RugFreeCoins Audit

HARP Coin Token

Smart Contract Security Audit

July 31, 2021

Contents

Audit details

Audited project

Harp Coin Token

Contract Address

0xe37ab1f60987cb4ac3c27918c11412f41460ab0b

Client contact

Harp Coin Team

Blockchain

Binance smart chain

Project website

https://harpcoin.co/

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 disclaimer below – please make sure to read it in full.

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Background

Rugfreecoins was commissioned by Harp Coin to perform an audit of the smart contract.

https://bscscan.com/token/0xe37ab1f60987cb4ac3c27918c11412f41460ab0b

The focus of this audit is to verify that the smart contract is secure, resilient and working according to the specifications.

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

About the project

Harp Coin is a token built on the Binance Smart Chain. Each transaction, purchase and sale incur a 10% fee. The token was launched on Pancakeswap in May. The project is community-driven and with a real-world use case that the team is working on to enable De-Fi functionalities for mobile applications in a decentralized approach.

Features:

- Token distribution of 5%, which Harp Coin holders benefit through static rewards, that tokens will be distributed among every holder proportional to how many tokens each individual holds.

- The liquidity fee of 5%, which is a redistribution mechanism that ensures the trading pool always has sufficient liquidity. This is a key element for decentralized exchanges like Pancakeswap.

Tokenomics

- 5% of trade goes to holders pockets.
- 5% of trade goes to the liquidity pool.

Target market and the concept

Target market

- Anyone who's interested in Crypto space with long term investment plans.
- Anyone who's ready to earn a passive income by holding tokens.
- Anyone who's interested in trading tokens.
- Anyone who's interested in making financial transactions with any other party using HARP Coin as the currency.
- Anyone who's interested in using HARP coins as the subscription payment method for the mobile apps that will be enabled in the future.
- Anyone who's interested in staking through mobile apps and getting rewarded HARP coins.

Core concept

The static reward system

5% of tokens will be distributed among the holders per every buy and sell.

Sustainable mechanism

The liquidity fee of 5%, which is a redistribution mechanism that ensures the trading pool always has sufficient liquidity.

The plan

The HARP Coin team is working on a concept to replace the traditional subscription model already existing on the mobile applications. The team is building an API to connect wallets into the mobile applications in order to use HARP as the currency for business transactions like paying in HARP for subscription-based models.

This will enable use to

- Unlock features of the mobile app by paying in HARP.
- Disable ads by being a premium user.
- Be eligible to get rewards.

Staking will also be enabled in the future for the mobile applications so that users will get a specific percentage of HARP as a staking reward.

Potential to grow with score points

1.	Project efficiency	8/10
2.	Project uniqueness	7/10
3	Information quality	7/10
4	Service quality	710
5	System quality	7/10
6	Impact on the community	8/10
7	Impact on the business	8/10
8	Preparing for the future	8/10
Total Points		**7.5/10**

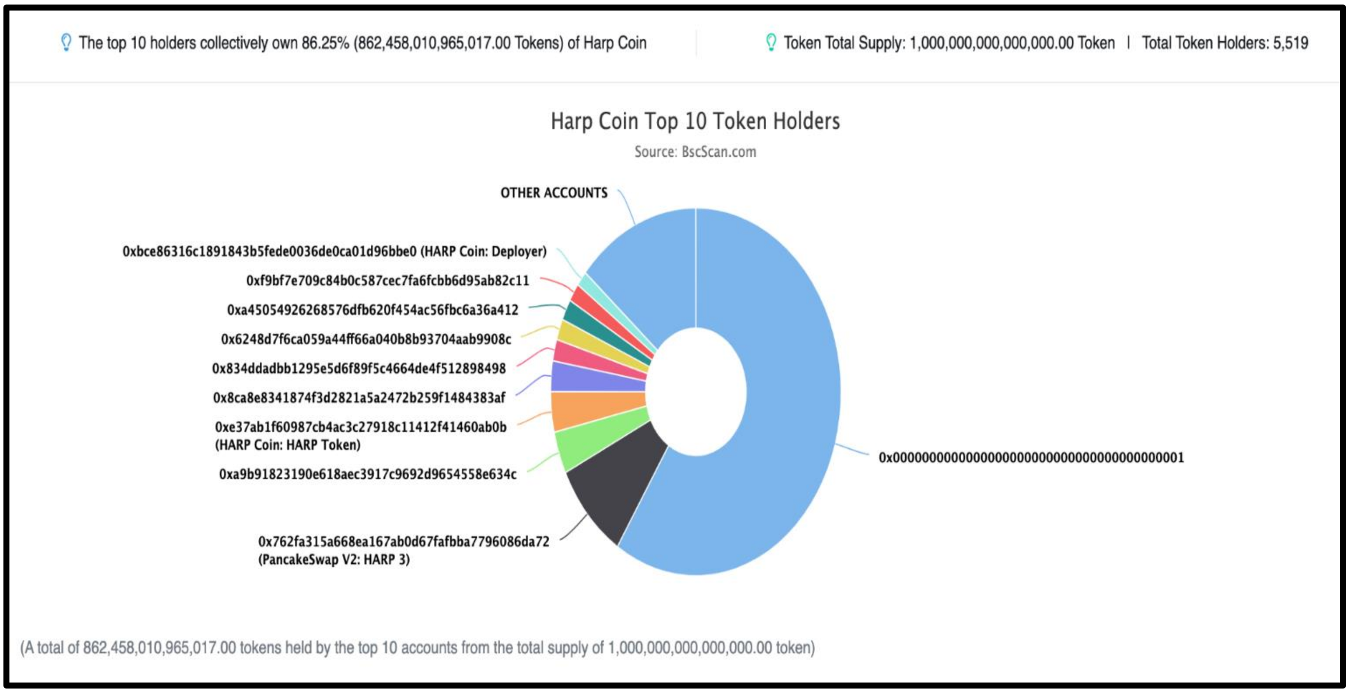
Contract details

Token contract details for 31st July 2021

Contract name	Harp Coin
Contract address	0xe37ab1f60987cb4ac3c27918c11412f41460ab0b
Token supply	1,000,000,000,000,000
Token ticker	HARP
Decimals	9
Token holders	5,518
Transaction count	6,272
Top 100% holders dominance	99.82%
Contract deployer address	0xbce86316c1891843B5fedE0036de0cA01d96bbE0
Contract's current owner address	0x0000000000000000000000000000000000000000

Top token holders

Top 10 Token Holders



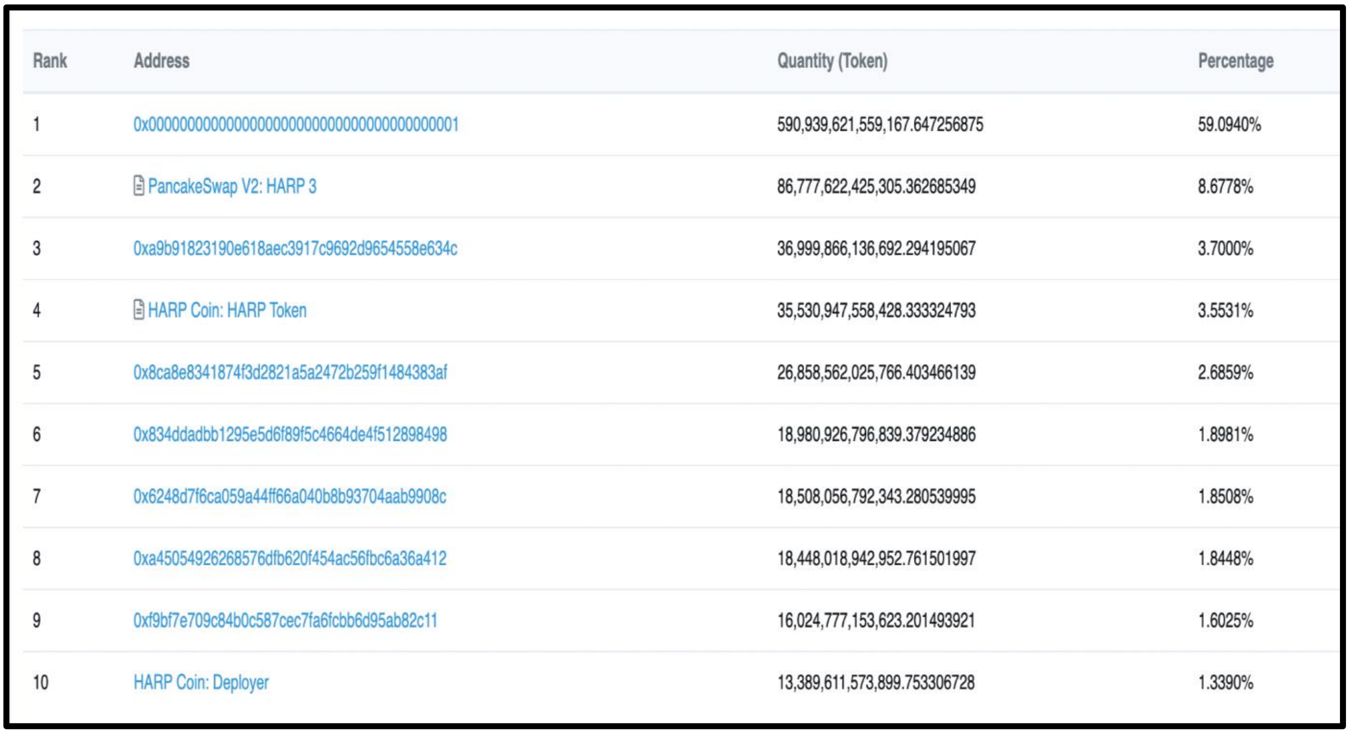
The top 10 holders collectively own 86.25% (862,458,010,965,017.00 Tokens) of Harp Coin

Token Total Supply: 1,000,000,000,000,000.00 Token | Total Token Holders: 5,519

Harp Coin Top 10 Token Holders

Source: BscScan.com

(A total of 862,458,010,965,017.00 tokens held by the top 10 accounts from the total supply of 1,000,000,000,000,000.00 token)

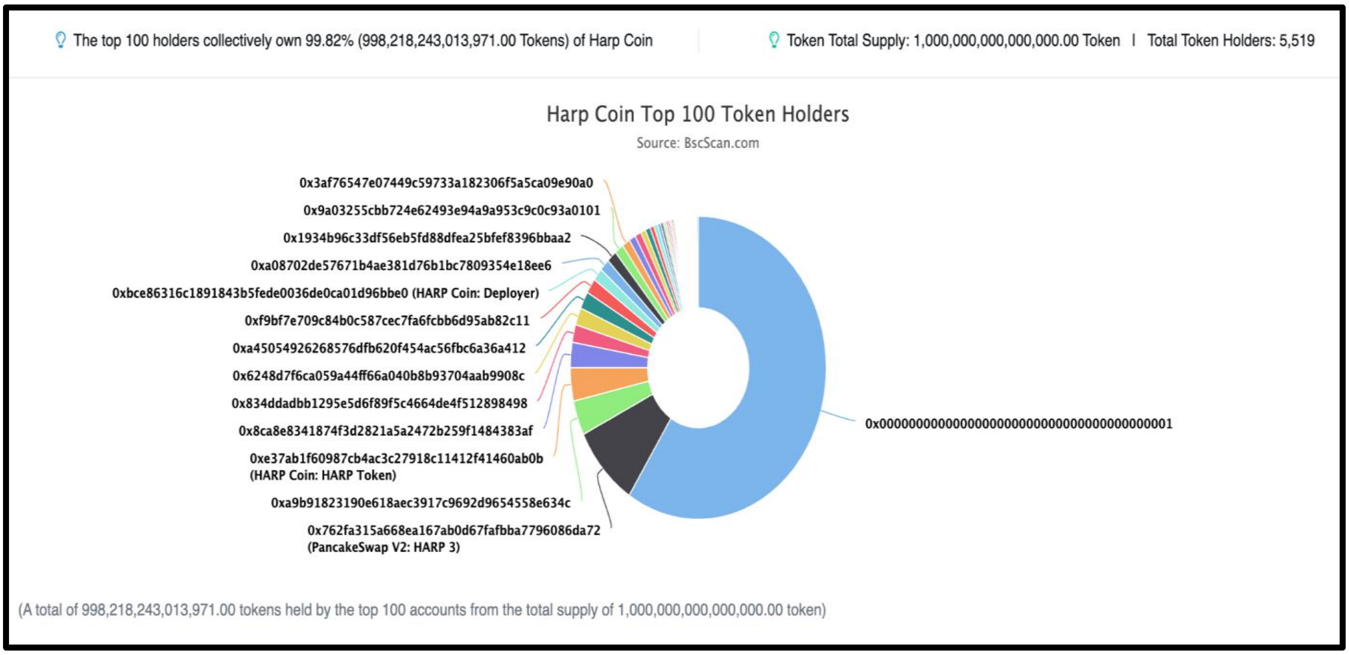


Rank	Address	Quantity (Token)	Percentage
1	0x0000000000000000000000000000000000000001	590,939,621,559,167.647256875	59.0940%
2	PancakeSwap V2: HARP 3	86,777,622,425,305.362685349	8.6778%
3	0xa9b91823190e618aec3917c9692d9654558e634c	36,999,866,136,692.294195067	3.7000%
4	HARP Coin: HARP Token	35,530,947,558,428.333324793	3.5531%
5	0x8ca8e8341874f3d2821a5a2472b259f1484383af	26,858,562,025,766.403466139	2.6859%
6	0x834ddadbb1295e5d6f89f5c4664de4f512898498	18,980,926,796,839.379234886	1.8981%
7	0x6248d7f6ca059a44ff66a040b8b93704aab9908c	18,508,056,792,343.280539995	1.8508%
8	0xa45054926268576dfb620f454ac56fbc6a36a412	18,448,018,942,952.761501997	1.8448%
9	0xf9bf7e709c84b0c587cec7fa6fcbb6d95ab82c11	16,024,777,153,623.201493921	1.6025%
10	HARP Coin: Deployer	13,389,611,573,899.753306728	1.3390%

Token distribution

Tokens are distributed as follows:

Top 100 Token Holders



The top 100 holders collectively own 99.82% (998,218,243,013,971.00 Tokens) of Harp Coin

Token Total Supply: 1,000,000,000,000,000.00 Token | Total Token Holders: 5,519

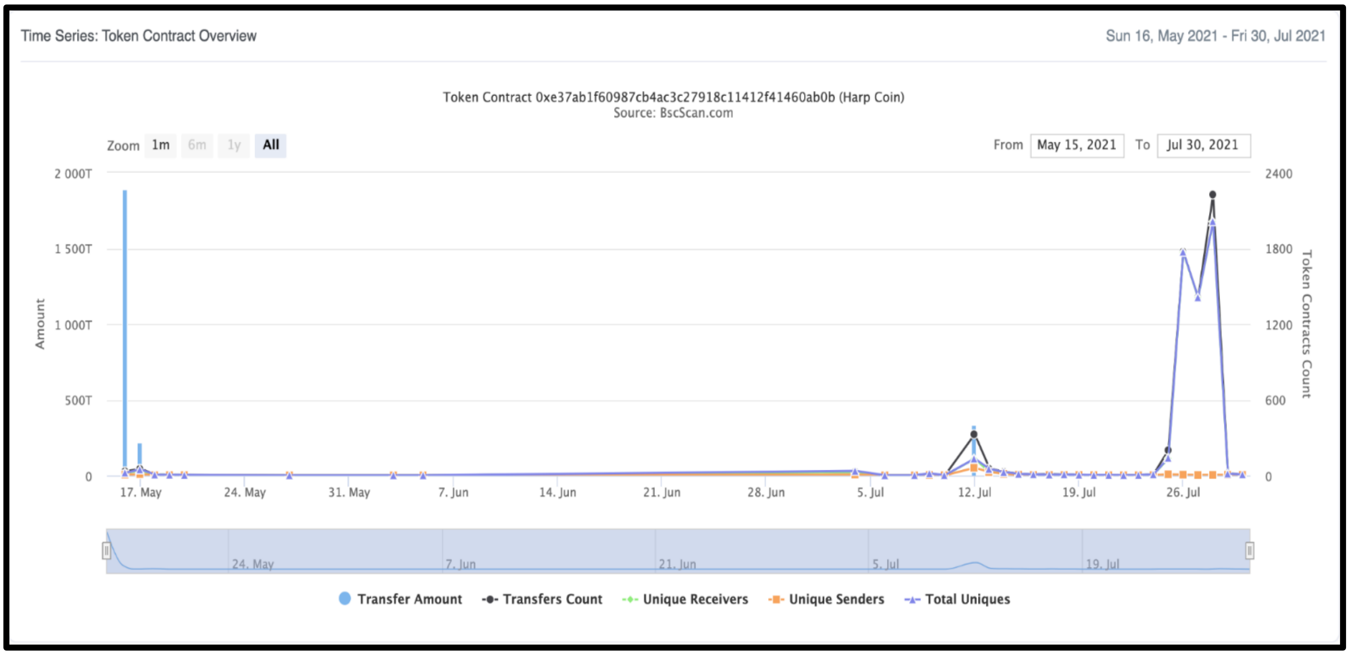
Harp Coin Top 100 Token Holders

Source: BscScan.com

0x3af76547e07449c59733a182306f5a5ca09e90a0
0x9a03255cbb724e62493e94a9a953c9c0c93a0101
0x1934b96c33df56eb5fd88dfea25bfef8396bbaa2
0xa08702de57671b4ae381d76b1bc7809354e18ee6
0xbce86316c1891843b5fede0036de0ca01d96bbe0 (HARP Coin: Deployer)
0xf9bf7e709c84b0c587cec7fa6fcbb6d95ab82c11
0xa45054926268576dfb620f454ac56fbc6a36a412
0x6248d7f6ca059a44ff66a040b8b93704aab9908c
0x834ddadbb1295e5d6f89f5c4664de4f512898498
0x8ca8e8341874f3d2821a5a2472b259f1484383af
0xe37ab1f60987cb4ac3c27918c11412f41460ab0b (HARP Coin: HARP Token)
0xa9b91823190e618aec3917c9692d9654558e634c
0x762fa315a668ea167ab0d67fafbba7796086da72 (PancakeSwap V2: HARP 3)
0x0000000000000000000000000000000000000001

(A total of 998,218,243,013,971.00 tokens held by the top 100 accounts from the total supply of 1,000,000,000,000,000.00 token)

Contract interaction details



Time Series: Token Contract Overview

Sun 16, May 2021 - Fri 30, Jul 2021

Token Contract 0xe37ab1f60987cb4ac3c27918c11412f41460ab0b (Harp Coin)

Source: BscScan.com

Zoom 1m 6m 1y **All**

From May 15, 2021 To Jul 30, 2021

Contract code function details

No	Category	Item	Result
1	Coding conventions	BRC20 Token standards	pass
		compile errors	pass
		Compiler version security	pass
		visibility specifiers	pass
		Gas consumption	pass
		SafeMath features	pass
		Fallback usage	pass
		tx.origin usage	pass
		deprecated items	pass
		Redundant code	pass
		Overriding variables	pass
2	Function call audit	Authorization of function call	pass
		Low level function (call/delegate call) security	pass
		Returned value security	pass
		Selfdestruct function security	pass
3	Business security	Access control of owners	pass
		Business logics	pass
		Business implementations	pass
4	Integer overflow/underflow		pass
5	Reentrancy		pass
6	Exceptional reachable state		pass
7	Transaction ordering dependence		pass
8	Block properties dependence		pass
9	Pseudo random number generator (PRNG)		pass
10	DoS (Denial of Service)		pass
11	Token vesting implementation		pass
12	Fake deposit		pass
13	Event security		pass

Contract description table

Below table represents the summary of the contracts and methods in the token contract. We scanned the whole contract and listed down all the Interfaces, functions and implementations with its visibility and mutability.

Contract	Type	Bases		
└	Function Name	Visibility	Mutability	Modifiers
IERC20	**Interface**			
└	totalSupply	External ❗		NO❗
└	balanceOf	External ❗		NO❗
└	transfer	External ❗	🛑	NO❗
└	allowance	External ❗		NO❗
└	approve	External ❗	🛑	NO❗
└	transferFrom	External ❗	🛑	NO❗
SafeMath	**Library**			
└	add	Internal 🔒		
└	sub	Internal 🔒		
└	sub	Internal 🔒		
└	mul	Internal 🔒		
└	div	Internal 🔒		
└	div	Internal 🔒		
└	mod	Internal 🔒		
└	mod	Internal 🔒		
Context	**Implementation**			
└	_msgSender	Internal 🔒		

└	_msgData	Internal 🔒		
Address	**Library**			
└	isContract	Internal 🔒		
└	sendValue	Internal 🔒	🛑	
└	functionCall	Internal 🔒	🛑	
└	functionCall	Internal 🔒	🛑	
└	functionCallWithValue	Internal 🔒	🛑	
└	functionCallWithValue	Internal 🔒	🛑	
└	_functionCallWithValue	Private 🔐	🛑	
Ownable	**Implementation**	**Context**		
└		Internal 🔒	🛑	
└	owner	Public ❗		NO❗
└	renounceOwnership	Public ❗	🛑	onlyOwner
└	transferOwnership	Public ❗	🛑	onlyOwner
└	geUnlockTime	Public ❗		NO❗
└	lock	Public ❗	🛑	onlyOwner
└	unlock	Public ❗	🛑	NO❗
IUniswapV2Factory	**Interface**			
└	feeTo	External ❗		NO❗
└	feeToSetter	External ❗		NO❗
└	getPair	External ❗		NO❗
└	allPairs	External ❗		NO❗

└	allPairsLength	External ❗		NO❗
└	createPair	External ❗	🛑	NO❗
└	setFeeTo	External ❗	🛑	NO❗
└	setFeeToSetter	External ❗	🛑	NO❗
IUniswapV2Pair	**Interface**			
└	name	External ❗		NO❗
└	symbol	External ❗		NO❗
└	decimals	External ❗		NO❗
└	totalSupply	External ❗		NO❗
└	balanceOf	External ❗		NO❗
└	allowance	External ❗		NO❗
└	approve	External ❗	🛑	NO❗
└	transfer	External ❗	🛑	NO❗
└	transferFrom	External ❗	🛑	NO❗
└	DOMAIN_SEPARATOR	External ❗		NO❗
└	PERMIT_TYPEHASH	External ❗		NO❗
└	nonces	External ❗		NO❗
└	permit	External ❗	🛑	NO❗
└	MINIMUM_LIQUIDITY	External ❗		NO❗
└	factory	External ❗		NO❗
└	token0	External ❗		NO❗
└	token1	External ❗		NO❗
└	getReserves	External ❗		NO❗
└	price0CumulativeLast	External ❗		NO❗

└	price1CumulativeLast	External ❗		NO❗
└	kLast	External ❗		NO❗
└	mint	External ❗	🛑	NO❗
└	burn	External ❗	🛑	NO❗
└	swap	External ❗	🛑	NO❗
└	skim	External ❗	🛑	NO❗
└	sync	External ❗	🛑	NO❗
└	initialize	External ❗	🛑	NO❗
IUniswapV2Router01	**Interface**			
└	factory	External ❗		NO❗
└	WETH	External ❗		NO❗
└	addLiquidity	External ❗	🛑	NO❗
└	addLiquidityETH	External ❗	💵	NO❗
└	removeLiquidity	External ❗	🛑	NO❗
└	removeLiquidityETH	External ❗	🛑	NO❗
└	removeLiquidityWithPermit	External ❗	🛑	NO❗
└	removeLiquidityETHWithPermit	External ❗	🛑	NO❗
└	swapExactTokensForTokens	External ❗	🛑	NO❗
└	swapTokensForExactTokens	External ❗	🛑	NO❗
└	swapExactETHForTokens	External ❗	💵	NO❗
└	swapTokensForExactETH	External ❗	🛑	NO❗

L	swapExactTokensForETH	External ❗	🛑	NO❗
L	swapETHForExactTokens	External ❗	💵	NO❗
L	quote	External ❗		NO❗
L	getAmountOut	External ❗		NO❗
L	getAmountIn	External ❗		NO❗
L	getAmountsOut	External ❗		NO❗
L	getAmountsIn	External ❗		NO❗
IUniswapV2Router02	**Interface**	**IUniswapV2Router01**		
L	removeLiquidityETHSupportingFeeOnTransferTokens	External ❗	🛑	NO❗
L	removeLiquidityETHWithPermitSupportingFeeOnTransferTokens	External ❗	🛑	NO❗
L	swapExactTokensForTokensSupportingFeeOnTransferTokens	External ❗	🛑	NO❗
L	swapExactETHForTokensSupportingFeeOnTransferTokens	External ❗	💵	NO❗
L	swapExactTokensForETHSupportingFeeOnTransferTokens	External ❗	🛑	NO❗
HarpCoin	**Implementation**	**Context, IERC20, Ownable**		
L		Public ❗	🛑	NO❗
L	name	Public ❗		NO❗

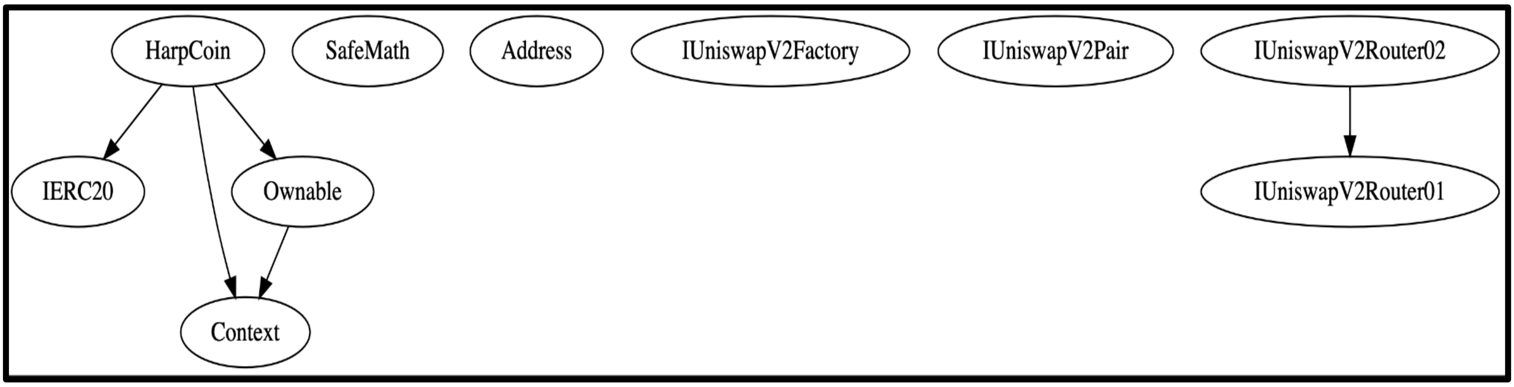
└	symbol	Public ❗		NO❗
└	decimals	Public ❗		NO❗
└	totalSupply	Public ❗		NO❗
└	balanceOf	Public ❗		NO❗
└	transfer	Public ❗	🛑	NO❗
└	allowance	Public ❗		NO❗
└	approve	Public ❗	🛑	NO❗
└	transferFrom	Public ❗	🛑	NO❗
└	increaseAllowance	Public ❗	🛑	NO❗
└	decreaseAllowance	Public ❗	🛑	NO❗
└	isExcludedFromReward	Public ❗		NO❗
└	totalFees	Public ❗		NO❗
└	deliver	Public ❗	🛑	NO❗
└	reflectionFromToken	Public ❗		NO❗
└	tokenFromReflection	Public ❗		NO❗
└	excludeFromReward	Public ❗	🛑	onlyOwner
└	includeInReward	External ❗	🛑	onlyOwner
└	_transferBothExcluded	Private 🔐	🛑	
└	excludeFromFee	Public ❗	🛑	onlyOwner
└	includeInFee	Public ❗	🛑	onlyOwner
└	setTaxFeePercent	External ❗	🛑	onlyOwner
└	setLiquidityFeePercent	External ❗	🛑	onlyOwner
└	setMaxTxPercent	External ❗	🛑	onlyOwner

└	setSwapAndLiquifyEnabled	Public ❗	🛑	onlyOwner
└	enableTrading	External ❗	🛑	onlyOwner
└		External ❗	💵	NO❗
└	_reflectFee	Private 🔐	🛑	
└	_getValues	Private 🔐		
└	_getTValues	Private 🔐		
└	_getRValues	Private 🔐		
└	_getRate	Private 🔐		
└	_getCurrentSupply	Private 🔐		
└	_takeLiquidity	Private 🔐	🛑	
└	calculateTaxFee	Private 🔐		
└	calculateLiquidityFee	Private 🔐		
└	removeAllFee	Private 🔐	🛑	
└	restoreAllFee	Private 🔐	🛑	
└	isExcludedFromFee	Public ❗		NO❗
└	_approve	Private 🔐	🛑	
└	_transfer	Private 🔐	🛑	
└	swapAndLiquify	Private 🔐	🛑	lockTheSwap
└	swapTokensForEth	Private 🔐	🛑	
└	addLiquidity	Private 🔐	🛑	
└	_tokenTransfer	Private 🔐	🛑	
└	_transferStandard	Private 🔐	🛑	
└	_transferToExcluded	Private 🔐	🛑	
└	_transferFromExcluded	Private 🔐	🛑	

Legend

Symbol	Meaning
🛑	**Function can modify state**
💵	**Function is payable**

Inheritance Hierarchy



Security issue checking status

- **High severity issues**
  No high severity issues found.

- **Medium severity issues**
  No medium severity issues found.

- **Low severity issues**

Hard code router address

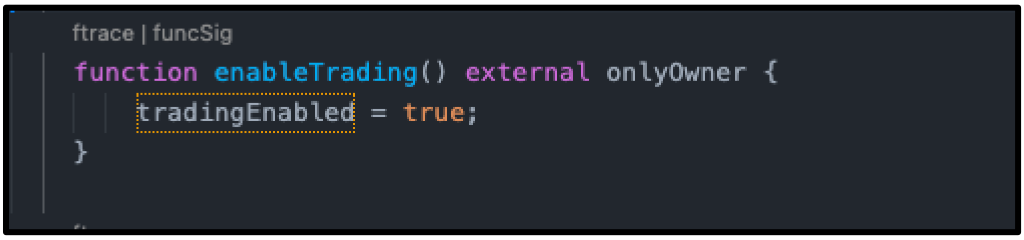
Hardcoded uniswapV2Router address makes it impossible to migrate to a new version of DEX in case of future upgrades of PancakeSwap periphery.

Owner privileges

Ownership has been renounced and the owner doesn't have any privileges and has no authority to make any changes now.

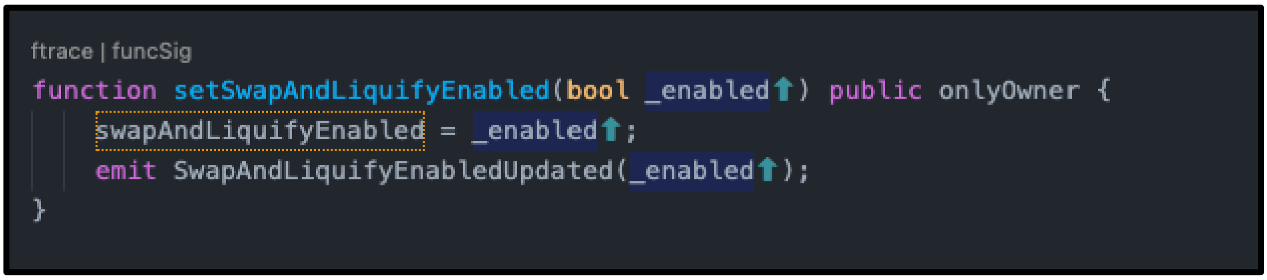
Ownership privileges owner had

- Owner can enable the trading and cannot disable it.



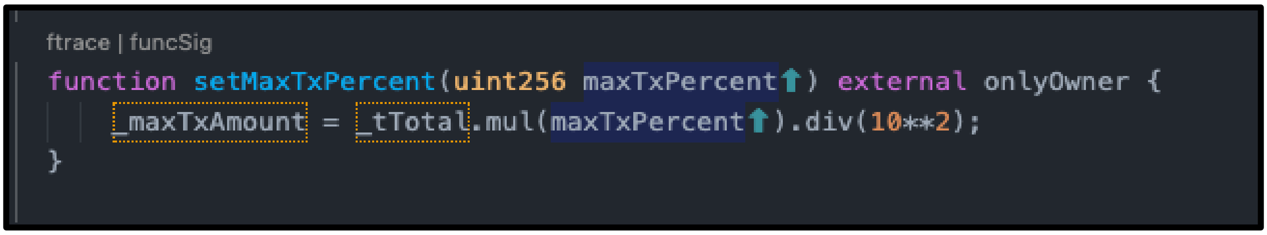
```
ftrace | funcSig
function enableTrading() external onlyOwner {
    tradingEnabled = true;
}
```

- Owner can enable/disable liquidity add feature.



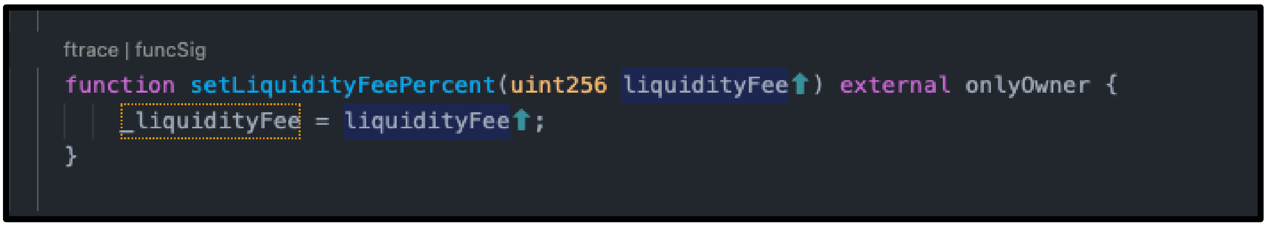
```
ftrace | funcSig
function setSwapAndLiquifyEnabled(bool _enabled⬆) public onlyOwner {
    swapAndLiquifyEnabled = _enabled⬆;
    emit SwapAndLiquifyEnabledUpdated(_enabled⬆);
}
```

- Owner can change maximum transaction amount.



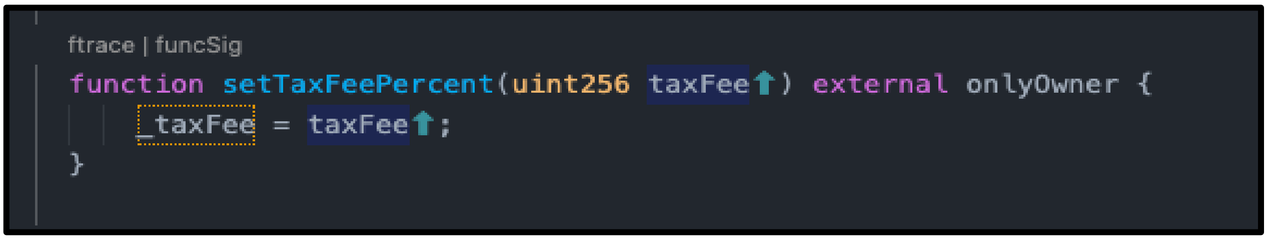
```
ftrace | funcSig
function setMaxTxPercent(uint256 maxTxPercent⬆) external onlyOwner {
    _maxTxAmount = _tTotal.mul(maxTxPercent⬆).div(10**2);
}
```

- Owner can change liquidity fee.



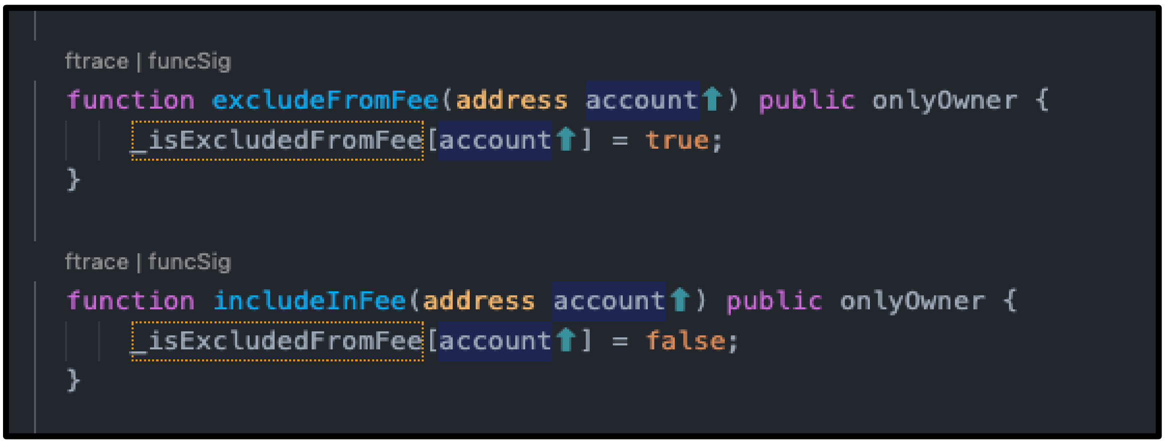
```
ftrace | funcSig
function setLiquidityFeePercent(uint256 liquidityFee⬆) external onlyOwner {
    _liquidityFee = liquidityFee⬆;
}
```

- Owner can change tax fee.



```
ftrace | funcSig
function setTaxFeePercent(uint256 taxFee⬆) external onlyOwner {
    _taxFee = taxFee⬆;
}
```

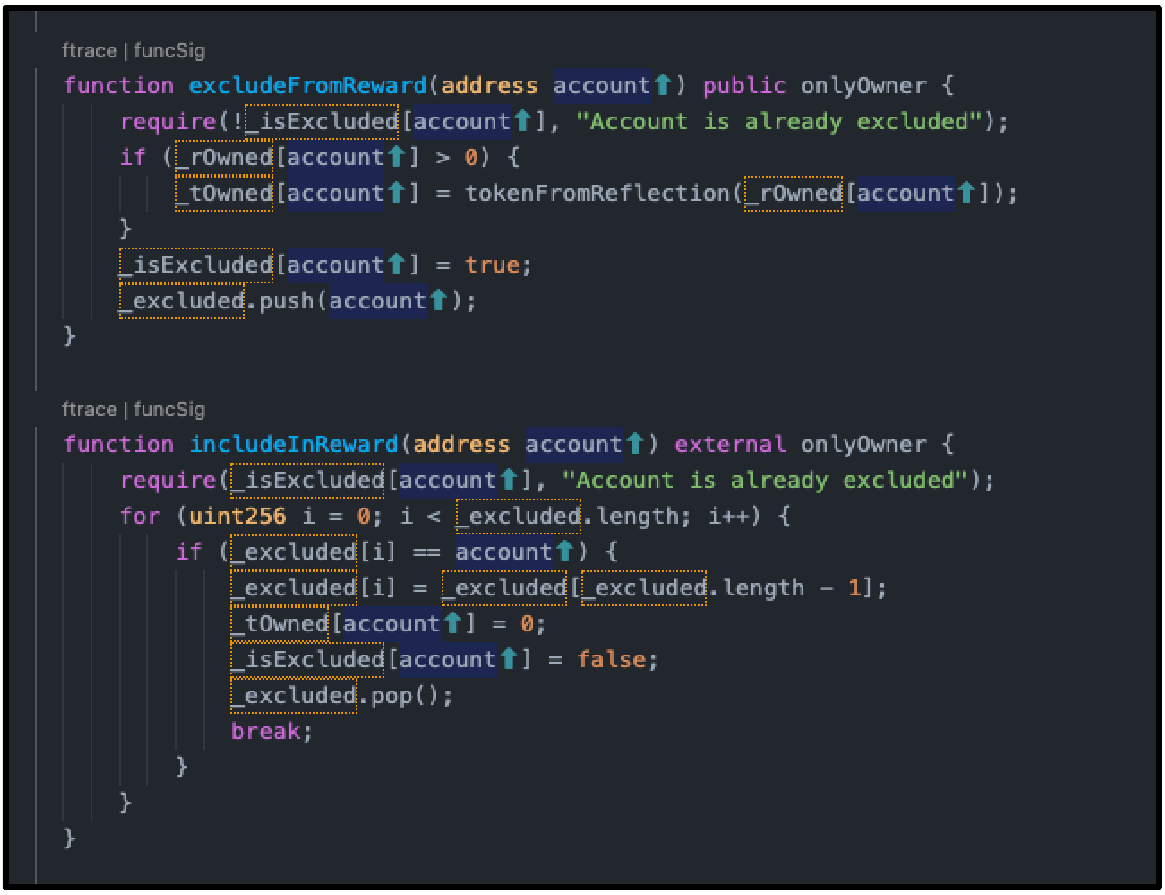
- ❖ The owner can include/exclude accounts from fees.



```
ftrace | funcSig
function excludeFromFee(address account) public onlyOwner {
    _isExcludedFromFee[account] = true;
}

ftrace | funcSig
function includeInFee(address account) public onlyOwner {
    _isExcludedFromFee[account] = false;
}
```

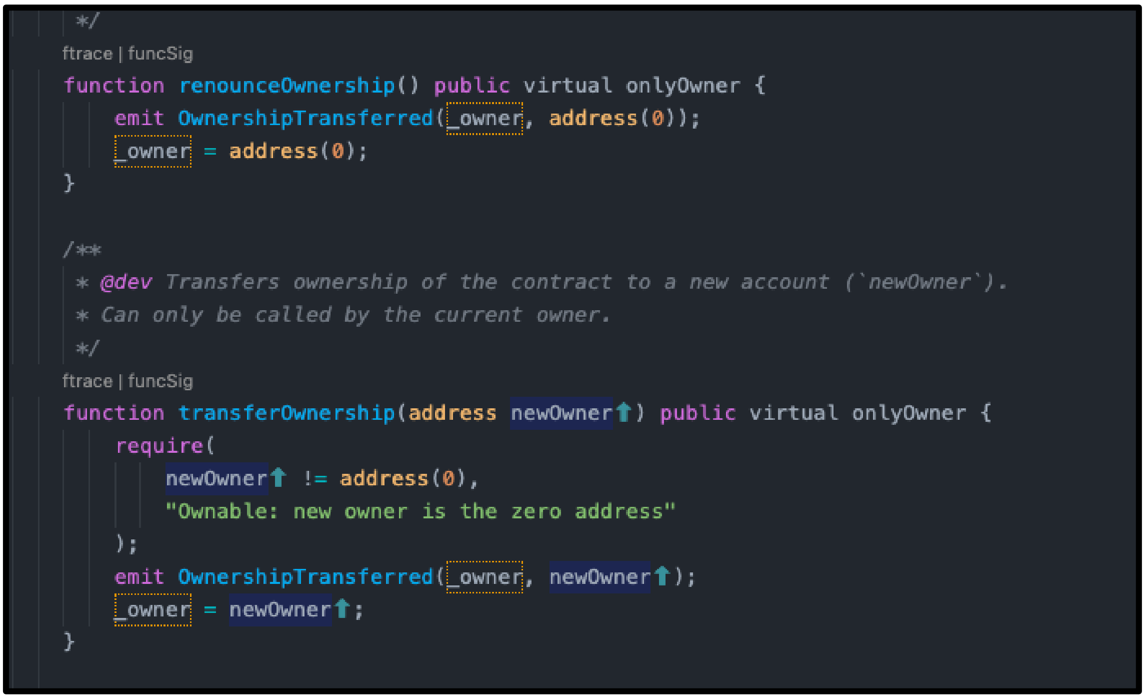
- ❖ Owner can include/exclude wallet from reward.



```
ftrace | funcSig
function excludeFromReward(address account) public onlyOwner {
    require(!_isExcluded[account], "Account is already excluded");
    if (_rOwned[account] > 0) {
        _tOwned[account] = tokenFromReflection(_rOwned[account]);
    }
    _isExcluded[account] = true;
    _excluded.push(account);
}

ftrace | funcSig
function includeInReward(address account) external onlyOwner {
    require(_isExcluded[account], "Account is already excluded");
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (_excluded[i] == account) {
            _excluded[i] = _excluded[_excluded.length - 1];
            _tOwned[account] = 0;
            _isExcluded[account] = false;
            _excluded.pop();
            break;
        }
    }
}
```

- Owner can transfer and renounce the ownership.



```
    */
    ftrace | funcSig
    function renounceOwnership() public virtual onlyOwner {
        emit OwnershipTransferred(_owner, address(0));
        _owner = address(0);
    }

    /**
     * @dev Transfers ownership of the contract to a new account (`newOwner`).
     * Can only be called by the current owner.
     */
    ftrace | funcSig
    function transferOwnership(address newOwner) public virtual onlyOwner {
        require(
            newOwner != address(0),
            "Ownable: new owner is the zero address"
        );
        emit OwnershipTransferred(_owner, newOwner);
        _owner = newOwner;
    }
```

Audit conclusion

While conducting the audit of the HARP Coin smart contract, it was observed that there is nothing alamaring with the code and the contract contains only a low severity issue.