



Smart Contract Audit

FOR

Listen AI

DATED : 20 FEB 23'



AUDIT SUMMARY

Project name – Listen AI

Date: 20 February, 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/0x90BE7C8D31CB7f4be216480BdaEb9C434Dbdef88#code>



Token Information

Token Name : ListenAI

Token Symbol: ListenAI

Decimals: 18

Token Supply: 21,000,000

Token Address: Not Provided

Checksum:

7f4637c4c0993af2f6a3874de24406b78e17d63c560
bf5b3e6f76b0b4edc8fe0

Owner: Not Provided



TOKEN OVERVIEW

Fees:

Buy Fees: 0%

Sell Fees: 0%

Transfer Fees: 0%

Fees Privilege: Owner

Ownership : Owned

Minting: No mint function

Max Tx Amount/ Max Wallet Amount: No

Blacklist: No

Other Privileges: None



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 is exercised 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 | ✓ Gasless Send |
| ✓ Private modifier | ✓ Using block.timestamp |
| ✓ Multiple Sends | ✓ Re-entrancy |
| ✓ Using Suicide | ✓ Tautology or contradiction |
| ✓ Gas Limitand Loops | ✓ Timestamp Dependence |
| ✓ Address hardcoded | ✓ Revert/require functions |
| ✓ Exception Disorder | ✓ Use of tx.origin |
| ✓ Using inline assembly | ✓ Integer overflow/underflow |
| ✓ Divide before multiply | ✓ Dangerous strict equalities |
| ✓ Missing Zero Address Validation | ✓ Using SHA3 |
| ✓ Compiler version not fixed | ✓ Using throw |
-



CLASSIFICATION OF RISK

Severity

Description

◆ Critical

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

◆ High-Risk

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

◆ Medium-Risk

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

◆ Low-Risk

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

◆ Gas Optimization /Suggestion

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

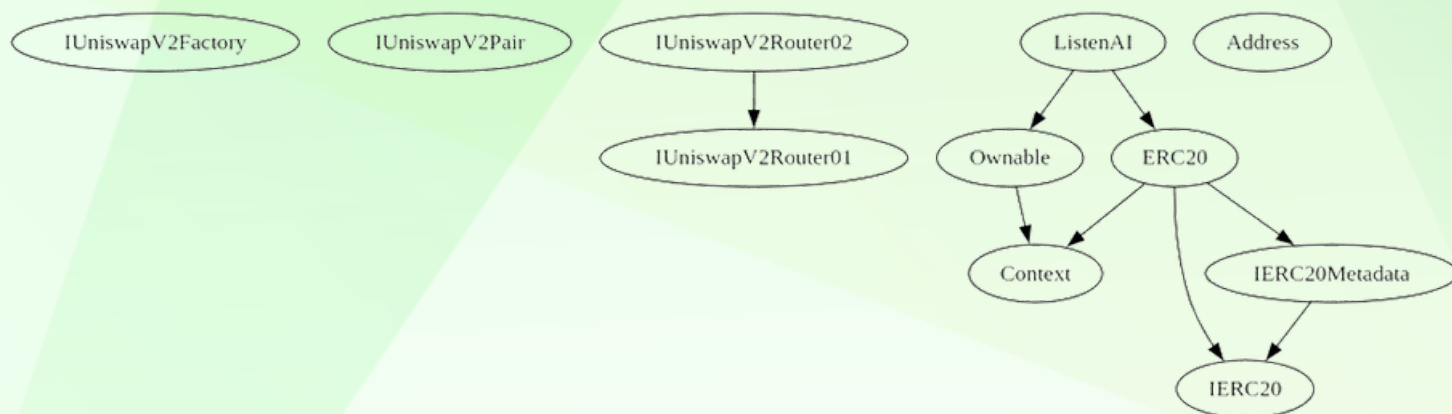
0

◆ Gas Optimization / Suggestions

1



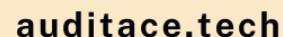
INHERITANCE TREE





POINTS TO NOTE

- **Owner is not able to set buy/sell/transfer taxes (0% static)**
 - **Owner is not able to blacklist an arbitrary wallet**
 - **Owner is not able to set max buy/sell/transfer amounts**
 - **Owner is not able to disable trades**
 - **Owner is not able to mint new tokens**
-



Contract	Type	Bases		
:-----: :-----: :-----: :-----: :-----:				
L	**Function Name**	**Visibility**	**Mutability**	**Modifiers**
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 !	
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	mint	External !	⊗ NO !	
L	burn	External !	⊗ NO !	
L	swap	External !	⊗ NO !	
L	skim	External !	⊗ NO !	
L	sync	External !	⊗ NO !	
L	initialize	External !	⊗ NO !	



CONTRACT ASSESMENT


|||||


| ****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! |

| | swapExactTokensForETH | External ! |  | NO! |

| | swapETHForExactTokens | External ! |  | NO! |

| | quote | External ! | | NO! |

| | getAmountOut | External ! | | NO! |

| | getAmountIn | External ! | | NO! |

| | getAmountsOut | External ! | | NO! |

| | getAmountsIn | External ! | | NO! |

|||||

| ****IUniswapV2Router02**** | Interface | IUniswapV2Router01 |||

| | removeLiquidityETHSupportingFeeOnTransferTokens | External ! |  | NO! |

| | removeLiquidityETHWithPermitSupportingFeeOnTransferTokens | External ! |  | NO! |

| | swapExactTokensForTokensSupportingFeeOnTransferTokens | External ! |  | NO! |

| | swapExactETHForTokensSupportingFeeOnTransferTokens | External ! |  | NO! |

| | swapExactTokensForETHSupportingFeeOnTransferTokens | External ! |  | NO! |

|||||

| ****IERC20**** | Interface | |||

| | totalSupply | External ! | | NO! |

| | balanceOf | External ! | | NO! |

| | transfer | External ! |  | NO! |

| | allowance | External ! | | NO! |

| | approve | External ! |  | NO! |

| | transferFrom | External ! |  | NO! |

|||||

| ****IERC20Metadata**** | Interface | IERC20 |||

| | name | External ! | | NO! |

| | symbol | External ! | | NO! |

| | decimals | External ! | | NO! |

|||||

CONTRACT ASSESMENT




















```

| **Address** | Library | ||| |
|  | isContract | Internal | | |
|  | sendValue | Internal | | |
|  | functionCall | Internal | | |
|  | functionCall | Internal | | |
|  | functionCallWithValue | Internal | | |
|  | functionCallWithValue | Internal | | |
|  | functionStaticCall | Internal | | |
|  | functionStaticCall | Internal | | |
|  | functionDelegateCall | Internal | | |
|  | functionDelegateCall | Internal | | |
|  | verifyCallResultFromTarget | Internal | | |
|  | verifyCallResult | Internal | | |
|  | _revert | Private | | |
| | | |
| **Context** | Implementation | |||
|  | _msgSender | Internal | | |
|  | _msgData | Internal | | |
| | | |
| **Ownable** | Implementation | Context | |||
|  | <Constructor> | Public | | | NO |
|  | owner | Public | | | NO |
|  | renounceOwnership | Public | | | onlyOwner |
|  | transferOwnership | Public | | | onlyOwner |
| | | |
| **ERC20** | Implementation | Context, IERC20, IERC20Metadata | |||
|  | <Constructor> | Public | | | NO |
|  | 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 |
|  | _transfer | Internal | | |
|  | _mint | Internal | | |
|  | _burn | Internal | | |

```




CONTRACT ASSESMENT

^L	_approve	Internal 		
^L	_beforeTokenTransfer	Internal 		
^L	_afterTokenTransfer	Internal 		
ListenAI	Implementation	ERC20, Ownable		
^L	<Constructor>	Public 		ERC20
^L	<Receive Ether>	External 		NO 
^L	claimStuckTokens	External 		onlyOwner
^L	_transfer	Internal 		
^L	setSwapEnabled	External 		onlyOwner
^L	setSwapTokensAtAmount	External 		onlyOwner

| Symbol | Meaning |

| :-----: | ----- |

|  | Function can modify state |

|  | Function is payable |



STATIC ANALYSIS

```
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#uninitialized-local-variables
Address._revert(bytes,string) (contracts/Token.sol#529-544) uses assembly
- INLINE_ASM (contracts/Token.sol#537-540)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#assembly-usage
Address._revert(bytes,string) (contracts/Token.sol#529-544) is never used and should be removed
Address.functionCall(address,bytes) (contracts/Token.sol#388-399) is never used and should be removed
Address.functionCall(address,bytes,string) (contracts/Token.sol#401-407) is never used and should be removed
Address.functionCallWithValue(address,bytes,uint256) (contracts/Token.sol#409-421) is never used and should be removed
Address.functionCallWithValue(address,bytes,uint256,string) (contracts/Token.sol#423-443) is never used and should be removed
Address.functionDelegateCall(address,bytes) (contracts/Token.sol#472-482) is never used and should be removed
Address.functionDelegateCall(address,bytes,string) (contracts/Token.sol#484-497) is never used and should be removed
Address.functionStaticCall(address,bytes) (contracts/Token.sol#445-455) is never used and should be removed
Address.functionStaticCall(address,bytes,string) (contracts/Token.sol#457-470) is never used and should be removed
Address.isContract(address) (contracts/Token.sol#371-373) is never used and should be removed
Address.verifyCallResult(bool,bytes,string) (contracts/Token.sol#517-527) is never used and should be removed
Address.verifyCallResultFromTarget(address,bool,bytes,string) (contracts/Token.sol#499-515) is never used and should be removed
Context._msgData() (contracts/Token.sol#552-555) is never used and should be removed
ERC20._burn(address,uint256) (contracts/Token.sol#742-757) 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#3) necessitates a version too recent to be trusted. Consider deploying with 0.6.12/0.7.6/0.8.16
solc-0.8.18 is not recommended for deployment
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#incorrect-versions-of-solidity
Low level call in Address.sendValue(address,uint256) (contracts/Token.sol#375-386):
- (success) = recipient.call{value: amount}() (contracts/Token.sol#381)
Low level call in Address.functionCallWithValue(address,bytes,uint256,string) (contracts/Token.sol#423-443):
- (success, returndata) = target.call{value: value}(data) (contracts/Token.sol#433-435)
Low level call in Address.functionStaticCall(address,bytes,string) (contracts/Token.sol#457-470):
- (success, returndata) = target.staticcall(data) (contracts/Token.sol#462)
Low level call in Address.functionDelegateCall(address,bytes,string) (contracts/Token.sol#484-497):
- (success, returndata) = target.delegatecall(data) (contracts/Token.sol#489)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#low-level-calls
Function IUniswapV2Pair.DOMAIN_SEPARATOR() (contracts/Token.sol#65) is not in mixedCase
Function IUniswapV2Pair.PERMIT_TYPEHASH() (contracts/Token.sol#67) is not in mixedCase
Function IUniswapV2Pair.MINIMUM_LIQUIDITY() (contracts/Token.sol#98) is not in mixedCase
Function IUniswapV2Router01.WETH() (contracts/Token.sol#138) is not in mixedCase
Parameter ListenAI.setSwapEnabled(bool).enabled (contracts/Token.sol#855) is not in mixedCase
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#conformance-to-solidity-naming-conventions
Redundant expression "this (contracts/Token.sol#553)" inContext (contracts/Token.sol#547-556)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#redundant-statements
Variable IUniswapV2Router01.addLiquidity(address,address,uint256,uint256,uint256,uint256,address,uint256).amountADesired (contracts/Token.sol#143) is too similar to IUniswapV2Router01.addLiquidity(address,address,uint256,uint256,uint256,uint256,address,uint256).amountBDesired (contracts/Token.sol#144)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#variable-names-too-similar
ListenAI.uniswapV2Pair (contracts/Token.sol#788) should be immutable
ListenAI.uniswapV2Router (contracts/Token.sol#787) should be immutable
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-immutable
```

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

1- Adding Liquidity (Passed):

liquidity added on Pancakeswap V2:

<https://testnet.bscscan.com/tx/0x101ace708348bb68a0a71c15b7fa407161f48c77729d20916dfc76ca5496e77c>

no issue were found on adding liquidity.

2- Buying (0% Tax) (Passed):

<https://testnet.bscscan.com/tx/0x101ace708348bb68a0a71c15b7fa407161f48c77729d20916dfc76ca5496e77c>

3- Selling (0% Tax) (Passed):

<https://testnet.bscscan.com/tx/0x96e5c11e5041a5427c431da47bc6f4937f602cc5b93b0d065dd87f2487679be0>

4-Transferring (0% tax)(Passed):

<https://testnet.bscscan.com/tx/0x4d5bc14a235d6b20208aa313689f2300fcab78082f64747a0591c87bd4b51f85>

MANUAL TESTING

Suggestions and Optimizations

Suggestions

The function `setSwapEnable` and `setSwapTokensAtAmount` appear to be unnecessary in the contract since there are currently no fees associated with buys, sells or transfers, nor is there an internal swap function. Thus, it is recommended that these functions be removed, along with the PancakeSwap router and factory interfaces.



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