HACKEN

SMART CONTRACT CODE REVIEW AND SECURITY ANALYSIS REPORT

Customer: CryptoTank
Date: December 28th, 2021

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Document

Name	Smart Contract Code Review and Security Analysis Report for CryptoTank.
Approved by	Andrew Matiukhin | CTO Hacken OU
Type	BEP20 token
Platform	Binance Smart Chain / Solidity
Methods	Architecture Review, Functional Testing, Computer-Aided Verification, Manual Review
Repository	https://github.com/cryptotanks/exchange_token
Commit	328c9883d8a391cea47058ee6098b73547b86db4
Deployed Contract	https://bscscan.com/address/0x4444A19C8bb86E9BDbC023709A363bbCE91aF33E#code
Technical Documentation	YES
JS tests	NO
Website	cryptotanks.com
Timeline	14 DECEMBER 2021 - 28 DECEMBER 2021
Changelog	16 DECEMBER 2021 - INITIAL AUDIT 28 DECEMBER 2021 - SECOND REVIEW

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Table of contents

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Introduction

Hacken OÜ (Consultant) was contracted by CryptoTank (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 between December 14th, 2021 - December 16th, 2021.

Second review conducted on December 28th, 2021.

Scope

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

Repository:
https://github.com/cryptotanks/exchange_token
Commit:
328c9883d8a391cea47058ee6098b73547b86db4
Deployed Contract:
https://bscscan.com/address/0x4444A19C8bb86E9BDbC023709A363bbCE91aF33E#code
Technical Documentation: Yes (provided in text)
JS tests: No
Contracts:
tank_token_latest.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

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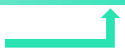
Functional review	▪ Business Logics Review ▪ Functionality Checks ▪ Access Control & Authorization ▪ Escrow manipulation ▪ Token Supply manipulation ▪ Assets integrity ▪ User Balances manipulation ▪ Data Consistency manipulation ▪ Kill-Switch Mechanism ▪ Operation Trails & Event Generation

Executive Summary

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

Insecure	Poor secured	Secured	Well-secured

You are here 

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** low severity issues.

After the second review security engineers found that code was slightly changed by adding blacklist and dexlist arrays, also some issues were addressed therefore still **1** low severity issues were found.

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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

No critical issues were found.

High

No high severity issues were found.

Medium

No medium severity issues were found.

Low

1. Too many digits.

Literals with many digits are difficult to read and review. Also, while the token decimals number is already known and it's a standard 18, why not use ether suffix instead of calling the function?

Contract: BEP20

Function: constructor

Recommendation: Please consider using scientific notation with ether unit suffix (ie: *100e6 ether*).

Status: Fixed

2. A public function that could be declared external.

public functions that are never called by the contract should be declared **external** to save gas.

Contract: BEP20

Functions: addToWhiteList, removeFromWhiteList, name, enableTransfer, addressInWhiteList, symbol, totalSupply, balanceOf, transfer, allowance, approve, transferFrom, increaseAllowance, decreaseAllowance

Recommendation: Use the **external** attribute for functions never called from the contract.

Status: Fixed

3. Duplicated code.

Right now transferFrom and decreaseAllowance have totally the same part of the code.

Contract: BEP20

Functions: transferFrom

Recommendation: Please consider moving the logic into a separate function and call it from both decreaseAllowance and transferFrom instead of duplicating the functionality.

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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** low severity issues.

After the second review security engineers found that code was slightly changed by adding blacklist and dexlist arrays, also some issues were addressed therefore still **2** low severity issues were found.

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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.