HACKEN

SMART CONTRACT CODE REVIEW AND SECURITY ANALYSIS REPORT

Customer: Chibi Dinos
Date: February 21st, 2022

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Document

Name	Smart Contract Code Review and Security Analysis Report for Chibi Dinos.
Approved by	Andrew Matiukhin | CTO Hacken OU
Type	BEP20 token;
Platform	BSC / Solidity
Methods	Architecture Review, Functional Testing, Computer-Aided Verification, Manual Review
Repository	https://github.com/sascham/hoop
Commit	09BB9AD51B9F375C0B31FE1D8F2269B67864511C
Deployed contract	
Technical Documentation	YES
JS tests	NO
Website	chibidinos.io
Timeline	14 JAN 2022 - 21 FAB 2022
Changelog	14 JAN 2022 - INITIAL AUDIT 02 FEB 2022 - SECOND AUDIT 21 FEB 2022 - THIRD AUDIT

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Introduction

Hacken OÜ (Consultant) was contracted by Chibi Dinos (Customer) to conduct a Smart Contract Code Review and Security Analysis. This report presents the findings of the security assessment of the Customer's smart contract and its code review conducted on January 14th, 2022.

The second review was conducted on February 2d, 2022.

The second review was conducted on February 21st, 2022.

Scope

The scope of the project is smart contracts in the repository:

Repository:
https://github.com/sascham/hoop
Commit:
09bb9ad51b9f375c0b31fe1d8f2269b67864511c
Technical Documentation: Yes
JS tests: No
Contracts:
hoop.sol

We have scanned this smart contract for commonly known and more specific vulnerabilities. Here are some of the commonly known vulnerabilities that are considered:

Category	Check Item
Code review	▪ Reentrancy ▪ Ownership Takeover ▪ Timestamp Dependence ▪ Gas Limit and Loops ▪ DoS with (Unexpected) Throw ▪ DoS with Block Gas Limit ▪ Transaction-Ordering Dependence ▪ Style guide violation ▪ Costly Loop ▪ ERC20 API violation ▪ Unchecked external call ▪ Unchecked math ▪ Unsafe type inference ▪ Implicit visibility level ▪ Deployment Consistency ▪ Repository Consistency ▪ Data Consistency

Functional review	▪ Business Logics Review ▪ Functionality Checks ▪ Access Control & Authorization ▪ Escrow manipulation ▪ Token Supply manipulation ▪ Assets integrity ▪ User Balances manipulation ▪ Data Consistency manipulation ▪ Kill-Switch Mechanism ▪ Operation Trails & Event Generation

Executive Summary

According to the assessment, the Customer's smart contracts are well-secured.

Our team performed an analysis of code functionality, manual audit, and automated checks with Mythril and Slither. All issues found during automated analysis were manually reviewed, and important vulnerabilities are presented in the Audit overview section. All found issues can be found in the Audit overview section.

As a result of the audit, security engineers found **3** critical severity issues.

As a result of the second review, security engineers found that **1** critical severity issue was resolved, while **2** critical issues remained.

As a result of the third review, security engineers found **no** issues.

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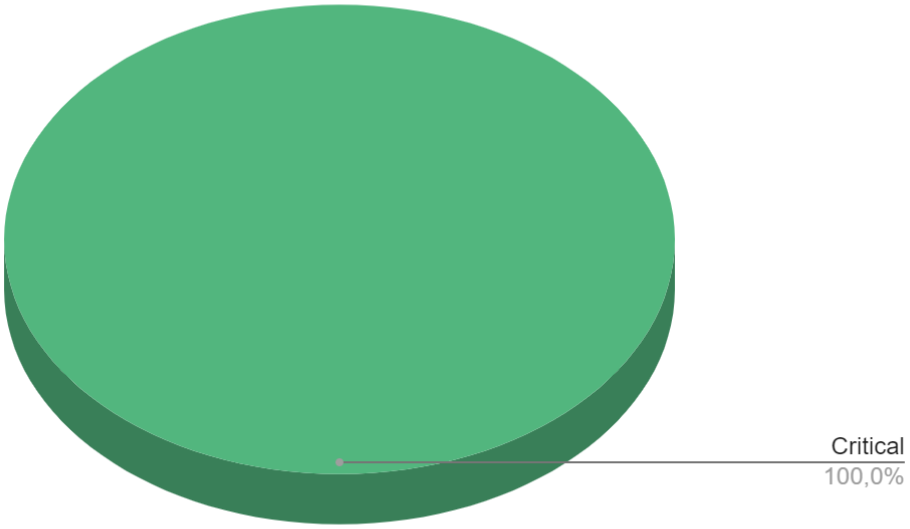
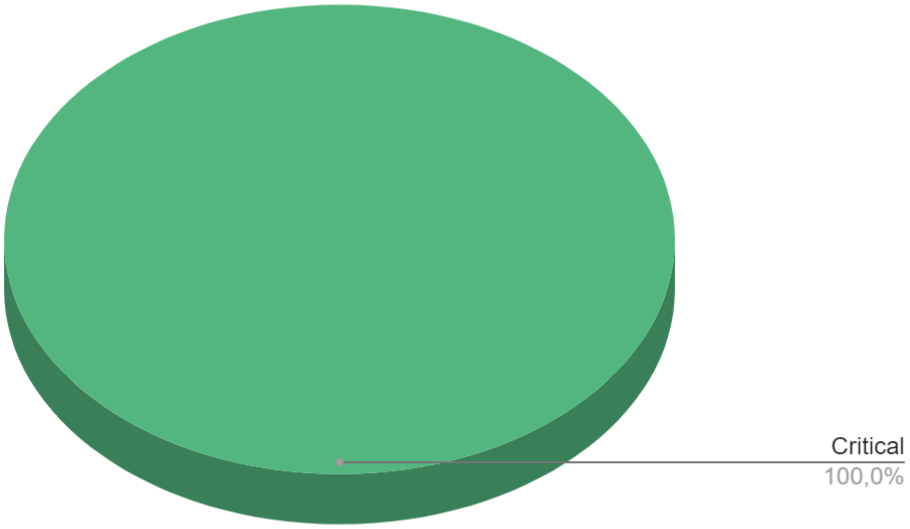
Graph 1. The distribution of vulnerabilities after the audit.



Graph 2. The distribution of vulnerabilities after the second review.



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Severity Definitions

Risk Level	Description
Critical	Critical vulnerabilities are usually straightforward to exploit and can lead to assets loss or data manipulations.
High	High-level vulnerabilities are difficult to exploit; however, they also have a significant impact on smart contract execution, e.g., public access to crucial functions
Medium	Medium-level vulnerabilities are important to fix; however, they can't lead to assets loss or data manipulations.
Low	Low-level vulnerabilities are mostly related to outdated, unused, etc. code snippets that can't have a significant impact on execution

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Audit overview

Critical

1. The mint function allows the Owner to mint tokens without any restrictions. It can lead to token supply manipulations.

   Contracts: hoop.sol

   Function: mint

   Recommendation: remove the possibility of unlimited minting.

   Status: fixed.

2. The setTotalSupply function allows the Owner to change the total supply.

   Contracts: hoop.sol

   Function: setTotalSupply

   Recommendation: remove the possibility to change the total supply.

   Status: fixed.

3. According to the whitepaper, the total supply must be 300 000 000 tokens. But in the constructor, it was set as 0,0000000003 tokens because the decimal multiplier was missed.

   Contracts: hoop.sol

   Function: constructor

   Recommendation: set the right total supply.

   Status: fixed.

High

No high severity issues were found.

Medium

No medium severity issues were found.

Low

No low severity issues were found.

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Conclusion

Smart contracts within the scope were manually reviewed and analyzed with static analysis tools.

The audit report contains all found security vulnerabilities and other issues in the reviewed code.

As a result of the audit, security engineers found **3** critical severity issues.

As a result of the second review, security engineers found that **1** critical severity issue was resolved, while **2** critical issues remained.

As a result of the third review, security engineers found **no** issues.

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Disclaimers

Hacken Disclaimer

The smart contracts given for audit have been analyzed in accordance with the best industry practices at the date of this report, in relation to cybersecurity vulnerabilities and issues in smart contract source code, the details of which are disclosed in this report (Source Code); the Source Code compilation, deployment, and functionality (performing the intended functions).

The audit makes no statements or warranties on the security of the code. It also cannot be considered as a sufficient assessment regarding the utility and safety of the code, bug-free status, or any other statements of the contract. While we have done our best in conducting the analysis and producing this report, it is important to note that you should not rely on this report only — we recommend proceeding with several independent audits and a public bug bounty program to ensure the security of smart contracts.

Technical Disclaimer

Smart contracts are deployed and executed on a blockchain platform. The platform, its programming language, and other software related to the smart contract can have vulnerabilities that can lead to hacks. Thus, the audit can't guarantee the explicit security of the audited smart contracts.