AuditAce
FROM INCEPTION TO SUCCESS

Smart Contract Audit

FOR

Itchy Scratchy Inu

DATED : 4 June 23'

AUDIT SUMMARY

Project name – Itchy Scratchy Inu

Date: 4 June, 2023

Scope of Audit- Audit Ace was consulted to conduct the smart contract audit of the solidity source codes.

Audit Status: Passed

Issues Found

Status	Critical	High	Medium	Low	Suggestion
Open	0	0	0	0	1
Acknowledged	0	0	0	0	0
Resolved	0	0	0	0	0

USED TOOLS

Tools:

1- Manual Review:

a line by line code review has been performed by audit ace team.

2- BSC Test Network:

all tests were done on BSC Test network, each test has its transaction has attached to it.

3- Slither : Static Analysis

Testnet Link: all tests were done using this contract, tests are done on BSC Testnet

https://testnet.bscscan.com/token/0xd719eefa258132b183ff5e3213696bf9b5368c04#code

Token Information

Token Name : Itchy Scratchy Inu

Token Symbol: ISI

Decimals: 9

Token Supply:10,000,000,000

Token Address: -

Checksum:
b55207574b215d4a0f2704bc5592c550f79d6c0d

Owner: -

TOKEN OVERVIEW

Fees:

Buy Fees: 5%

Sell Fees: 5 %

Transfer Fees: 5%

Fees Privilige: None (Immutable fees)

Ownership : Owned

Minting: No mint function

Max Tx Amount/ Max Wallet Amount: none

Blacklist: No

Other Priviliges: - changing swap threshold

- modifying swap settings

- enabling trades

- initial distribution of tokens

AUDIT METHODOLOGY

The auditing process will follow a routine as special considerations by Auditace:

- Review of the specifications, sources, and instructions provided to Auditace to make sure the contract logic meets the intentions of the client without exposing the user's funds to risk.

- Manual review of the entire codebase by our experts, which is the process of reading source code line-by-line in an attempt to identify potential vulnerabilities.

- Specification comparison is the process of checking whether the code does what the specifications, sources, and instructions provided to Auditace describe.

- Test coverage analysis determines whether the test cases are covering the code and how much code isexercised when we run the test cases.

- Symbolic execution is analysing a program to determine what inputs cause each part of a program to execute.

- Reviewing the codebase to improve maintainability, security, and control based on the established industry and academic practices.

VULNERABILITY CHECKLIST

- Return values of low-level calls
- Private modifier
- Multiple Sends
- Using Suicide
- Gas Limitand Loops
- Address hardcoded
- Exception Disorder
- Using inline assembly
- Divide before multiply
- Missing Zero Address Validation
- Compiler version not fixed

- **Gasless Send**
- Using block.timestamp
- Re-entrancy
- Tautology or contradiction
- Timestamp Dependence
- Revert/require functions
- Use of tx.origin
- Integer overflow/underflow
- Dangerous strict equalities
- Using SHA3
- Using throw

CLASSIFICATION OF RISK

Severity

◆ **Critical**

◆ **High-Risk**

◆ **Medium-Risk**

◆ **Low-Risk**

◆ **Gas Optimization /Suggestion**

Description

These vulnerabilities could be exploited easily and can lead to asset loss, data loss, asset, or data manipulation. They should be fixed right away.

A vulnerability that affects the desired outcome when using a contract, or provides the opportunity to use a contract in an unintended way.

A vulnerability that could affect the desired outcome of executing the contract in a specific scenario.

A vulnerability that does not have a significant impact on possible scenarios for the use of the contract and is probably subjective.

A vulnerability that has an informational character but is not affecting any of the code.

Findings

Severity	Found
◆ **Critical**	0
◆ **High-Risk**	0
◆ **Medium-Risk**	0
◆ **Low-Risk**	0
◆ **Gas Optimization / Suggestions**	1

INHERITANCE TREE
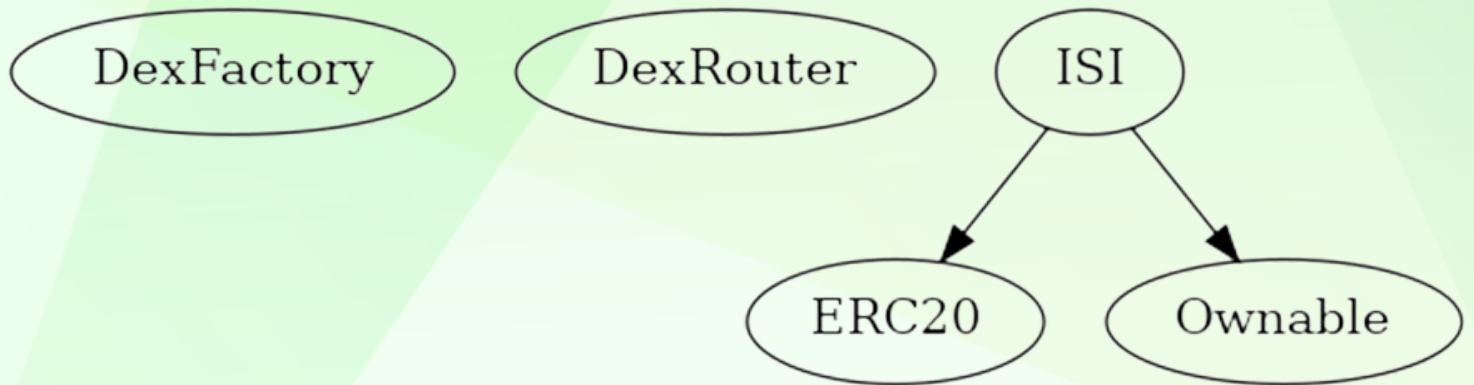
POINTS TO NOTE

- Owner is not able to change buy/sell/transfer fees (5% static)
- Owner is not able to set max buy/sell/transfer/hold amount
- Owner is not able to blacklist an arbitrary wallet
- Owner is not able to mint new tokens
- Owner is not able to disable trades

CONTRACT ASSESMENT

Contract	Type	Bases		
└	**Function Name**	**Visibility**	**Mutability**	**Modifiers**
DexFactory	Interface			
└	createPair	External ❗	🛑	NO❗
DexRouter	Interface			
└	factory	External ❗		NO❗
└	WETH	External ❗		NO❗
└	addLiquidityETH	External ❗	💵	NO❗
└	swapExactTokensForETHSupportingFeeOnTransferTokens	External ❗	🛑	NO❗
ISI	Implementation	ERC20, Ownable		
└	<Constructor>	Public ❗	🛑	ERC20
└	setmarketingWallet	External ❗	🛑	onlyOwner
└	setSwapTokensAtAmount	External ❗	🛑	onlyOwner
└	toggleSwapping	External ❗	🛑	onlyOwner
└	setWhitelistStatus	External ❗	🛑	onlyOwner
└	checkWhitelist	External ❗		NO❗
└	startTrading	External ❗	🛑	onlyOwner
└	_takeTax	Internal 🔒	🛑	
└	_transfer	Internal 🔒	🛑	
└	internalSwap	Internal 🔒	🛑	
└	swapToETH	Internal 🔒	🛑	
└	withdrawStuckETH	External ❗	🛑	onlyOwner
└	withdrawStuckTokens	External ❗	🛑	onlyOwner
└	<Receive Ether>	External ❗	💵	NO❗

Legend

Symbol	Meaning
🛑	Function can modify state
💵	Function is payable

STATIC ANALYSIS

```
Reentrancy in ISI._transfer(address,address,uint256) (contracts/Token.sol#1073-1096):
        External calls:
        - internalSwap() (contracts/Token.sol#1092)
                - uniswapRouter.swapExactTokensForETHSupportingFeeOnTransferTokens(_amount,0,path,address(this),block.timestamp) (contracts/Token.sol#1114-1120)
                - (success) = marketingWallet.call{value: address(this).balance}() (contracts/Token.sol#1104-1106)
        External calls sending eth:
        - internalSwap() (contracts/Token.sol#1092)
                - (success) = marketingWallet.call{value: address(this).balance}() (contracts/Token.sol#1104-1106)
        Event emitted after the call(s):
        - Transfer(from,to,amount) (contracts/Token.sol#424)
                - super._transfer(_from,_to,toTransfer) (contracts/Token.sol#1095)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#reentrancy-vulnerabilities-3

Context._msgData() (contracts/Token.sol#117-119) is never used and should be removed
ERC20._burn(address,uint256) (contracts/Token.sol#464-480) is never used and should be removed
SafeMath.add(uint256,uint256) (contracts/Token.sol#683-685) is never used and should be removed
SafeMath.div(uint256,uint256) (contracts/Token.sol#725-727) is never used and should be removed
SafeMath.div(uint256,uint256,string) (contracts/Token.sol#781-790) is never used and should be removed
SafeMath.mod(uint256,uint256) (contracts/Token.sol#741-743) is never used and should be removed
SafeMath.mod(uint256,uint256,string) (contracts/Token.sol#807-816) is never used and should be removed
SafeMath.mul(uint256,uint256) (contracts/Token.sol#711-713) is never used and should be removed
SafeMath.sub(uint256,uint256) (contracts/Token.sol#697-699) is never used and should be removed
SafeMath.sub(uint256,uint256,string) (contracts/Token.sol#758-767) is never used and should be removed
SafeMath.tryAdd(uint256,uint256) (contracts/Token.sol#597-606) is never used and should be removed
SafeMath.tryDiv(uint256,uint256) (contracts/Token.sol#648-656) is never used and should be removed
SafeMath.tryMod(uint256,uint256) (contracts/Token.sol#663-671) is never used and should be removed
SafeMath.tryMul(uint256,uint256) (contracts/Token.sol#628-641) is never used and should be removed
SafeMath.trySub(uint256,uint256) (contracts/Token.sol#613-621) is never used and should be removed
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#dead-code

Pragma version^0.8.17 (contracts/Token.sol#8) necessitates a version too recent to be trusted. Consider deploying with 0.6.12/0.7.6/0.8.16
solc-0.8.20 is not recommended for deployment
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#incorrect-versions-of-solidity

Low level call in ISI.internalSwap() (contracts/Token.sol#1098-1107):
        - (success) = marketingWallet.call{value: address(this).balance}() (contracts/Token.sol#1104-1106)
Low level call in ISI.withdrawStuckETH() (contracts/Token.sol#1123-1128):
        - (success) = address(msg.sender).call{value: address(this).balance}() (contracts/Token.sol#1124-1126)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#low-level-calls

Function DexRouter.WETH() (contracts/Token.sol#934) is not in mixedCase
Event ISImarketingWalletChanged(address) (contracts/Token.sol#985) is not in CapWords
Parameter ISI.setmarketingWallet(address)._newmarketing (contracts/Token.sol#1007) is not in mixedCase
Parameter ISI.setSwapTokensAtAmount(uint256)._newAmount (contracts/Token.sol#1016) is not in mixedCase
Parameter ISI.setWhitelistStatus(address,bool)._wallet (contracts/Token.sol#1030) is not in mixedCase
Parameter ISI.setWhitelistStatus(address,bool)._status (contracts/Token.sol#1031) is not in mixedCase
Parameter ISI.checkWhitelist(address)._wallet (contracts/Token.sol#1037) is not in mixedCase
Parameter ISI.swapToETH(uint256)._amount (contracts/Token.sol#1109) is not in mixedCase
Parameter ISI.withdrawStuckTokens(address).BEP20_token (contracts/Token.sol#1130) is not in mixedCase
Constant ISI._totalSupply (contracts/Token.sol#962) is not in UPPER_CASE_WITH_UNDERSCORES
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#conformance-to-solidity-naming-conventions

ISI.slitherConstructorVariables() (contracts/Token.sol#957-1139) uses literals with too many digits:
        - swapTokensAtAmount = _totalSupply / 100000 (contracts/Token.sol#977)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#too-many-digits
```

Result => A static analysis of contract's source code has been performed using slither,
No major issues were found in the output

FUNCTIONAL TESTING

Router (PCS V2):
0xD99D1c33F9fC3444f8101754aBC46c52416550D1

All the functionalities have been tested, no issues were found

1- Adding liquidity (passed):
https://testnet.bscscan.com/tx/0x0647ea93818cd749d97aa8608c
bbe5b95b3a4e030c30ac11098a8269e21dafd4

2- Buying when excluded (0% tax) (passed):
https://testnet.bscscan.com/tx/0x576a5736042e9ea83a39ba5c78
ff4168e4204725d209084fe35c22f336f0d83d

3- Selling when excluded (0% tax) (passed):
https://testnet.bscscan.com/tx/0x027296fcb42efad84ea25ee870
39760d204526bf7e1c6b5ed718f3ebf825b8a2

4- Transferring when excluded (0% tax) (passed):
https://testnet.bscscan.com/tx/0xe325d89e21ff42da51860d05d41
ad3cd3c7552deeede50ab7ab7fb468e33104b

5- Buying from a regular wallet (5% tax) (passed):
https://testnet.bscscan.com/tx/0xebc7d37936345342be806223f9
b23b37fb513b8d3b680b6320ed62a1bd3ef8ef

6- Selling from a regular wallet (5% tax) (passed):
https://testnet.bscscan.com/tx/0x0fb63b314b82023480d284c08e
fbe2ed644db4c50196b2c61a45c5f0cf3d31ca

FUNCTIONAL TESTING

7- Transferring from a regular wallet (5% tax) (passed):
https://testnet.bscscan.com/tx/0x55ef457f3ee67fe24dfe46ac857
fcd41026fe196cb0ba1bd394f1ae56fe9e2da

8-Internal swap (BNB Fees and auto-liquidity) ((passed):
https://testnet.bscscan.com/tx/0x0fb63b314b82023480d284c08e
fbe2ed644db4c50196b2c61a45c5f0cf3d31ca

ISSUES FOUND

Centralization – Trades must be enabled

Severity: **Informational**
function: EnableTrading
Status: Not Resolved

Overview:
The smart contract owner must enable trades for holders. If trading remain disabled, no one would be able to buy/sell/transfer tokens.

```
function startTrading() external onlyOwner {
    require(!tradingEnabled, "Trading already enabled");
    tradingEnabled = true;
}
```

Suggestion

To mitigate this centralization issue, we propose the following options:

1. Renounce Ownership: Consider relinquishing control of the smart contract by renouncing ownership. This would remove the ability for a single entity to manipulate the router, reducing centralization risks.

2. Multi-signature Wallet: Transfer ownership to a multi-signature wallet. This would require multiple approvals for any changes to the mainRouter, adding an additional layer of security and reducing the centralization risk.

3. Transfer ownership to a trusted and valid 3rd party in order to guarantee enabling of the trades

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