CONTRACT CHECKER

Blockchain Solutions

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Anywhere on the Blockchain

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Smart Contract Security Audit

GVAULT DAO TOKEN

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Audit Result

GVAULT DAO TOKEN has successfully PASSED the smart contract security audit with below privileges

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

Audit Result:	PASSED
Ownership:	Not renounced yet
KYC Verification:	NA at the date of report edition
Audit Date:	August 16, 2022
Audit Team:	CONTRACTCHECKER

Findings_ Privileges of Ownership

- Blacklist available to owner. Owner can use it to block any account from trading.
- Auto liquidity is going to an externally owned account
- Owner can exclude accounts from rewards
- Owner can swap and withdraw all the collected taxes to treasury account
- Owner can exclude an account from paying fees
- There is 12% buy fee and 14% sell fee and cannot be changed
- Owner can change swap settings
- Owner can stop auto rebasing (APY reflections)

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.

Table of Contents

SUMMARY

CONTRACTCHECKER received an application for smart contract security audit of GVAULT DAO TOKEN on August 15, 2022, from the project team to discover if any vulnerability in the source codes of the GVAULT DAO 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	GVAULT DAO TOKEN
Web Site	https://gvault.finance/
Twitter	http://twitter.com/gvaultfi
Telegram	http://t.me/gvaultfinance
Announcement	http://t.me/gvaultannouncements
Docs	https://docs.gvault.finance/
Platform	Binance Smart Chain
Token Type	BEP20
Language	Solidity
Platforms & Tools	Remix IDE, Truffle, Truffle Team, Ganache, Solhint, VScode, Mythril, Contract Library
Contract Address	0x54943C61dfCDf9d3fAE6C60ab7F14a5d21dFA047
Contract Link	https://bscscan.com/token/0x54943c61dfcdf9d3fae6c60ab7f14a5d21dfa047
Test Link	https://testnet.bscscan.com/address/0x54D3D78d6ef8A2e8458f011C47B46Ee4105e55cD

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OVERVIEW

This Audit Report mainly focuses on overall security of GVAULT DAO 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

№	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.

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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	LOW
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	LOW
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

➢ SWC-103: A floating pragma is set

The current pragma Solidity directive is ""^0.7.4"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

```
pragma solidity ^0.7.4;

library SafeMathInt {
```

➢ SWC-108: State variable visibility is not set

It is best practice to set the visibility of state variables explicitly. The default visibility for "_token" is internal. Other possible visibility settings are public and private.

```
using SafeMath for uint256;

address _token;
```

The default visibility for "BUSD" is internal. Other possible visibility settings are public and private.

```
IERC20 BUSD = IERC20(0x78867BbEeF44f2326bF8DDd1941a4439382EF2A7);
//address WBNB = 0xbb4CdB9CBd36B01bD1cBaEBF2De08d9173bc095c;
IPancakeSwapRouter router;
```

The default visibility for "router" is internal. Other possible visibility settings are public and private.

```
IERC20 BUSD = IERC20(0x78867BbEeF44f2326bF8DDd1941a4439382EF2A7);
//address WBNB = 0xbb4CdB9CBd36B01bD1cBaEBF2De08d9173bc095c;
IPancakeSwapRouter router;
```

The default visibility for "shareholders" is internal. Other possible visibility settings are public and private.

```
IPancakeSwapRouter router;

address[] shareholders;
```

The default visibility for "shareholderIndexes" is internal. Other possible visibility settings are public and private.

```
address[] shareholders;
mapping (address => uint256) shareholderIndexes;
mapping (address => uint256) shareholderClaims;
```

The default visibility for "shareholderClaims" is internal. Other possible visibility settings are public and private.

```
address[] shareholders;
mapping (address => uint256) shareholderIndexes;
mapping (address => uint256) shareholderClaims;
```

The default visibility for "initialized" is internal. Other possible visibility settings are public and private.

```
bool initialized;
modifier initialization() {
require(!initialized);
```

The default visibility for "_isFeeExempt" is internal. Other possible visibility settings are public and private.

```
IPancakeSwapPair public pairContract;
mapping(address => bool) _isFeeExempt;

```

The default visibility for "DEAD" is internal. Other possible visibility settings are public and private.

```
uint256 public feeDenominator = 1000;

address DEAD = 0x000000000000000000000000000000000000dEaD;
```

The default visibility for "ZERO" is internal. Other possible visibility settings are public and private.

```
address DEAD = 0x000000000000000000000000000000000000dEaD;
address ZERO = 0x0000000000000000000000000000000000000000;

address public autoLiquidityReceiver;
```

The default visibility for "distributor" is internal. Other possible visibility settings are public and private.

```
address public treasuryReceiver;

DividendDistributor distributor;
```

The default visibility for "distributorGas" is internal. Other possible visibility settings are public and private.

```
DividendDistributor distributor;
address public safuDividendReceiver;
uint256 distributorGas = 500000;
```

The default visibility for "inSwap" is internal. Other possible visibility settings are public and private.

```
address public pair;
bool inSwap = false;
modifier swapping() {
```

Automated Audit

Remix Compiler Warnings

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

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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: