



Smart Contract Audit

FOR
QuantumAI

DATED : 23 FEB 23'



AUDIT SUMMARY

Project name – QuantumAI

Date: 23 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	3
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. You can check this tests in “functionality tests” section of the report.

3- Slither :The code has undergone static analysis using Slither.



TESTNET LINKS

All tests were done using this contract, BSC Testnet

<https://testnet.bscscan.com/token/0xB8c81a5557446d040BcD98B98E1560AF12Bcc61F>

Token Address: :

0x4949dA31bF62B764A31dd23f9A4D9Fa72eBb4eD8

Checksum:

7f4637c4c0993af2f6a3874de24406b78e17d63c560
bf5b3e6f76b0b4edc8fe0

Deployer:

0x329456727c84315a0A06Ac79545162c4179507C9

Owner:

0x329456727c84315a0A06Ac79545162c4179507C9

Network: Arbitrum

THIS TOKEN IS ON ARBITRUM NETWORK



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.

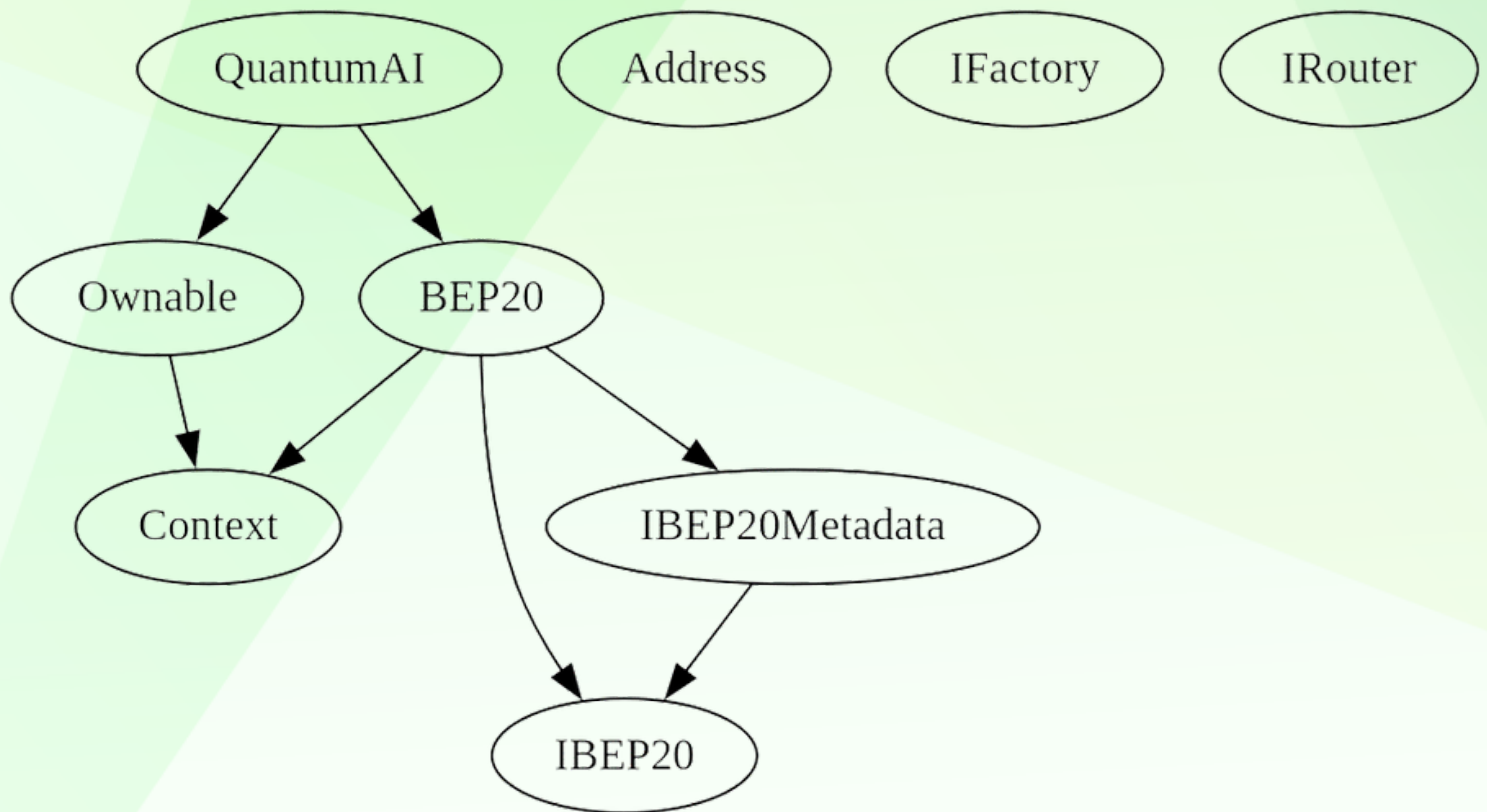
Findings

Severity

Found

◆ Critical	0
◆ High-Risk	0
◆ Medium-Risk	0
◆ Low-Risk	0
◆ Gas Optimization / Suggestions	3

INHERITANCE TREE



POINTS TO NOTE

- Up to 5 blocks after launch will have 99% tax
 - 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
 - *Owner must enable trading in order for everyone to be able to trade (otherwise no one would be able to buy/sell/transfer)*
-



CONTRACT ASSESMENT

Contract	Type	Bases			
:-----: :-----: :-----: :-----: :-----:					
└	**Function Name**	**Visibility**	**Mutability**	**Modifiers**	
Context Implementation					
└	_msgSender	Internal	🔒		
└	_msgData	Internal	🔒		
IBEP20 Interface					
└	totalSupply	External	!		NO!
└	balanceOf	External	!		NO!
└	transfer	External	!	🛑	NO!
└	allowance	External	!		NO!
└	approve	External	!	🛑	NO!
└	transferFrom	External	!	🛑	NO!
IBEP20Metadata Interface IBEP20					
└	name	External	!		NO!
└	symbol	External	!		NO!
└	decimals	External	!		NO!
BEP20 Implementation Context, IBEP20, IBEP20Metadata					
└	<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	🔒	🛑	
└	_tokengeneration	Internal	🔒	🛑	
└	_approve	Internal	🔒	🛑	
Address Library					
└	sendValue	Internal	🔒	🛑	
Ownable Implementation Context					

CONTRACT ASSESMENT


```

|  | <Constructor> | Public ! |  | NO! |
|  | owner | Public ! | | NO! |
|  | renounceOwnership | Public ! |  | onlyOwner |
|  | transferOwnership | Public ! |  | onlyOwner |
|  | _setOwner | Private  |  | |
|||||
| **IFactory** | Interface | |||
|  | createPair | External ! |  | NO! |
|||||
| **IRouter** | Interface | |||
|  | factory | External ! | | NO! |
|  | WETH | External ! | | NO! |
|  | addLiquidityETH | External ! |  | NO! |
|  | swapExactTokensForETHSupportingFeeOnTransferTokens | External ! |  | NO! |
|||||
| **QuantumAI** | Implementation | BEP20, Ownable |||
|  | <Constructor> | Public ! |  | BEP20 |
|  | approve | Public ! |  | NO! |
|  | transferFrom | Public ! |  | NO! |
|  | increaseAllowance | Public ! |  | NO! |
|  | decreaseAllowance | Public ! |  | NO! |
|  | transfer | Public ! |  | NO! |
|  | _transfer | Internal  |  | |
|  | Liquify | Private  |  | lockTheSwap |
|  | swapTokensForETH | Private  |  | |
|  | addLiquidity | Private  |  | |
|  | updateLiquidityProvide | External ! |  | onlyOwner |
|  | updateLiquidityTreshhold | External ! |  | onlyOwner |
|  | EnableTrading | External ! |  | onlyOwner |
|  | updatedeadline | External ! |  | onlyOwner |
|  | updateMarketingWallet | External ! |  | onlyOwner |
|  | updateExemptFee | External ! |  | onlyOwner |
|  | bulkExemptFee | External ! |  | onlyOwner |
|  | rescueBNB | External ! |  | onlyOwner |
|  | rescueBSC20 | External ! |  | onlyOwner |
|  | <Receive Ether> | External ! |  | NO! |

```

| Symbol | Meaning |

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

|  | Function can modify state |

|  | Function is payable |



STATIC ANALYSIS

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

```
Reentrancy in QuantumAI.transferFrom(address,address,uint256) (contracts/Token.sol#494-509):
  External calls:
    - _transfer(sender,recipient,amount) (contracts/Token.sol#499)
      - router.addLiquidityETH(value: ethAmount)(address(this),tokenAmount,0,0,deadWallet,block.timestamp) (contracts/Token.sol#665-672)
      - (success) = recipient.call(value: amount){} (contracts/Token.sol#344)
      - router.swapExactTokensForETHSupportingFeeOnTransferTokens(tokenAmount,0,path,address(this),block.timestamp) (contracts/Token.sol#651-657)
      - address(marketingWallet).sendValue(marketingAmt) (contracts/Token.sol#637)
  External calls sending eth:
    - _transfer(sender,recipient,amount) (contracts/Token.sol#499)
      - router.addLiquidityETH(value: ethAmount)(address(this),tokenAmount,0,0,deadWallet,block.timestamp) (contracts/Token.sol#665-672)
      - (success) = recipient.call(value: amount){} (contracts/Token.sol#344)
  Event emitted after the call(s):
    - Approval(owner,spender,amount) (contracts/Token.sol#333)
      - _approve(sender,_msgSender(),currentAllowance - amount) (contracts/Token.sol#506)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#reentrancy-vulnerabilities-3

Context._msgData() (contracts/Token.sol#14-17) 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#7) 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#338-349):
  - (success) = recipient.call{value: amount}{} (contracts/Token.sol#344)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#low-level-calls

Variable BEP20_balances (contracts/Token.sol#70) is not in mixedCase
Variable BEP20_allowances (contracts/Token.sol#72) is not in mixedCase
Function IRouter.WETH() (contracts/Token.sol#402) is not in mixedCase
Function QuantumAI.Liquify(uint256,QuantumAI.Taxes) (contracts/Token.sol#601-640) is not in mixedCase
Parameter QuantumAI.updateLiquidityTreshhold(uint256).new_amount (contracts/Token.sol#679) is not in mixedCase
Function QuantumAI.EnableTrading() (contracts/Token.sol#687-692) is not in mixedCase
Parameter QuantumAI.updatedeadline(uint256).deadline (contracts/Token.sol#694) is not in mixedCase
Parameter QuantumAI.updateExemptFee(address,bool)._address (contracts/Token.sol#705) is not in mixedCase
Variable QuantumAI.genesis_block (contracts/Token.sol#437) is not in mixedCase
Constant QuantumAI.deadWallet (contracts/Token.sol#442-443) is not in UPPER_CASE_WITH_UNDERSCORES
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#conformance-to-solidity-naming-conventions

Redundant expression "this (contracts/Token.sol#15)" inContext (contracts/Token.sol#9-18)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#redundant-statements

QuantumAI.lastSell (contracts/Token.sol#456) is never used in QuantumAI (contracts/Token.sol#425-732)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#unused-state-variable

QuantumAI.launchtax (contracts/Token.sol#439) should be constant
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-constant

QuantumAI.pair (contracts/Token.sol#429) should be immutable
QuantumAI.router (contracts/Token.sol#428) should be immutable
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-immutable
```



FUNCTIONAL TESTING

Functionality Tests

Router (PCS V2):

0xD99D1c33F9fC3444f8101754aBC46c52416550D1

increased fees to max limit

1- Adding liquidity (passed):

<https://testnet.bscscan.com/tx/0x5299c79c8701eb3a4d4484ac2793bdbbe90bd7433cdc176de927ab2890348f68e>

2- Buying (0%) (passed):

<https://testnet.bscscan.com/tx/0x0562cc4fccf5f378a2d4a1170c81c72a21dfc6eb208b5909802d9cfab1d89af1>

3- Selling (0%) (passed):

<https://testnet.bscscan.com/tx/0x9c0f1ad90c7ef96f96b51904a10f827fce1d56c447b2b3584e70b6dc9d6950d5>

4- Transferring (0%) (passed):

<https://testnet.bscscan.com/tx/0x52cc259c649da91a59ed0ea37c4f6bca72a1a241e756e86a894e7a3f500d5545>

MANUAL TESTING

Suggestions & Gas optimizations:

Suggestions:

- Since contract can not have fees, its suggested to remove unused functions and logic

Gas Optimizations:

- Since contract can not have fees, then some functions and code can increase gas usage unnecessary
- Consider optimizing the contract's code to reduce its overall gas usage.



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