



Cyberscope

# Audit Report

## **Simpson**

April 2023

Network    BSC

Address    0x380005fc97640c0c94ea7f7393ecd02022fb3116

Audited by    © cyberscope

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## Review

|                  |   |
|------------------|---|
| Contract Name    | Simpsoninu  |
| Compiler Version | v0.8.19+commit.7dd6d404   |
| Optimization     | 200 runs  |
| Explorer         | <a href="https://bscscan.com/address/0x380005fc97640c0c94ea7f7393ecd02022fb3116">https://bscscan.com/address/0x380005fc97640c0c94ea7f7393ecd02022fb3116</a> |
| Address          | 0x380005fc97640c0c94ea7f7393ecd02022fb3116  |
| Network          | BSC   |
| Symbol           | SIPS  |
| Decimals         | 9   |
| Total Supply     | 100,000,000,000,000,000   |

## Audit Updates

|               |             |
|---------------|-------------|
| Initial Audit | 30 Apr 2023 |
|---------------|-------------|

## Source Files

|                |  |
|----------------|--|
| Filename       | SHA256   |
| Simpsoninu.sol | e0f4adbc9c0a8ad1af46d6cd1d572580a724e81a314d0b09358214e5987d64ae |

## Findings Breakdown



|                       |   |
|-----------------------|---|
| ● Critical            | 0 |
| ● Medium              | 0 |
| ● Minor / Informative | 9 |

| Severity              | Unresolved | Acknowledged | Resolved | Other |
|-----------------------|------------|--------------|----------|-------|
| ● Critical            | 0          | 0            | 0        | 0     |
| ● Medium              | 0          | 0            | 0        | 0     |
| ● Minor / Informative | 9          | 0            | 0        | 0     |

# Analysis

● Critical ● Medium ● Minor / Informative ● Pass

| Severity | Code | Description                        | Status |
|----------|------|------------------------------------|--------|
| ●        | ST   | Stops Transactions                 | Passed |
| ●        | OCTD | Transfers Contract's Tokens        | Passed |
| ●        | OTUT | Transfers User's Tokens            | Passed |
| ●        | ELFM | Exceeds Fees Limit                 | Passed |
| ●        | ULTW | Transfers Liquidity to Team Wallet | Passed |
| ●        | MT   | Mints Tokens                       | Passed |
| ●        | BT   | Burns Tokens                       | Passed |
| ●        | BC   | Blacklists Addresses               | Passed |

# Diagnostics

● Critical ● Medium ● Minor / Informative

| Severity | Code | Description                                | Status     |
|----------|------|--|------------|
| ●        | PTRP | Potential Transfer Revert Propagation      | Unresolved |
| ●        | RSML | Redundant SafeMath Library                 | Unresolved |
| ●        | IDI  | Immutable Declaration Improvement          | Unresolved |
| ●        | L02  | State Variables could be Declared Constant | Unresolved |
| ●        | L04  | Conformance to Solidity Naming Conventions | Unresolved |
| ●        | L05  | Unused State Variable                      | Unresolved |
| ●        | L16  | Validate Variable Setters                  | Unresolved |
| ●        | L19  | Stable Compiler Version                    | Unresolved |
| ●        | L20  | Succeeded Transfer Check                   | Unresolved |

## PTRP - Potential Transfer Revert Propagation

|             |                     |
|-------------|---------------------|
| Criticality | Minor / Informative |
| Location    | Simpsoninu.sol#L299 |
| Status      | Unresolved          |

### Description

The contract sends funds to `_developmentAddress` and `_marketingAddress` as part of the transfer flow. This address can either be a wallet address or a contract. If the address belongs to a contract then it may revert from incoming payment. As a result, the error will propagate to the token's contract and revert the transfer.

```
_developmentAddress.transfer(amount.div(2));  
_marketingAddress.transfer(amount.div(2));
```

### Recommendation

The contract should tolerate the potential revert from the underlying contracts when the interaction is part of the main transfer flow. This could be achieved by not allowing set contract addresses or by sending the funds in a non-revertable way.



## RSML - Redundant SafeMath Library

|             |                     |
|-------------|---------------------|
| Criticality | Minor / Informative |
| Location    | Simpsoninu.sol      |
| Status      | Unresolved          |

### Description

SafeMath is a popular Solidity library that provides a set of functions for performing common arithmetic operations in a way that is resistant to integer overflows and underflows.

Starting with Solidity versions that are greater than or equal to 0.8.0, the arithmetic operations revert on underflow and overflow. As a result, the native functionality of the Solidity operations replaces the SafeMath library. Hence, the usage of the SafeMath library adds complexity, overhead and increases the gas consumption unnecessarily.

```
library SafeMath {...}
```

### Recommendation

The team is advised to remove the SafeMath library. Since the version of the contract is greater than `0.8.0` then the pure Solidity arithmetic operations produce the same result.

If the previous functionality is required, then the contract could exploit the `unchecked { ... }` statement.

Read more about the breaking change on

<https://docs.soliditylang.org/en/v0.8.16/080-breaking-changes.html#solidity-v0-8-0-breaking-changes>.

## IDI - Immutable Declaration Improvement

|                    |                         |
|--------------------|-------------------------|
| <b>Criticality</b> | Minor / Informative     |
| <b>Location</b>    | Simpsoninu.sol#L171,172 |
| <b>Status</b>      | Unresolved              |

### Description

The contract is using variables that initialize them only in the constructor. The other functions are not mutating the variables. These variables are not defined as `immutable`.

```
uniswapV2Router  
uniswapV2Pair
```

### Recommendation

By declaring a variable as immutable, the Solidity compiler is able to make certain optimizations. This can reduce the amount of storage and computation required by the contract, and make it more gas-efficient.

## L02 - State Variables could be Declared Constant

|                    |                     |
|--------------------|---------------------|
| <b>Criticality</b> | Minor / Informative |
| <b>Location</b>    | Simpsoninu.sol#L97  |
| <b>Status</b>      | Unresolved          |

### Description

State variables can be declared as constant using the constant keyword. This means that the value of the state variable cannot be changed after it has been set. Additionally, the constant variables decrease gas consumption of the corresponding transaction.

```
address private _previousOwner
```

### Recommendation

Constant state variables can be useful when the contract wants to ensure that the value of a state variable cannot be changed by any function in the contract. This can be useful for storing values that are important to the contract's behavior, such as the contract's address or the maximum number of times a certain function can be called. The team is advised to add the constant keyword to state variables that never change.

## L04 - Conformance to Solidity Naming Conventions

|                    |  |
|--------------------|--|
| <b>Criticality</b> | Minor / Informative                                    |
| <b>Location</b>    | Simpsoninu.sol#L38,136,149,150,151,303,304,309,316,402 |
| <b>Status</b>      | Unresolved   |

### Description

The Solidity style guide is a set of guidelines for writing clean and consistent Solidity code. Adhering to a style guide can help improve the readability and maintainability of the Solidity code, making it easier for others to understand and work with.

The followings are a few key points from the Solidity style guide:

1. Use camelCase for function and variable names, with the first letter in lowercase (e.g., myVariable, updateCounter).
2. Use PascalCase for contract, struct, and enum names, with the first letter in uppercase (e.g., MyContract, UserStruct, ErrorEnum).
3. Use uppercase for constant variables and enums (e.g., MAX\_VALUE, ERROR\_CODE).
4. Use indentation to improve readability and structure.
5. Use spaces between operators and after commas.
6. Use comments to explain the purpose and behavior of the code.
7. Keep lines short (around 120 characters) to improve readability.

```
function WETH() external pure returns (address);
uint256 private constant _tTotal = 100000000000 * 10**6 * 10**9
string private constant _name = "SimpsonInu"
string private constant _symbol = "SIPS"
uint8 private constant _decimals = 9
event tokensRescued(address indexed token, address indexed to, uint
amount);
address _tokenAddr
uint _amount
address _to
event devAddressUpdated(address indexed previous, address indexed
adr);
event marketingAddressUpdated(address indexed previous, address
indexed adr);
bool _swapEnabled
```

## Recommendation

By following the Solidity naming convention guidelines, the codebase increased the readability, maintainability, and makes it easier to work with.

Find more information on the Solidity documentation

<https://docs.soliditylang.org/en/v0.8.17/style-guide.html#naming-convention>.

## L05 - Unused State Variable

|                    |                        |
|--------------------|------------------------|
| <b>Criticality</b> | Minor / Informative    |
| <b>Location</b>    | Simpsoninu.sol#L97,131 |
| <b>Status</b>      | Unresolved             |

### Description

An unused state variable is a state variable that is declared in the contract, but is never used in any of the contract's functions. This can happen if the state variable was originally intended to be used, but was later removed or never used.

Unused state variables can create clutter in the contract and make it more difficult to understand and maintain. They can also increase the size of the contract and the cost of deploying and interacting with it.

```
address private _previousOwner  
mapping (address => uint256) private _tOwned
```

### Recommendation

To avoid creating unused state variables, it's important to carefully consider the state variables that are needed for the contract's functionality, and to remove any that are no longer needed. This can help improve the clarity and efficiency of the contract.

## L16 - Validate Variable Setters

|                    |                             |
|--------------------|-----------------------------|
| <b>Criticality</b> | Minor / Informative         |
| <b>Location</b>    | Simpsoninu.sol#L122,312,319 |
| <b>Status</b>      | Unresolved                  |

### Description

The contract performs operations on variables that have been configured on user-supplied input. These variables are missing of proper check for the case where a value is zero. This can lead to problems when the contract is executed, as certain actions may not be properly handled when the value is zero.

```
_owner = newOwner  
_developmentAddress = dev  
_marketingAddress = markt
```

### Recommendation

By adding the proper check, the contract will not allow the variables to be configured with zero value. This will ensure that the contract can handle all possible input values and avoid unexpected behavior or errors. Hence, it can help to prevent the contract from being exploited or operating unexpectedly.

## L19 - Stable Compiler Version

|                    |                     |
|--------------------|---------------------|
| <b>Criticality</b> | Minor / Informative |
| <b>Location</b>    | Simpsoninu.sol#L7   |
| <b>Status</b>      | Unresolved          |

### Description

The `^` symbol indicates that any version of Solidity that is compatible with the specified version (i.e., any version that is a higher minor or patch version) can be used to compile the contract. The version lock is a mechanism that allows the author to specify a minimum version of the Solidity compiler that must be used to compile the contract code. This is useful because it ensures that the contract will be compiled using a version of the compiler that is known to be compatible with the code.

```
pragma solidity ^0.8.4;
```

### Recommendation

The team is advised to lock the pragma to ensure the stability of the codebase. The locked pragma version ensures that the contract will not be deployed with an unexpected version. An unexpected version may produce vulnerabilities and undiscovered bugs. The compiler should be configured to the lowest version that provides all the required functionality for the codebase. As a result, the project will be compiled in a well-tested LTS (Long Term Support) environment.



## L20 - Succeeded Transfer Check

|                    |                     |
|--------------------|---------------------|
| <b>Criticality</b> | Minor / Informative |
| <b>Location</b>    | Simpsoninu.sol#L306 |
| <b>Status</b>      | Unresolved          |

### Description

According to the ERC20 specification, the transfer methods should be checked if the result is successful. Otherwise, the contract may wrongly assume that the transfer has been established.

```
Token(_tokenAddr).transfer(_to, _amount)
```

### Recommendation

The contract should check if the result of the transfer methods is successful. The team is advised to check the SafeERC20 library from the [Openzeppelin library](#).

# Functions Analysis

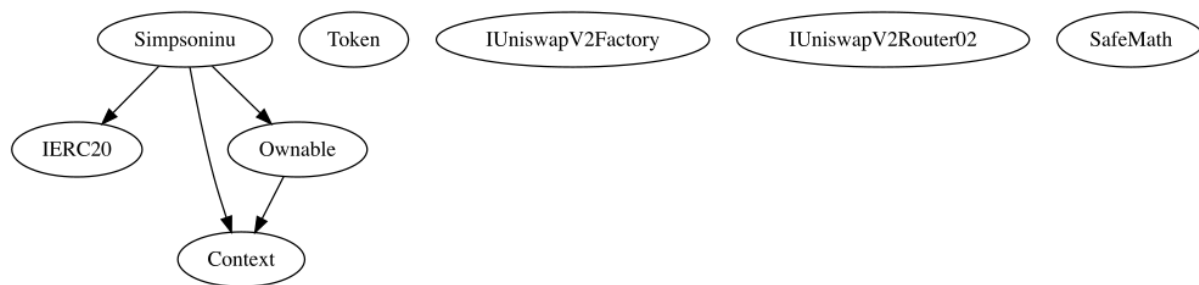
| Contract                  | Type   | Bases      |            |           |
|---------------------------|--|------------|------------|-----------|
|                           | Function Name                                      | Visibility | Mutability | Modifiers |
|                           |  |            |            |           |
| <b>IERC20</b>             | Interface  |            |            |           |
|                           | totalSupply  | External   |            | -         |
|                           | balanceOf  | External   |            | -         |
|                           | transfer   | External   | ✓          | -         |
|                           | allowance  | External   |            | -         |
|                           | approve  | External   | ✓          | -         |
|                           | transferFrom                                       | External   | ✓          | -         |
|                           |  |            |            |           |
| <b>Token</b>              | Interface  |            |            |           |
|                           | transferFrom                                       | External   | ✓          | -         |
|                           | transfer   | External   | ✓          | -         |
|                           |  |            |            |           |
| <b>IUniswapV2Factory</b>  | Interface  |            |            |           |
|                           | createPair   | External   | ✓          | -         |
|                           |  |            |            |           |
| <b>IUniswapV2Router02</b> | Interface  |            |            |           |
|                           | swapExactTokensForETHSupportingFeeOnTransferTokens | External   | ✓          | -         |

|                   |                   |                                |         |           |
|-------------------|-------------------|--------------------------------|---------|-----------|
|                   | factory           | External                       |         | -         |
|                   | WETH              | External                       |         | -         |
|                   | addLiquidityETH   | External                       | Payable | -         |
|                   |                   |                                |         |           |
| <b>Context</b>    | Implementation    |                                |         |           |
|                   | _msgSender        | Internal                       |         |           |
|                   |                   |                                |         |           |
| <b>SafeMath</b>   | Library           |                                |         |           |
|                   | add               | Internal                       |         |           |
|                   | sub               | Internal                       |         |           |
|                   | sub               | Internal                       |         |           |
|                   | mul               | Internal                       |         |           |
|                   | div               | Internal                       |         |           |
|                   | div               | Internal                       |         |           |
|                   |                   |                                |         |           |
| <b>Ownable</b>    | Implementation    | Context                        |         |           |
|                   |                   | Public                         | ✓       | -         |
|                   | owner             | Public                         |         | -         |
|                   | renounceOwnership | Public                         | ✓       | onlyOwner |
|                   | transferOwnership | Public                         | ✓       | onlyOwner |
|                   |                   |                                |         |           |
| <b>Simpsoninu</b> | Implementation    | Context,<br>IERC20,<br>Ownable |         |           |
|                   |                   | Public                         | ✓       | -         |

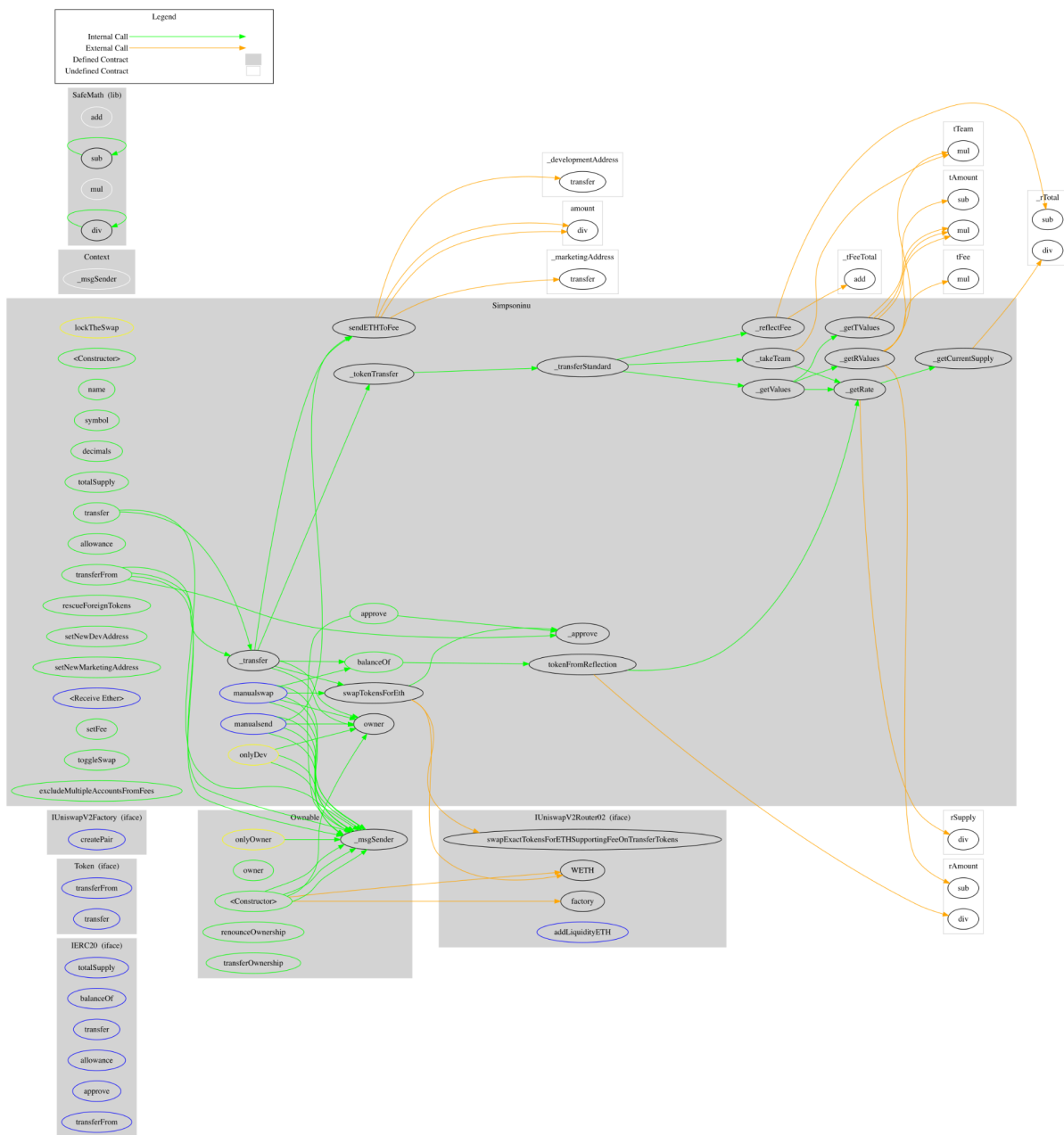
|  |                        |          |         |             |
|--|------------------------|----------|---------|-------------|
|  | name                   | Public   |         | -           |
|  | symbol                 | Public   |         | -           |
|  | decimals               | Public   |         | -           |
|  | totalSupply            | Public   |         | -           |
|  | balanceOf              | Public   |         | -           |
|  | transfer               | Public   | ✓       | -           |
|  | allowance              | Public   |         | -           |
|  | approve                | Public   | ✓       | -           |
|  | transferFrom           | Public   | ✓       | -           |
|  | tokenFromReflection    | Private  |         |             |
|  | _approve               | Private  | ✓       |             |
|  | _transfer              | Private  | ✓       |             |
|  | swapTokensForEth       | Private  | ✓       | lockTheSwap |
|  | sendETHToFee           | Private  | ✓       |             |
|  | _tokenTransfer         | Private  | ✓       |             |
|  | rescueForeignTokens    | Public   | ✓       | onlyDev     |
|  | setNewDevAddress       | Public   | ✓       | onlyDev     |
|  | setNewMarketingAddress | Public   | ✓       | onlyDev     |
|  | _transferStandard      | Private  | ✓       |             |
|  | _takeTeam              | Private  | ✓       |             |
|  | _reflectFee            | Private  | ✓       |             |
|  |                        | External | Payable | -           |
|  | _getValues             | Private  |         |             |

|  |                                 |          |   |           |
|--|---------------------------------|----------|---|-----------|
|  | _getTValues                     | Private  |   |           |
|  | _getRValues                     | Private  |   |           |
|  | _getRate                        | Private  |   |           |
|  | _getCurrentSupply               | Private  |   |           |
|  | manualswap                      | External | ✓ | -         |
|  | manualsend                      | External | ✓ | -         |
|  | setFee                          | Public   | ✓ | onlyDev   |
|  | toggleSwap                      | Public   | ✓ | onlyDev   |
|  | excludeMultipleAccountsFromFees | Public   | ✓ | onlyOwner |

## Inheritance Graph



# Flow Graph



## Summary

Simpson contract implements a token mechanism. This audit investigates security issues, business logic concerns and potential improvements. Simpson is an interesting project that has a friendly and growing community. The Smart Contract analysis reported no compiler error or critical issues. The contract Owner can access some admin functions that can not be used in a malicious way to disturb the users' transactions. There is also a limit of max 16% fees.



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Cyberscope is one of the leading smart contract audit firms in the crypto space and has built a high-profile network of clients and partners.



**The Cyberscope team**

<https://www.cyberscope.io>