SKELETON ECOSYSTEM

SMART CONTRACT AUDIT

Horse Coin
HRS
BEP20

0x59788812223da63d215e8a45189032a64ef10876

Table of Contents

Global Disclaimer

This document serves as a disclaimer for the crypto smart contract audit conducted by Skeleton Ecosystem. The purpose of the audit was to review the codebase of the smart contracts for potential vulnerabilities and issues. It is important to note the following:

Limited Scope: The audit is based on the code and information available up to the audit completion date. It does not cover external factors, system interactions, or changes made after the audit. The audit itself can not guarantee 100% safaty and can not detect common scam methods like farming and developer sell-out.

No Guarantee of Security: While we have taken reasonable steps to identify vulnerabilities, it is impossible to guarantee the complete absence of security risks or issues. The audit report provides an assessment of the contract's security as of the audit date.

Continued Development: Smart contracts and blockchain technology are evolving fields. Updates, forks, or changes to the contract post-audit may introduce new risks that were not present during the audit.

Third-party Code: If the smart contract relies on third-party libraries or code, those components were not thoroughly audited unless explicitly stated. Security of these dependencies is the responsibility of their respective developers.

Non-Exhaustive Testing: The audit involved automated analysis, manual review, and testing under controlled conditions. It is possible that certain vulnerabilities or issues may not have been identified.

Risk Evaluation: The audit report includes a risk assessment for identified vulnerabilities. It is recommended that the development team carefully reviews and addresses these risks to mitigate potential exploits.

Not Financial Advice: This audit report is not intended as financial or investment advice. Decisions regarding the use, deployment, or investment in the smart contract should be made based on a comprehensive assessment of the associated risks.

By accessing and using this audit report, you acknowledge and agree to the limitations outlined above. Skeleton Ecosystem and its auditors shall not be held liable for any direct or indirect damages resulting from the use of the audit report or the smart contract itself.

Please consult with legal, technical, and financial professionals before making any decisions related to the smart contract.

Overview

Contract Name	HorseCoin
Ticker/Simbol	HRS
Blockchain	Binance Smart Chain BEP20
Contract Address	0x59788812223da63d215e8a45189032a64ef10876
Creator Address	0x8c1E1cb82b9cbaa289b401649736878C259CA69A
Current Owner Address	0x8c1E1cb82b9cbaa289b401649736878C259CA69A
Contract Explorer	https://bscscan.com/token/0x59788812223DA63D215e8a45189032A64EF10876#code
Compiler Version	v0.8.19+commit.7dd6d404
License	Unlicense
Optimisation	Yes with 200 Runs
Total Supply	420,000,000 **HRS**
Decimals	18

Creation/Audit

Contract Deployed	19.09.2023
Audit Created	25.09.2024
Audit Update	V 1.0

Verified Socials

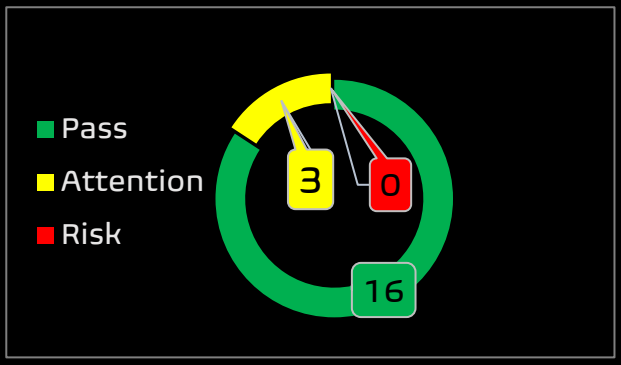
Website	https://horsecoin.org/
Telegram	https://t.me/horsecoin_bsc
Twitter (X)	https://x.com/horse_coin_bsc

SKELETON ECOSYSTEM
SMART CONTRACT AUDIT REPORT

HORSE COIN BEP20

Contract Function Analysis

✅ Pass ⚠️ Attention Item ❗ Risky Item



Contract Verified	✅	The contract source code is uploaded to blockchain explorer and is open source, so everybody can read it.
Contract Ownership		0x8c1E1cb82b9cbaa289b401649736878C259CA69A
Buy Tax	5 %	Shows the taxes for purchase transactions. Above 10% may be considered a high tax rate. More than 50% tax rate means may not be tradable. Fee can be set!
Sell Tax	5 %	Shows the taxes for sell transactions. Above 10% may be considered a high tax rate. More than 50% tax rate means may not be tradable. Fee can be set!
Honeypot Analyse	✅	Holder is able to buy and sell. If honeypot: The contract blocks sell transfer from holder wallet. Multiple events may cause honeypot. Trading disabled, extremely high tax
Liqudity Status	✅	Liqudity status on 25.09.2024 100.00% locked on Pinklock locker for *364 days*. https://bscscan.com/tx/0xe57855eb086923ff656f528adf7b3b86fb8238365745978b2cc606030f95457f
Trading Disable Functions	✅	No Trading suspendable function found. If a suspendable code is included, the token maybe neither be bought or sold (honeypot risk). If contract is renounced this function can't be used
Set Fees function	⚠️	Fee Setting function found. The contract owner may contain the authority to modify the transaction tax. If the transaction tax is increased to more than 49%, the tokens may not be able to be traded (honeypot risk).
Proxy Contract	✅	Not a Proxy contract
Mint Function	✅	No Mint Function detected Mint function is transparent or non-existent. Hidden mint functions may increase the amount of tokens in circulation and effect the price of the token. Owner can mint new tokens and sell.

Balance Modifier Function		No Balance Modifier function found. If there is a function for this, the contract owner can have the authority to modify the balance of tokens at other addresses. For example revoke the bought tokens from the holders wallet. Common form of scam: You buy the token, but it's disappearing from your wallet.
Blacklist Function		No Blacklist Setting function found. If there is a blacklist, some addresses may not be able to trade normally. Example: you buy the token and right after your Wallet getting blacklisted. Like so you will be unable to sell. Honeypot Risk.
Whitelist Function		Whitelist Setting function found If there is a function for this Developer can set zero fee or no max wallet size for adresses (for example team wallets can trade without fee. Can cause farming)
Hidden Owner Analysis		No Hidden or multi owner with authorisation For contract with a hidden owner, developer can still manipulate the contract even if the ownership has been abandoned.
Retrieve Ownership Function		No Functions found which can retrieve ownership of the contract. If this function exists, it is possible for the project owner to regain ownership even after relinquishing it. Also known as fake renounce.
Self Destruct Function		No Self Destruct function found. If this function exists and is triggered, the contract will be destroyed, all functions will be unavailable, and all related assets will be erased.
Transfer Tax Changing Function		Transfer Tax Changing Functions found. If it exists, the contract owner may set a very outrageous tax rate for assigned address if these transfer tokens between wallets.
Trading Cooldown Function		No Trading Cooldown Function found. If there is a trading cooldown function, the user will not be able to sell the token within a certain time or block after buying. Like a temporary honeypot.
Max Transaction and Holding Modify Function		Max Transaction and Holding Modify function found. If there is a function for this, the maximum trading amount or maximum position can be modified. Can cause honeypot
Transaction Limiting Function		No Transaction Limiter Function Found. The number of overall token transactions may be limited (honeypot risk)

Details of Risk - Attention Items

⚠ Set Fee (max 30% Bux +Sell)

The contract owner may contain the authority to modify the transaction tax. If the transaction tax is increased to more than 49%, the tokens may not be able to be traded (honeypot risk).

```
ftrace | funcSig
498  function _hrs_fee_settings(uint256 Hrs_buy_update, uint256 Hrs_sell_update) external onlyOwner() {
499
500      require((Hrs_buy_update + Hrs_sell_update) <= maxPossibleFee, "Fee is too high!");
501      Hrs_sell_fee = Hrs_sell_update;
502      Hrs_buy_fee = Hrs_buy_update;
503
504  }
```

⚠ Max Transaction and Holding Modify function

If there is a function for this, the maximum trading amount or maximum position can be modified. Can cause honeypot

```
ftrace | funcSig
498  function _hrs_fee_settings(uint256 Hrs_buy_update, uint256 Hrs_sell_update) external onlyOwner() {
499
500      require((Hrs_buy_update + Hrs_sell_update) <= maxPossibleFee, "Fee is too high!");
501      Hrs_sell_fee = Hrs_sell_update;
502      Hrs_buy_fee = Hrs_buy_update;
503
504  }
```

⚠ Transfer Tax Changing Function

If it exists, the contract owner may set a very outrageous tax rate for assigned address if these transfer tokens between wallets.

```
ftrace | funcSig
525  function Transfers_tax_Update(bool true_or_false) external onlyOwner {
526      checkfeetransfer_ = true_or_false;
527  }
528
```

HORSE COIN BEP20

Contract Security

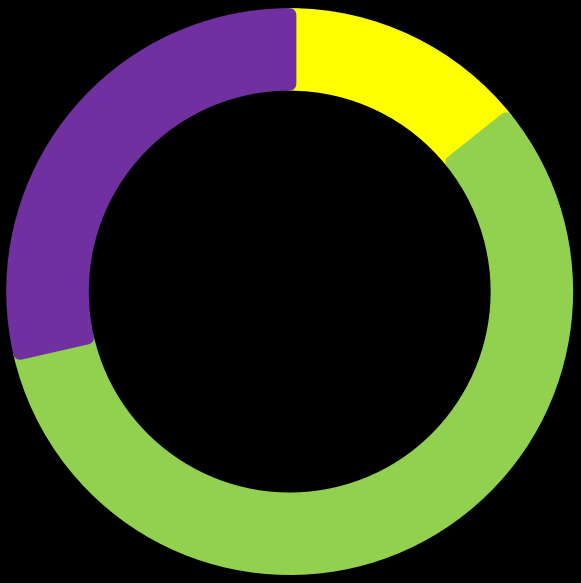
Total Findings: 7

High 0

Medium 1

Low 4

Info 2



High Severity Issues: High possibility to cause problems, need to be resolved.

Medium Severity Issue: Will likely cause problems, recommended to resolve.

Low Severity Issues: Won't cause problems, but for improvement purposes could be adjusted.

Informational Severity Issues: Not harmful in any way, information for the developer team.

Contract Weakness Classisication

THE SMART CONTRACT WEAKNESS CLASSIFICATION REGISTRY (SWC REGISTRY) IS AN IMPLEMENTATION OF THE WEAKNESS CLASSIFICATION SCHEME PROPOSED IN EIP-1470. IT IS LOOSELY ALIGNED TO THE TERMINOLOGIES AND STRUCTURE USED IN THE COMMON WEAKNESS ENUMERATION (CWE) WHILE OVERLAYING A WIDE RANGE OF WEAKNESS VARIANTS THAT ARE

High severity Issues: (0)

Medium severity issues: (1)

- Incorrect Acces Control

Low severity issues: (4)

- Missing Events
- Long number literals
- Outdated compiler Version
- Unchecked Array Lenght

Informational severity issues: (2)

- Public Functions Should be Declared External
- State Variables Should be Declared Constant

ID	Description	AI	Manual	Result
SWC-100	Function Default Visibility	Passed	Passed	Passed
SWC-101	Integer Overflow and Underflow	Passed	Passed	Passed
SWC-102	Outdated Compiler Version	low	low	low
SWC-103	Floating Pragma	low	Passed	Passed
SWC-104	Unchecked Call Return Value	Passed	Passed	Passed
SWC-105	Unprotected Ether Withdrawal	Passed	Passed	Passed
SWC-106	Unprotected SELFDESTRUCT Instruction	Passed	Passed	Passed
SWC-107	Reentrancy	Passed	Passed	Passed
SWC-108	State Variable Default Visibility	Passed	Passed	Passed
SWC-109	Uninitialized Storage Pointer	Passed	Passed	Passed
SWC-110	Assert Violation	Passed	Passed	Passed
SWC-111	Use of Deprecated Solidity Functions	Passed	Passed	Passed
SWC-112	Delegatecall to Untrusted Callee	Passed	Passed	Passed
SWC-113	DoS with Failed Call	Passed	Passed	Passed
SWC-114	Transaction Order Dependence	Passed	Passed	Passed
SWC-115	Authorization through tx.origin	Passed	Passed	Passed
SWC-116	Block values as a proxy for time	Passed	Passed	Passed
SWC-117	Signature Malleability	Passed	Passed	Passed
SWC-118	Incorrect Constructor Name	Passed	Passed	Passed
SWC-119	Shadowing State Variables	Passed	Passed	Passed
SWC-120	Weak Sources of Randomness from Chain Attributes	Passed	Passed	Passed
SWC-121	Missing Protection against Signature Replay Attacks	Passed	Passed	Passed
SWC-122	Lack of Proper Signature Verification	Passed	Passed	Passed
SWC-123	Requirement Violation	Passed	Passed	Passed
SWC-124	Write to Arbitrary Storage Location	Passed	Passed	Passed
SWC-125	Incorrect Inheritance Order	Passed	Passed	Passed
SWC-126	Insufficient Gas Griefing	Passed	Passed	Passed

SWC-127	Arbitrary Jump with Function Type Variable	Passed	Passed	Passed
SWC-128	DoS With Block Gas Limit	Passed	Passed	Passed
SWC-129	Typographical Error	low	Passed	Passed
SWC-130	Right-To-Left-Override control character (U+202E)	Passed	Passed	Passed
SWC-131	Presence of unused variables	Passed	Passed	Passed
SWC-132	Unexpected Ether balance	Passed	Passed	Passed
SWC-133	Hash Collisions With Multiple Variable Length Arguments	Passed	Passed	Passed
SWC-134	Message call with hardcoded gas amount	Passed	Passed	Passed
SWC-135	Code With No Effects	Passed	Passed	Passed
SWC-136	Unencrypted Private Data On-Chain	Passed	Passed	Passed

Detected High and Medium Severity Vulnerability Description.

⚠ Incorrect Access Control (1 Item)

Item: 1	Location:	Line 467-471	Severity:	Medium

Function	Access control plays an important role in segregation of privileges in smart contracts and other applications. If this is misconfigured or not properly validated on sensitive functions, it may lead to loss of funds, tokens and in some cases compromise of the smart contract. The contract HorseCoin is importing an access control library @openzeppelin/contracts-upgradeable/access/OwnableUpgradeable.sol but the function approve is missing the modifier onlyOwner.
Remedation	1. Consider adding access control modifiers to the function to Ensure that initialization functions can only be called once and only by authorized entities. 2. Implement least-privilege roles using libraries like OpenZeppelin's Access Control. 3. Add proper access control modifiers to sensitive functions, such as onlyOwner or custom roles.

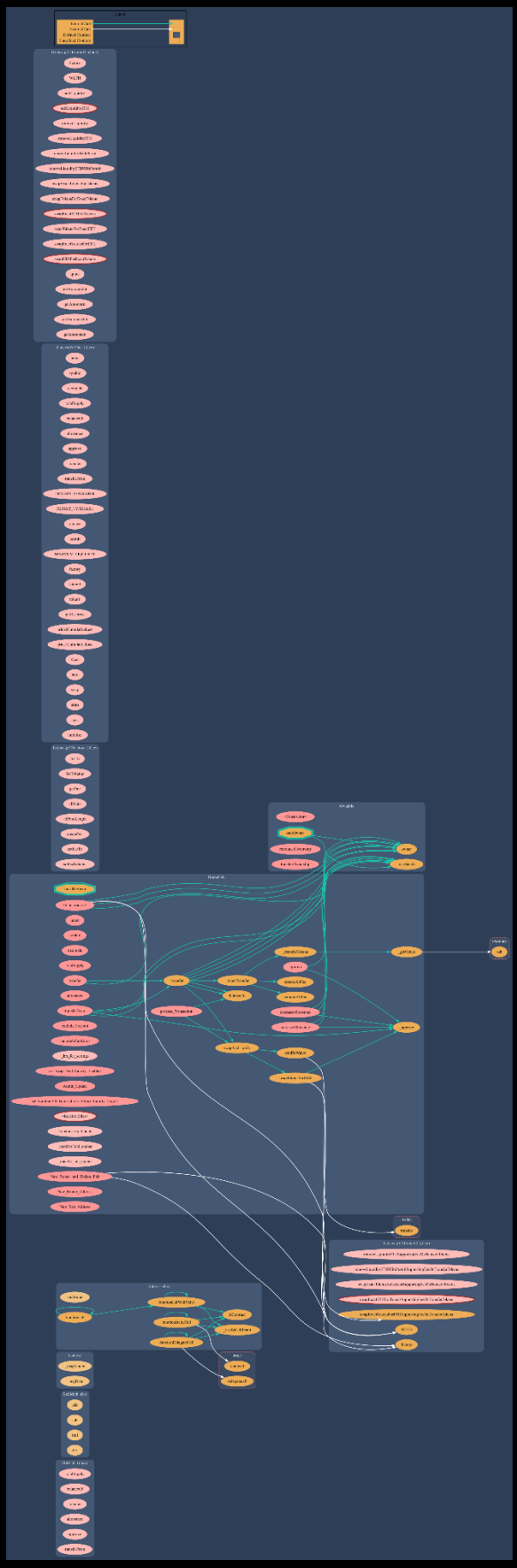
```
ftrace | funcSig
467     function approve(address spender1, uint256 amount1) public override returns (bool) {
468         _approve(_msgSender(), spender1, amount1);
469         return true;
470     }
471
```

⚠ Outdated Compiler Version.

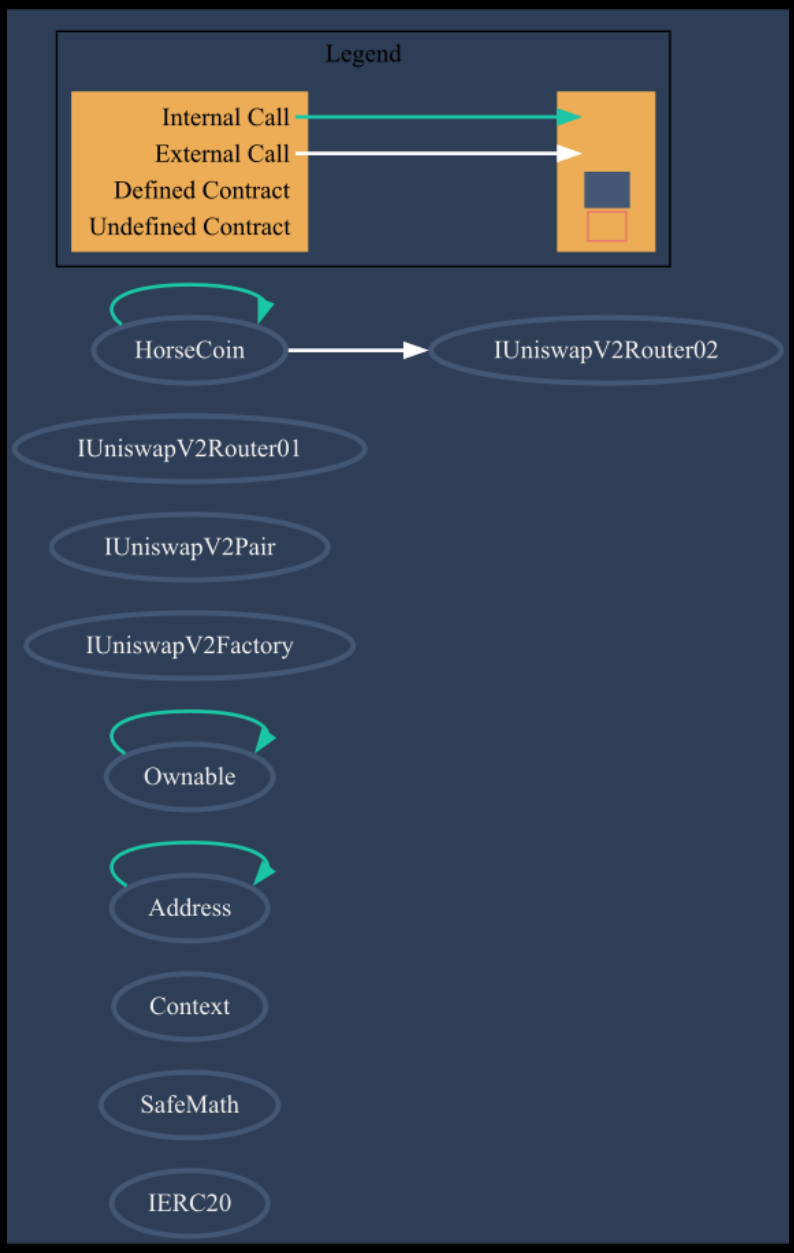
Item: 1	Location:	Line 14	Severity:	Low

Function	Using an outdated compiler version can be problematic especially if there are publicly disclosed bugs and issues that affect the current compiler version. The following outdated versions were detected: /horse.sol - ^0.8.7
Remedation	It is recommended to use a recent version of the Solidity compiler that should not be the most recent version, and it should not be an outdated version as well. Using very old versions of Solidity prevents the benefits of bug fixes and newer security checks. Consider using the solidity version v0.8.25, which patches most solidity vulnerabilities.

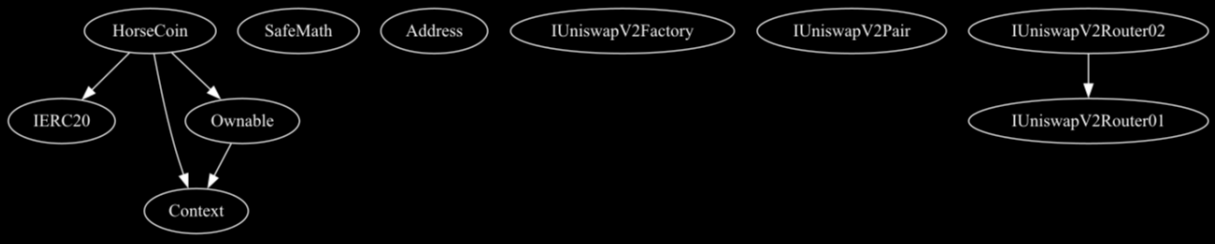
Contract Flow Graph



Contract Interaction Graph



Inheritance Graph



Contract Functions

Contract	Type	Bases		
L	Function Name	Visibility	Mutability	Modifiers
IERC20	Interface			
L	totalSupply	External ❗		NO❗
L	balanceOf	External ❗		NO❗
L	transfer	External ❗	🛑	NO❗
L	allowance	External ❗		NO❗
L	approve	External ❗	🛑	NO❗
L	transferFrom	External ❗	🛑	NO❗
SafeMath	Library			
L	add	Internal 🔒		
L	sub	Internal 🔒		
L	mul	Internal 🔒		
L	div	Internal 🔒		
L	sub	Internal 🔒		
L	div	Internal 🔒		
Context	Implementation			
L	_msgSender	Internal 🔒		
L	_msgData	Internal 🔒		
Address	Library			
L	isContract	Internal 🔒		
L	sendValue	Internal 🔒	🛑	
L	functionCall	Internal 🔒	🛑	

Contract	Type	Bases		
L	functionCall	Internal 🔒	🛑	
L	functionCallWithValue	Internal 🔒	🛑	
L	functionCallWithValue	Internal 🔒	🛑	
L	functionStaticCall	Internal 🔒		
L	functionStaticCall	Internal 🔒		
L	functionDelegateCall	Internal 🔒	🛑	
L	functionDelegateCall	Internal 🔒	🛑	
L	_verifyCallResult	Private 🔐		
Ownable	Implementation	Context		
L		Public ❗	🛑	NO❗
L	owner	Public ❗		NO❗
L	renounceOwnership	Public ❗	🛑	onlyOwner
L	transferOwnership	Public ❗	🛑	onlyOwner
IUniswapV2Factory	Interface			
L	feeTo	External ❗		NO❗
L	feeToSetter	External ❗		NO❗
L	getPair	External ❗		NO❗
L	allPairs	External ❗		NO❗
L	allPairsLength	External ❗		NO❗
L	createPair	External ❗	🛑	NO❗
L	setFeeTo	External ❗	🛑	NO❗
L	setFeeToSetter	External ❗	🛑	NO❗

Contract	Type	Bases		
IUniswapV2Pair	Interface			
L	name	External ❗		NO❗
L	symbol	External ❗		NO❗
L	decimals	External ❗		NO❗
L	totalSupply	External ❗		NO❗
L	balanceOf	External ❗		NO❗
L	allowance	External ❗		NO❗
L	approve	External ❗	🔘	NO❗
L	transfer	External ❗	🔘	NO❗
L	transferFrom	External ❗	🔘	NO❗
L	DOMAIN_SEPARATOR	External ❗		NO❗
L	PERMIT_TYPEHASH	External ❗		NO❗
L	nonces	External ❗		NO❗
L	permit	External ❗	🔘	NO❗
L	MINIMUM_LIQUIDITY	External ❗		NO❗
L	factory	External ❗		NO❗
L	token0	External ❗		NO❗
L	token1	External ❗		NO❗
L	getReserves	External ❗		NO❗
L	price0CumulativeLast	External ❗		NO❗
L	price1CumulativeLast	External ❗		NO❗
L	kLast	External ❗		NO❗
L	burn	External ❗	🔘	NO❗

Contract	Type	Bases		
L	swap	External ❗	🔘	NO❗
L	skim	External ❗	🔘	NO❗
L	sync	External ❗	🔘	NO❗
L	initialize	External ❗	🔘	NO❗
IUniswapV2Router01	Interface			
L	factory	External ❗		NO❗
L	WETH	External ❗		NO❗
L	addLiquidity	External ❗	🔘	NO❗
L	addLiquidityETH	External ❗	💸	NO❗
L	removeLiquidity	External ❗	🔘	NO❗
L	removeLiquidityETH	External ❗	🔘	NO❗
L	removeLiquidityWithPermit	External ❗	🔘	NO❗
L	removeLiquidityETHWithPermit	External ❗	🔘	NO❗
L	swapExactTokensForTokens	External ❗	🔘	NO❗
L	swapTokensForExactTokens	External ❗	🔘	NO❗
L	swapExactETHForTokens	External ❗	💸	NO❗
L	swapTokensForExactETH	External ❗	🔘	NO❗
L	swapExactTokensForETH	External ❗	🔘	NO❗
L	swapETHForExactTokens	External ❗	💸	NO❗
L	quote	External ❗		NO❗
L	getAmountOut	External ❗		NO❗

Contract	Type	Bases		
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❗
HorseCoin	Implementation	Context, IERC20, Ownable		
L		Public ❗	🔘	NO❗
L	name	Public ❗		NO❗
L	symbol	Public ❗		NO❗
L	decimals	Public ❗		NO❗
L	totalSupply	Public ❗		NO❗
L	balanceOf	Public ❗		NO❗
L	transfer	Public ❗	🔘	NO❗
L	allowance	Public ❗		NO❗

Contract	Type	Bases		
L	approve	Public ❗	🔘	NO❗
L	transferFrom	Public ❗	🔘	NO❗
L	increaseAllowance	Public ❗	🔘	NO❗
L	decreaseAllowance	Public ❗	🔘	NO❗
L	excludeTaxLimit	Public ❗	🔘	onlyOwner
L	includeInTaxLimit	Public ❗	🔘	onlyOwner
L	_hrs_fee_settings	External ❗	🔘	onlyOwner
L	set_Swap_And_Liquify_Enabled	Public ❗	🔘	onlyOwner
L	Admin_Update	Public ❗	🔘	onlyOwner
L	set_Number_Of_Transactions_Before_Liquify_Trigger	Public ❗	🔘	onlyOwner
L		External ❗	💳	NO❗
L	Transfers_tax_Update	External ❗	🔘	onlyOwner
L	_maxHrsHold_update	External ❗	🔘	onlyOwner
L	_maxTrx_hrs_update	External ❗	🔘	onlyOwner
L	removeAllFee	Private 🔐	🔘	
L	restoreAllFee	Private 🔐	🔘	
L	_approve	Private 🔐	🔘	
L	_transfer	Private 🔐	🔘	
L	sendToWallet	Private 🔐	🔘	
L	swapAndLiquify	Private 🔐	🔘	lockTheSwap
L	process_Transaction	Public ❗	🔘	onlyOwner

Contract	Type	Bases		
L	swapTokensForBNB	Private		
L	New_Router_and_Update_Pair	Public		onlyOwner
L	New_Router_Address	Public		onlyOwner
L	New_Pair_Address	Public		onlyOwner
L	_tokenTransfer	Private		
L	_transferTokens	Private		
L	_getValues	Private		

Function can modify state

Function is payable

Audit Scope

Audit Method.

Our smart contract audit is an extensive methodical examination and analysis of the smart contract's code that is used to interact with the blockchain. Goal: discover errors, issues and security vulnaribilities in the code. Findings getting reported and improvements getting suggested.

Automatic and Manual Review
We are using automated tools to scan functions and weeknesses of the contract. Transfers, integer over-undeflow checks such as all CWE events.

Tools we use:
Visual Studio Code
CWE
SWC
Solidity Scan
SVD

In manual code review our auditor looking at source code and performing line by line examination. This method helps to clarify developer's coding decisions and business logic.

Skeleton Ecosystem

https://skeletonecosystem.com

https://github.com/SkeletonEcosystem/Audits