



# Smart Contract Security Audit Report

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## PAWTHHEREUM

March 2023

Security Status



[www.hacksafe.io](https://www.hacksafe.io)

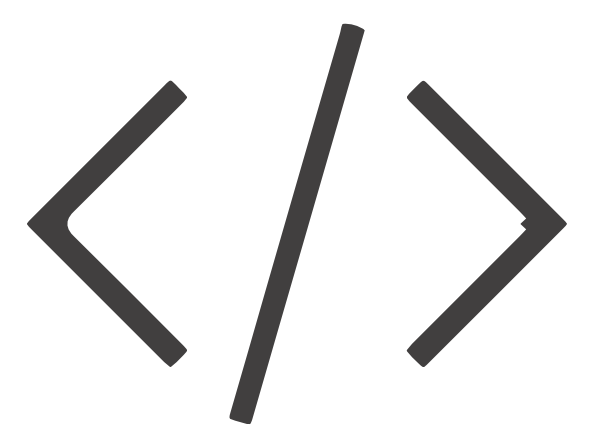


# Audit Details



## Audited project

PAWTHHEREUM



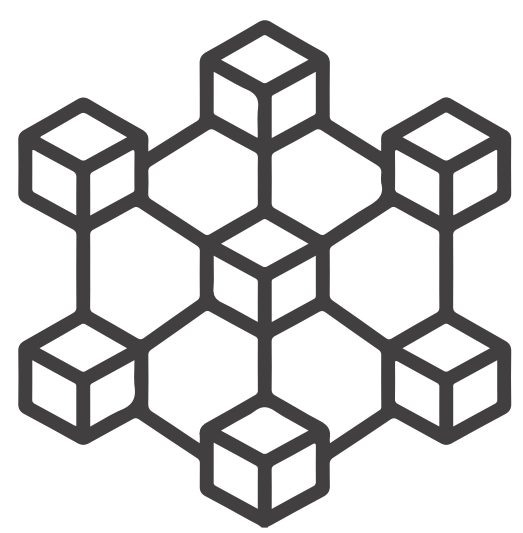
## Deployer address

0x06b0a2c6beea3fd215d47324dd49e1ee3a4a9f25



## Client contacts

PAWTHHEREUM Team



## Blockchain

Binance smart chain



## 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 PAWTHHEREUM to perform an audit of smart contracts:

- <https://bscscan.com/token/0x409e215738E31d8aB252016369c2dd9c2008Fee0#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 understood to 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 28.03.2023

Token Type	: Charity
Contract name	: Pawthereum
Contract address	: 0x409e215738E31d8aB252016369c2dd9c2008Fee0
Total supply	: 1,000,000,000
Token ticker	: PAWTH
Decimals	: 9
Token holders	: 2,087
Transactions count	: 11,811
Compiler version	: v0.6.12+commit.27d51765
Contract deployer address	: 0x06b0a2c6beea3fd215d47324dd49e1ee3a4a9f25
owner address	: 0xf10b1d6e1cd1de1f11daf1f609b152b8b125426d



# Audit Summary

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

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 0 low.

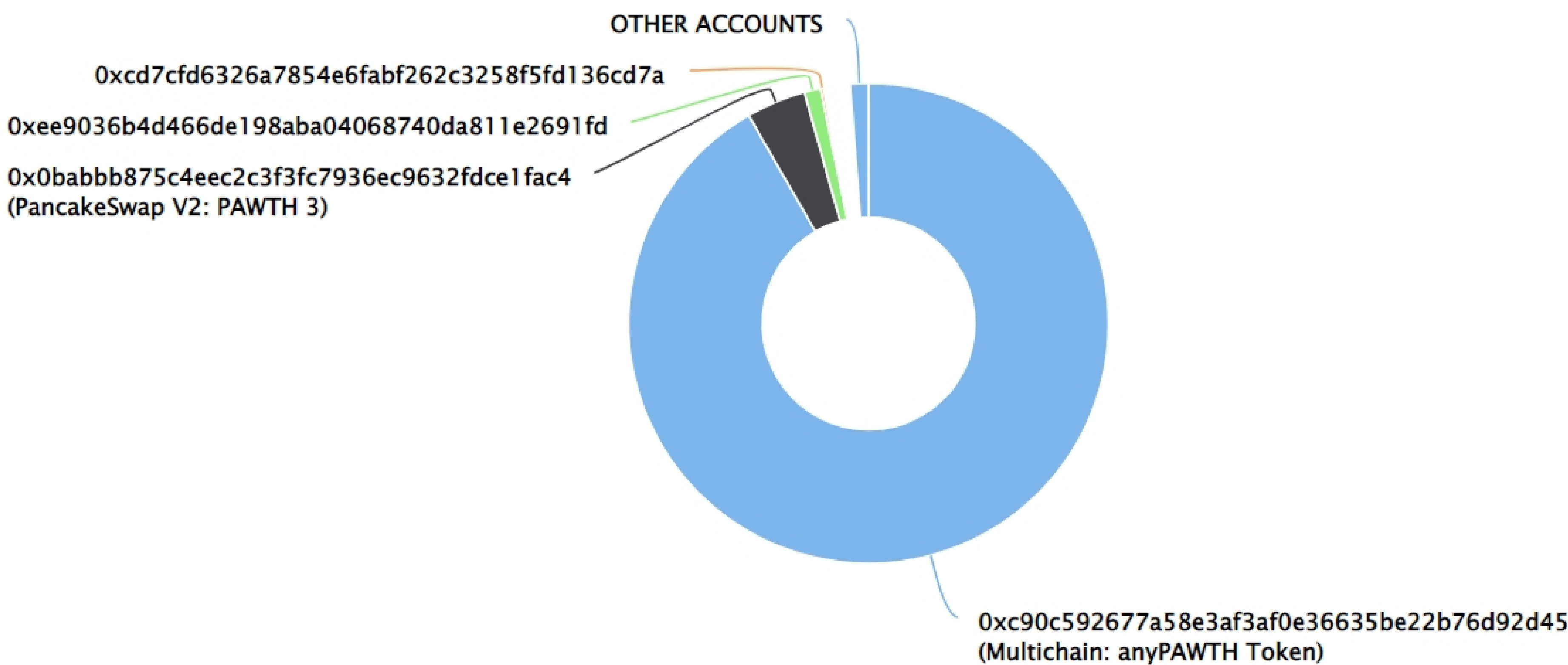
# PAWTHHEREUM TOKEN Distribution

💡 The top 100 holders collectively own 98.78% (987,751,682.81 Tokens) of Pawthereum

💡 Token Total Supply: 1,000,000,000.00 Token | Total Token Holders: 2,087




Pawthereum Top 100 Token Holders

Source: BscScan.com



## PAWTHHEREUM Token Top 20 Token Holders

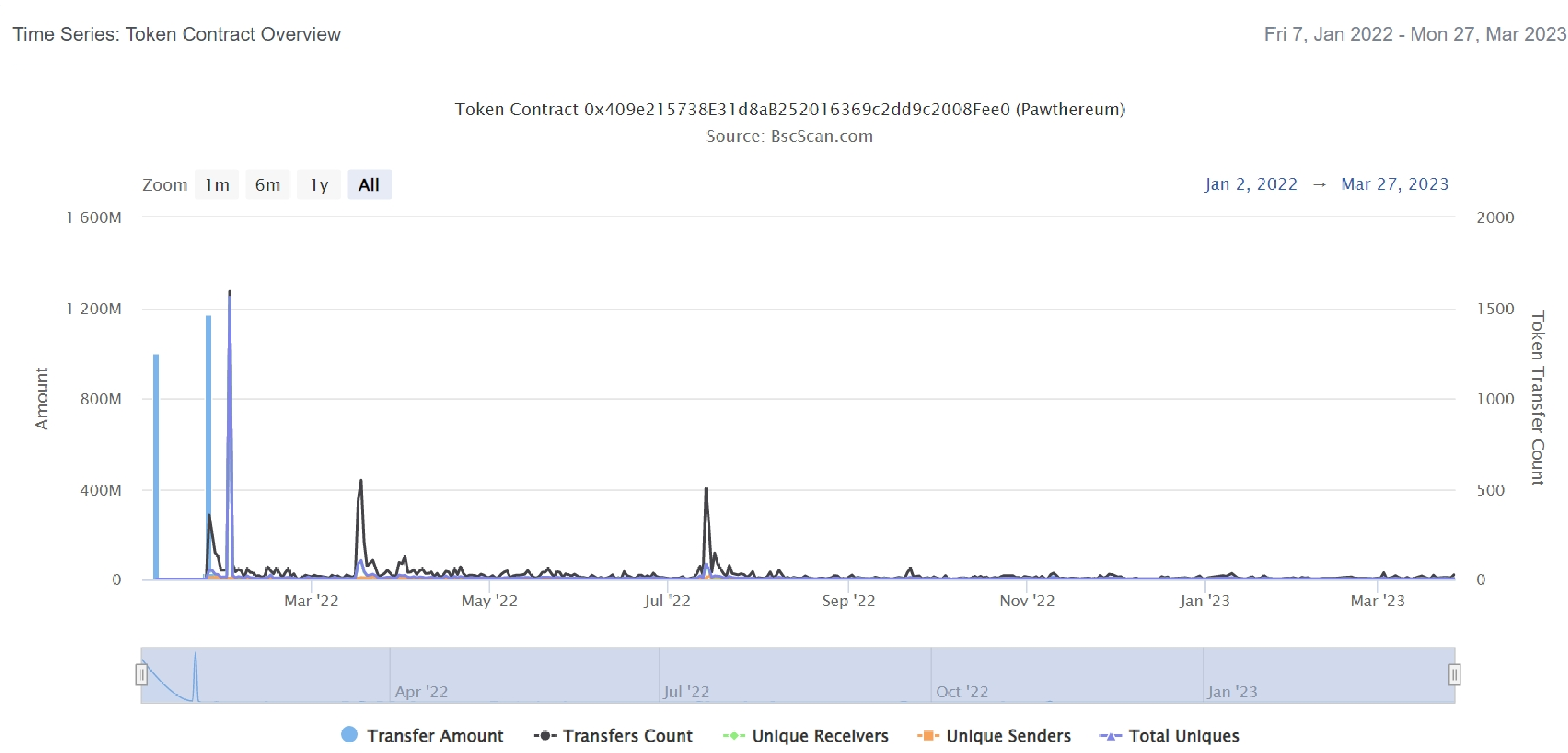
(A total of 987,751,682.81 tokens held by the top 100 accounts from the total supply of 1,000,000,000.00 token)

Rank	Address	Quantity (Token)	Percentage
1	 Multichain: anyPAWTH Token	916,780,203.347282599	91.6780%
2	 PancakeSwap V2: PAWTH 3	40,211,043.221507624	4.0211%
3	 0xee9036b4d466de198aba04068740da811e2691fd	10,949,395.512607752	1.0949%
4	0xcd7cfd6326a7854e6fabf262c3258f5fd136cd7a	2,080,296.169276165	0.2080%
5	0x72d0df0ae2580bd744007bf84dd172f5968db3c6	1,444,987.317009482	0.1445%
6	0x932d9169963b0264ef054aef5cdbab2231db5d6e	1,418,244.898348777	0.1418%
7	0x997559133d6382c0c376fc295c52e5ee6a213d65	1,213,641.252186315	0.1214%
8	0xad6c62e8038237c97422f6d2c68ccfd644f67f6f	1,197,936.958207412	0.1198%
9	0xe570c5b6cf2d86399d94a2af1b6fbaf77ad2d979	1,072,863.20520346	0.1073%
10	0x7d859cb9db0e02641db2b292bd758394896d89b0	986,482.260559183	0.0986%
11	0x6632cee3d1dcf86185c2737bf5c301a628623a14	538,231.51090049	0.0538%
12	0x21b7edc8ef9ad1eef28f862aabd40ab75ed127cd	473,349.169742919	0.0473%
13	0x7ebc30248ce80bce93ce477445e7ebf28f5c38f3	465,271.950465916	0.0465%
14	0x53835910eff0aa4aa6e7434a6c06d73eb910f36	453,356.891128706	0.0453%
15	0x3eba6c280f251aca011c39ed51d68485490ed898	330,600.929912731	0.0331%
16	0x03b3d42950a39ce68b68b88590c8baa6aa277070	318,582.385376349	0.0319%
17	0x1489e86a45174413516fa90979b805e7e8889075	267,808.210281709	0.0268%
18	0x57b0fe0f8de3448a2582c972cecc2c5563322e46	261,838.923139929	0.0262%
19	0x8a876f10bcf0a5475d4650d640c8e6b530800dd1	257,522.741695867	0.0258%
20	0x392175332123ac3517270947b28851ba3e69e743	241,463.430077826	0.0241%



# PAWTHHEREUM TOKEN Distribution

## PAWTHHEREUM Contract Overview



# Contract functions details

## +Context

- [Int] \_msgSender
- [Int] \_msgData

## + [Int] IERC20

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

## + [Lib] SafeMath

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

## + [Lib] Address

- [Int] isContract
- [Int] sendValue #
- [Int] functionCall #
- [Int] functionCall #
- [Int] functionCallWithValue #
- [Int] functionCallWithValue #
- [Prv] \_functionCallWithValue #

## +Ownable (Context)

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

## + [Int] IUniswapV2Factory

- [Ext] createPair #



# Contract functions details

**+ [Int]** IUniswapV2Pair

**- [Ext]** sync #

**+ [Int]** IUniswapV2Router01

**- [Ext]** factory

**- [Ext]** WETH

**- [Ext]** addLiquidity #

**- [Ext]** addLiquidityETH (\$)

**+ [Int]** IUniswapV2Router02 (IUniswapV2Router01)

**- [Ext]** removeLiquidityETHSupportingFeeOnTransferTokens #

**- [Ext]** swapExactTokensForETHSupportingFeeOnTransferTokens #

**- [Ext]** swapExactTokensForTokensSupportingFeeOnTransferTokens #

**- [Ext]** swapExactETHForTokensSupportingFeeOnTransferTokens (\$)

**+ Pawthereum** (Context, IERC20, Ownable)

**- [Pub]** <Constructor> #

**- [Pub]** name

**- [Pub]** symbol

**- [Pub]** decimals

**- [Pub]** totalSupply

**- [Pub]** balanceOf

**- [Pub]** transfer #

**- [Pub]** allowance

**- [Pub]** approve #

**- [Pub]** transferFrom #

**- [Pub]** increaseAllowance #

**- [Pub]** decreaseAllowance #

**- [Pub]** isExcluded

**- [Pub]** isTaxlessAccount

**- [Pub]** reflectionFromToken

**- [Pub]** tokenFromReflection

**- [Ext]** excludeAccount #

- modifiers: onlyOwner

**- [Ext]** includeAccount #

- modifiers: onlyOwner

**- [Prv]** \_approve #

**- [Prv]** \_transfer #

**- [Prv]** collectFee #

# Contract functions details

- [Prv] \_getReflectionRate
- [Prv] swapAndLiquify #
  - modifiers: lockTheSwap
- [Prv] swapTokensForEth #
- [Prv] addLiquidity #
- [Ext] setLpTokenHolder #
  - modifiers: onlyOwner
- [Ext] setPair #
  - modifiers: onlyOwner
- [Ext] setMarketingWallet #
  - modifiers: onlyOwner
- [Ext] setCharityWallet #
  - modifiers: onlyOwner
- [Ext] setStakingWallet #
  - modifiers: onlyOwner
- [Ext] setTaxless #
  - modifiers: onlyOwner
- [Ext] setSwapAndLiquifyEnabled #
  - modifiers: onlyOwner
- [Ext] setTaxActive #
  - modifiers: onlyOwner
- [Ext] setTaxFee #
  - modifiers: onlyOwner
- [Ext] setBurnFee #
  - modifiers: onlyOwner
- [Ext] setLiquidityFee #
  - modifiers: onlyOwner
- [Ext] setMarketingFee #
  - modifiers: onlyOwner
- [Ext] setCharityFee #
  - modifiers: onlyOwner
- [Ext] setMaxTxAmount #
  - modifiers: onlyOwner
- [Ext] setMaxTokensInSwap #
  - modifiers: onlyOwner
- [Ext] setMinTokensBeforeSwap #
  - modifiers: onlyOwner
- [Ext] setSwapAndLiquifyMarketing #



# Contract functions details

- modifiers: onlyOwner
- [Ext] setSwapAndLiquifyCharity #
  - modifiers: onlyOwner
- [Ext] setAutomatedMarketMakerPair #
  - modifiers: onlyOwner
- [Ext] setRouterAddress #
  - modifiers: onlyOwner
- [Ext] setPurr #
  - modifiers: onlyOwner
- [Prv] \_addThreeUints
- [Ext] withdrawTokenToOwner #
  - modifiers: onlyOwner
- [Ext] withdrawEthToOwner #
  - modifiers: onlyOwner
- [Ext] initLp (\$)
  - modifiers: onlyOwner
- [Ext]< Fallback> (\$)

(\$) = payable function

# = non-constant function

# Issues Checking Status

No.	Title	Status
1.	Compiler error	Passed
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

- **Issue:**

- The function `includeAccount()` uses the loop to find and remove addresses from the `_excluded` list. Function will be aborted with `OUT_OF_GAS` exception if there will be a long excluded addresses list.
- The function `_getReflectionRate()` also uses the loop for evaluating total supply. It also could be aborted with `OUT_OF_GAS` exception if there will be a long excluded addresses list.

- **Recommendation**

Check that the excluded array length is not too big.

## ✔ Low Severity Issues

No low severity issue found.



# Centralization

## Owner Privileges :

- PAWTHereum Contract:
  - Owner can change lpTokenHolder address.
  - Owner can update Uniswap router and pair.
  - Owner can change marketing, charity and staking wallet addresses.
  - Owner can include in or exclude from the taxes.
  - Owner can enable / disable swap and liquify.
  - Owner can enable / disable taxes.
  - Owner can change the tax, burn, liquidity, marketing and charity fee.
  - Owner can change the maximum transaction amount.
  - Owner can change the maximum tokens in swap.
  - Owner can change minimum amounts of tokens needed to swap.
  - Owner can enable/disable swapAndLiquifyMarketing and swapAndLiquifyCharity.
  - Owner can include/exclude addresses in automatedMarketMakerPairs array.
  - Owner can change Purr fees.
  - Owner can withdraw ERC20 tokens and recalculate \_liquidityTokensToSwap, \_marketingTokensToSwap, \_charityTokensToSwap values.
  - Owner can withdraw contract BNBs.
  - Owner can initialize liquidity.

# Conclusion

Smart contract contains 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.