

Smart Contract Security Audit

AUDIT RATE TECH

for

HeavenPay



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. In order 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 on the basis of 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.

Audit details:

Audited project: HeavenPay

Total supply: 7,777,777,777

Token ticker: HEAVEN

Decimals: 18

Contract address: 0x038c2BCDc4CEDB7c72fD245c58b91284FDAfA6fb

Languages: Solidity (Smart contract)

Platforms and Tools: Remix IDE, Truffle, Truffle Team, Ganache, Solhint, VScode, Mythril,

Contract Library

Compiler Version: v0.8.13+commit.abaa5c0e

Optimization Enabled: Yes with 200 runs

Contract Deployer Address: 0x84D9899A62E2f0dB82c4C185918B6433b810BDCb

Blockchain: Binance Smart Chain

Project website: <https://www.heavenpay.finance/>

The audit items and results:

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

Audit Result: Passed

Audit Date: May 31, 2022

Audit Team: AUDIT RATE TECH

<https://www.auditrate.tech/>

Introduction

This Audit Report mainly focuses on the overall security of HeavenPay Smart Contract. With this report, we have tried to ensure the reliability and correctness of their smart contract by complete and rigorous assessment of their system's architecture and the smart contract codebase.

Auditing Approach and Methodologies applied

The AUDIT RATE TECH team has performed rigorous testing of the project starting with analyzing the code design patterns in which we reviewed the smart contract architecture to ensure it is structured and safe use of third-party smart contracts and libraries.

Our team then performed a formal line by line inspection of the Smart Contract to find any potential issue like race conditions, transaction-ordering dependence, timestamp dependence, and denial of service attacks.

In the Unit testing Phase, we coded/conducted custom unit tests written for each function in the contract to verify that each function works as expected.

In Automated Testing, we tested the Smart Contract with our in-house developed tools to identify vulnerabilities and security flaws.

The code was tested in collaboration of our multiple team members and this included -

- Testing the functionality of the Smart Contract to determine proper logic has been followed throughout the whole process.
- Analyzing the complexity of the code in depth and detailed, manual review of the code, lineby-line.
- Deploying the code on testnet using multiple clients to run live tests.
- Analyzing 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.
- Analyzing the security of the on-chain data.

Audit Goals

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

Issue Categories

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

High level severity issues

Issues on this level are critical to the smart contract's performance/functionality and should be fixed before moving to a live environment.

Medium level severity issues

Issues on this level could potentially bring problems and should eventually be fixed.

Low level severity issues

Issues on this level are minor details and warnings that can remain unfixed but would be better fixed at some point in the future.

Manual Audit:

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

Automated Audit

Remix Compiler Warnings

It throws warnings by Solidity's compiler. If it encounters any errors the contract cannot be compiled and deployed. No issues found.

Issues Checking Status

SWC ID	Description	Checking status
SWC-100	Function Default Visibility	Passed
SWC-101	Integer Overflow and Underflow	LOW
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	Reentrancy	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	Delegatecall 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	Passed
SWC-136	Unencrypted Private Data On-Chain	Passed

Owner privileges

172 renounceOwnership
177 transferOwnership
204 addWhitelisted
208 removeWhitelisted
681 mint
696 setAutomatedMarketMakerPair
717 setInitialDistributionFinished
723 setFeeExempt
728 setTxFee
733 setSellLimitTimeFrame
737 setTargetLiquidity
741 setSwapBackSettings
746 setFeeReceivers
752 setFees
764 clearStuckBalance
769 rescueToken
774 setAutoRebase
779 setRebaseFrequency
784 setRewardYield
789 setFeesOnNormalTransfers
794 setIsLiquidityInBnb
799 setNextRebase

Whitelisted adress privilege

685 manualRebase

Top Token Holders

At the time of the audit

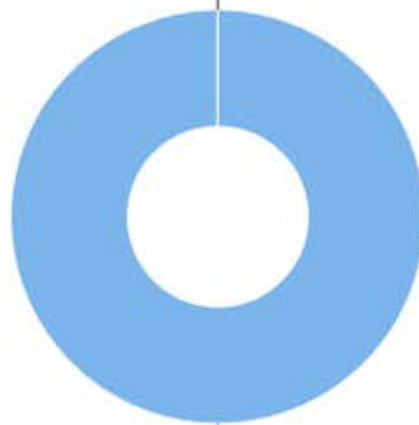
💡 The top 3 holders collectively own 100.00%
(7,777,777,777.00 Tokens) of HeavenPay

💡 Token Total Supply: 7,777,777,777.00 Token | Total
Token Holders: 1

HeavenPay Top 3 Token Holders

Source: BscScan.com

OTHER ACCOUNTS



0x84d9899a62e2f0db82c4c185918b6433b810bdc b

(A total of 7,777,777,777.00 tokens held by the top 3 accounts from the total supply of 7,777,777,777.00 token)

Rank	Address	Quantity (Token)	Percentage
1	0x84d9899a62e2f0db82c4c185918b6433b810bdc b	7,777,777,777	100.0000%

KYC/Doxx

Verified by



Conclusion

Owner cannot set fees more than 25%

```
function setFees(uint256 _liquidityFee, uint256 _riskFreeValue, uint256 _treasuryFee,
uint256 _sellFeeTreasuryAdded, uint256 _sellFeeRFVAdded, uint256 _feeDenominator) external onlyOwner {
    liquidityFee = _liquidityFee;
    buyFeeRFV = _riskFreeValue;
    treasuryFee = _treasuryFee;
    sellFeeTreasuryAdded = _sellFeeTreasuryAdded;
    sellFeeRFVAdded = _sellFeeRFVAdded;
    totalBuyFee = liquidityFee+(treasuryFee)+(buyFeeRFV);
    totalSellFee = totalBuyFee+(sellFeeTreasuryAdded)+(sellFeeRFVAdded);
    feeDenominator = _feeDenominator;
    require(totalBuyFee < feeDenominator / 4, "Fees set too high");}
```

Owner can mint tokens

```
function mint(uint256 amountOfTokens, address destination) external onlyOwner {
}
```

Owner can set max tx amount >1%

```
function setTxFee(uint256 percent) external onlyOwner {
    require(percent >= 1, "cannot set percent lower than 1");
    txfee = percent;}
```

Owner cannot pause trading, but owner can set sell limit time frame without limit

```
function setSellLimitTimeFrame(uint256 _time) external onlyOwner {
    sellLimitTimeFrame = _time;
}
```

SWC-101 (LOW)

Integer overflow and underflow

Recommendation:

Arithmetic operations in Solidity wrap on overflow. This can easily result in bugs. Using library instead of the unchecked operations eliminates an entire class of bugs, so it's recommended to use it always.

Note:

Please check the disclaimer above and note, the audit makes no statements or warranties on business model, investment attractiveness or code sustainability. The report is provided for the only contract mentioned in the report and does not include any other potential contracts deployed by Owner. The analysis of the contract does not give complete security and includes only the analysis that is indicated in the report. We do not analyze locked tokens or LP tokens, the presence of KYC in other companies, and so on. Also, our audit is not a recommendation for investment. All responsibility for the loss of investment lies with you!

