RugFreeCoins Audit

Hodler Heroes NFT Token

Smart Contract Security Audit

November 06, 2021

Contents

Audit details

Audited project

Hodler Heroes NFT Token

Contract Address

0x882fd7db274b32dd0361931c406f7cf058bac822

Client contact

Hodler Heroes NFT Team

Blockchain

Binance smart chain

Project website

https://hodlerheroes.org/

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.

DISCLAIMER: By reading this report or any part of it, you agree to the terms of this disclaimer. If you do not agree to the terms, then please immediately cease reading this report, and delete and destroy any and all copies of this report downloaded and/or printed by you. This report is provided for information purposes only and on a non-reliance basis, and does not constitute investment advice. No one shall have any right to rely on the report or its contents, and Rugfreecoins and its affiliates (including holding companies, shareholders, subsidiaries, employees, directors, officers and other representatives) (Rugfreecoins) owe no duty of care towards you or any other person, nor does Rugfreecoins make any warranty or representation to any person on the accuracy or completeness of the report. The report is provided "as is", without any conditions, warranties or other terms of any kind except as set out in this disclaimer, and Rugfreecoins hereby excludes all representations, warranties, conditions and other terms (including, without limitation, the warranties implied by law of satisfactory quality, fitness for purpose and the use of reasonable care and skill) which, but for this clause, might have effect in relation to the report. Except and only to the extent that it is prohibited by law, Rugfreecoins hereby excludes all liability and responsibility, and neither you nor any other person shall have any claim against Rugfreecoins, for any amount or kind of loss or damage that may result to you or any other person (including without limitation, any direct, indirect, special, punitive, consequential or pure economic loss or damages, or any loss of income, profits, goodwill, data, contracts, use of money, or business interruption, and whether in delict, tort (including without limitation negligence), contract, breach of statutory duty, misrepresentation (whether innocent or negligent) or otherwise under any claim of any nature whatsoever in any jurisdiction) in any way arising from or connected with this report and the use, inability to use or the results of use of this report, and any reliance on this report. 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.

Background

Rugfreecoins was commissioned by Hodler Heroes NFT Token to perform an audit of the smart contract.

https://bscscan.com/token/0x882fd7db274b32dd0361931c406f7cf058bac822

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

Hodler Heroes NFT is a token built on the Binance Smart Chain and it's a project where holders will be able to buy and collect NFT heroes designed in pixel art. Moreover, a lot of attractive and innovative features are introduced into this multi-token ecosystem. Each transaction, purchase incurs 5% and sale incur 15% fee.

Features

❖ **BNB and $CAPHODL rewards** will be distributed among every holder proportional to how many tokens each individual holds in values of **1.5% when buying and 4.5% selling**.

❖ The **sustainability fee of 1.5% when buying and 4.5% when selling for marketing** is what allows Hodler Heroes NFT to hold the aforementioned promise. Tokens will be swapped into BNB and will be sent to a marketing wallet per transaction. This way, Hodler Heroes NFT will have enough funds to promote the coin and spend for future development without selling tokens as the traditional way.

❖ **The fee of 2% when buying and 6% when selling** will be allocated for the NFT treasury pool.

Tokenomics

5% fee when buying

❖ 2% of trade goes to the NFT treasury pool.
❖ 1.5% of trade goes to the marketing wallet.
❖ 1.5% of trade goes to holders' pockets in BNB and $CAPHODL.

15% fee when selling

❖ 6% of trade goes to the NFT treasury pool.
❖ 4.5% of trade goes to the marketing wallet.
❖ 4.5% of trade goes to holders' pockets in BNB and $CAPHODL.

Roadmap

Q4 – 2021

- ❖ dApp first release
- ❖ Presale + Launch
- ❖ Private sale of Capsules
- ❖ 15 Listing sites
- ❖ NFT Market Launch
- ❖ First Tournament with prizes

Q1 – 2022

- ❖ Apply for Coingecko
- ❖ Apply for Coin Market Cap
- ❖ PVP Upgrade/Factions
- ❖ PVP fixed weekly tournaments
- ❖ PVM missions against computers
- ❖ Lottery inside dApp
- ❖ First game introduction
- ❖ Partnership with YouTubers

Q2 – 2022

- ❖ Open platform for partners tokens
- ❖ Listing on major exchanges
- ❖ Staking and Farming
- ❖ Birthing Heroes from champions
- ❖ Game version 2
- ❖ iOS + Android app

Q3 – 2022

- ❖ Fiat payments in-app
- ❖ Passive media from success
- ❖ First virtual reality PVP battle inside the blockchain
- ❖ Game version 3
- ❖ Games ecosystem

Target market and the concept

❖ Anyone who's interested in Crypto space with long term investment plans.
❖ Anyone who's ready to earn a passive income in Hodler Heroes NFT tokens by holding tokens.
❖ Anyone who's ready to earn a passive income in BNB by holding Hodler Heroes NFT.
❖ Anyone who's interested in owning NFTs.
❖ Anyone who's interested in doing daily tasks in the game and gets rewards in HHNFT.
❖ Anyone who's interested in collecting NFTs or trading NFTs.
❖ Anyone who's interested in trading tokens.
❖ All $CAPHODL and BNB investors and fans out there.
❖ Anyone who's interested in taking part with the future plans of the HHNFT token.
❖ Anyone who's interested in making financial transactions with any other party using $CAPHODL and $HHNFT as the currency.

NFT REWARDS SYSTEM. HOLDERS WILL EARN REWARDS FOR HOLDING NFT HEROES. THESE PAYOUTS ARE GENERATED FROM TRANSACTION FEES, MARKETPLACE TRADE FEES AND COMMUNITY EVENTS. THE MORE HEROES YOU HAVE, THE MORE REWARDS YOU'LL RECEIVE. GROW YOUR LEGION AND MAKE YOUR WAY UP THE LEADERBOARD FOR MONTHLY PRIZES. THERE ARE MORE THAN 30 HEROES THAT WILL BE GRADUALLY DRIP-FED IN THE SPAN OF 18 MONTHS THAT YOU'LL BE ABLE TO SEND TO PVP BATTLES, MINING MISSIONS, FARMING AND FUTURE GAMES FEATURED IN THE "GAME JAM".

STAKING. NFT HEROES CAN BE SENT TO A STAKING SMART CONTRACT. REWARDS WILL INCREASE IN CORRELATION WITH THE RARITY OF YOUR HERO.

GOVERNANCE. YOUR TOKENS WILL GIVE YOU VOTING POWER OVER IMPORTANT DECISIONS CONCERNING THE HODLER HEROES PROJECT. THE MORE TOKENS YOU HOLD, THE MORE YOUR VOTING POWER WILL BE. THROUGH A SMART GOVERNANCE CONTRACT THE COMMUNITY WILL VOTE ON TOPICS THAT WILL INITIALLY BE OPEN FOR DISCUSSION IN THE COMMUNITY'S OFFICIAL TELEGRAM CHANNELS. ALWAYS CHECK FOR ANNOOUNCEMENTS AND UPDATES ON OUR SOCIAL MEDIA AND TELEGRAM CHANNELS. THIS IS A COMMUNITY-DRIVEN PROJECT SO YOUR ACTIVE PARTICIPATION IS CRUCIAL!

MARKETPLACE. THERE'S A SECRET PLANET ON A DISTANT GALAXY, FAR BEYOND IN UNCHARTED SECTORS OF THE UNIVERSE. RUMOURS SAY THE OUTLAWS RUN A MARKETPLACE IN THAT PLANET, WHERE VISITORS CAN TRADE HEROES, ITEMS AND EVEN LANDS. ASSETS CAN BE SOLD IN AUCTIONS OR AT A FIXED PRICE.

Hodler Heroes NFT reward system

1.5% of each transaction when buying and 4.5% when selling gets converted to BNBs and $CAPHODL and is split amongst all holders. Holders will be eligible to receive BNBs and $CAPHODL proportional to how many tokens each individual holds.

Sustainable mechanism

The **sustainability fee of 1.5%% when buying and 4. %% when selling for marketing** is what allows Hodler Heroes NFT to promote the token and use funds to further development of the platform. Tokens will be swapped into BNB and will be sent to a marketing wallet per transaction. This way, Hodler Heroes NFT will have access to the funds without selling tokens as the traditional way, which will enable them to consume funds without hurting the project.

NFT system

The fee of 2% when buying and 6% when selling will be allocated for the NFT treasury pool.

LANDS AND MINES. PLAYERS WILL BE ABLE TO ACQUIRE LAND AND MINES TO SEND YOUR HEROES TO. STAKING YOUR NFT ON YOUR LANDS WILL GENERATE EVEN GREATER REWARDS. EACH LAND IS GENERATED WITH UNIQUE PROPERTIES:

1. REST
2. DEFENSE
3. MINING
4. CAMP

OTHER PLAYERS CAN SEND THEIR HEROES TO DWELL IN YOUR LANDS. BUT WILL NEED TO PAY THE OWNER TRIBUTE IN EXCHANGE FOR ALL THE BENEFITS THAT THEY'LL RECEIVE. PLOTS ARE LIMITED IN QUANTITIES AND WILL ONLY BE RELEASED IN COMMUNITY EVENTS. DISTRIBUTED AS PRIZES FOR THE TOP RANKED CHAMPIONS. THEY WILL BE TRADEABLE ON THE MARKETPLACE PLANET.

PVP BATTLES. PLAYERS CAN SEND THEIR HEROES TO FIGHT IN THRILLING PVP BATTLES. PLANNING THEIR ATTACK AND DEFENSE STRATEGIES FOR 6 TURNS. A HERO'S LUCK FACTOR CAN TURN THE TABLES ANY TIME DURING THE BATTLE. SO DON'T UNDERESTIMATE YOUR RIVALS! PLAYERS CAN ALSO PURCHASE ITEMS AND UPGRADES TO INCREASE THEIR CHANCES OF WINNING.

Potential to grow with score points

1.	Project efficiency	9/10
2.	Project uniqueness	9/10
3	Information quality	9/10
4	Service quality	9/10
5	System quality	9/10
6	Impact on the community	9/10
7	Impact on the business	9/10
8	Preparing for the future	9/10
Total Points		**9/10**

Contract details

Token contract details for 06th November 2021

Contract name	HodlerHeroes NFT
Contract address	0x882fd7db274b32dd0361931c406f7cf058bac822
Token supply	1,000,000,000
Token ticker	HHNFT
Decimals	18
Token holders	5,806
Transaction count	15,138
Captain Dividend token	0x0e09fabb73bd3ade0a17ecc321fd13a19e81ce82
Captain Dividend tracker	0x84b3657f879b80a962e20c021260704f13e4aaf2
Dex Router	0x10ed43c718714eb63d5aa57b78b54704e256024e
Game Treasury	0x1a335a321cbfccd5cff99f3809a61259cd8b8e18
Marketing wallet	0x16216ba4ddca56094da66250c5893e3b23b0d7d5
Team wallet	0x5ff9b5f2aee72f39ce88fea2256186bcb9483c73
Burn Alliance token	0xf9562f1a6cc1ca096de163f6293eb3f07241b82c
WBNB reflection token	0xbb4cdb9cbd36b01bd1cbaebf2de08d9173bc095c
WBNB reflection tracker	0x1033262017041d1b33f57a92013bba384ce4616e
Contract deployer address	0x396A3BD226236192FEd4a4d978B99B82c88BaEb3
Contract's current owner address	: 0x396a3bd226236192fed4a4d978b99b82c88baeb3

Top token holders

Top 10 Token Holders

The top 10 holders collectively own 83.84% (838,392,645.15 Tokens) of HodlerHeroes NFT | Token Total Supply: 1,000,000,000.00 Token | Total Token Holders: 5,811

HodlerHeroes NFT Top 10 Token Holders
Source: BscScan.com

OTHER ACCOUNTS
0xd00d6d226cb91e45801b26aac3c9c3cd879f0011
0x3161e2006f83353d551242a1209c4e0c5f37959c
0x392581204aaf82ce612b1f8e68ebb1717ef29fd0
0x037de0016d1141ab6bbe68b586f4644eb1189934
0x1a335a321cbfccd5cff99f3809a61259cd8b8e18
0x16216ba4ddca56094da66250c5893e3b23b0d7d5
0x396a3bd226236192fed4a4d978b99b82c88baeb3

0x000000000000000000000000000000000000dead (Burn Address)

0x81e0ef68e103ee65002d3cf766240ed1c070334d (KIPS: Locked Wallet)

0xb443bc49337f89a1c9b790abce1cc1cfbbf68bbe
(PancakeSwap V2: HHNFT 6)

(A total of 838,392,645.15 tokens held by the top 10 accounts from the total supply of 1,000,000,000.00 token)

(A total of 838,392,645.15 tokens held by the top 10 accounts from the total supply of 1,000,000,000.00 token)

Rank	Address	Quantity (Token)	Percentage
1	KIPS: Locked Wallet	480,520,114.208800002	48.0520%
2	PancakeSwap V2: HHNFT 6	134,204,034.218555626166338946	13.4204%
3	Burn Address	122,433,685.034270549345638538	12.2434%
4	0x396a3bd226236192fed4a4d978b99b82c88baeb3	42,004,268.638150267874221972	4.2004%
5	0x16216ba4ddca56094da66250c5893e3b23b0d7d5	28,471,355.5691615652211202779	2.8471%
6	0x1a335a321cbfccd5cff99f3809a61259cd8b8e18	11,089,526.592442185007180777	1.1090%
7	0x037de0016d1141ab6bbe68b586f4644eb1189934	7,140,003.45395368699575486	0.7140%
8	0x392581204aaf82ce612b1f8e68ebb1717ef29fd0	5,347,855	0.5348%
9	0x3161e2006f83353d551242a1209c4e0c5f37959c	3,922,195.814699602282557631	0.3922%
10	0xd00d6d226cb91e45801b26aac3c9c3cd879f0011	3,259,606.6150730644480412771	0.3260%

Token distribution

Token are distributed as follows

Distribution

- **12%** Initial Burn
- **9%** Team (locked)
- **15%** Game incentives (locked)
- **39%** Pre+Launch (25% LP)
- **25%** Burns (locked)

Funds allocation

- **70%** Locked LP
- **5%** Team + Advisers
- **10%** Game development
- **15%** Marketing

Top 100 Token Holders

The top 100 holders collectively own 93.56% (935,598,503.09 Tokens) of HodlerHeroes NFT

Token Total Supply: 1,000,000,000.00 Token | Total Token Holders: 5,811

HodlerHeroes NFT Top 100 Token Holders
Source: BscScan.com

OTHER ACCOUNTS
0x51f03c404153b74d8132c2ca3a9601eb4ef06986
0x894d44046f35608e1ecfeca49f798b7b8cb027d8
0xd00d6d226cb91e45801b26aac3c9c3cd879f0011
0x3161e2006f83353d551242a1209c4e0c5f37959c
0x392581204aaf82ce612b1f8e68ebb1717ef29fd0
0x037de0016d1141ab6bbe68b586f4644eb1189934
0x1a335a321cbfccd5cff99f3809a61259cd8b8e18
0x16216ba4ddca56094da66250c5893e3b23b0d7d5
0x396a3bd226236192fed4a4d978b99b82c88baeb3
0x0000000000000000000000000000000000000dead (Burn Address)

0x81e0ef68e103ee65002d3cf766240ed1c070334d (KIPS: Locked Wallet)

0xb443bc49337f89a1c9b790abce1cc1cfbbf68bbe
(PancakeSwap V2: HHNFT 6)

(A total of 935,598,503.09 tokens held by the top 100 accounts from the total supply of 1,000,000,000.00 token)

Contract interaction details

Time Series: Token Contract Overview

Sun 17, Oct 2021 - Fri 5, Nov 2021

Token Contract 0x882fd7db274b32dd0361931c406f7cf058bac822 (HodlerHeroes NFT)
Source: BscScan.com

Zoom 1m 6m 1y All

From Oct 16, 2021 To Nov 5, 2021

● Transfer Amount ●- Transfers Count -●- Unique Receivers -●- Unique Senders -●- Total Uniques
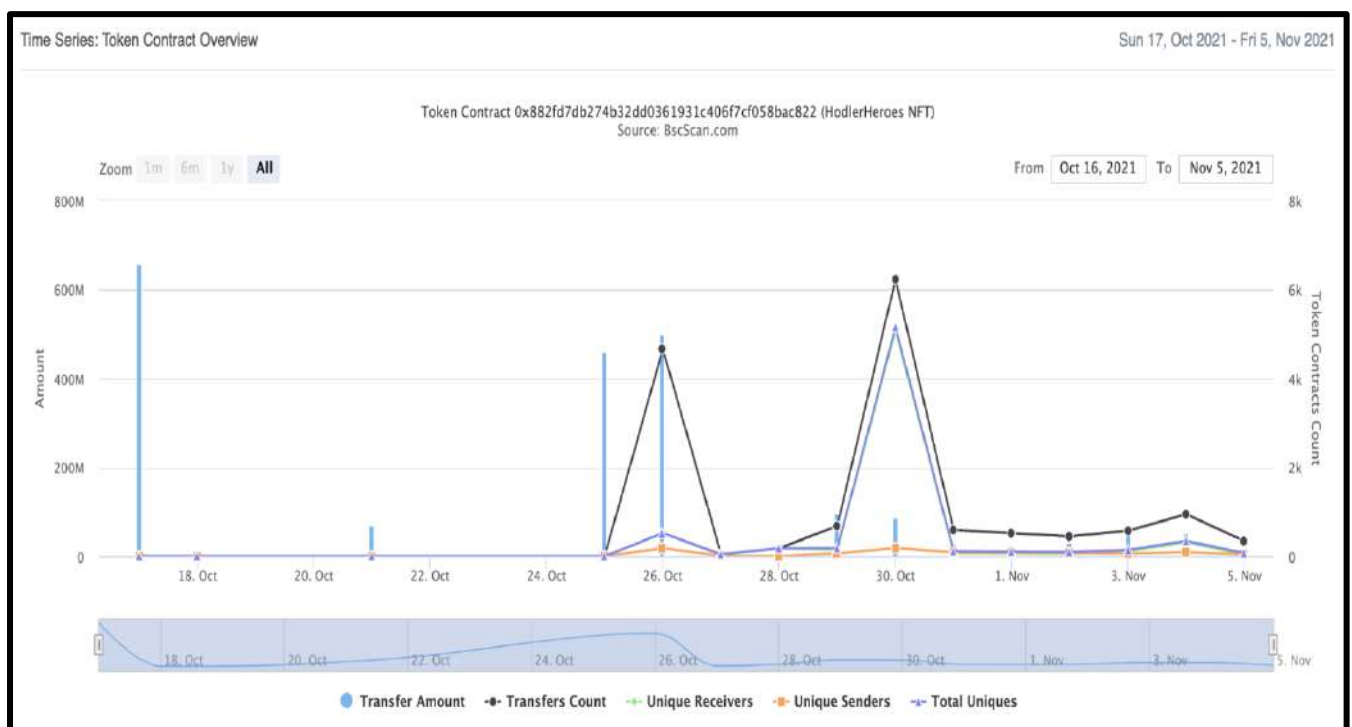
Contract code function details

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	informational
		Business logics	pass
		Business implementations	informational
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		
L	Function Name	Visibility	Mutability	Modifiers
Context	**Implementation**			
L	_msgSender	Internal 🔒		
L	_msgData	Internal 🔒		
Ownable	**Implementation**	**Context**		
L		Public ▯	⬢	NO▯
L	owner	Public ▯		NO▯
L	renounceOwnership	Public ▯	⬢	onlyOwner
L	transferOwnership	Public ▯	⬢	onlyOwner
L	lock	Public ▯	⬢	onlyOwner
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[
ERC20	**Implementation**	**Context, IERC20**		
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[
L	approve	Public [	⬛	NO[
L	transferFrom	Public [	⬛	NO[
L	increaseAllowance	Public [	⬛	NO[
L	decreaseAllowance	Public [	⬛	NO[

17

L	_transfer	Internal 🔒	⬢	
L	_mint	Internal 🔒	⬢	
L	_burn	Internal 🔒	⬢	
L	_approve	Internal 🔒	⬢	
L	_setupDecimals	Internal 🔒	⬢	
L	_beforeTokenTransfer	Internal 🔒	⬢	
IDividendPayingToken	**Interface**			
L	dividendOf	External ▯		NO▯
L	withdrawDividend	External ▯	⬢	NO▯
L	withdrawableDividendOf	External ▯		NO▯
L	withdrawnDividendOf	External ▯		NO▯
L	accumulativeDividendOf	External ▯		NO▯
DividendPayingToken	**Implementation**	**ERC20, IDividendPayingToken**		
L		Public ▯	⬢	ERC20
L		External ▯	🔲	NO▯
L	distributeDividends	Public ▯	⬢	NO▯

18

L	withdrawDividend	Public 〖	⬣	NO〗
L	setOnlyCaller	External 〖	⬣	NO〗
L	setDividendToken Address	External 〖	⬣	NO〗
L	setMinTokenBefor eSendDividend	External 〖	⬣	NO〗
L	retrieveTokens	External 〖	⬣	NO〗
L	retrieveBNB	External 〖	⬣	NO〗
L	_withdrawDividend OfUser	Internal 🔒	⬣	
L	dividendOf	Public 〖		NO〗
L	withdrawableDivid endOf	Public 〖		NO〗
L	withdrawnDividend Of	Public 〖		NO〗
L	accumulativeDivid endOf	Public 〖		NO〗
L	_transfer	Internal 🔒	⬣	
L	_mint	Internal 🔒	⬣	
L	_burn	Internal 🔒	⬣	
L	_setBalance	Internal 🔒	⬣	
IDEXFactory	**Interface**			
L	createPair	External 〖	⬣	NO〗

IDEXRouter	Interface			
L	factory	External ▯		NO▯
L	WETH	External ▯		NO▯
L	addLiquidity	External ▯	⬤	NO▯
L	addLiquidityETH	External ▯	🔲	NO▯
L	swapExactTokens ForTokensSupport ingFeeOnTransfer Tokens	External ▯	⬤	NO▯
L	swapExactETHFor TokensSupporting FeeOnTransferTo kens	External ▯	🔲	NO▯
L	swapExactTokens ForETHSupporting FeeOnTransferTo kens	External ▯	⬤	NO▯
IterableMapping	**Library**			
L	get	Public ▯		NO▯
L	getIndexOfKey	Public ▯		NO▯
L	getKeyAtIndex	Public ▯		NO▯
L	size	Public ▯		NO▯
L	set	Public ▯	⬤	NO▯
L	remove	Public ▯	⬤	NO▯

SafeMath		Library			
L		tryAdd	Internal 🔒		
L		trySub	Internal 🔒		
L		tryMul	Internal 🔒		
L		tryDiv	Internal 🔒		
L		tryMod	Internal 🔒		
L		add	Internal 🔒		
L		sub	Internal 🔒		
L		mul	Internal 🔒		
L		div	Internal 🔒		
L		mod	Internal 🔒		
L		sub	Internal 🔒		
L		div	Internal 🔒		
L		mod	Internal 🔒		
SafeMathInt		Library			
L		mul	Internal 🔒		
L		div	Internal 🔒		

L	sub	Internal 🔒		
L	add	Internal 🔒		
L	toUint256Safe	Internal 🔒		
SafeMathUint	**Library**			
L	toInt256Safe	Internal 🔒		
CaptainDividendTracker	**Implementation**	**DividendPaying Token, Ownable**		
L		Public ▯	⬤	DividendPayingToken
L	setDividendTokenAddress	External ▯	⬤	onlyOwner
L	updateMinimumTokenBalanceForDividends	External ▯	⬤	onlyOwner
L	excludeFromDividends	External ▯	⬤	onlyOwner
L	updateClaimWait	External ▯	⬤	onlyOwner
L	setBalance	External ▯	⬤	onlyOwner
L	processAccount	Public ▯	⬤	onlyOwner
L	process	Public ▯	⬤	NO▯
L	_transfer	Internal 🔒		
L	withdrawDividend	Public ▯		NO▯

HodlerHeroes				
L	getNumberOfTokenHolders	External ⚡		NO⚡
L	getAccount	Public ⚡		NO⚡
L	getAccountAtIndex	Public ⚡		NO⚡
L	_canAutoClaim	Private 🍞		
HodlerHeroes	**Implementation**	**ERC20, Ownable**		
L		Public ⚡	⬤	ERC20
L		External ⚡	🔲	NO⚡
L	afterPreSale	External ⚡	⬤	onlyOwner
L	prepareForPartner	External ⚡	⬤	onlyOwner
L	setMaxBuyTransaction	External ⚡	⬤	onlyOwner
L	setMaxSellTransaction	External ⚡	⬤	onlyOwner
L	setCaptainDividendToken	External ⚡	⬤	onlyOwner
L	setMinCaptainBeforeSendDividend	External ⚡	⬤	onlyOwner
L	setSendCaptainInTx	External ⚡	⬤	onlyOwner
L	setWbnbReflectToken	External ⚡	⬤	onlyOwner
L	setWbnbReflectTracker	External ⚡	⬤	onlyOwner
L	setTeamWallet	External ⚡	⬤	onlyOwner

L	setMarketingWalle t	External ▯	⬤	onlyOwner
L	setBurnAllianceTo ken	External ▯	⬤	onlyOwner
L	setToBurnAlliance Fee	External ▯	⬤	onlyOwner
L	setToBurnTokenF ee	External ▯	⬤	onlyOwner
L	setGameTreasury Fee	External ▯	⬤	onlyOwner
L	setMaxWalletToke n	External ▯	⬤	onlyOwner
L	setSwapTokensAt Amount	External ▯	⬤	onlyOwner
L	setSellTransaction Multiplier	External ▯	⬤	onlyOwner
L	setTradingIsEnabl ed	External ▯	⬤	onlyOwner
L	setMinBNBAfterBu yback	Public ▯	⬤	onlyOwner
L	setMinSellToTrigg erBuyback	Public ▯	⬤	onlyOwner
L	setBuyBackUpper LimitBNB	External ▯	⬤	onlyOwner
L	setCaptainDividen dTracker	External ▯	⬤	onlyOwner
L	setCaptainDividen dRewardFee	External ▯	⬤	onlyOwner
L	setWbnbReflectRe wardFee	External ▯	⬤	onlyOwner
L	setMarketingFee	External ▯	⬤	onlyOwner
L	setBuyBackFee	External ▯	⬤	onlyOwner
L	setLiquidityFee	External ▯	⬤	onlyOwner

L	setDexRouter	External 𝄽	⬤	onlyOwner
L	setIsBlacklisted	External 𝄽	⬤	onlyOwner
L	setFeesOnNormal Transfers	External 𝄽	⬤	onlyOwner
L	setAutomatedMark etMakerPair	Public 𝄽	⬤	onlyOwner
L	_setAutomatedMa rketMakerPair	Private 🔐	⬤	onlyOwner
L	setGasForProcess ing	External 𝄽	⬤	onlyOwner
L	setMinimumBalan ceForDividends	External 𝄽	⬤	onlyOwner
L	setClaimWait	External 𝄽	⬤	onlyOwner
L	excludeFromFees	Public 𝄽	⬤	onlyOwner
L	excludeFromDivid end	Public 𝄽	⬤	onlyOwner
L	processDividendTr acker	External 𝄽	⬤	onlyOwner
L	manualBuyBackA ndBurn	Public 𝄽	⬤	onlyOwner
L	retrieveTokens	External 𝄽	⬤	onlyOwner
L	retrieveBNB	External 𝄽	⬤	onlyOwner
L	claim	External 𝄽	⬤	NO𝄽
L	_updateTotalFee	Internal 🔒	⬤	
L	_transfer	Internal 🔒	⬤	
L	_swapAndLiquify	Private 🔐	⬤	

L	_addLiquidity	Private 🔒	⬤	
L	_buyBackAlliance TokenAndBurn	Private 🔒	⬤	
L	_buyBackAndBurn	Private 🔒	⬤	
L	_swapTokensForB NB	Private 🔒	⬤	
L	_swapTokensForD ividendToken	Private 🔒	⬤	
L	_swapAndSendCa ptainDividends	Private 🔒	⬤	
L	_swapAndSendW bnbReflects	Private 🔒	⬤	
L	_transferToWallet	Private 🔒	⬤	

Legend

Symbol	Meaning
🔴	**Function can modify state**
🔲	**Function is payable**

Inheritance Hierarchy
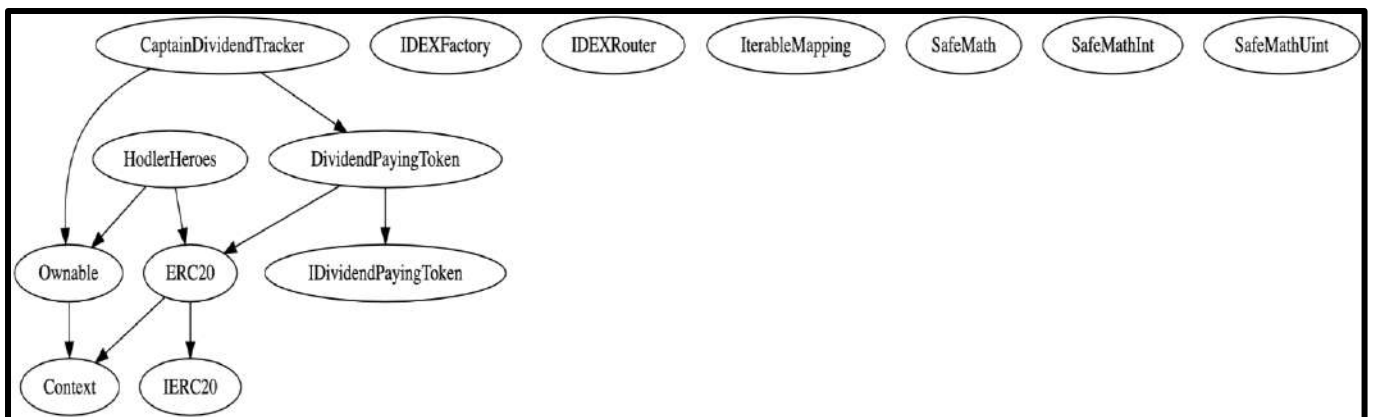
Security issue checking status

❖ **High severity issues**

- **No high severity issues found.**

❖ **Medium severity issues**

- **No medium severity issues found.**

❖ **Low severity issues**

- **No low severity issues found.**

❖ **Informational issues**

- **The owner can set max buy and sell transactions without any limitation, so if the owner sets those values to 0 no one can buy or sell tokens.**

```
ftrace | funcSig
function setMaxBuyTransaction(uint256 _maxTxn↑) external onlyOwner {
    maxBuyTransactionAmount = _maxTxn↑;
}

ftrace | funcSig
function setMaxSellTransaction(uint256 _maxTxn↑) external onlyOwner {
    maxSellTransactionAmount = _maxTxn↑;
}
```

- **The owner can change sell fee multiplier without any limitation.**

```
ftrace | funcSig
function setSellTransactionMultiplier(uint256 _multiplier↑)
    external
    onlyOwner
{
    sellFeeIncreaseFactor = _multiplier↑;
}
```

- **The owner can enable and disable trading any time.**

```
ftrace | funcSig
function setTradingIsEnabled(bool _enabled↑) external onlyOwner {
    tradingIsEnabled = _enabled↑;
}
```

Owner privileges

❖ The owner can change max buy and sell transactions.

```
ftrace | funcSig
function setMaxBuyTransaction(uint256 _maxTxn↑) external onlyOwner {
    maxBuyTransactionAmount = _maxTxn↑;
}

ftrace | funcSig
function setMaxSellTransaction(uint256 _maxTxn↑) external onlyOwner {
    maxSellTransactionAmount = _maxTxn↑;
}
```

❖ The owner can change the captain dividend token address and can change minimum captain token amount to send dividend.

```
ftrace | funcSig
function setCaptainDividendToken(address _newContract↑) external onlyOwner {
    captainDividendToken = _newContract↑;
    captainDividendTracker.setDividendTokenAddress(_newContract↑);
}

ftrace | funcSig
function setMinCaptainBeforeSendDividend(uint256 _newAmount↑)
    external
    onlyOwner
{
    captainDividendTracker.setMinTokenBeforeSendDividend(_newAmount↑);
}
```

❖ The owner can change WBNB reflection token address and dividend tracker.

```
ftrace | funcSig
function setWbnbReflectToken(address _newContract↑) external onlyOwner {
    wbnbReflectToken = _newContract↑;
}

ftrace | funcSig
function setWbnbReflectTracker(address _newContract↑) external onlyOwner {
    wbnbReflectTracker = _newContract↑;
}

ftrace | funcSig
```

❖ The owner can change the team wallet address and marketing wallet address.

```
ftrace | funcSig
function setTeamWallet(address _newWallet↑) external onlyOwner {
    excludeFromFees(_newWallet↑, true);
    teamWallet = _newWallet↑;
}

ftrace | funcSig
function setMarketingWallet(address _newWallet↑) external onlyOwner {
    excludeFromFees(_newWallet↑, true);
    marketingWallet = _newWallet↑;
}
```

❖ The owner can change the Alliance token address.

```
ftrace | funcSig
function setBurnAllianceToken(address _newAddress↑) external onlyOwner {
    toBurnAllianceToken = _newAddress↑;
}
```

❖ The owner can change the max wallet token. (maximum token amount a wallet can hold)

```
ftrace | funcSig
function setMaxWalletToken(uint256 _maxToken↑) external onlyOwner {
    maxWalletToken = _maxToken↑;
}
```

❖ The owner can change alliance token burn fee, token burn fee and game treasury fee.

```
ftrace | funcSig
function setToBurnAllianceFee(uint256 newFee↑) external onlyOwner {
    require(newFee↑ <= MAX_FEE_RATE, "wrong");
    toBurnAllianceFee = newFee↑;
    _updateTotalFee();
}

ftrace | funcSig
function setToBurnTokenFee(uint256 newFee↑) external onlyOwner {
    require(newFee↑ <= MAX_FEE_RATE, "wrong");
    toBurnTokenFee = newFee↑;
    _updateTotalFee();
}

ftrace | funcSig
function setGameTreasuryFee(uint256 newFee↑) external onlyOwner {
    require(newFee↑ <= MAX_FEE_RATE, "wrong");
    gameTreasuryFee = newFee↑;
    _updateTotalFee();
}
```

❖ The owner can change the swap point.

```
ftrace | funcSig
function setSwapTokensAtAmount(uint256 _swapAmount↑) external onlyOwner {
    swapTokensAtAmount = _swapAmount↑;
}
```

❖ The owner can change the sell fee multiplier.

```
ftrace | funcSig
function setSellTransactionMultiplier(uint256 _multiplier↑)
    external
    onlyOwner
{
    sellFeeIncreaseFactor = _multiplier↑;
}
```

❖ The owner can enable and disable trading.

```
ftrace | funcSig
function setTradingIsEnabled(bool _enabled↑) external onlyOwner {
    tradingIsEnabled = _enabled↑;
}
```

❖ The owner can change minimum BNB to buy back and minimum sell amount to trigger buy back.

```
ftrace | funcSig
function setMinBNBAfterBuyback(uint256 _newAmount↑) public onlyOwner {
    require(_newAmount↑ >= 0, "newAmount error");
    minBNBAfterBuyback = _newAmount↑;
}

ftrace | funcSig
function setMinSellToTriggerBuyback(uint256 _newAmount↑) public onlyOwner {
    require(_newAmount↑ > 0, "newAmount error");
    minSellToTriggerBuyback = _newAmount↑;
}
```

❖ The owner can change captain dividend tracker.

```
ftrace | funcSig
function setCaptainDividendTracker(address newAddress↑) external onlyOwner {
    CaptainDividendTracker newCaptainDividendTracker = CaptainDividendTracker(
            payable(newAddress↑)
        );

    require(
        newCaptainDividendTracker.owner() == address(this),
        "must be owned by HodlerHero"
    );

    newCaptainDividendTracker.excludeFromDividends(
        address(newCaptainDividendTracker)
    );
    newCaptainDividendTracker.excludeFromDividends(address(this));
    newCaptainDividendTracker.excludeFromDividends(address(dexRouter));
    newCaptainDividendTracker.excludeFromDividends(address(deadAddress));

    captainDividendTracker = newCaptainDividendTracker;
}
```

❖ The owner can change all fees.

```
ftrace | funcSig
function setCaptainDividendRewardFee(uint8 newFee↑) external onlyOwner {
    require(newFee↑ <= MAX_FEE_RATE, "wrong");
    captainDividendRewardsFee = newFee↑;
    _updateTotalFee();
}

ftrace | funcSig
function setWbnbReflectRewardFee(uint8 newFee↑) external onlyOwner {
    require(newFee↑ <= MAX_FEE_RATE, "wrong");
    wbnbReflectRewardsFee = newFee↑;
    _updateTotalFee();
}

ftrace | funcSig
function setMarketingFee(uint8 newFee↑) external onlyOwner {
    require(newFee↑ <= MAX_FEE_RATE, "wrong");
    marketingFee = newFee↑;
    _updateTotalFee();
}

ftrace | funcSig
function setBuyBackFee(uint8 newFee↑) external onlyOwner {
    require(newFee↑ <= MAX_FEE_RATE, "wrong");
    buyBackFee = newFee↑;
    _updateTotalFee();
}

ftrace | funcSig
function setLiquidityFee(uint8 newFee↑) external onlyOwner {
    require(newFee↑ <= MAX_FEE_RATE, "wrong");
    liquidityFee = newFee↑;
    _updateTotalFee();
}
```

❖ The owner can change the Dex router address.

```
ftrace | funcSig
function setDexRouter(address newAddress↑) external onlyOwner {
    dexRouter = IDEXRouter(newAddress↑);
}
```

❖ The owner can black list wallets and remove wallets from blacklist.

```
ftrace | funcSig
function setIsBlacklisted(address adr↑, bool blacklisted↑)
    external
    onlyOwner
{
    isBlacklisted[adr↑] = blacklisted↑;
}
```

❖ The owner can enable and disable to get fees on normal transactions.

```
ftrace | funcSig
function setFeesOnNormalTransfers(bool _enabled↑) external onlyOwner {
    feesOnNormalTransfers = _enabled↑;
}
```

❖ The owner can change the minimum token amount to get dividend.

```
ftrace | funcSig
function setMinimumBalanceForDividends(uint256 newMinimumBalance↑)
    external
    onlyOwner
{
    captainDividendTracker.updateMinimumTokenBalanceForDividends(
        newMinimumBalance↑
    );
}

ftrace | funcSig
function setClaimWait(uint256 claimWait↑) external onlyOwner {
    captainDividendTracker.updateClaimWait(claimWait↑);
}
```

❖ The owner can exclude wallet from fees and dividend.

```
ftrace | funcSig
function excludeFromFees(address account↑, bool excluded↑) public onlyOwner {
    require(isExcludedFromFees[account↑] != excluded↑, "Already excluded");
    isExcludedFromFees[account↑] = excluded↑;

    emit ExcludeFromFees(account↑, excluded↑);
}

ftrace | funcSig
function excludeFromDividend(address account↑) public onlyOwner {
    captainDividendTracker.excludeFromDividends(address(account↑));
}
```

❖ The owner can manually process the dividend tracker.

```
ftrace | funcSig
function processDividendTracker(uint256 gas↑) external onlyOwner {
    (
        uint256 aIterations,
        uint256 aClaims,
        uint256 aLastProcessedIndex
    ) = captainDividendTracker.process(gas↑);
    emit ProcessedCaptainDividendTracker(
        aIterations,
        aClaims,
        aLastProcessedIndex,
        false,
        gas↑,
        tx.origin
    );
}
```

❖ The owner can manually buy back and burn tokens.

```
ftrace | funcSig
function manualBuyBackAndBurn(uint256 _amount↑) public onlyOwner {
    uint256 balance = address(this).balance;
    require(
        balance >= minBNBAfterBuyback.add(_amount↑),
        "amount is too big"
    );

    if (!swapping) {
        _buyBackAndBurn(_amount↑);
    }
}
```

❖ The owner can retrieve bnb and other tokens in contract.

```
ftrace | funcSig
function retrieveTokens(address token↑, uint256 amount↑) external onlyOwner {
    require(IERC20(token↑).transfer(msg.sender, amount↑), "Transfer failed");
}

ftrace | funcSig
function retrieveBNB(uint256 amount↑) external onlyOwner {
    (bool success, ) = payable(msg.sender).call{value: amount↑}("");
    require(success, "Failed to retrieve BNB");
}
```

Audit conclusion

While conducting the audit of the Hodler Heroes NFT smart contract, it was observed that there is nothing alarming with the code and it only contains informational concerns.