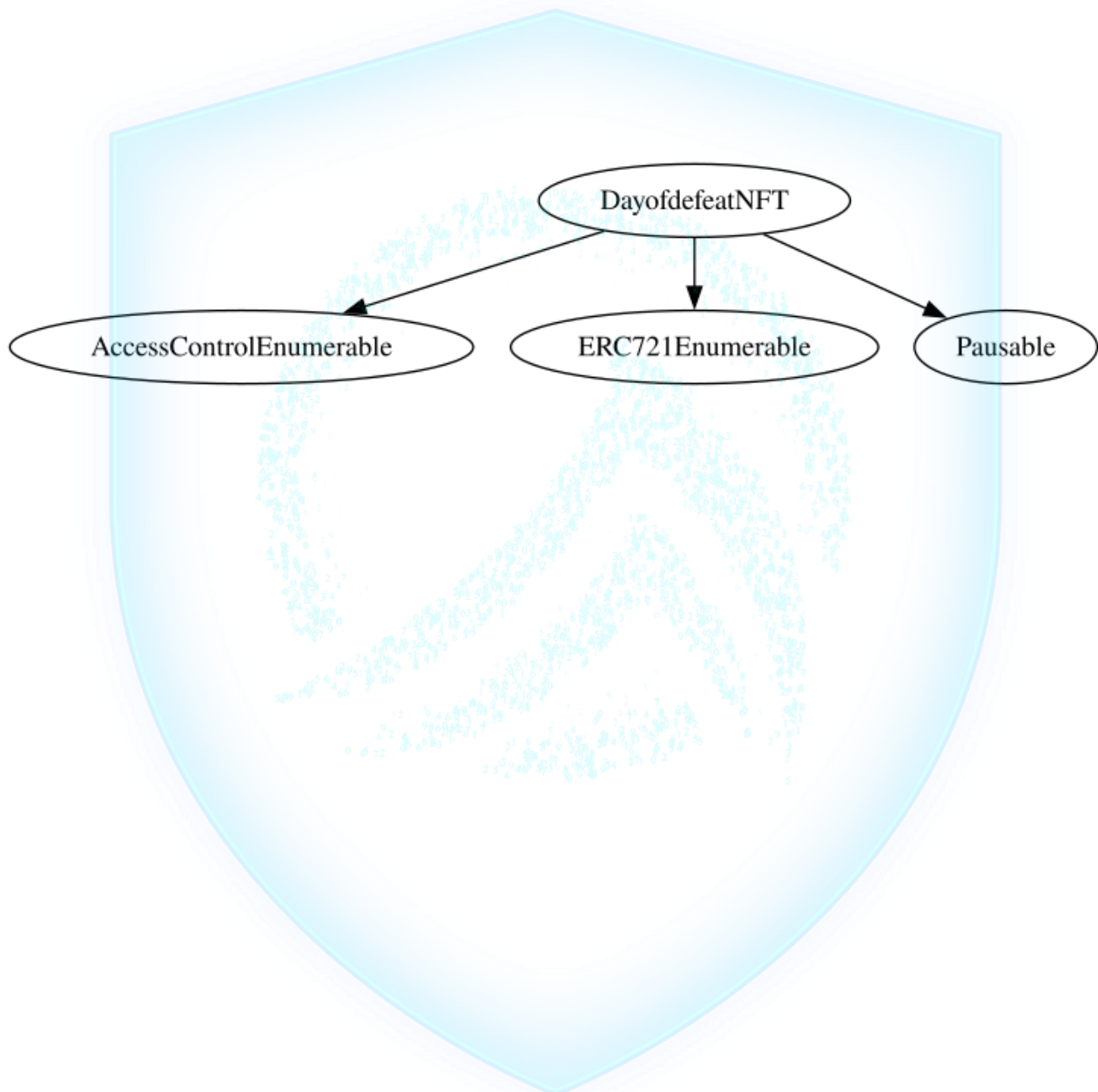
Privileged Functions (onlyOwner)

Function Name	Parameters	Visibility
setURI	string memory baseTokenURI	External
setSuffix	string memory suffix	External
setMintLimit	address account, uint256 max	External

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DODNFT-02 | Function Visibility Optimization.

Category	Severity	Location	Status
Gas Optimization	🟢 Minor	DayofdefeatNFT.sol:	✅Resolved

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
tokenURI		public
pause		public
unpause		public
supportsInterface		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.

Project Action

3rd REVIEW: Review public functions and change those that can be changed to external.

4th REVIEW: 17 functions out of 21 have been changed to external functions.

References:

external vs public best practices.

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DODNFT-11 | mintTo.

Category	Severity	Location	Status
mintLimit[_msgSender()].max	🔴 Major	DayofdefeatNFT.sol: 151,5	✅ Resolved

Description

Missing lines of codes.

Remediation

This mintTo function lacks a line of codes to add mintLimit[_msgSender()].current, leading to the inoperability of a proper mintLimit[_msgSender()].max validation.

Project Action

159,9, mintLimit[_msgSender()].current++; has been added.

DODNFT-12 | Centralization Risks In The DEFAULT_ADMIN_ROLE Role(s)

Category	Severity	Location	Status
Centralization / Privilege	🟡 Medium	DayofdefeatNFT.sol: 33,9	✔ Resolved

Description

In the contract DayofdefeatNFT, the role DEFAULT_ADMIN_ROLE has authority over the functions that lead to centralization risks.
        Any compromise to the DEFAULT_ADMIN_ROLE account(s) may allow the hacker to take advantage of this authority.

Remediation

The risk describes the current project design and potentially makes iterations to improve in the security operation and level of decentralization, which in most cases cannot be resolved entirely at the present stage.
        We advise the client to carefully manage the privileged account's private key to avoid any potential risks of being hacked.
        In general, we strongly recommend centralized privileges or roles in the protocol be improved via a decentralized mechanism or smart-contract-based accounts with enhanced security practices, e.g., multisignature wallets.

Project Action

Previous: Considering that the NFT's minted from this contract serves as a validator of votes in the project's DAO governance contract, giving a power to add/remove/edit other roles by the DEFAULT_ADMIN_ROLE can lead to a centralization risk. At minimum, use of a multi-sig contract to hold DEFAULT_ADMIN_ROLE is recommended, as well as clearly stating who, how, and why the other roles that grants power to mint the NFT's are given, and how and why the number of NFT's can get limited.

FOLLOW-UP: The owner has communicated that the address assigned to DEFAULT_ADMIN_ROLE will be a multi-sig contract, and investors will be well informed on how and why LIMIT_MINTER_ROLE will be assigned based on the agreed project policy.

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Social Media Checks

Social Media	URL	Result
Website	https://www.dayofdefeat.app/	Pass
Telegram	https://t.me/DayOfDefeatBSC	Pass
Twitter	https://twitter.com/dayofdefeatBSC	Pass
OtherSocial	https://titanservice.cn/dayofdefeatCN	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:

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Assessment Results

Score Results

Review	Score
Overall Score	95/100
Auditor Score	89/100

Review by Section	Score
Manual Scan Score	14/18
SWC Scan Score	36/37
Advance Check Score	45/45

The maximum score is 100, however to attain that value the project must pass the reviews and provide all the data needed for the assessment. Minimum score to pass is 80 points. If a project fails to attain 80 and/or has unresolved critical and/or major and/or medium finding(s) in the Palladium tier assessments, an automatic failure is given. Read our notes and final assessment below.

PASSED

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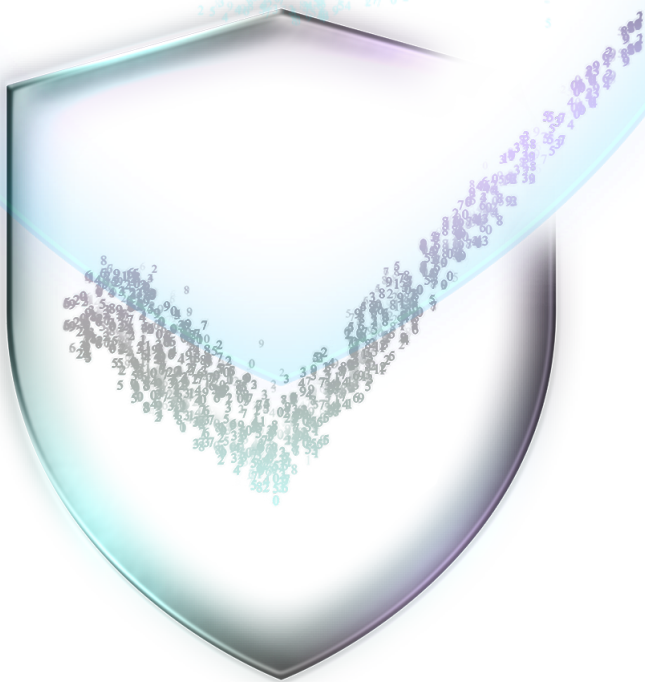
Assessment Results

Auditor Score = 89
Audit Passed

PASSED

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Important Notes from the Auditor:

- 4th: 17 functions' visibility have been updated.

-

- 3rd: The owner has communicated that the address assigned to DEFAULT_ADMIN_ROLE will be a multi-sig contract, and investors will be well informed on how and why LIMIT_MINTER_ROLE will be assigned based on the agreed project policy.

-

- 2nd: DEFAULT_ADMIN_ROLE can set a limit on how many LIMIT_MINTER_ROLE can mint.

- 2nd: There isn't a limit on how many MINTER_ROLE can mint.

- 2nd: PAUSE_ROLE can pause the minting or trading of NFT's.

- 2nd: The aforementioned roles carry centralization risks and in light of the project's goal to eliminate centralization, it is strongly recommended to utilize multi-sig contract for DEFAULT_ADMIN_ROLE & PAUSER_ROLE roles.

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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.

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Disclaimer

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