SMART CONTRACT SECURITY AUDIT

SolidityLabs

Hayate INU (HINU)

On December 27, 2021, **SolidityLabs** received an application for a smart contract security audit of **Hayate INU (HINU)**. This smart contract security audit yielded the following results:

Token Name: $HINU

Contract address: 0x903aed40b7fcbe8de84a699151c9055f4c0a6db3

Link Address: https://etherscan.io/token/0x903aed40b7fcbe8de84a699151c9055f4c0a6db3

The audit items and results:
(The audit responsibility scope does not include other unknown security vulnerabilities.)

Audit Result: Passed

Ownership: Not renounced
(The contract contains ownership functionality and ownership is not renounced which allows the creator or current owner to modify contract behavior)

KYC Verification: Not verified

Audit Number: SLA0000000005
Audit Date: December 30, 2021
Audit Team: SolidityLabs
https://www.SolidityLabs.io

Table of Content

Introduction

The purpose of this audit is to assess the overall security of **Hayate INU(HINU)** Smart Contract. The purpose of this report is to ensure the reliability and correctness of their smart contracts by reviewing their system's architecture and the smart contract codebase completely and rigorously.

During our rigorous testing of the project, the SolidityLabs team reviewed the smart contract architecture to ensure that it is structured and that it uses third-party smart contracts and libraries in a safe way.
In our team's next step, we examined the Smart Contract line by line for any potential issues such as race conditions, timestamp-dependent transactions, or denial of service attacks.
To ensure that each function in the contract works as expected, we coded/conducted custom unit tests for each function within the contract. In Automated Testing, we identified vulnerabilities and security flaws by using tools we developed in-house. Several of our team members collaborated on testing the code, including:
● Testing the functionality of the Smart Contract to determine proper logic has been implemented throughout the entire process.
● Analyzing the code's complexity in depth and conducting a detailed, line-by-line review.
Running live tests using multiple clients to deploy the code on testnet.
Checking how Smart Contracts perform in case of bugs and vulnerabilities by analyzing failure preparations.
● Verifying that all libraries used in the code are up-to-date.
● Analyzing the security of the on-chain data.

Audit Details
Project Name: Hayate INU (HINU)
Website: https://hayateinu.io/
Languages: Solidity (Smart contract)
Platforms and Tools: Remix IDE, Contract Library, Mythril, Solhint, Ganache, Truffle, TruffleTeam, VScode

Audit Goals

In the audit, the focus was on verifying that the Smart Contract System was secure, resilient, and working according to specification. The audit activities can be divided into 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-level	Description
High	A high severity issue or vulnerability means that your smart contract can be exploited. Issues on this level are critical to the smart contract's performance or functionality, and we recommend these issues be fixed before moving to a live environment.
Medium	The issues marked as medium severity usually arise because of errors and deficiencies in the smart contract code. Issues on this level could potentially bring problems, and they should still be fixed.
Low	Low-level severity issues can cause minor impact and or are just warnings that can remain unfixed for now. It would be better to fix these issues at some point in the future.
Informational	These are severity issues that indicate an improvement request, a general question, a cosmetic or documentation error, or a request for information. There is low-to-no impact.

● **Issues Found – Code Review**

High severity issues
There are no High severity vulnerabilities found

Medium severity issues
There are no Medium severity vulnerabilities found

Low severity issues

Description:
#Use of block.timestamp for comparisons
The value of block.timestamp can be manipulated by the miner.
And conditions with strict equality is difficult to achieve - block.timestamp

Remediation:
Avoid use of block.timestamp

Status: Acknowledged

#Missing Zero Address Validation
Description: Function _transfer(): Missing Zero Address Check for to address

```
/**
 * @dev See {IERC20-transfer}.
 *
 * Requirements:
 *
 * - `recipient` cannot be the zero address.
 * - the caller must have a balance of at least `amount`.
 */
function transfer(address recipient, uint256 amount) public virtual override returns (bool) {
    _transfer(_msgSender(), recipient, amount);
    return true;
}
```

Remediation
Add a 'require' to check to address != address(O)
Status: Acknowledged

#Owner privileges (In the period when the owner isn't renounced)

Description :
Owner can change tax, burn, market, and liquidity fees in both(BUY – SELL fees).

```
function updateBuyFees(uint256 _marketingFee, uint256 _liquidityFee, uint256 _devFee) external
onlyOwner {
        buyMarketingFee = _marketingFee;
        buyLiquidityFee = _liquidityFee;
        buyDevFee = _devFee;
        buyTotalFees = buyMarketingFee + buyLiquidityFee + buyDevFee;
        require(buyTotalFees <= 20, "Must keep fees at 20% or less");
    }


    function updateSellFees(uint256 _marketingFee, uint256 _liquidityFee, uint256 _devFee) external onlyOwner {
        sellMarketingFee = _marketingFee;
        sellLiquidityFee = _liquidityFee;
        sellDevFee = _devFee;
        sellTotalFees = sellMarketingFee + sellLiquidityFee + sellDevFee;
        require(sellTotalFees <= 25, "Must keep fees at 25% or less");
    }
```

Remediation:
Make these functions internal in next version or the team should announce the investors before change the fees and give them time if they want to use the old fees.
Status: Acknowledged

Manual Audit:

Our developers tested/read the code line by line for this section. To test the contract functionality, we also used Remix IDE's JavaScript VM and Kovan networks.

Critical Severity Issues
No critical severity issues found.

High Severity Issues
No high severity issues found.

Medium Severity Issues
No medium severity issues found.

Low Severity Issues
THREE low severity issues found.

Automated Audit
According to automatic test, the customer`s solidity smart contract is Secured.

The general overview is presented in the Project Information section and all a issues found are located in the audit overview section.

Disclaimer

In this report, we discuss our findings, which are based on our analysis, in accordance with good industry practice as of the date of this report, in relation to cybersecurity and issues in the framework and algorithms for smart contracts. Details are provided in this report. To gain a full understanding of our analysis, it is imperative that you read the full report. In conducting our analysis and producing this report, we have done our very best. However, you should not rely on it and cannot make a claim against us based solely on what it says or does not say, or how it was produced. In addition, it is important for you to conduct your own independent investigations before making any final decisions. In the disclaimer below, we go into more detail on this - please read it carefully.

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Security analysis is purely based on smart contracts. There was no review of applications or operations. The code of the product was not examined.

Summary

Hayate Inu (HINU) contract does not contain any high severity issues!

Note:

Note that the audit does not make any statements or warranties regarding business model, investment attractiveness, or code sustainability. The report focuses on the only contract mentioned.