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AuditAce
FROM INCEPTION TO SUCCESS

# 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:**
**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.

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

    ftrace | funcSig
    function removeB(address addr↑) public onlyOwner {
        bl[addr↑] = block.timestamp;
    }

}
```

# 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 | 2 | 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

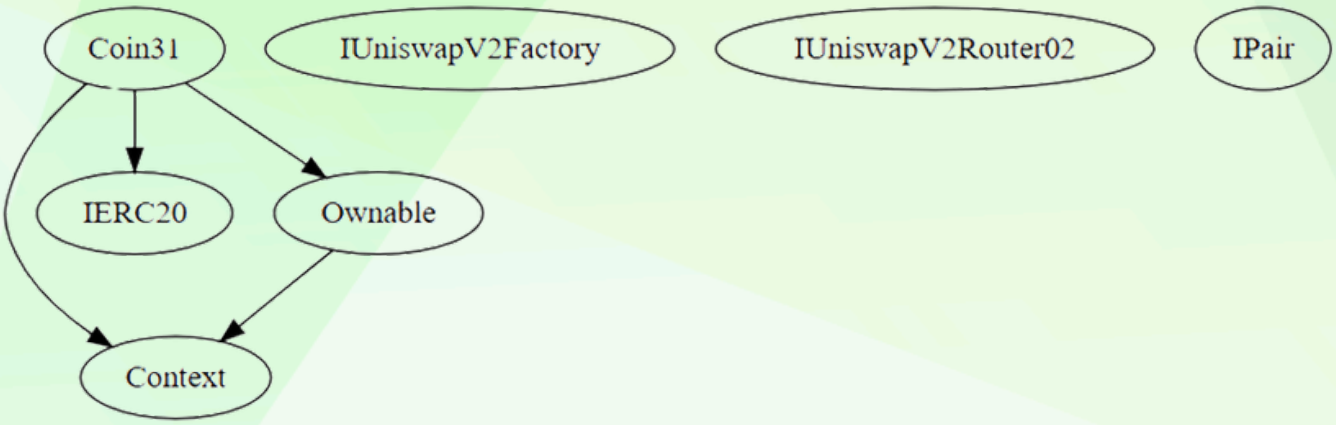
The auditing process will follow a routine as special considerations by Auditace:

- 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 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

- [x] Return values of low-level calls
- [x] Private modifier
- [x] Multiple Sends
- [x] Using Suicide
- [x] Gas Limitand Loops
- [x] Address hardcoded
- [x] Exception Disorder
- [x] Using inline assembly
- [x] Divide before multiply
- [x] Missing Zero Address Validation
- [x] Compiler version not fixed
- [x] **Gasless Send**
- [x] Using block.timestamp
- [x] Re-entrancy
- [x] Tautology or contradiction
- [x] Timestamp Dependence
- [x] Revert/require functions
- [x] Use of tx.origin
- [x] Integer overflow/underflow
- [x] Dangerous strict equalities
- [x] Using SHA3
- [x] 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)._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-immutabl
e
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/0xb07e66d7469d4b0c73e32257877fdf2dcd4ce252a1ff233c3b44384a0c56e2f2

**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 | 2 |
| Medium-Risk | 0 |
| Low-Risk | 3 |
| Gas Optimization / Suggestions | 1 |

# 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.

```
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**Suggestion:**

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

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**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.

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

    ftrace | funcSig
    function removeB(address addr↑) public onlyOwner {
        bl[addr↑] = block.timestamp;
    }

}
```

# 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 (0x00000...). 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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