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AuditAce

FROM INCEPTION TO SUCCESS

Smart Contract Audit

FOR

AiSora

DATED : 26 Feb, 2024

MANUAL TESTING

Centralization – Enabling Trades

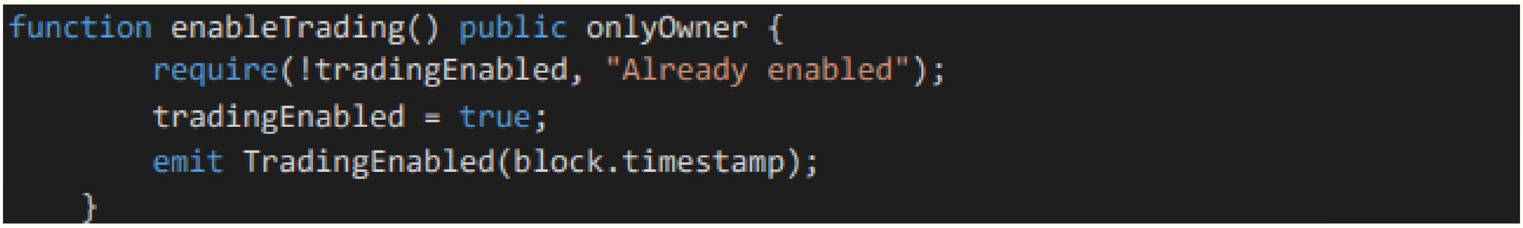
Severity: High

Function: EnableTrading

Status: Open

Overview:

The EnableTrading function permits only the contract owner to activate trading capabilities. Until this function is executed, no investors can buy, sell, or transfer their tokens. This places a high degree of control and centralization in the hands of the contract owner.



```
function enableTrading() public onlyOwner {
        require(!tradingEnabled, "Already enabled");
        tradingEnabled = true;
        emit TradingEnabled(block.timestamp);
    }
```

Suggestion:

To reduce centralization and potential manipulation, consider one of the following approaches:

1.Automatically enable trading after a specified condition, such as the completion of a presale, is met.

2.If manual activation is still desired, consider transferring the ownership of the contract to a trustworthy, third-party entity like a certified "PinkSale Safu" developer. This can give investors more confidence in the eventual activation of trading capabilities, mitigating concerns of potential bad-faith actions by the original owner.

AUDIT SUMMARY

Project name – AiSora

Date: 26 Feb, 2024

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

Audit Status: **Passed With High Risk**

Issues Found

Status	Critical	High	Medium	Low	Suggestion
Open	0	1	0	1	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 conducted on the BSC Test network, and each test has a corresponding transaction attached to it. These tests can be found in the "Functional Tests" section of the report.

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

Testnet version:
The tests were performed using the contract deployed on the BSC Testnet, which can be found at the following address:
https://testnet.bscscan.com/address/0xafa30a219e4cee216e6cb350b7afb25f69689c4a#code

Token Information

Token Name : AiSora

Token Symbol: AiSora

Decimals: 18

Token Supply: 900,000,000

Network: BscScan

Token Type: BEP-20

Token Address:
0x87dfbC5926239760CEEb6f3C57199ba2358a524b

Checksum:
B67acbefe2a12642d388659dffd20712

Owner:
0xaD0705f93aeEE52adE5a95E54B52bB47c62Cc5F0
(at time of writing the audit)

Deployer:
0x5240fA85dE586c651245ABfE17D716B72f02f6F3

TOKEN OVERVIEW

Fees:

Buy Fee: 5%

Sell Fee: 5%

Transfer Fee: 0-0%

Fees Privilege: Owner

Ownership: Owned

Minting: No mint function

Max Tx Amount/ Max Wallet Amount: No

Blacklist: No

Other Privileges:

-Whitelist to transfer without enabling trades

- Enabling trades

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.

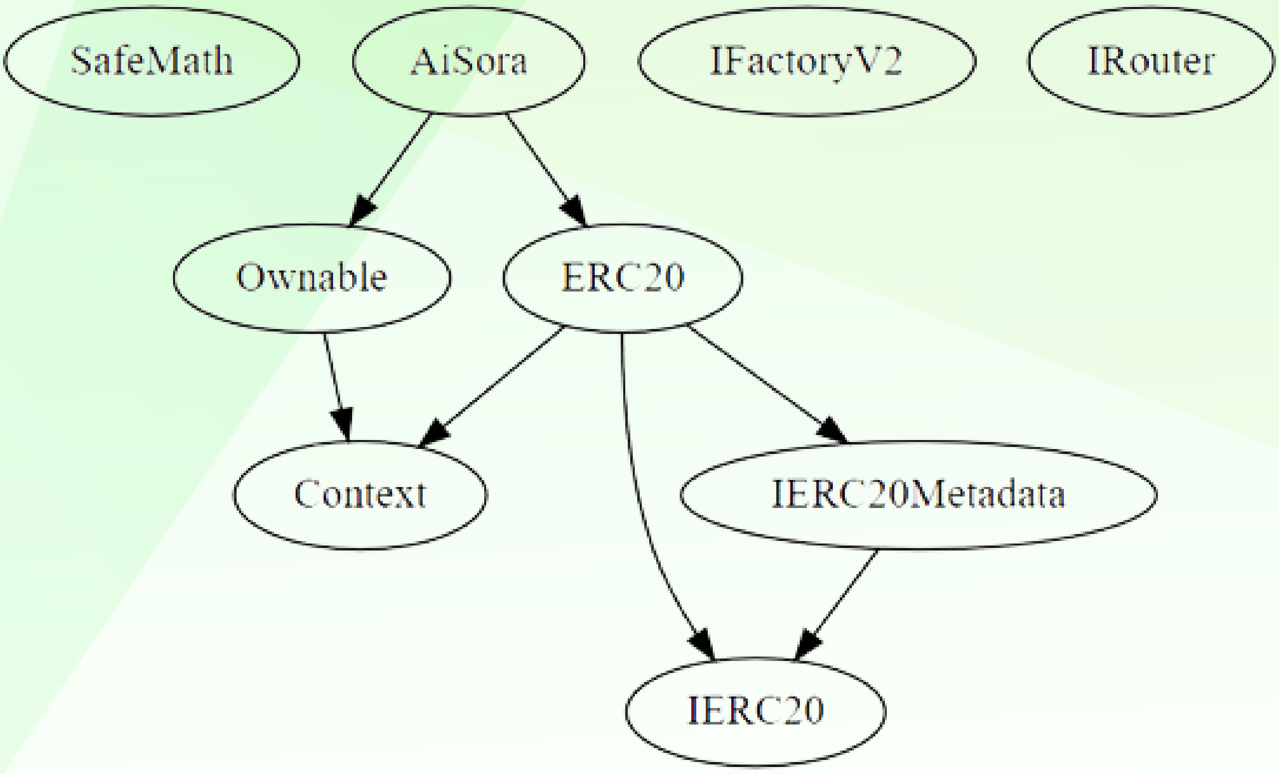
- Symbolic execution is analysing a program to determine what inputs cause each part of a program to execute.

- 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

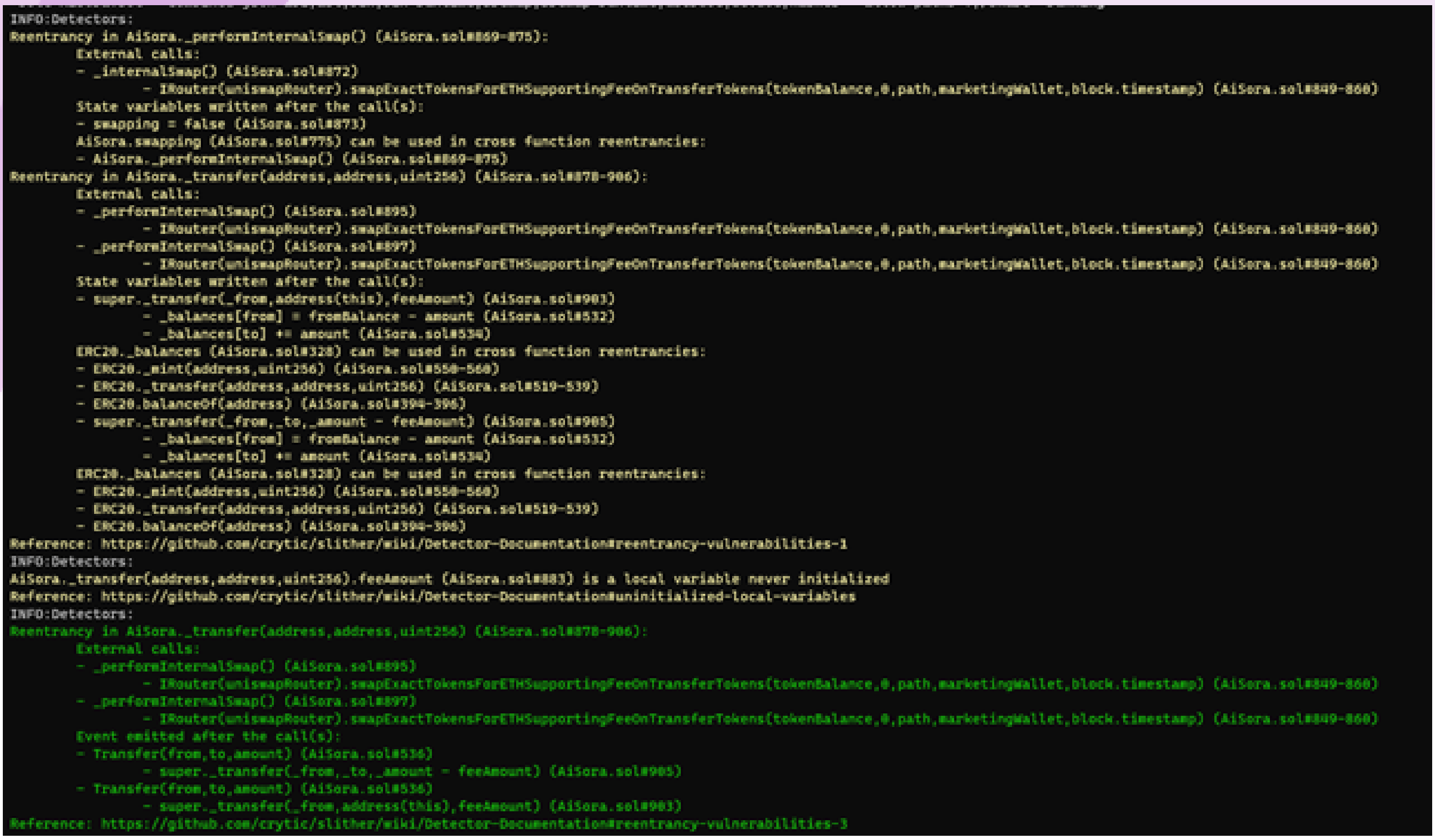
INHERITANCE TREE



STATIC ANALYSIS

A static analysis of the code was performed using Slither.

No issues were found.



```
INFO:Detectors:
Reentrancy in AiSora._performInternalSwap() (AiSora.sol#869-875):
        External calls:
        - _internalSwap() (AiSora.sol#872)
                - IRouter(uniswapRouter).swapExactTokensForETHSupportingFeeOnTransferTokens(tokenBalance,0,path,marketingWallet,block.timestamp) (AiSora.sol#849-860)
        State variables written after the call(s):
        - swapping = false (AiSora.sol#873)
        AiSora.swapping (AiSora.sol#775) can be used in cross function reentrancies:
        - AiSora._performInternalSwap() (AiSora.sol#869-875)
Reentrancy in AiSora._transfer(address,address,uint256) (AiSora.sol#878-906):
        External calls:
        - _performInternalSwap() (AiSora.sol#895)
                - IRouter(uniswapRouter).swapExactTokensForETHSupportingFeeOnTransferTokens(tokenBalance,0,path,marketingWallet,block.timestamp) (AiSora.sol#849-860)
        - _performInternalSwap() (AiSora.sol#897)
                - IRouter(uniswapRouter).swapExactTokensForETHSupportingFeeOnTransferTokens(tokenBalance,0,path,marketingWallet,block.timestamp) (AiSora.sol#849-860)
        State variables written after the call(s):
        - super._transfer(_from,address(this),feeAmount) (AiSora.sol#903)
                - _balances[from] = fromBalance - amount (AiSora.sol#532)
                - _balances[to] += amount (AiSora.sol#534)
        ERC20._balances (AiSora.sol#328) can be used in cross function reentrancies:
        - ERC20._mint(address,uint256) (AiSora.sol#550-560)
        - ERC20._transfer(address,address,uint256) (AiSora.sol#519-539)
        - ERC20.balanceOf(address) (AiSora.sol#394-396)
        - super._transfer(_from,_to,_amount - feeAmount) (AiSora.sol#905)
                - _balances[from] = fromBalance - amount (AiSora.sol#532)
                - _balances[to] += amount (AiSora.sol#534)
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        - ERC20._transfer(address,address,uint256) (AiSora.sol#519-539)
        - ERC20.balanceOf(address) (AiSora.sol#394-396)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#reentrancy-vulnerabilities-1
INFO:Detectors:
AiSora._transfer(address,address,uint256).feeAmount (AiSora.sol#883) is a local variable never initialized
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#uninitialized-local-variables
INFO:Detectors:
Reentrancy in AiSora._transfer(address,address,uint256) (AiSora.sol#878-906):
        External calls:
        - _performInternalSwap() (AiSora.sol#895)
                - IRouter(uniswapRouter).swapExactTokensForETHSupportingFeeOnTransferTokens(tokenBalance,0,path,marketingWallet,block.timestamp) (AiSora.sol#849-860)
        - _performInternalSwap() (AiSora.sol#897)
                - IRouter(uniswapRouter).swapExactTokensForETHSupportingFeeOnTransferTokens(tokenBalance,0,path,marketingWallet,block.timestamp) (AiSora.sol#849-860)
        Event emitted after the call(s):
        - Transfer(from,to,amount) (AiSora.sol#536)
                - super._transfer(_from,_to,_amount - feeAmount) (AiSora.sol#905)
        - Transfer(from,to,amount) (AiSora.sol#536)
                - super._transfer(_from,address(this),feeAmount) (AiSora.sol#903)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#reentrancy-vulnerabilities-3
```
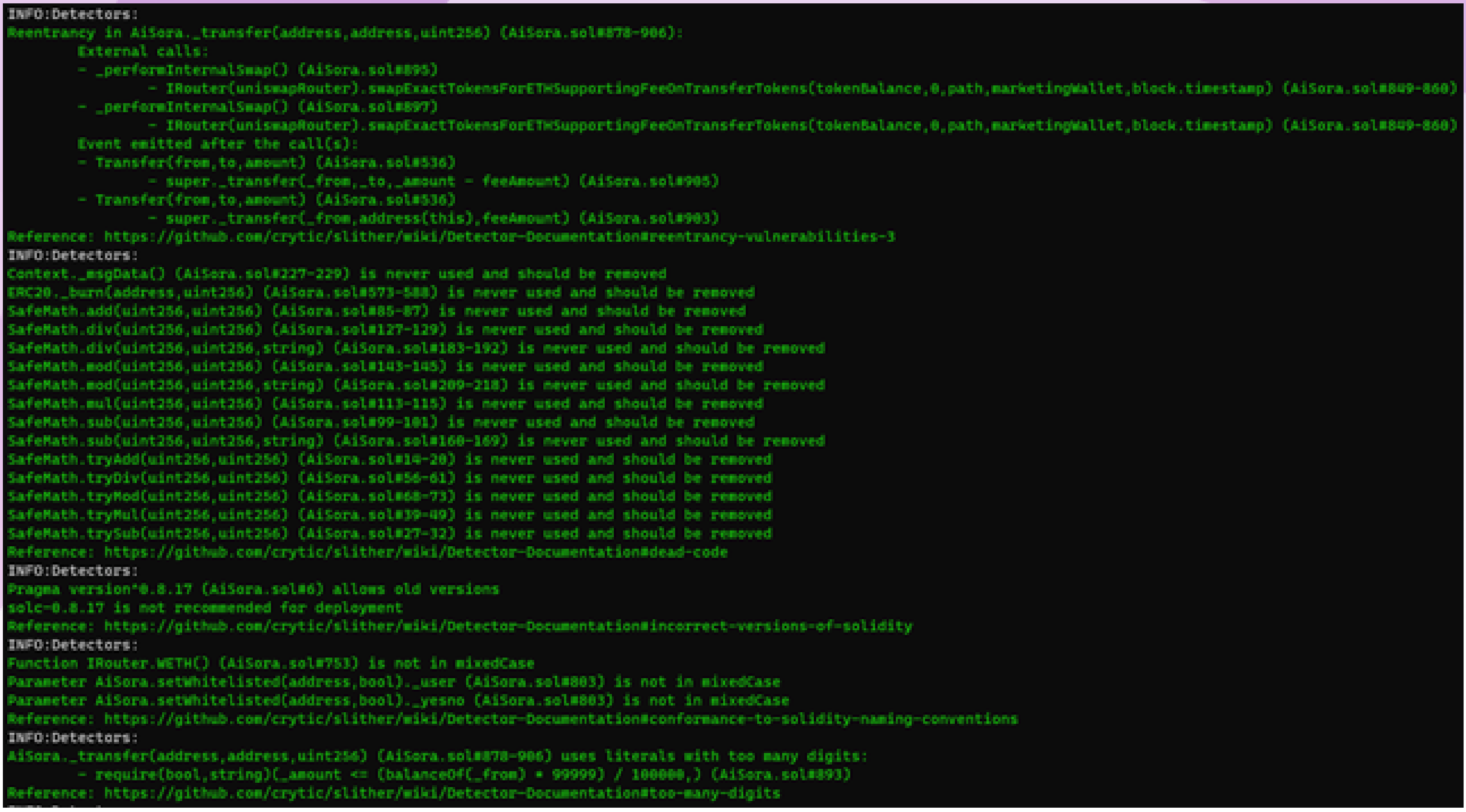

STATIC ANALYSIS



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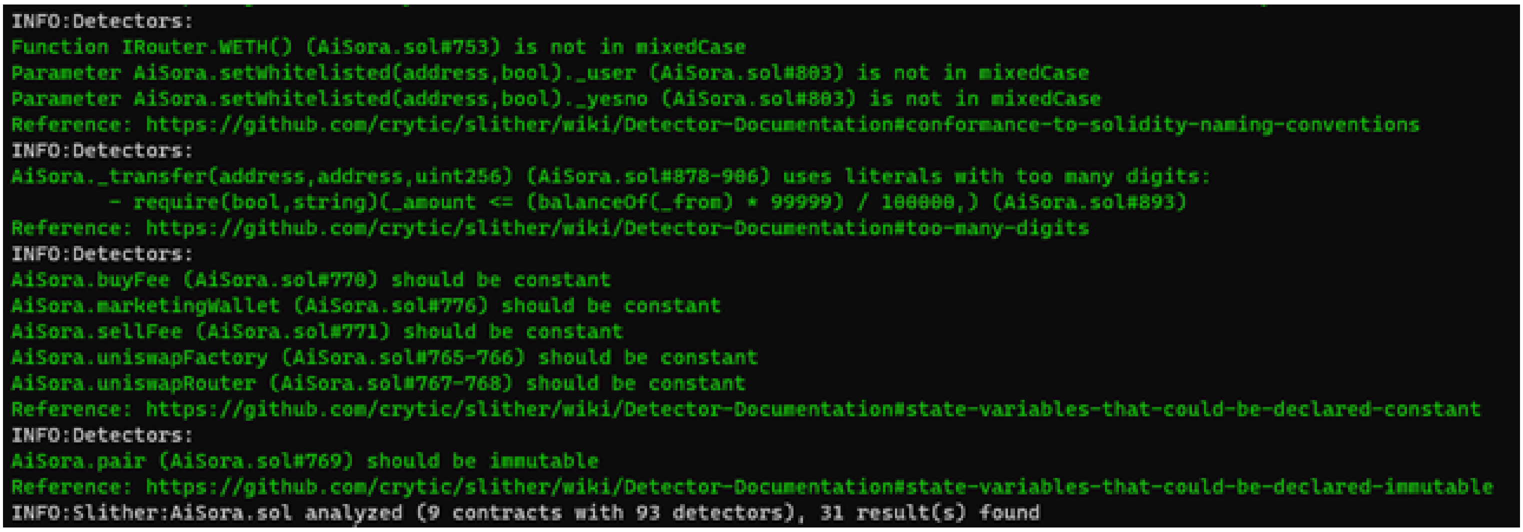
                - super._transfer(_from,address(this),feeAmount) (AiSora.sol#903)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#reentrancy-vulnerabilities-3
INFO:Detectors:
Context._msgData() (AiSora.sol#227-229) is never used and should be removed
ERC20._burn(address,uint256) (AiSora.sol#573-588) is never used and should be removed
SafeMath.add(uint256,uint256) (AiSora.sol#85-87) is never used and should be removed
SafeMath.div(uint256,uint256) (AiSora.sol#127-129) is never used and should be removed
SafeMath.div(uint256,uint256,string) (AiSora.sol#183-192) is never used and should be removed
SafeMath.mod(uint256,uint256) (AiSora.sol#143-145) is never used and should be removed
SafeMath.mod(uint256,uint256,string) (AiSora.sol#209-218) is never used and should be removed
SafeMath.mul(uint256,uint256) (AiSora.sol#113-115) is never used and should be removed
SafeMath.sub(uint256,uint256) (AiSora.sol#99-101) is never used and should be removed
SafeMath.sub(uint256,uint256,string) (AiSora.sol#160-169) is never used and should be removed
SafeMath.tryAdd(uint256,uint256) (AiSora.sol#14-20) is never used and should be removed
SafeMath.tryDiv(uint256,uint256) (AiSora.sol#56-61) is never used and should be removed
SafeMath.tryMod(uint256,uint256) (AiSora.sol#68-73) is never used and should be removed
SafeMath.tryMul(uint256,uint256) (AiSora.sol#39-49) is never used and should be removed
SafeMath.trySub(uint256,uint256) (AiSora.sol#27-32) is never used and should be removed
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#dead-code
INFO:Detectors:
Pragma version^0.8.17 (AiSora.sol#6) allows old versions
solc-0.8.17 is not recommended for deployment
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#incorrect-versions-of-solidity
INFO:Detectors:
Function IRouter.WETH() (AiSora.sol#753) is not in mixedCase
Parameter AiSora.setWhitelisted(address,bool)._user (AiSora.sol#803) is not in mixedCase
Parameter AiSora.setWhitelisted(address,bool)._yesno (AiSora.sol#803) is not in mixedCase
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#conformance-to-solidity-naming-conventions
INFO:Detectors:
AiSora._transfer(address,address,uint256) (AiSora.sol#878-906) uses literals with too many digits:
        - require(bool,string)(_amount <= (balanceOf(_from) * 99999) / 100000,) (AiSora.sol#893)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#too-many-digits
```



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Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#too-many-digits
INFO:Detectors:
AiSora.buyFee (AiSora.sol#770) should be constant
AiSora.marketingWallet (AiSora.sol#776) should be constant
AiSora.sellFee (AiSora.sol#771) should be constant
AiSora.uniswapFactory (AiSora.sol#765-766) should be constant
AiSora.uniswapRouter (AiSora.sol#767-768) should be constant
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-constant
INFO:Detectors:
AiSora.pair (AiSora.sol#769) should be immutable
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-immutable
INFO:Slither:AiSora.sol analyzed (9 contracts with 93 detectors), 31 result(s) found
```

FUNCTIONAL TESTING

1- Approve (passed):
https://testnet.bscscan.com/tx/0xe912079adab63d539bb390f1b6039d919ab230e1de6c3fb8d5881832057ed007

2- Increase Allowance (passed):
https://testnet.bscscan.com/tx/0xf3e5e9368651968e96f27bc29d0ff653bca960b862f85f61dd40eb20530db9a0

3- Decrease Allowance (passed):
https://testnet.bscscan.com/tx/0x8e78960e3567ec2fed42d34e1f8f4a7ef226ff930c7c7c7a333ec1b6517fce0f

4- Enable Trading (passed):
https://testnet.bscscan.com/tx/0x170ee0c0648b8394c9e73c137e69e559fe50a245ebeea6d2bf3269c3ce7d1602

POINTS TO NOTE

- The owner can transfer ownership.
- The owner can renounce ownership.
- The owner can Enable trading.
- The owner can set a whitelisted address.
- The owner can remove the maximum wallet limit.

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	1
◆ Medium-Risk	0
◆ Low-Risk	1
◆ Gas Optimization / Suggestions	3

MANUAL TESTING

Centralization – Enabling Trades

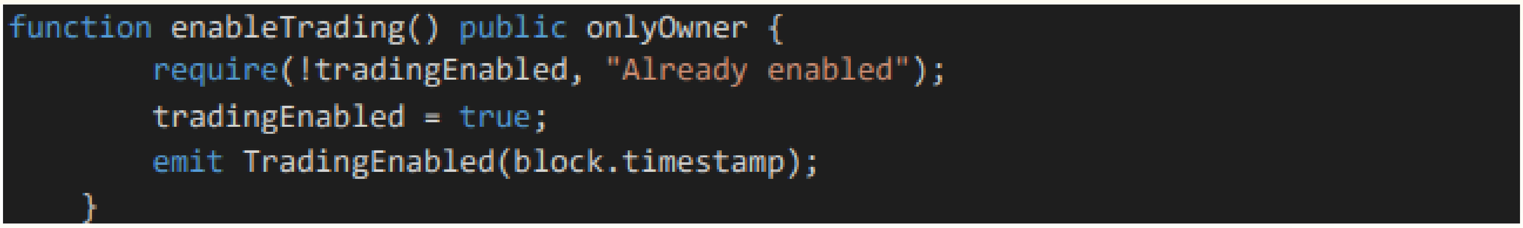
Severity: High

Function: EnableTrading

Status: Open

Overview:

The EnableTrading function permits only the contract owner to activate trading capabilities. Until this function is executed, no investors can buy, sell, or transfer their tokens. This places a high degree of control and centralization in the hands of the contract owner.



```
function enableTrading() public onlyOwner {
        require(!tradingEnabled, "Already enabled");
        tradingEnabled = true;
        emit TradingEnabled(block.timestamp);
    }
```

Suggestion:

To reduce centralization and potential manipulation, consider one of the following approaches:

1.Automatically enable trading after a specified condition, such as the completion of a presale, is met.

2.If manual activation is still desired, consider transferring the ownership of the contract to a trustworthy, third-party entity like a certified "PinkSale Safu" developer. This can give investors more confidence in the eventual activation of trading capabilities, mitigating concerns of potential bad-faith actions by the original owner.

MANUAL TESTING

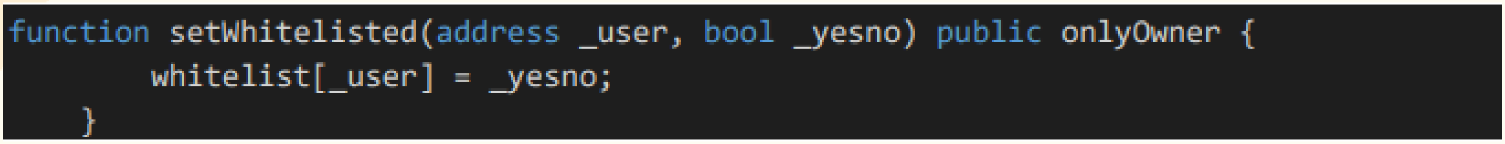
Centralization – Missing Events

Severity: Low

Subject: Missing Events

Status: Open

Overview:
They serve as a mechanism for emitting and recording data onto the blockchain, making it transparent and easily accessible.



```
function setWhitelisted(address _user, bool _yesno) public onlyOwner {
        whitelist[_user] = _yesno;
    }
```

MANUAL TESTING

Optimization

Severity: Informational

Subject: Remove Safe Math

Status: Open

Line: 8-129

Overview:
compiler version above 0.8.0 can control arithmetic overflow/underflow, it is recommended to remove the unwanted code to avoid high gas fees.

MANUAL TESTING

Optimization

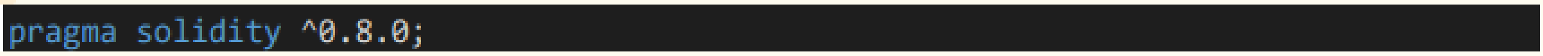
Severity: Informational

Subject: Floating Pragma

Status: Open

Overview:

It is considered best practice to pick one compiler version and stick with it. With a floating pragma, contracts may accidentally be deployed using an outdated.



```
pragma solidity ^0.8.0;
```

Suggestion:

Adding the latest constant version of solidity is recommended, as this prevents the unintentional deployment of a contract with an outdated compiler that contains unresolved bugs.

MANUAL TESTING

Optimization

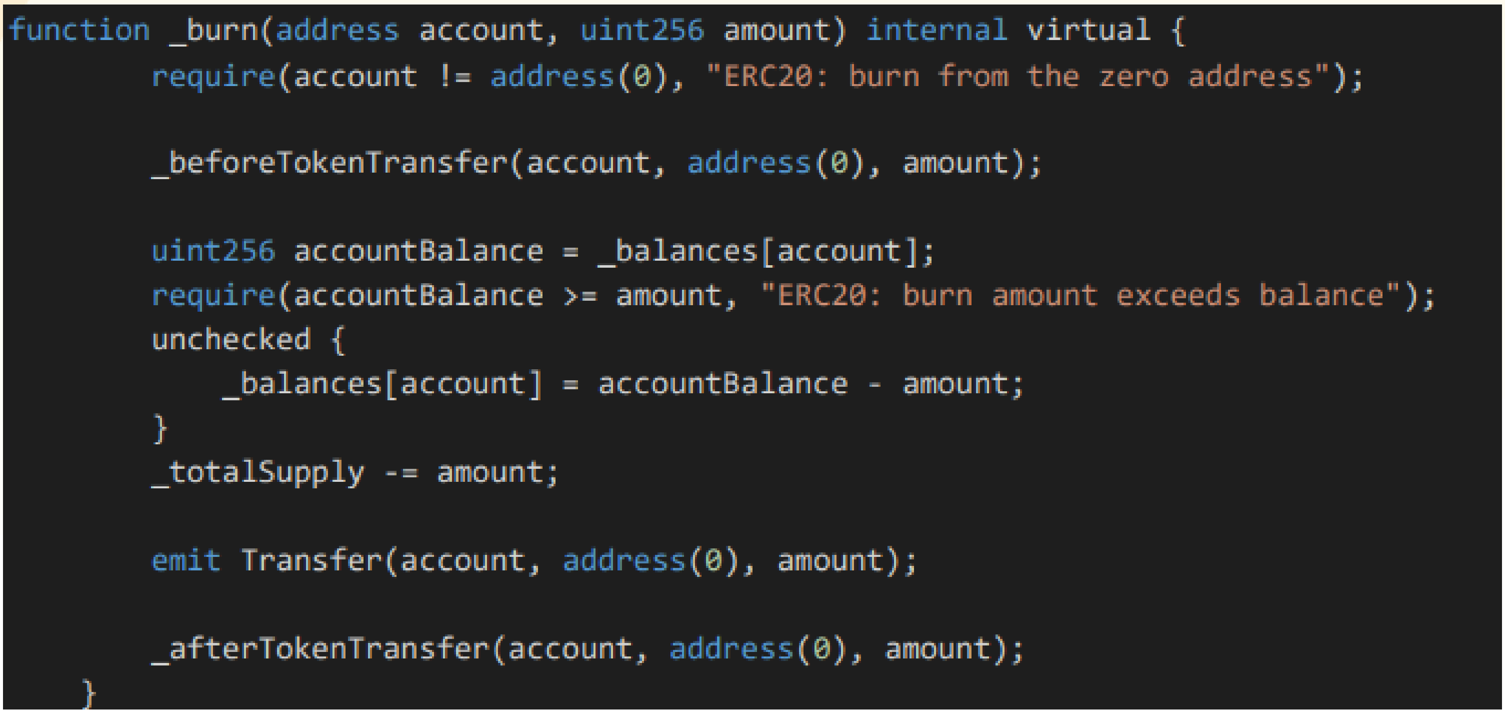
Severity: Optimization

Subject: Remove unused code

Status: Open

Overview:

Unused variables are allowed in Solidity, and they do. not pose a direct security issue. It is the best practice. though to avoid them.



```
function _burn(address account, uint256 amount) internal virtual {
        require(account != address(0), "ERC20: burn from the zero address");

        _beforeTokenTransfer(account, address(0), amount);

        uint256 accountBalance = _balances[account];
        require(accountBalance >= amount, "ERC20: burn amount exceeds balance");
        unchecked {
            _balances[account] = accountBalance - amount;
        }
        _totalSupply -= amount;

        emit Transfer(account, address(0), amount);

        _afterTokenTransfer(account, address(0), amount);
    }
```

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