



Smart Contract Audit

FOR
Coin31
DATED : 5 July 24'



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() external onlyOwner {  
    tradeEnable = !tradeEnable;  
}
```

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 – Owner can blacklist wallets.

Severity: High

Function: addB/removeB

Status: Open

Overview:

The owner can blacklist wallets from transferring of tokens for an indefinite period of time which is not recommended. Which can lock user's token.

```
function addB(address addr, uint256 period) public onlyOwner {  
    bl[addr] = block.timestamp + period;  
}  
  
function removeB(address addr) public onlyOwner {  
    bl[addr] = block.timestamp;  
}
```

Suggestion:

There should be a locking period so that the wallet cannot be locked for an indefinite. Period of time.



MANUAL TESTING

Centralization – Loss of Funds

Severity: High

Function: _Transfer

Status: Open

Overview:

In this _Transfer function if underflow occurs, _balances[from] would not correctly reflect the intended balance after the transfer. Instead, it would hold an incorrect large value, and the actual transfer of tokens would be incorrect.

```
function _transfer(address from, address to, uint256 amount) private ReentryGuard(from, to, amount) {
    require(from != address(0), "ERC20: transfer from the zero address");
    require(to != address(0), "ERC20: transfer to the zero address");
    require(amount > 0, "Transfer amount must be greater than zero");

    unchecked {
        _balances[from] -= amount;
    }
    _balances[to] += amount;

    emit Transfer(from, to, amount);
}
```

Suggestion:

Removed the unchecked block to ensure that the subtraction and addition operations are checked for underflow and overflow, respectively. By removing the unchecked block and adding a check to ensure the from account has sufficient balance, the function will prevent the underflow issue, thereby protecting against the potential loss of funds.



AUDIT SUMMARY

Project name - Coin31

Date: 5 July, 2024

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

Audit Status: High Risk Major Flag

Issues Found

Status	Critical	High	Medium	Low	Suggestion
Open	0	3	0	3	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 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/0x7524bdc3604a3953a10436afaae68654bf9a93d5#code>



Token Information

Token Address: --

Name: --

Symbol: --

Decimals: --

Network: --

Token Type: --

Owner: --

Deployer: --

Token Supply: --

Checksum: Ae032c616934aeb47e6039f76b20d513

Testnet:

<https://testnet.bscscan.com/address/0x7524bdc3604a3953a10436afaae68654bf9a93d5#code>



TOKEN OVERVIEW

Buy Fee: 0-0%

Sell Fee: 0-0%

Transfer Fee: 0-0%

Fee Privilege: Owner

Ownership: Owned

Minting: None

Max Tx: No

Blacklist: Yes





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 Limit and 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

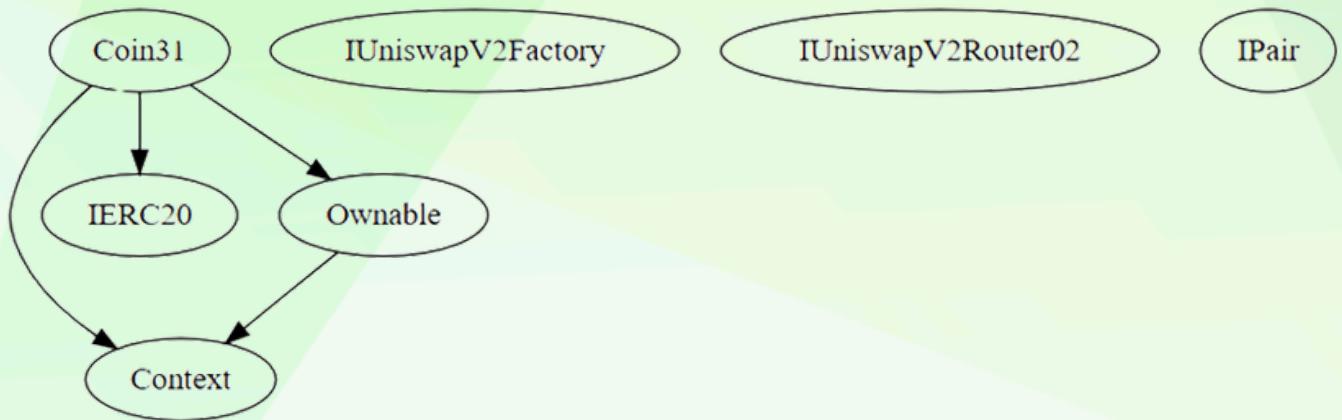


Compiler version not fixed



Using throw

INHERITANCE TREE





POINTS TO NOTE

- The owner can transfer ownership.
- The owner can renounce ownership.
- The owner can Enable trading.
- The owner can recover BEP20.
- The owner can add/remove the W address.
- The owner can add/remove the B address.



STATIC ANALYSIS

```
Coin31.recoverBEP20FromContract(address,uint256,address) (Coin31.sol#294-299) ignores return value by IERC20(_tokenAddy)
.transfer(to,_amount) (Coin31.sol#297)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#unchecked-transfer
INFO:Detectors:
Coin31.allowance(address,address).owner (Coin31.sol#248) shadows:
- Ownable.owner() (Coin31.sol#117-119) (function)
Coin31._approve(address,address,uint256).owner (Coin31.sol#265) shadows:
- Ownable.owner() (Coin31.sol#117-119) (function)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#local-variable-shadowing
INFO:Detectors:
Ownable.constructor().msgSender (Coin31.sol#112) lacks a zero-check on :
- _owner = msgSender (Coin31.sol#113)
Coin31.recoverBNBfromContract(address).to (Coin31.sol#301) lacks a zero-check on :
- address(address(to)).transfer(contractETHBalance) (Coin31.sol#305)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#missing-zero-address-validation
INFO:Detectors:
Reentrancy in Coin31.recoverBEP20FromContract(address,uint256,address) (Coin31.sol#294-299):
External calls:
- IERC20(_tokenAddy).transfer(to,_amount) (Coin31.sol#297)
Event emitted after the call(s):
- ERC20TokensRecovered(_amount) (Coin31.sol#298)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#reentrancy-vulnerabilities-3
INFO:Detectors:
Coin31.cbl(address) (Coin31.sol#285-287) uses timestamp for comparisons
Dangerous comparisons:
- bl[addr] > 0 && block.timestamp < bl[addr] (Coin31.sol#286)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#block-timestamp
Reentrancy in Coin31.recoverBEP20FromContract(address,uint256,address) (Coin31.sol#294-299):
External calls:
- IERC20(_tokenAddy).transfer(to,_amount) (Coin31.sol#297)
Event emitted after the call(s):
- ERC20TokensRecovered(_amount) (Coin31.sol#298)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#reentrancy-vulnerabilities-3
INFO:Detectors:
Coin31.cbl(address) (Coin31.sol#285-287) uses timestamp for comparisons
Dangerous comparisons:
- bl[addr] > 0 && block.timestamp < bl[addr] (Coin31.sol#286)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#block-timestamp
INFO:Detectors:
Coin31.min(uint256,uint256) (Coin31.sol#239-241) is never used and should be removed
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#dead-code
INFO:Detectors:
Pragma version0.8.17 (Coin31.sol#2) 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 IUniswapV2Router02.WETH() (Coin31.sol#35) is not in mixedCase
Function IPair.DOMAIN_SEPARATOR() (Coin31.sol#69) is not in mixedCase
Function IPair.PERMIT_TYPEHASH() (Coin31.sol#70) is not in mixedCase
Function IPair.MINIMUM_LIQUIDITY() (Coin31.sol#87) is not in mixedCase
Parameter Coin31.recoverBEP20FromContract(address,uint256,address)._tokenAddy (Coin31.sol#294) is not in mixedCase
Parameter Coin31.recoverBEP20FromContract(address,uint256,address)..amount (Coin31.sol#294) is not in mixedCase
Constant Coin31._decimals (Coin31.sol#160) is not in UPPER_CASE_WITH_UNDERSCORES

Function IUniswapV2Router02.WETH() (Coin31.sol#35) is not in mixedCase
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Parameter Coin31.recoverBEP20FromContract(address,uint256,address)._tokenAddy (Coin31.sol#294) is not in mixedCase
Parameter Coin31.recoverBEP20FromContract(address,uint256,address)..amount (Coin31.sol#294) is not in mixedCase
Constant Coin31._decimals (Coin31.sol#160) is not in UPPER_CASE_WITH_UNDERSCORES

Modifier Coin31.ReentryGuard(address,address,uint256) (Coin31.sol#172-188) is not in mixedCase
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#conformance-to-solidity-naming-conventions
INFO:Detectors:
Reentrancy in Coin31.recoverBNBfromContract(address) (Coin31.sol#301-307):
External calls:
- address(address(to)).transfer(contractETHBalance) (Coin31.sol#305)
Event emitted after the call(s):
- ETHBalanceRecovered() (Coin31.sol#306)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#reentrancy-vulnerabilities-4
INFO:Detectors:
Coin31.router (Coin31.sol#157) should be constant
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-constant
INFO:Detectors:
Coin31.uniswapV2Router (Coin31.sol#167) should be immutable
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-immutable
INFO:Slither:Coin31.sol analyzed (7 contracts with 93 detectors), 21 result(s) found
ethsec@0dcc802fad35:/share$ |
```

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



FUNCTIONAL TESTING

1- Approve (passed):

<https://testnet.bscscan.com/tx/0x9c0807151d43d7d282edc303798b7ddc79bd2ac68ee0ab022a8d18612908e586>

2- Add W (passed):

<https://testnet.bscscan.com/tx/0x75d626917d66133f37d128c777c6cd53ac9232f5da1eb9960960c0451d4ff645>

3- Add B (passed):

<https://testnet.bscscan.com/tx/0xa1c56f67c4b0efdd44da147ec9b08c9a4d1bb2b03ccb09805d901936523e1562>

4- Enable Trading (passed):

<https://testnet.bscscan.com/tx/0xb07e66d7469d4b0c73e32257877fdf2dc4ce252a1ff233c3b44384a0c56e2f2>

5- Remove B (passed):

<https://testnet.bscscan.com/tx/0xa79685d48a61334e1f6a98b74cd9de998110d445935300e399592fc377ed9210>

6- Remove W (passed):

<https://testnet.bscscan.com/tx/0xca19a435820ca4ea3fb00c778c324f82be1ccd39fda1387d667a84a53ca3b87e>



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



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function addB(address addr, uint256 period) public onlyOwner {  
    bl[addr] = block.timestamp + period;  
}  
  
function removeB(address addr) public onlyOwner {  
    bl[addr] = block.timestamp;  
}
```

Suggestion:

There should be a locking period so that the wallet cannot be locked for an indefinite. Period of time.



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Centralization – Loss of Funds

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Function: _Transfer

Status: Open

Overview:

In this _Transfer function if underflow occurs, _balances[from] would not correctly reflect the intended balance after the transfer. Instead, it would hold an incorrect large value, and the actual transfer of tokens would be incorrect.

```
function _transfer(address from, address to, uint256 amount) private ReentryGuard(from, to, amount) {
    require(from != address(0), "ERC20: transfer from the zero address");
    require(to != address(0), "ERC20: transfer to the zero address");
    require(amount > 0, "Transfer amount must be greater than zero");

    unchecked {
        _balances[from] -= amount;
    }
    _balances[to] += amount;

    emit Transfer(from, to, amount);
}
```

Suggestion:

Removed the unchecked block to ensure that the subtraction and addition operations are checked for underflow and overflow, respectively. By removing the unchecked block and adding a check to ensure the from account has sufficient balance, the function will prevent the underflow issue, thereby protecting against the potential loss of funds.



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 enableTrading() external onlyOwner {  
    tradeEnable = !tradeEnable;  
}  
function addW(address addr) external onlyOwner {  
    isW[addr] = true;  
}  
function removeW(address addr) external onlyOwner {  
    isW[addr] = false;  
}  
function addB(address addr, uint256 period) public onlyOwner {  
    bl[addr] = block.timestamp + period;  
}  
function removeB(address addr) public onlyOwner {  
    bl[addr] = block.timestamp;  
}
```

Suggestion:

Emit an event for critical changes.



MANUAL TESTING

Centralization – Missing Zero Address

Severity: Low

Subject: Zero Check

Status: Open

Overview:

functions can take a zero address as a parameter (0x0000...). If a function parameter of address type is not properly validated by checking for zero addresses, there could be serious consequences for the contract's functionality.

```
function addW(address addr) external onlyOwner {  
    isW[addr] = true;  
}  
function removeW(address addr) external onlyOwner {  
    isW[addr] = false;  
}  
function addB(address addr, uint256 period) public onlyOwner {  
    bl[addr] = block.timestamp + period;  
}  
function removeB(address addr) public onlyOwner {  
    bl[addr] = block.timestamp;  
}  
  
function recoverBNBfromContract(address to) external onlyOwner {  
    uint256 contractETHBalance = address(this).balance;  
    require(contractETHBalance > 0, "Amount should be greater than zero");  
    require(contractETHBalance <= address(this).balance, "Insufficient  
Amount");  
    payable(address(to)).transfer(contractETHBalance);  
    emit ETHBalanceRecovered();  
}
```

Suggestion:

It is suggested that the address should not be zero or dead.



MANUAL TESTING

Centralization – Local variable Shadowing

Severity: Low

Subject: Variable Shadowing

Status: Open

Overview:

```
function allowance(address owner, address spender) public view returns  
(uint256) {  
    return _allowances[owner][spender];  
}  
function _approve(address owner, address spender, uint256 amount) private {  
    require(owner != address(0), "ERC20: approve from the zero address");  
    require(spender != address(0), "ERC20: approve to the zero address");  
    _allowances[owner][spender] = amount;  
    emit Approval(owner, spender, amount);  
}
```

Suggestion:

Rename the local variables that shadow another component.



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 min(uint256 a, uint256 b) private pure returns (uint256) {  
    return (a > b) ? b : a;
```



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