DeHacker

Code Security Assessment

Kissantoken - Audit

Sep 8th, 2023

Contents

Summary

DeHacker's objective was to evaluate the repository for security-related issues, code quality, and adherence to specification and best practices.
Possible issues we looked for included (but are not limited to):

- Transaction-ordering dependence
- Timestamp dependence
- Mishandled exceptions and call stack limits
- Unsafe external calls
- Integer overflow/underflow
- Number rounding errors
- Reentrancy and cross-function vulnerabilities
- Denial of service/logical oversights
- Access control
- Centralization of power
- Business logic contradicting the specification
- Code clones, functionality duplication
- Gas usage
- Arbitrary token minting

Issue Categories

Every issue in this report was assigned a severity level from the following:

Critical severity issues

A vulnerability that can disrupt the contract functioning in a number of scenarios or creates a risk that the contract may be broken.

Major severity issues

A vulnerability that affects the desired outcome when using a contract or provides the opportunity to use a contract in an unintended way.

Medium severity issues

A vulnerability that could affect the desired outcome of executing the contract in a specific scenario.

Minor severity issues

A vulnerability that does not have a significant impact on possible scenarios for the use of the contract and is probably subjective.

Informational

A vulnerability that has informational character but is not affecting any of the code.

Overview

Project Summary

Project Name	Kissantoken - Audit
Platform	BSC
Website	https://kissantoken.io/
Type	Others
Language	Solidity

Vulnerability Summary

Vulnerability Level	Total	Mitigated	Declined	Acknowledged	Partially Resolved	Resolved
Critical	0	0	0	0	0	0
Major	2	0	0	1	0	1
Medium	0	0	0	0	0	0
Minor	0	0	0	0	0	0
Informational	2	0	0	2	0	0
Discussion	0	0	0	0	0	0

Audit scope

ID	File	SHA256 Checksum
KSN	KSN.sol	3bf7b0f1145155369de02ce5a870138c8283b60bcb1d68a8a1135d63eccde82e

Findings

ID	Category	Severity	Status
KSN-01	Centralization / Privilege	Major	Resolved
KSN-02	Centralization /Privilege	Major	Acknowledged
KSN-03	Volatile Code	Informational	Acknowledged
KSN-04	Coding Style	Informational	Acknowledged

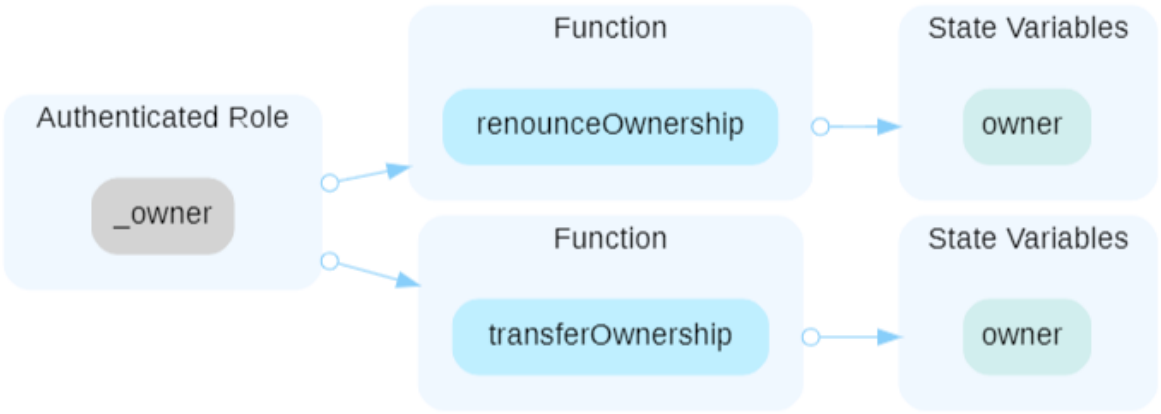
MAJOR

KSN-01|CENTRALIZATION RISKS IN KSN.SOL

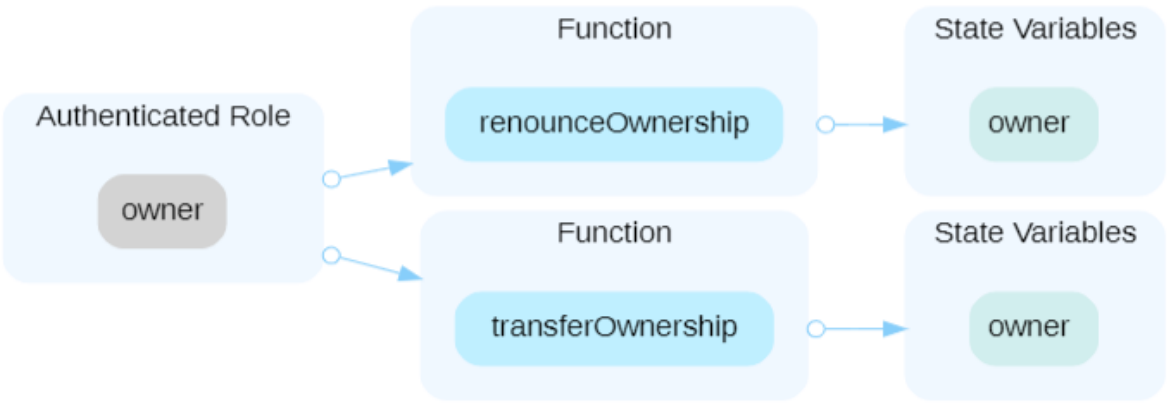
Category	Severity	Location	Status
Centralization /Privilege	Major	KSN.sol: 593, 602	Resolved

Description

In the contract Ownable the role _owner has authority over the functions shown in the diagram below. Any compromise tothe _owner account may allow the hacker to take advantage of this authority.



In the contract Ownable the role owner has authority over the functions shown in the diagram below. Any compromise tothe owner account may allow the hacker to take advantage of this authority.



Recommendation

The risk describes the current project design and potentially makes iterations to improve in the security operation and level ofdecentralization, which in most cases cannot be resolved entirely at the present stage. We advise the client to carefullymanage 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 accountswith enhanced security practices, e.g., multisignature wallets. Indicatively, here are some feasible suggestions that wouldalso mitigate the potential risk at a different level in terms of short-term, long-term and permanent:

Short Term:
Timelock and Multi sign (2/3, 3/5) combination mitigate by delaying the sensitive operation and avoiding a single point of keymanagement failure.
Time-lock with reasonable latency, e.g., 48 hours, for awareness on privileged operations;
AND
Assignment of privileged roles to multi-signature wallets to prevent a single point of failure due to the private keycompromised;
AND
A medium/blog link for sharing the timelock contract and multi-signers addresses information with the publicaudience.

Long Term:
Timelock and DAO, the combination, mitigate by applying decentralization and transparency.
Time-lock with reasonable latency, e.g., 48 hours, for awareness on privileged operations;
AND
Introduction of a DAO/governance/voting module to increase transparency and user involvement.
AND
A medium/blog link for sharing the timelock contract, multi-signers addresses, and DAO information with the publicaudience.

Permanent:Renouncing the ownership or removing the function can be considered fully resolved.
Renounce the ownership and never claim back the privileged roles.
OR
Remove the risky functionality.

MAJOR

KSN-02|INITIAL TOKEN DISTRIBUTION

Category	Severity	Location	Status
Centralization / Privilege	Major	KSN.sol: 615	Acknowledged

Description

All of the KSN tokens are sent to the contract deployer when deploying the contract. This could be a centralization risk as thedeployer can distribute KSN tokens without obtaining the consensus of the community. Thedeployer (0x1601410d5b6e841718a19c10433901121add9f7e) transferred those tokens to another address0xf451aa1aeb7275a02359b53a3693098c856f1c7a, which currently holds 44.83% of the total supply.

Recommendation

We recommend the team to be transparent regarding the initial token distribution process, and the team shall make enoughefforts to restrict the access of the private key.

MINOR

KSN-03|OPENZEPPELIN LIBRARY CODE INCLUDED IN SOURCECODE

Category	Severity	Location	Status
Volatile Code	Informational	KSN.sol	Acknowledged

Description

It is highly recommended NOT to include OpenZeppelin library code directly in the source code, but import the original libraryto minimize risk because even slight changes to the library code may lead to critical/major vulnerabilities/bugs. For Solidityversion 0.6.x, the latest OpenZeppelin version 3.4.2 should be used.

Recommendation

We advise the client to remove OpenZeppelin library code from source code and use the latest OpenZeppelin version.

INFORMATIONAL

KSN-04|MISSING ERROR MESSAGES

Category	Severity	Location	Status
Coding Style	Informational	KSN.sol: 585, 594	Acknowledged

Description

The require can be used to check for conditions and throw an exception if the condition is not met. It is better to provide astring message containing details about the error that will be passed back to the caller.

Recommendation

We advise adding error messages to the linked require statements.

Disclaimer

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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.

Coding Style

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

Volatile Code

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

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.

Checksum Calculation Method

The "Checksum" field in the "Audit Scope" section is calculated as the SHA-256 (Secure Hash Algorithm 2 with digest size of 256 bits) digest of the content of each file hosted in the listed source repository under the specified commit.

The result is hexadecimal encoded and is the same as the output of the Linux “sha256sum" command against the target file.

About

DeHacker is a team of auditors and white hat hackers who perform security audits and assessments. With decades of experience in security and distributed systems, our experts focus on the ins and outs of system security. Our services follow clear and prudent industry standards. Whether it's reviewing the smallest modifications or a new platform, we'll provide an in-depth security survey at every stage of your company's project. We provide comprehensive vulnerability reports and identify structural inefficiencies in smart contract code, combining high-end security research with a real-world attacker mindset to reduce risk and harden code.

BLOCKCHAIINS

Ethereum
Cosmos
Eos
Substrate

TECH STACK

Python
Solidity
Rust
c++

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