



Cyberscope

# Audit Report

## **Simpsonsinu**

May 2023

Network    BSC

Address    0x5cc97dAb7bc2c01556FbE3d06a09b8C559Dff7d5

Audited by    © cyberscope

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## Review

|                  |                                                                                                                                                             |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contract Name    | SIMPSONSINU                                                                                                                                                 |
| Compiler Version | v0.8.17+commit.8df45f5f                                                                                                                                     |
| Optimization     | 200 runs                                                                                                                                                    |
| Explorer         | <a href="https://bscscan.com/address/0x5cc97dab7bc2c01556fbe3d06a09b8c559dff7d5">https://bscscan.com/address/0x5cc97dab7bc2c01556fbe3d06a09b8c559dff7d5</a> |
| Address          | 0x5cc97dab7bc2c01556fbe3d06a09b8c559dff7d5                                                                                                                  |
| Network          | BSC                                                                                                                                                         |
| Symbol           | SIMPSONSINU                                                                                                                                                 |
| Decimals         | 9                                                                                                                                                           |
| Total Supply     | 420,690,000,000,000                                                                                                                                         |

## Audit Updates

|               |             |
|---------------|-------------|
| Initial Audit | 16 May 2023 |
|---------------|-------------|

## Source Files

|                 |                                                                  |
|-----------------|------------------------------------------------------------------|
| Filename        | SHA256                                                           |
| SIMPSONSINU.sol | 0146256334b08a41b2fee6eeaedc155e647b0743d5cca4e65229d1b416248eb1 |

## Findings Breakdown



|                       |   |
|-----------------------|---|
| ● Critical            | 0 |
| ● Medium              | 1 |
| ● Minor / Informative | 6 |

| Severity              | Unresolved | Acknowledged | Resolved | Other |
|-----------------------|------------|--------------|----------|-------|
| ● Critical            | 0          | 0            | 0        | 0     |
| ● Medium              | 1          | 0            | 0        | 0     |
| ● Minor / Informative | 6          | 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     |
|----------|------|--------------------------------------------|------------|
| ●        | RED  | Redundant Event Declaration                | Unresolved |
| ●        | CSD  | Circulating Supply Discrepancy             | Unresolved |
| ●        | RS   | Redundant Struct                           | Unresolved |
| ●        | IDI  | Immutable Declaration Improvement          | Unresolved |
| ●        | L02  | State Variables could be Declared Constant | Unresolved |
| ●        | L04  | Conformance to Solidity Naming Conventions | Unresolved |
| ●        | L14  | Uninitialized Variables in Local Scope     | Unresolved |

## RED - Redundant Event Declaration

|             |                          |
|-------------|--------------------------|
| Criticality | Minor / Informative      |
| Location    | SIMPSONSINU.sol#L320,322 |
| Status      | Unresolved               |

### Description

There are code segments that could be optimized. A segment may be optimized so that it becomes a smaller size, consumes less memory, executes more rapidly, or performs fewer operations.

The contract declares the events `SwapAndLiquify` and `SwapTokensAtAmountUpdated` but they are not used in the contract. As a result, both events are redundant.

```
event SwapAndLiquify(uint256 tokensSwapped, uint256 bnbReceived, uint256  
tokensIntoLiquidity);  
event SwapTokensAtAmountUpdated(uint256 amount);
```

### Recommendation

The team is advised to take these segments into consideration and rewrite them so the runtime will be more performant. That way it will improve the efficiency and performance of the source code and reduce the cost of executing it.

## CSD - Circulating Supply Discrepancy

|             |                      |
|-------------|----------------------|
| Criticality | Medium               |
| Location    | SIMPSONSINU.sol#L385 |
| Status      | Unresolved           |

### Description

According to the ERC20 specification, the `totalSupply()` function should return the total supply of the token. The total supply should always equal the sum of the balances. The contract does not return the `totalSupply()`. Instead, the function returns the `totalSupply()` minus the amount that has been moved to the dead address. This amount is the circulating supply of the token. Many decentralized applications and tools are calculating many indicators like the circulating supply and market cap based on the `totalSupply()`. As a result, these applications will produce misleading results.

```
function totalSupply() public view override returns (uint256) {  
    return _tTotalVisual;  
}
```

### Recommendation

The `totalSupply()` should always equal the sum of the holder's balances. The contract should comply with this convention so that the decentralized applications will produce correct results.

## RS - Redundant Struct

|             |                      |
|-------------|----------------------|
| Criticality | Minor / Informative  |
| Location    | SIMPSONSINU.sol#L304 |
| Status      | Unresolved           |

### Description

There are code segments that could be optimized. A segment may be optimized so that it becomes a smaller size, consumes less memory, executes more rapidly, or performs fewer operations.

The contract declares the `Taxes` struct along with the `taxes` variable. This variable is not being used in the contract. As a result, it is redundant.

```
struct Taxes {  
    uint256 reflectionFee;  
    uint256 marketingFee;  
    uint256 buyBackFee;  
}  
  
Taxes public taxes = Taxes(3, 5, 1);
```

### Recommendation

The team is advised to take these segments into consideration and rewrite them so the runtime will be more performant. That way it will improve the efficiency and performance of the source code and reduce the cost of executing it.

## IDI - Immutable Declaration Improvement

|                    |                      |
|--------------------|----------------------|
| <b>Criticality</b> | Minor / Informative  |
| <b>Location</b>    | SIMPSONSINU.sol#L355 |
| <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`.

```
swapTokensAtAmount
```

### 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>    | SIMPSONSINU.sol#L279,280,281 |
| <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.

```
string private _name      = "The Simpsons Inu"  
string private _symbol    = "SIMPSONSINU"  
uint8 private _decimals = 9
```

### 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>    | SIMPSONSINU.sol#L98,99,115,134,285,525,529,533 |
| <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 DOMAIN_SEPARATOR() external view returns (bytes32);
function PERMIT_TYPEHASH() external pure returns (bytes32);
function MINIMUM_LIQUIDITY() external pure returns (uint);
function WETH() external pure returns (address);
uint256 internal _tTotalVisual = 420_690_000_000_000 * (10 ** _decimals)
uint256 _amount
```

## 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>.

## L14 - Uninitialized Variables in Local Scope

|                    |                      |
|--------------------|----------------------|
| <b>Criticality</b> | Minor / Informative  |
| <b>Location</b>    | SIMPSONSINU.sol#L326 |
| <b>Status</b>      | Unresolved           |

### Description

Using an uninitialized local variable can lead to unpredictable behavior and potentially cause errors in the contract. It's important to always initialize local variables with appropriate values before using them.

```
address router
```

### Recommendation

By initializing local variables before using them, the contract ensures that the functions behave as expected and avoid potential issues.

## Functions Analysis

| Contract       | Type              | Bases      |            |           |
|----------------|-------------------|------------|------------|-----------|
|                | Function Name     | Visibility | Mutability | Modifiers |
|                |                   |            |            |           |
| <b>Context</b> | Implementation    |            |            |           |
|                | _msgSender        | Internal   |            |           |
|                | _msgData          | Internal   |            |           |
|                |                   |            |            |           |
| <b>Ownable</b> | Implementation    | Context    |            |           |
|                |                   | Public     | ✓          | -         |
|                | owner             | Public     |            | -         |
|                | renounceOwnership | Public     | ✓          | onlyOwner |
|                |                   |            |            |           |
| <b>IERC20</b>  | Interface         |            |            |           |
|                | totalSupply       | External   |            | -         |
|                | balanceOf         | External   |            | -         |
|                | transfer          | External   | ✓          | -         |
|                | allowance         | External   |            | -         |
|                | approve           | External   | ✓          | -         |
|                | transferFrom      | External   | ✓          | -         |
|                |                   |            |            |           |
| <b>Address</b> | Library           |            |            |           |

|                          |                  |          |   |   |
|--------------------------|------------------|----------|---|---|
|                          | sendValue        | Internal | ✓ |   |
|                          |                  |          |   |   |
| <b>IUniswapV2Factory</b> | Interface        |          |   |   |
|                          | feeTo            | External |   | - |
|                          | feeToSetter      | External |   | - |
|                          | getPair          | External |   | - |
|                          | allPairs         | External |   | - |
|                          | allPairsLength   | External |   | - |
|                          | createPair       | External | ✓ | - |
|                          | setFeeTo         | External | ✓ | - |
|                          | setFeeToSetter   | External | ✓ | - |
|                          |                  |          |   |   |
| <b>IUniswapV2Pair</b>    | Interface        |          |   |   |
|                          | name             | External |   | - |
|                          | symbol           | External |   | - |
|                          | decimals         | External |   | - |
|                          | totalSupply      | External |   | - |
|                          | balanceOf        | External |   | - |
|                          | allowance        | External |   | - |
|                          | approve          | External | ✓ | - |
|                          | transfer         | External | ✓ | - |
|                          | transferFrom     | External | ✓ | - |
|                          | DOMAIN_SEPARATOR | External |   | - |

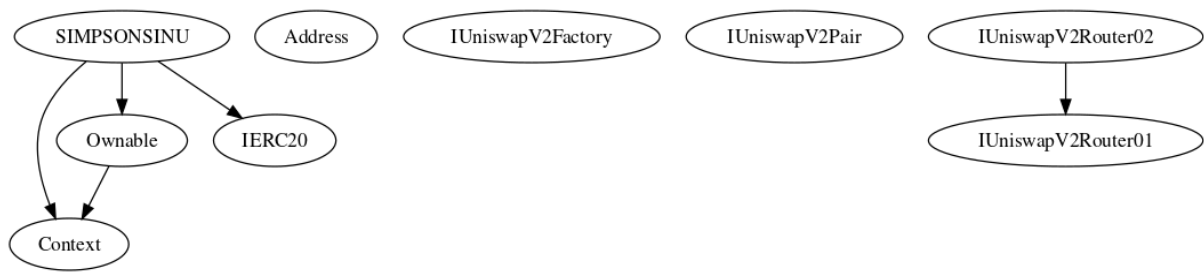
|                           |                      |          |         |   |
|---------------------------|----------------------|----------|---------|---|
|                           | PERMIT_TYPEHASH      | External |         | - |
|                           | nonces               | External |         | - |
|                           | permit               | External | ✓       | - |
|                           | MINIMUM_LIQUIDITY    | External |         | - |
|                           | factory              | External |         | - |
|                           | token0               | External |         | - |
|                           | token1               | External |         | - |
|                           | getReserves          | External |         | - |
|                           | price0CumulativeLast | External |         | - |
|                           | price1CumulativeLast | External |         | - |
|                           | kLast                | External |         | - |
|                           | burn                 | External | ✓       | - |
|                           | swap                 | External | ✓       | - |
|                           | skim                 | External | ✓       | - |
|                           | sync                 | External | ✓       | - |
|                           | initialize           | External | ✓       | - |
|                           |                      |          |         |   |
| <b>IUniswapV2Router01</b> | Interface            |          |         |   |
|                           | factory              | External |         | - |
|                           | WETH                 | External |         | - |
|                           | addLiquidity         | External | ✓       | - |
|                           | addLiquidityETH      | External | Payable | - |
|                           | removeLiquidity      | External | ✓       | - |

|                           |                                                           |                    |         |   |
|---------------------------|-----------------------------------------------------------|--------------------|---------|---|
|                           | removeLiquidityETH                                        | External           | ✓       | - |
|                           | removeLiquidityWithPermit                                 | External           | ✓       | - |
|                           | removeLiquidityETHWithPermit                              | External           | ✓       | - |
|                           | swapExactTokensForTokens                                  | External           | ✓       | - |
|                           | swapTokensForExactTokens                                  | External           | ✓       | - |
|                           | swapExactETHForTokens                                     | External           | Payable | - |
|                           | swapTokensForExactETH                                     | External           | ✓       | - |
|                           | swapExactTokensForETH                                     | External           | ✓       | - |
|                           | swapETHForExactTokens                                     | External           | Payable | - |
|                           | quote                                                     | External           |         | - |
|                           | getAmountOut                                              | External           |         | - |
|                           | getAmountIn                                               | External           |         | - |
|                           | getAmountsOut                                             | External           |         | - |
|                           | getAmountsIn                                              | External           |         | - |
|                           |                                                           |                    |         |   |
| <b>IUniswapV2Router02</b> | Interface                                                 | IUniswapV2Router01 |         |   |
|                           | removeLiquidityETHSupportingFeeOnTransferTokens           | External           | ✓       | - |
|                           | removeLiquidityETHWithPermitSupportingFeeOnTransferTokens | External           | ✓       | - |
|                           | swapExactTokensForTokensSupportingFeeOnTransferTokens     | External           | ✓       | - |
|                           | swapExactETHForTokensSupportingFeeOnTransferTokens        | External           | Payable | - |
|                           | swapExactTokensForETHSupportingFeeOnTransferTokens        | External           | ✓       | - |
|                           |                                                           |                    |         |   |

| SIMPSONSINU | 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                         | ✓       | -         |
|             | increaseAllowance          | Public                         | ✓       | -         |
|             | decreaseAllowance          | Public                         | ✓       | -         |
|             | isExcludedFromReward       | Public                         |         | -         |
|             | totalReflectionDistributed | Public                         |         | -         |
|             | reflectionFromToken        | Public                         |         | -         |
|             | tokenFromReflection        | Public                         |         | -         |
|             | excludeFromReward          | Public                         | ✓       | onlyOwner |
|             |                            | External                       | Payable | -         |
|             | _reflectFee                | Private                        | ✓       |           |
|             | _getValues                 | Private                        |         |           |
|             | _getTValues                | Private                        |         |           |
|             | _getRValues                | Private                        |         |           |

|  |                       |          |   |           |
|--|-----------------------|----------|---|-----------|
|  | _getRate              | Private  |   |           |
|  | _getCurrentSupply     | Private  |   |           |
|  | _takeBuyback          | Private  | ✓ |           |
|  | _takeMarketing        | Private  | ✓ |           |
|  | calculateTaxFee       | Private  |   |           |
|  | calculateBuybackFee   | Private  |   |           |
|  | calculateMarketingFee | Private  |   |           |
|  | removeAllFee          | Private  | ✓ |           |
|  | setBuyFee             | Private  | ✓ |           |
|  | setSellFee            | Private  | ✓ |           |
|  | setTransferFee        | Private  | ✓ |           |
|  | isExcludedFromFee     | Public   |   | -         |
|  | _approve              | Private  | ✓ |           |
|  | enableTrading         | External | ✓ | onlyOwner |
|  | _transfer             | Private  | ✓ |           |
|  | buyBackAndBurn        | Private  | ✓ |           |
|  | swapAndSendMarketing  | Private  | ✓ |           |
|  | _tokenTransfer        | Private  | ✓ |           |
|  | _transferStandard     | Private  | ✓ |           |
|  | _transferToExcluded   | Private  | ✓ |           |
|  | _transferFromExcluded | Private  | ✓ |           |
|  | _transferBothExcluded | Private  | ✓ |           |
|  | excludeFromFees       | External | ✓ | onlyOwner |

## Inheritance Graph



## Flow Graph

## Summary

Simpsonsину contract implements a token mechanism. This audit investigates security issues, business logic concerns, and potential improvements. Simpsonsину is an interesting project that has a friendly and growing community. The Smart Contract analysis reported no compiler errors or critical issues. The contract owner has renounced ownership. There is also a fixed fee of 9%.

### Renounce Ownership Transaction

<https://bscscan.com/tx/0x3e0a13e2305a7efacba22f3fc8703e0d33ef144596b8bdf4cabea24409b83839>

## Disclaimer

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Blockchain technology and cryptographic assets present a high level of ongoing risk. Cyberscope's position is that each company and individual are responsible for their own due diligence and continuous security. Cyberscope's goal is to help reduce the attack vectors and the high level of variance associated with utilizing new and consistently changing technologies and in no way claims any guarantee of security or functionality of the technology we agree to analyze. The assessment services provided by Cyberscope are subject to dependencies and are under continuing development. You agree that your access and/or use including but not limited to any services reports and materials will be at your sole risk on an as-is where-is and as-available basis. Cryptographic tokens are emergent technologies and carry with them high levels of technical risk and uncertainty. The assessment reports could include false positives, false negatives and other unpredictable results. The services may access and depend upon multiple layers of third parties.

## About Cyberscope

Cyberscope is a blockchain cybersecurity company that was founded with the vision to make web3.0 a safer place for investors and developers. Since its launch, it has worked with thousands of projects and is estimated to have secured tens of millions of investors' funds.

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>



Cyberscope

# Audit Report

## **Simpsonsinu**

May 2023

Network    BSC

Address    0x5cc97dAb7bc2c01556FbE3d06a09b8C559Dff7d5

Audited by    © cyberscope

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## Review

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|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contract Name    | SIMPSONSINU                                                                                                                                                 |
| Compiler Version | v0.8.17+commit.8df45f5f                                                                                                                                     |
| Optimization     | 200 runs                                                                                                                                                    |
| Explorer         | <a href="https://bscscan.com/address/0x5cc97dab7bc2c01556fbe3d06a09b8c559dff7d5">https://bscscan.com/address/0x5cc97dab7bc2c01556fbe3d06a09b8c559dff7d5</a> |
| Address          | 0x5cc97dab7bc2c01556fbe3d06a09b8c559dff7d5                                                                                                                  |
| Network          | BSC                                                                                                                                                         |
| Symbol           | SIMPSONSINU                                                                                                                                                 |
| Decimals         | 9                                                                                                                                                           |
| Total Supply     | 420,690,000,000,000                                                                                                                                         |

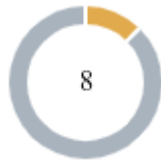
## Audit Updates

|               |             |
|---------------|-------------|
| Initial Audit | 16 May 2023 |
|---------------|-------------|

## Source Files

|                 |                                                                  |
|-----------------|------------------------------------------------------------------|
| Filename        | SHA256                                                           |
| SIMPSONSINU.sol | 0146256334b08a41b2fee6eeaadc155e647b0743d5cca4e65229d1b416248eb1 |

## Findings Breakdown



|                       |   |
|-----------------------|---|
| ● Critical            | 0 |
| ● Medium              | 1 |
| ● Minor / Informative | 7 |

| Severity              | Unresolved | Acknowledged | Resolved | Other |
|-----------------------|------------|--------------|----------|-------|
| ● Critical            | 0          | 0            | 0        | 0     |
| ● Medium              | 1          | 0            | 0        | 0     |
| ● Minor / Informative | 7          | 0            | 0        | 0     |

# Analysis

● Critical ● Medium ● Minor / Informative ● Pass

| Severity | Code | Description                        | Status     |
|----------|------|------------------------------------|------------|
| ●        | ST   | Stops Transactions                 | Unresolved |
| ●        | 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     |

## ST - Stops Transactions

|             |                      |
|-------------|----------------------|
| Criticality | Minor / Informative  |
| Location    | SIMPSONSINU.sol#L594 |
| Status      | Unresolved           |

### Description

Initially, the contract does not allow the non-excluded addresses to transfer tokens. The restriction can be resumed once the contract owner enables them.

```
if(!_isExcludedFromFees[from] && !_isExcludedFromFees[to]) {  
    require(tradingEnabled, "Trading is not enabled yet");  
}
```

### Recommendation

The team should carefully manage the private keys of the owner's account. We strongly recommend a powerful security mechanism that will prevent a single user from accessing the contract admin functions. Some suggestions are:

- Introduce a multi-sign wallet so that many addresses will confirm the action.
- Introduce a governance model where users will vote about the actions.

## Diagnostics

● Critical ● Medium ● Minor / Informative

| Severity | Code | Description                                | Status     |
|----------|------|--------------------------------------------|------------|
| ●        | RED  | Redundant Event Declaration                | Unresolved |
| ●        | CSD  | Circulating Supply Discrepancy             | Unresolved |
| ●        | RS   | Redundant Struct                           | Unresolved |
| ●        | IDI  | Immutable Declaration Improvement          | Unresolved |
| ●        | L02  | State Variables could be Declared Constant | Unresolved |
| ●        | L04  | Conformance to Solidity Naming Conventions | Unresolved |
| ●        | L14  | Uninitialized Variables in Local Scope     | Unresolved |

## RED - Redundant Event Declaration

|             |                          |
|-------------|--------------------------|
| Criticality | Minor / Informative      |
| Location    | SIMPSONSINU.sol#L320,322 |
| Status      | Unresolved               |

### Description

There are code segments that could be optimized. A segment may be optimized so that it becomes a smaller size, consumes less memory, executes more rapidly, or performs fewer operations.

The contract declares the events `SwapAndLiquify` and `SwapTokensAtAmountUpdated` but they are not used in the contract. As a result, both events are redundant.

```
event SwapAndLiquify(uint256 tokensSwapped, uint256 bnbReceived, uint256  
tokensIntoLiquidity);  
event SwapTokensAtAmountUpdated(uint256 amount);
```

### Recommendation

The team is advised to take these segments into consideration and rewrite them so the runtime will be more performant. That way it will improve the efficiency and performance of the source code and reduce the cost of executing it.

## CSD - Circulating Supply Discrepancy

|             |                      |
|-------------|----------------------|
| Criticality | Medium               |
| Location    | SIMPSONSINU.sol#L385 |
| Status      | Unresolved           |

### Description

According to the ERC20 specification, the `totalSupply()` function should return the total supply of the token. The total supply should always equal the sum of the balances. The contract does not return the `totalSupply()`. Instead, the function returns the `totalSupply()` minus the amount that has been moved to the dead address. This amount is the circulating supply of the token. Many decentralized applications and tools are calculating many indicators like the circulating supply and market cap based on the `totalSupply()`. As a result, these applications will produce misleading results.

```
function totalSupply() public view override returns (uint256) {  
    return _tTotalVisual;  
}
```

### Recommendation

The `totalSupply()` should always equal the sum of the holder's balances. The contract should comply with this convention so that the decentralized applications will produce correct results.

## RS - Redundant Struct

|             |                      |
|-------------|----------------------|
| Criticality | Minor / Informative  |
| Location    | SIMPSONSINU.sol#L304 |
| Status      | Unresolved           |

### Description

There are code segments that could be optimized. A segment may be optimized so that it becomes a smaller size, consumes less memory, executes more rapidly, or performs fewer operations.

The contract declares the `Taxes` struct along with the `taxes` variable. This variable is not being used in the contract. As a result, it is redundant.

```
struct Taxes {  
    uint256 reflectionFee;  
    uint256 marketingFee;  
    uint256 buyBackFee;  
}  
  
Taxes public taxes = Taxes(3, 5, 1);
```

### Recommendation

The team is advised to take these segments into consideration and rewrite them so the runtime will be more performant. That way it will improve the efficiency and performance of the source code and reduce the cost of executing it.

## IDI - Immutable Declaration Improvement

|                    |                      |
|--------------------|----------------------|
| <b>Criticality</b> | Minor / Informative  |
| <b>Location</b>    | SIMPSONSINU.sol#L355 |
| <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`.

```
swapTokensAtAmount
```

### 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>    | SIMPSONSINU.sol#L279,280,281 |
| <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.

```
string private _name      = "The Simpsons Inu"  
string private _symbol    = "SIMPSONSINU"  
uint8 private _decimals = 9
```

### 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>    | SIMPSONSINU.sol#L98,99,115,134,285,525,529,533 |
| <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 DOMAIN_SEPARATOR() external view returns (bytes32);
function PERMIT_TYPEHASH() external pure returns (bytes32);
function MINIMUM_LIQUIDITY() external pure returns (uint);
function WETH() external pure returns (address);
uint256 internal _tTotalVisual = 420_690_000_000_000 * (10 ** _decimals)
uint256 _amount
```

## 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>.

## L14 - Uninitialized Variables in Local Scope

|                    |                      |
|--------------------|----------------------|
| <b>Criticality</b> | Minor / Informative  |
| <b>Location</b>    | SIMPSONSINU.sol#L326 |
| <b>Status</b>      | Unresolved           |

### Description

Using an uninitialized local variable can lead to unpredictable behavior and potentially cause errors in the contract. It's important to always initialize local variables with appropriate values before using them.

```
address router
```

### Recommendation

By initializing local variables before using them, the contract ensures that the functions behave as expected and avoid potential issues.

## Functions Analysis

| Contract       | Type              | Bases      |            |           |
|----------------|-------------------|------------|------------|-----------|
|                | Function Name     | Visibility | Mutability | Modifiers |
|                |                   |            |            |           |
| <b>Context</b> | Implementation    |            |            |           |
|                | _msgSender        | Internal   |            |           |
|                | _msgData          | Internal   |            |           |
|                |                   |            |            |           |
| <b>Ownable</b> | Implementation    | Context    |            |           |
|                |                   | Public     | ✓          | -         |
|                | owner             | Public     |            | -         |
|                | renounceOwnership | Public     | ✓          | onlyOwner |
|                |                   |            |            |           |
| <b>IERC20</b>  | Interface         |            |            |           |
|                | totalSupply       | External   |            | -         |
|                | balanceOf         | External   |            | -         |
|                | transfer          | External   | ✓          | -         |
|                | allowance         | External   |            | -         |
|                | approve           | External   | ✓          | -         |
|                | transferFrom      | External   | ✓          | -         |
|                |                   |            |            |           |
| <b>Address</b> | Library           |            |            |           |

|                          |                  |          |   |   |
|--------------------------|------------------|----------|---|---|
|                          | sendValue        | Internal | ✓ |   |
|                          |                  |          |   |   |
| <b>IUniswapV2Factory</b> | Interface        |          |   |   |
|                          | feeTo            | External |   | - |
|                          | feeToSetter      | External |   | - |
|                          | getPair          | External |   | - |
|                          | allPairs         | External |   | - |
|                          | allPairsLength   | External |   | - |
|                          | createPair       | External | ✓ | - |
|                          | setFeeTo         | External | ✓ | - |
|                          | setFeeToSetter   | External | ✓ | - |
|                          |                  |          |   |   |
| <b>IUniswapV2Pair</b>    | Interface        |          |   |   |
|                          | name             | External |   | - |
|                          | symbol           | External |   | - |
|                          | decimals         | External |   | - |
|                          | totalSupply      | External |   | - |
|                          | balanceOf        | External |   | - |
|                          | allowance        | External |   | - |
|                          | approve          | External | ✓ | - |
|                          | transfer         | External | ✓ | - |
|                          | transferFrom     | External | ✓ | - |
|                          | DOMAIN_SEPARATOR | External |   | - |

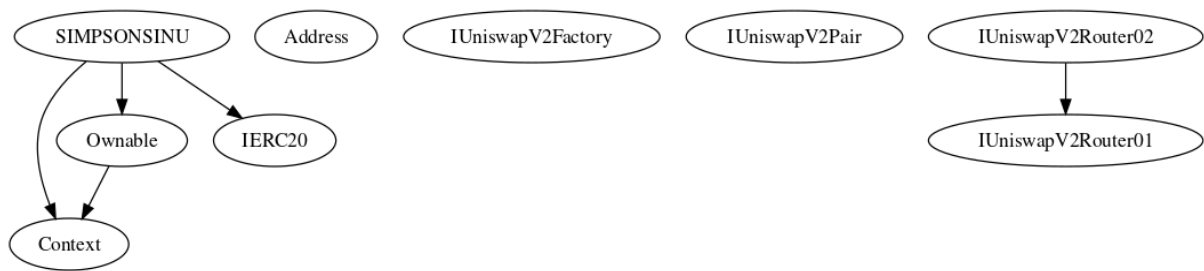
|                           |                      |          |         |   |
|---------------------------|----------------------|----------|---------|---|
|                           | PERMIT_TYPEHASH      | External |         | - |
|                           | nonces               | External |         | - |
|                           | permit               | External | ✓       | - |
|                           | MINIMUM_LIQUIDITY    | External |         | - |
|                           | factory              | External |         | - |
|                           | token0               | External |         | - |
|                           | token1               | External |         | - |
|                           | getReserves          | External |         | - |
|                           | price0CumulativeLast | External |         | - |
|                           | price1CumulativeLast | External |         | - |
|                           | kLast                | External |         | - |
|                           | burn                 | External | ✓       | - |
|                           | swap                 | External | ✓       | - |
|                           | skim                 | External | ✓       | - |
|                           | sync                 | External | ✓       | - |
|                           | initialize           | External | ✓       | - |
|                           |                      |          |         |   |
| <b>IUniswapV2Router01</b> | Interface            |          |         |   |
|                           | factory              | External |         | - |
|                           | WETH                 | External |         | - |
|                           | addLiquidity         | External | ✓       | - |
|                           | addLiquidityETH      | External | Payable | - |
|                           | removeLiquidity      | External | ✓       | - |

|                           |                                                           |                    |         |   |
|---------------------------|-----------------------------------------------------------|--------------------|---------|---|
|                           | removeLiquidityETH                                        | External           | ✓       | - |
|                           | removeLiquidityWithPermit                                 | External           | ✓       | - |
|                           | removeLiquidityETHWithPermit                              | External           | ✓       | - |
|                           | swapExactTokensForTokens                                  | External           | ✓       | - |
|                           | swapTokensForExactTokens                                  | External           | ✓       | - |
|                           | swapExactETHForTokens                                     | External           | Payable | - |
|                           | swapTokensForExactETH                                     | External           | ✓       | - |
|                           | swapExactTokensForETH                                     | External           | ✓       | - |
|                           | swapETHForExactTokens                                     | External           | Payable | - |
|                           | quote                                                     | External           |         | - |
|                           | getAmountOut                                              | External           |         | - |
|                           | getAmountIn                                               | External           |         | - |
|                           | getAmountsOut                                             | External           |         | - |
|                           | getAmountsIn                                              | External           |         | - |
|                           |                                                           |                    |         |   |
| <b>IUniswapV2Router02</b> | Interface                                                 | IUniswapV2Router01 |         |   |
|                           | removeLiquidityETHSupportingFeeOnTransferTokens           | External           | ✓       | - |
|                           | removeLiquidityETHWithPermitSupportingFeeOnTransferTokens | External           | ✓       | - |
|                           | swapExactTokensForTokensSupportingFeeOnTransferTokens     | External           | ✓       | - |
|                           | swapExactETHForTokensSupportingFeeOnTransferTokens        | External           | Payable | - |
|                           | swapExactTokensForETHSupportingFeeOnTransferTokens        | External           | ✓       | - |
|                           |                                                           |                    |         |   |

| SIMPSONSINU | 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                         | ✓       | -         |
|             | increaseAllowance          | Public                         | ✓       | -         |
|             | decreaseAllowance          | Public                         | ✓       | -         |
|             | isExcludedFromReward       | Public                         |         | -         |
|             | totalReflectionDistributed | Public                         |         | -         |
|             | reflectionFromToken        | Public                         |         | -         |
|             | tokenFromReflection        | Public                         |         | -         |
|             | excludeFromReward          | Public                         | ✓       | onlyOwner |
|             |                            | External                       | Payable | -         |
|             | _reflectFee                | Private                        | ✓       |           |
|             | _getValues                 | Private                        |         |           |
|             | _getTValues                | Private                        |         |           |
|             | _getRValues                | Private                        |         |           |

|  |                       |          |   |           |
|--|-----------------------|----------|---|-----------|
|  | _getRate              | Private  |   |           |
|  | _getCurrentSupply     | Private  |   |           |
|  | _takeBuyback          | Private  | ✓ |           |
|  | _takeMarketing        | Private  | ✓ |           |
|  | calculateTaxFee       | Private  |   |           |
|  | calculateBuybackFee   | Private  |   |           |
|  | calculateMarketingFee | Private  |   |           |
|  | removeAllFee          | Private  | ✓ |           |
|  | setBuyFee             | Private  | ✓ |           |
|  | setSellFee            | Private  | ✓ |           |
|  | setTransferFee        | Private  | ✓ |           |
|  | isExcludedFromFee     | Public   |   | -         |
|  | _approve              | Private  | ✓ |           |
|  | enableTrading         | External | ✓ | onlyOwner |
|  | _transfer             | Private  | ✓ |           |
|  | buyBackAndBurn        | Private  | ✓ |           |
|  | swapAndSendMarketing  | Private  | ✓ |           |
|  | _tokenTransfer        | Private  | ✓ |           |
|  | _transferStandard     | Private  | ✓ |           |
|  | _transferToExcluded   | Private  | ✓ |           |
|  | _transferFromExcluded | Private  | ✓ |           |
|  | _transferBothExcluded | Private  | ✓ |           |
|  | excludeFromFees       | External | ✓ | onlyOwner |

## Inheritance Graph



## Flow Graph

## Summary

SimpsonsINU contract implements a token mechanism. This audit investigates security issues, business logic concerns, and potential improvements. There are some functions that can be abused by the owner like stopping transactions. A multi-wallet signing pattern will provide security against potential hacks. The fees are locked at 9%.

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**The Cyberscope team**

<https://www.cyberscope.io>