



Smart Contract Security Audit Report

Invictus

December 2022

Security Status



www.hacksafe.io



Audit Details



Audited project

Invictus



Deployer address

0xd4710ffe134872183395da547ee06c69e4acf033



Client contacts

Invictus Team



Blockchain

Ethereum



Website

Not provided

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.

Procedure

Step 1 - In-Depth Manual Review

Manual line-by-line code reviews to ensure the logic behind each function is sound and safe from various attack vectors. This is the most important and lengthy portion of the audit process (as automated tools often cannot find the nuances that lead to exploits such as flash loan attacks).

Step 2 - Automated Testing

Simulation of a variety of interactions with your Smart Contract on a test blockchain leveraging a combination of automated test tools and manual testing to determine if any security vulnerabilities exist.

Step 3 – Leadership Review

The engineers assigned to the audit will schedule meetings with our leadership team to review the contracts, any comments or findings, and ask questions to further apply adversarial thinking to discuss less common attack vectors.

Step 4 - Resolution of Issues

Consulting with the team to provide our recommendations to ensure the code's security and optimize its gas efficiency, if possible. We assist project team's in resolving any outstanding issues or implementing our recommendations.

Step 5 - Published Audit Report

Boiling down results and findings into an easy-to-read report tailored to the project. Our audit reports highlight resolved issues and any risks that exist to the project or its users, along with any remaining suggested remediation measures. Diagrams are included at the end of each report to help users understand the interactions which occur within the project.

Background

HackSafe was commissioned by to Invictus perform an audit of smart contracts:

- <https://etherscan.io/address/0xeb2ed9a5c7A8491b4FaF987196BaA50EE0855241#code>

The purpose of the audit was to achieve the following:

- Ensure that the smart contract functions as intended.
- Identify potential security issues with the smart contract.

The information in this report should be understand the risk exposure of the smart contract, and as a guide to improve the security posture of the smart contract by remediating the issues that were identified.

Contract Details

Token contract details for 05.12.2022

Token Type	: Gaming
Contract name	: Invictus
Contract address	: 0xeb2ed9a5c7A8491b4FaF987196BaA50EE0855241
Total supply	: 1,000,000,000,000,000
Token ticker	: INV
Decimals	: 9
Token Holders	: 128
Transactions count	: 588
Compiler version	: v0.8.10+commit.fc410830
Contract deployer address	: 0xd4710ffe134872183395da547ee06c69e4acf033
Owner address	: 0x00

Audit Summary

According to the standard audit assessment, Customer`s solidity smart contracts are **“Secure”**. This token contract does not contain owner control as ownership has been renounced, which do make it fully decentralized as owner does not have control over smart contract.

Insecure	Poor secured	Secure	Well-secured
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You are here 

We used various tools like Slither, Mythril and Remix IDE. At the same time this finding is based on critical analysis of the manual audit. All issues found during automated analysis were manually reviewed and applicable vulnerabilities are presented in the issues checking status.

We found 0 critical, 0 high, 1 medium and 1 low.

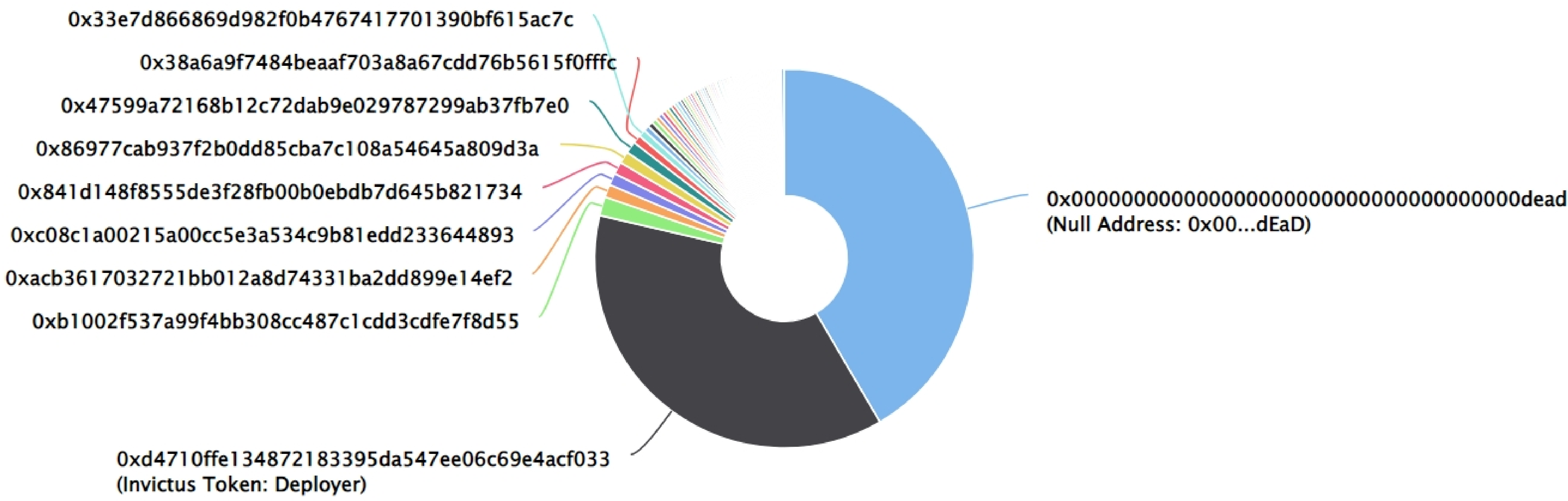
Invictus Distribution

💡 The top 100 holders collectively own 99.74% (997,364,172,387,647.00 Tokens) of Invictus

💡 Token Total Supply: 1,000,000,000,000,000.00 Token | Total Token Holders: 128

Invictus Top 100 Token Holders

Source: Etherscan.io



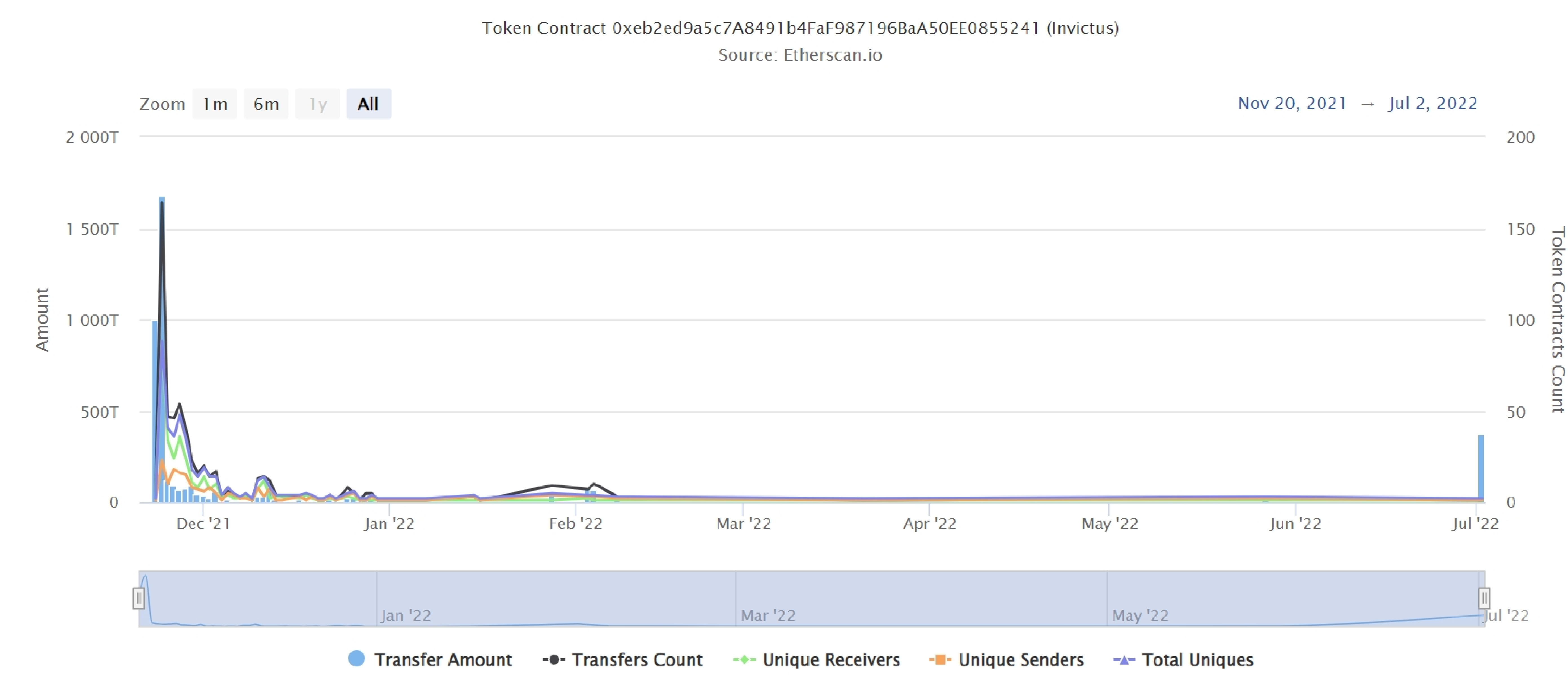
Invictus Top 20 Token Holders

(A total of 997,364,172,387,647.00 tokens held by the top 100 accounts from the total supply of 1,000,000,000,000,000.00 token)

Rank	Address	Quantity (Token)	Percentage
1	Null Address: 0x00...dEaD	415,837,277,587,585.867142704	41.5837%
2	Invictus Token: Deployer	370,728,889,534,130.471413026	37.0729%
3	0xb1002f537a99f4bb308cc487c1cdd3cdfef7f8d55	16,028,654,652,057.528136277	1.6029%
4	0xacb3617032721bb012a8d74331ba2dd899e14ef2	10,925,897,398,454.86863487	1.0926%
5	0xc08c1a00215a00cc5e3a534c9b81edd233644893	10,408,977,898,393.446088616	1.0409%
6	0x841d148f8555de3f28fb00b0ebdb7d645b821734	10,260,444,602,815.896313383	1.0260%
7	0x86977cab937f2b0dd85cba7c108a54645a809d3a	10,233,221,605,297.394107501	1.0233%
8	0x47599a72168b12c72dab9e029787299ab37fb7e0	10,179,294,198,572.308645916	1.0179%
9	0x38a6a9f7484beaf703a8a67cdd76b5615f0fffc	7,176,847,738,188.063067023	0.7177%
10	0x33e7d866869d982f0b4767417701390bf615ac7c	6,204,174,512,032.913165812	0.6204%
11	0x3e1bd188f5a299bbc12fcae26c92a3ba1ee514c4	4,811,690,173,943.556458187	0.4812%
12	0x9098cea37117e29c792340169800290784ad8fc1	4,446,462,290,348.03240198	0.4446%
13	0x2e12979da9ad061ccc204c00d0e3a477a8cc4aea	3,998,079,309,164.728496467	0.3998%
14	0xc134fd8b4ee709d335ab3fe0e87d72abfc107c53	3,529,824,859,695.866399354	0.3530%
15	0x16e712a59270f28de1585fb7eb53864a25a8346d	3,499,521,184,543.558871243	0.3500%
16	0x0418a173d1c6cc8737825a6c652a1e3a301f24ab	3,428,923,228,925.271253909	0.3429%
17	0xbafa2bcf35b60939c179f2ba6847be4d97b573b3	3,159,228,749,227.793164051	0.3159%
18	0xe01c409e4638886d4eb55aeffb9e28669a9ede9	3,142,814,367,769.138864319	0.3143%
19	0x99391c6f4d33ddac56e0856db4ef0013851031bd	3,041,796,332,626.678439813	0.3042%
20	0xfbb840cba8fa1419f55fd421da67377a84ffd08f	2,986,379,139,856.39663216	0.2986%

Invictus Distribution

Invictus Overview



Contract functions details

+Context

- [Int] _msgSender

+ [Int] IERC20

- [Ext] totalSupply
- [Ext] balanceOf
- [Ext] transfer
- [Ext] allowance
- [Ext] approve
- [Ext] transferFrom

+Ownable (Context)

- <constructor>
- [Pub] owner
- [Pub] renounceOwnership #
-modifiers: onlyOwner
- [Pub] transferOwnership #
-modifiers: onlyOwner

+ [Lib] SafeMath

- [Int] add
- [Int] sub
- [Int] sub
- [Int] mul
- [Int] div
- [Int] div

+ [Int] IUniswapV2Factory

- [Ext] createPair

+ [Int] IUniswapV2Router02

- [Ext] swapExactTokensForETHSupportingFeeOnTransferTokens
- [Ext] factory
- [Ext] WETH
- [Ext] addLiquidityETH \$

+Invictus (Context, IERC20, Ownable)

- [Pub] <Constructor> #
- [Pub] name
- [Pub] symbol
- [Pub] decimals

Contract functions details

- [Pub] totalSupply
- [Pub] balanceOf
- [Pub] transfer #
- [Pub] allowance
- [Pub] approve #
- [Pub] transferFrom #
- [Pvt] tokenFromReflection
- [Pvt] removeAllFee #
- [Pvt] restoreAllFee #
- [Pvt] _approve #
- [Pvt] _transfer #
- [Pvt] swapTokensForEth #
 - modifiers: lockTheSwap
- [Pvt] sendETHToFee #
- [Pub] setTrading #
 - modifiers: onlyOwner
- [Ext] manualswap #
- [Ext] manualsend #
- [Pub] blockBots #
 - modifiers: onlyOwner
- [Pub] unblockBot #
 - modifiers: onlyOwner
- [Pvt] _tokenTransfer #
- [Prv] _transferStandard #
- [Prv] _takeTeam #
- [Prv] _reflectFee #
- [Ext] <Fallback>(\$)
- [Prv] _getValues
- [Prv] _getTValues
- [Prv] _getRValues
- [Prv] _getRate
- [Prv] _getCurrentSupply
- [Pub] setFee #
 - modifiers: onlyOwner
- [Pub] setMinSwapTokensThreshold #
 - modifiers: onlyOwner
- [Pub] toggleSwap #
 - modifiers: onlyOwner

Contract functions details

-[Pub] setMaxTxnAmount #

- modifiers: onlyOwner

-[Pub] setMaxWalletSize #

- modifiers: onlyOwner

-[Pub] excludeMultipleAccountsFromFees #

- modifiers: onlyOwner

-[Pub] allowPreTrading #

- modifiers: onlyOwner

(\$) = payable function

= non-constant function

Issues Checking Status

No.	Title	Status
1.	Unlocked Compiler Version	Low issue
2.	Missing Input Validation	Passed
3.	Race conditions and Reentrancy. Cross-function race conditions.	Passed
4.	Possible delays in data delivery	Passed
5.	Oracle calls.	Passed
6.	Timestamp dependence.	Passed
7.	Integer Overflow and Underflow	Passed
8.	DoS with Revert.	Passed
9.	DoS with block gas limit.	Medium Issue
10.	Methods execution permissions.	Passed
11.	Economy model of the contract.	Passed
12.	Private use data leaks.	Passed
13.	Malicious Event log.	Passed
14.	Scoping and Declarations.	Passed
15.	Uninitialized storage pointers.	Passed
16.	Arithmetic accuracy.	Passed
17.	Design Logic.	Passed
18.	Safe Open Zeppelin contracts implementation and usage.	Passed
19.	Incorrect Naming State Variable	Passed
20.	Too old version	Passed

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.

Security Issues

✓ Critical Severity Issues

No critical severity issue found.

✓ High Severity Issues

No high severity issue found.

✓ Medium Severity Issues

One medium severity issue found.

1. Out of gas limit

• Description

The function `blockBots()` uses the loop to block bots using addresses list. Function will be aborted with `OUT_OF_GAS` exception if there will be a long `bots_` addresses list.

The function `excludeMultipleAccountsFromFees()` uses the loop to exclude multiple accounts from fees using addresses list. Function will be aborted with `OUT_OF_GAS` exception if there will be a long accounts addresses list.

• Recommendation

Use `EnumerableSet` instead of array or do not use long arrays.

✓ Low Severity Issues

One low severity issue found.

1. Unlocked Compiler Version.

• Description

The contract utilizes an unlocked compiler version. An unlocked compiler version in the contract's source code permits the user to compile it at or above a particular version. This, in turn, leads to differences in the generated bytecode between compilations due to differing compiler version numbers. This can lead to ambiguity when debugging as compiler-specific bugs may occur in the codebase that would be difficult to identify over a span of multiple compiler versions rather than a specific one.

• Recommendation

It is advisable that the compiler version is alternatively locked at the lowest version possible so that the contract can be compiled. For example, for version `^0.8.10` the contract should contain the following line:

```
pragma solidity 0.8.10;
```

Centralization

Owner privileges :

- Invictus Contract:
 - Owner can open / close trading.
 - Owner can add and remove bots (no transferring between this addresses)
 - Owner can change redis and tax fees.
 - Owner can change minimum swap tokens at amount value
 - Owner can enable / disable swap.
 - Owner can change maximum transaction limit.
 - Owner can change maximum token per wallet
 - Owner can include in and exclude from fees.
 - Owner can enable / disable pre trading for addresses.
 - Development address can manually swap
 - Development address can manually withdraw contract ETHs.

This smart contract has some functions which can be executed by the Admin (Owner) only. If the admin wallet private key would be compromised, then it would create trouble but smart contract ownership has been renounced. Following are Admin functions:

- renounceOwnership
- transferOwnership
- setTrading
- blockBots
- unblockBot
- setFee
- setMinSwapTokensThreshold
- toggleSwap
- setMaxTxnAmount
- setMaxWalletsize
- excludeMultipleAccountsFromFees
- allowPreTrading

Conclusion

Smart contract contains low and medium severity issues! The further transfer and operations with the fund raised are not related to this particular contract.

HackSafe 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.