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Blockchain Solutions



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**Date:** 28.07.2022

# Smart Contract Security Audit

HEROWORLD TOKEN



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## Audit Result

🔗 HERO WORLD INU TOKEN has **PASSED** the smart contract source code audit with below listed privileges

(Other unknown security vulnerabilities are not included in the audit responsibility scope)

|                   |  |
|-------------------|--|
| Audit Result:     | <b>PASSED</b>                          |
| Ownership:        | Not renounced yet                      |
| KYC Verification: | <b>KYC Verified by ContractChecker</b> |
| Audit Date:       | July 28, 2022                          |
| Audit Team:       | CONTRACTCHECKER                        |

## Findings

### Privileges of Ownership

- ⚠️ Owner can exclude an account from paying fees
- ⚠️ Owner can change the fees but with limit of 20% at max
- ⚠️ Owner can change swap settings

## Important Notice for Investors

As Contract Checker team we are mainly auditing the contract code to find out how it will be functioning, and risks which are hidden in the code if any.

There are many factors must be taken into consideration before investing to a project, like: ownership status, project team approach, marketing, general market condition, liquidity, token holdings etc.

Investors must always do their own research and manage their risk considering different factors which can affect the success of a project.

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## SUMMARY

CONTRACTCHECKER received an application for smart contract security audit of HERO WORLD INU TOKEN on July 25, 2022, from the project team to discover if any vulnerability in the source codes of the HERO WORLD INU TOKEN as well as any contract dependencies. Detailed test has been performed using Static Analysis and Manual Review techniques.

The auditing process focuses to the following considerations with collaboration of an expert team

- Functionality test of the Smart Contract to determine if proper logic has been followed throughout the whole process.
- Manually detailed examination of the code line by line by experts.
- Live test by multiple clients using Testnet.
- Analysing failure preparations to check how the Smart Contract performs in case of any bugs and vulnerabilities.
- Checking whether all the libraries used in the code are on the latest version.
- Analysing the security of the on-chain data.

## Project Summary

|                   |   |
|-------------------|---|
| Token Name        | HERO WORLD INU TOKEN  |
| Web Site          | <a href="https://heroworld.app/">https://heroworld.app/</a>   |
| Telegram          | <a href="https://t.me/heroworld_official">https://t.me/heroworld_official</a>   |
| Platform          | Binance Smart Chain   |
| Token Type        | BEP20   |
| Language          | Solidity  |
| Platforms & Tools | Remix IDE, Truffle, Truffle Team, Ganache, Solhint, VScode, Mythril, Contract Library   |
| Contract Address  | 0x6E8721F992e5ddA13180281aa5Ac6e50dca8959f  |
| Contract Link     | <a href="https://bscscan.com/token/0x6e8721f992e5dda13180281aa5ac6e50dca8959f">https://bscscan.com/token/0x6e8721f992e5dda13180281aa5ac6e50dca8959f</a>                     |
| Test Link         | <a href="https://testnet.bscscan.com/address/0x5a88371991c0baae92fb2ffa04dbbcfe12c11281">https://testnet.bscscan.com/address/0x5a88371991c0baae92fb2ffa04dbbcfe12c11281</a> |

## OVERVIEW

This Audit Report mainly focuses on overall security of HERO WORLD INU TOKEN smart contract. Contract Checker team scanned the contract and assessed overall system architecture and the smart contract codebase against vulnerabilities, exploitations, hacks, and back-doors to ensure its reliability and correctness.

## Auditing Approach and Applied Methodologies

Contract Checker team has performed rigorous test procedures of the project

- Code design patterns analysis in which smart contract architecture is reviewed to ensure it is structured according to industry standards and safe use of third-party smart contracts and libraries.
- Line-by-line inspection of the Smart Contract to find any potential vulnerability like race conditions, transaction-ordering dependence, timestamp dependence, and denial of service attacks.
- Unit testing Phase, we coded/conducted custom unit tests written for each function in the contract to verify that each function works as expected.
- Automated Test performed with our in-house developed tools to identify vulnerabilities and security flaws of the Smart Contract.

The focus of the audit was to verify that the Smart Contract System is secure, resilient, and working according to the specifications. The audit activities can be grouped in the following three categories:

### Security

Identifying security related issues within each contract and the system of contract.

### Sound Architecture

Evaluation of the architecture of this system through the lens of established smart contract best practices and general software best practices.

### Code Correctness and Quality

A full review of the contract source code. The primary areas of focus include:

- Accuracy
- Readability
- Sections of code with high complexity
- Quantity and quality of test coverage

### Risk Classification

Vulnerabilities are classified in 3 main levels as below based on possible effect to the contract.

## High level vulnerability

Vulnerabilities on this level must be fixed immediately as they might lead to fund and data loss and open to manipulation. Any High-level finding will be highlighted with **RED** text

## Medium level vulnerability

Vulnerabilities on this level also important to fix as they have potential risk of future exploit and manipulation. Any Medium-level finding will be highlighted with **ORANGE** text

## Low level vulnerability

Vulnerabilities on this level are minor and may not affect the smart contract execution. Any Low-level finding will be highlighted with **BLUE** text

## Vulnerability Checklist

| Nº | Description.   | Result |
|----|--|--------|
| 1  | Compiler warnings.   | Passed |
| 2  | Race conditions and Re-entrancy. Cross-function race conditions. | Passed |
| 3  | Possible delays in data delivery.                                | Passed |
| 4  | Oracle calls.  | Passed |
| 5  | Front running.   | Passed |
| 6  | Timestamp dependence.  | Passed |
| 7  | Integer Overflow and Underflow.                                  | Passed |
| 8  | DoS with Revert.   | Passed |
| 9  | DoS with block gas limit.  | Passed |
| 10 | Methods execution permissions.                                   | Passed |
| 11 | Economy model.   | Passed |
| 12 | The impact of the exchange rate on the logic.                    | Passed |
| 13 | Private user data leaks.   | Passed |
| 14 | Malicious Event log.   | Passed |
| 15 | Scoping and Declarations.  | Passed |
| 16 | Uninitialized storage pointers.                                  | Passed |
| 17 | Arithmetic accuracy.   | Passed |
| 18 | Design Logic.  | Passed |
| 19 | Cross-function race conditions.                                  | Passed |
| 20 | Safe Zeppelin module.  | Passed |
| 21 | Fallback function security.                                      | Passed |

## Manual Audit:

For this section the code was tested/read line by line by our developers. Additionally, Remix IDE's JavaScript VM and Kovan networks used to test the contract functionality.



## Smart Contract SWC Attack Test

| SWC ID  | Description   | Test Result |
|---------|---|-------------|
| SWC-100 | Function Visibility                                     | Passed      |
| SWC-101 | Integer Overflow and Underflow                          | Passed      |
| SWC-102 | Outdated Compiler Version                               | Passed      |
| SWC-103 | Floating Pragma   | Passed      |
| SWC-104 | Unchecked Call Return Value                             | Passed      |
| SWC-105 | Unprotected Ether Withdrawal                            | Passed      |
| SWC-106 | Unprotected SELFDESTRUCT Instruction                    | Passed      |
| SWC-107 | Re-entrancy   | Passed      |
| SWC-108 | State Variable Default Visibility                       | Passed      |
| SWC-109 | Uninitialized Storage Pointer                           | Passed      |
| SWC-110 | Assert Violation  | Passed      |
| SWC-111 | Use of Deprecated Solidity Functions                    | Passed      |
| SWC-112 | Delegate Call to Untrusted Callee                       | Passed      |
| SWC-113 | DoS with Failed Call                                    | Passed      |
| SWC-114 | Transaction Order Dependence                            | Passed      |
| SWC-115 | Authorization through tx.origin                         | Passed      |
| SWC-116 | Block values as a proxy for time                        | Passed      |
| SWC-117 | Signature Malleability                                  | Passed      |
| SWC-118 | Incorrect Constructor Name                              | Passed      |
| SWC-119 | Shadowing State Variables                               | Passed      |
| SWC-120 | Weak Sources of Randomness from Chain Attributes        | Passed      |
| SWC-121 | Missing Protection against Signature Replay Attacks     | Passed      |
| SWC-122 | Lack of Proper Signature Verification                   | Passed      |
| SWC-123 | Requirement Violation                                   | Passed      |
| SWC-124 | Write to Arbitrary Storage Location                     | Passed      |
| SWC-125 | Incorrect Inheritance Order                             | Passed      |
| SWC-126 | Insufficient Gas Griefing                               | Passed      |
| SWC-127 | Arbitrary Jump with Function Type Variable              | Passed      |
| SWC-128 | DoS With Block Gas Limit                                | Passed      |
| SWC-129 | Typographical Error                                     | Passed      |
| SWC-130 | Right-To-Left-Override control character (U+202E)       | Passed      |
| SWC-131 | Presence of unused variables                            | Passed      |
| SWC-132 | Unexpected Ether balance                                | Passed      |
| SWC-133 | Hash Collisions with Multiple Variable Length Arguments | Passed      |
| SWC-134 | Message call with hardcoded gas amount                  | Passed      |
| SWC-135 | Code With No Effects (Irrelevant/Dead Code)             | Passed      |
| SWC-136 | Unencrypted Private Data On-Chain                       | Passed      |

 Smart Contract has successfully passed SWC Test

## Automated Audit

### Remix Compiler Warnings

It throws warnings by Solidity's compiler. No issues found.





## Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice as at the date of this report, in relation to cybersecurity vulnerabilities and issues in the framework and algorithms based on smart contracts, the details of which are set out in this report. To get a full view of our analysis, it is crucial for you to read the full report. While we have done our best in conducting our analysis and producing this report, it is important to note that you should not rely on this report and cannot claim against us based on what it says or doesn't say, or how we produced it, and it is important for you to conduct your own independent investigations before making any decisions. We go into more detail on this in the below disclaimer below – please make sure to read it in full.

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The analysis of the security is purely based on the smart contracts alone. No applications or operations were reviewed for security. No product code has been reviewed. If you have any doubt about the Genuity for this document, please check QR code: