

# SMART CONTRACT AUDIT REPORT

For

berylbit (BRB)



Prepared By: SFI Team

Prepared for: berylbit Team

**Prepared on**: 21/12/2021 Contract address: 0xcA0823d3D04b9FAeA7803cCb87fa8596775190DD

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### Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice as of the date of this report, in relation to cybersecurity vulnerabilities and issues in the framework and algorithms based on smart contracts, the details of which are set out in this report. In order to get a full view of our analysis, it is crucial for you to read the full report. While we have done our best in conducting our analysis and producing this report, it is important to note that you should not rely on this report and cannot claim against the team on the basis of what it says or doesn't say, or how team produced it, and it is important for you to conduct your own independent investigations before making any decisions, team go into more detail on this in the below disclaimer below – please make sure to read it in full. By reading this report or any part of it, you agree to the terms of this disclaimer. If you do not agree to the terms, then please immediately cease reading this report, and delete and destroy any and all copies of this report downloaded and/or printed by you. This report is provided for information purposes only and on a non-reliance basis, and does not constitute investment advice. No one shall have any right to rely on the report or its contents, and Saferico and its affiliates (including holding companies, shareholders, subsidiaries, employees, directors, officers and other representatives) (SaferICO) owe no duty of care towards you or any other person, nor does Saferico make any warranty or representation to any person on the accuracy or completeness of the report. The report is provided "as is", without any conditions, warranties or other terms of any kind except as set out in this disclaimer, and Saferico hereby excludes all representations, warranties, conditions and other terms (including, without limitation, the warranties implied by law of satisfactory quality, fitness for purpose and the use of reasonable care and skill) which, but for this clause, might have effect in relation to the report. Except and only to the extent that it is prohibited by law, Saferico hereby excludes all liability and responsibility, and neither you nor any other person shall have any claim against Saferico, for any amount or kind of loss or damage that may result to you or any other person (including without limitation, any direct, indirect, special, punitive, consequential or pure economic loss or damages, or any loss of income, profits, goodwill, data, contracts, use of money, or business interruption, and whether in delict, tort (including without limitation negligence), contract, breach of statutory duty, misrepresentation (whether innocent or negligent) or otherwise under any claim of any nature whatsoever in any jurisdiction) in any way arising from or connected with this report and the use, inability to use or the results of use of this report, and any reliance on this report. The analysis of the security is purely based on the smart contracts alone. No applications or operations were reviewed for security. No product code has been reviewed.

## Scope of the audit

The scope of this audit was to analyze and document the berylbit smart contract codebase for quality, security, and correctness (automatically)

### • Introduction

During the period of **December 19, 2021, to December 21, 2021** - SaferICO

Team performed a security audit for **berylbit** smart contracts.

The project has 1 file. It contains approx 1003 lines of Solidity code. Most of the functions and state variables are well commented on using the Nat spec documentation, but that does not create any vulnerability.

Source Code: https://bscscan.com/address/0xca0823d3d04b9faea7803ccb87fa8596775190dd#code

### • Check Vulnerabilities

In order to check for the security of the contract, we tested several attacks in order to make sure that the contract is secure and follows best practices automatically.

- 1. Unit tests passing.
- 2. Compilator warnings;
- 3. Race Conditions. Reentrancy. Cross-function Race Conditions. Pitfalls in Race Condition solutions:
- 4. Possible delays in data delivery;
- 5. Transaction-Ordering Dependence (front running);

- 6. Timestamp Dependence;
- 7. Integer Overflow and Underflow;
- 8. DoS with (unexpected) Revert;
- 9. DoS with Block Gas Limit
- 10. Call Depth Attack. Not relevant in modern ethereum network
- 11. Methods execution permissions;
- 12. Oracles calls;
- 13. Economy model. It's important to forecast scenarios when a user is provided with additional economic motivation or faced with limitations. If application logic is based on incorrect economy model, the application will not function correctly and participants will incur financial losses. This type of issue is most often found in bonus rewards systems.
- 14. The impact of the exchange rate on the logic;
- 15. Private user data leaks.

# • Issue Categories

Every issue in this report has been assigned to a severity level. There are four levels of severity, and each of them has been explained below.

Risk-level	Description
High	A high severity issue or vulnerability means that your smart contract can be exploited. Issues on this level are critical to the smart contract's performance or functionality, and we recommend these issues be fixed before moving to a live environment.
Medium	The issues marked as medium severity usually arise because of errors and deficiencies in the smart contract code. Issues on this level could potentially bring problems, and they should still be fixed.
Low	Low-level severity issues can cause minor impact and or are just warnings that can remain unfixed for now. It would be better to fix these issues at some point in the future.
Informational	These are severity issues that indicate an improvement request, a general question, a cosmetic or documentation error, or a request for information. There is low-to-no impact.

## • Issues Found – Code Review Automatically

#### High severity issues

### There are no High severity vulnerabilities found

### **Medium severity issues**

#### There are no Medium severity vulnerabilities found

### Low severity issues

### **#Pragam version not fixed**

#### Description

It is a good practice to lock the solidity version for a live deployment (use 0.8.7 instead of ^0.8.7). contracts should be deployed with the same compiler version and flags that they have been tested the most with. Locking the pragma helps ensure that contracts do not accidentally get deployed using, for example, the latest compiler which may have higher risks of undiscovered bugs. Contracts may also be deployed by others and the pragma indicates the compiler version intended by the original authors.

#### Remediation

Remove the ^ sign to lock the pragma version

Status: Closed. It already deployed at the same compiler

### **#use of block.timestamp**

Use of "block.timestamp": "block.timestamp" can be influenced by miners to a certain degree. that means that a miner can "choose" the block.timestamp, to a certain degree, to change the outcome of a transaction in the mined block.

```
uniswapV2Router.swapExactTokensForETHSupportingFeeOnTransferTokens(
tokenAmount,
0,
path,
```

```
address(this),
block.timestamp
);
```

#### Remediation

Avoid use of block.timestamp

Status: Acknowledged

#### Informational issues

#### **#Gas Cost:**

Gas requirement of function BaryIBit.functions is infinite: If the gas requirement of a function is higher than the block gas limit, it cannot be executed Please avoid loops in your functions or actions that modify large areas of storage

(This includes clearing or copying arrays in storage)

```
function name() public view returns (string memory) {
    return _name;
}

function symbol() public view returns (string memory) {
    return _symbol;
}

function decimals() public view returns (uint8) {
    return _decimals;
}

function allowance(address owner, address spender) public view override returns (uint256) {
    return _allowances[owner][spender];
}

function transferFrom(address sender, address recipient, uint256 amount) public override returns (bool) {
    _transfer(sender, recipient, amount);
    _approve(sender, _msgSender(), _allowances[sender][_msgSender()].sub(amount, "ERC20: transfer amount exceeds allowance"));
    return true;
}
```

```
function increaseAllowance(address spender, uint256 addedValue) public virtual returns (bool) {
    _approve(_msgSender(), spender, _allowances[_msgSender()][spender].add(addedValue));
    return true;
}

function decreaseAllowance(address spender, uint256 subtractedValue) public virtual returns (bool) {
    _approve(_msgSender(), spender, _allowances[_msgSender()][spender].sub(subtractedValue, "ERC20: decreased allowance
below zero"));
    return true;
}

function process_Tokens_Now (uint256 percent_Of_Tokens_To_Process) public onlyOwner {
    // Do not trigger if already in swap
    require(!inSwapAndLiquify, "Currently processing, try later.");
    if (percent_Of_Tokens_To_Process > 100){percent_Of_Tokens_To_Process == 100;}
    uint256 tokensOnContract = balanceOf(address(this));
    uint256 sendTokens = tokensOnContract*percent_Of_Tokens_To_Process/100;
    swapAndLiquify(sendTokens);
}
```

#### Remediation

Make these methods external instead public.

Status: Acknowledged

# Constant calculations in the contract

Description

recalculated initialization will save 2847 units of gas in deployment

```
uint256 private _tTotal = 300000000 * 10**18;
```

#### Recommendation

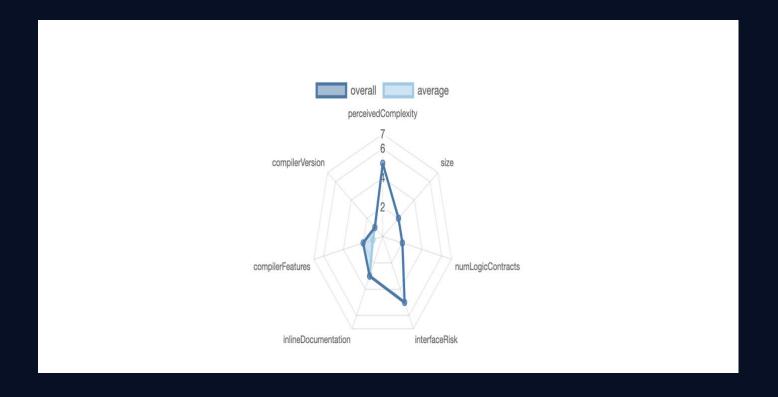
Replace the initialization as

Status: Acknowledged

## • Source Lines



# • Risk Level



### Testing proves

### • Check for security

e1298c813e57e43438801858cfae53cdb56d469dfeb762db50e34f8fe5361d62

File: BerylBit.sol | Language: solidity | Size: 32461 bytes | Date: 2021-12-21T04:51:10.641Z

### • Solidity Static Analysis

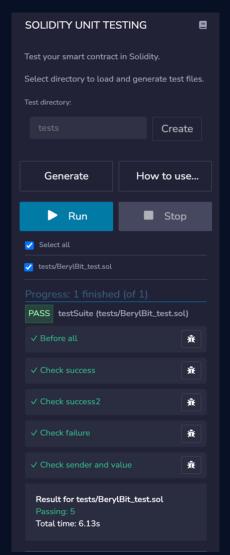


### • Inheritance graph



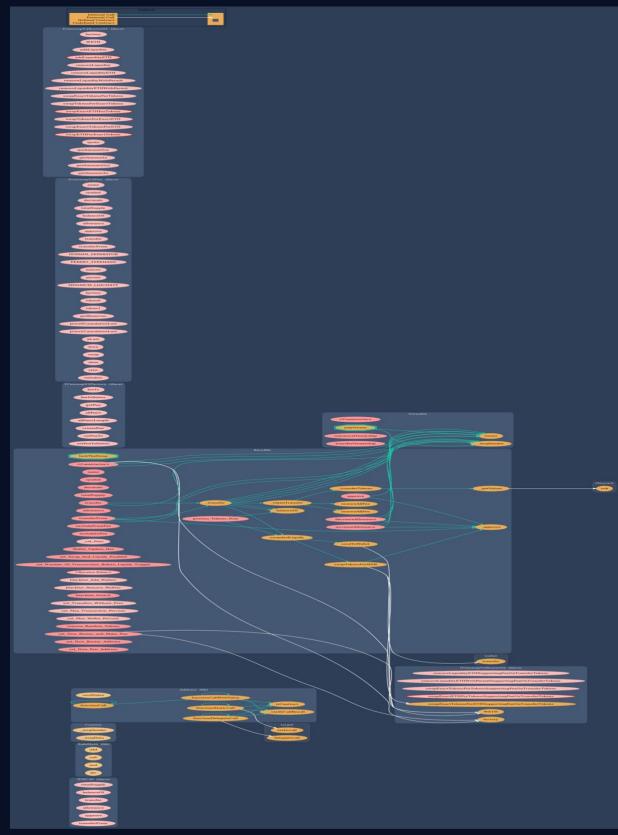
## • Solidity Unit Testing Code & Results

```
// SPDX-License-Identifier: GPL-3.0
pragma solidity >=0.4.22 <0.9.0;
import "remix_tests.sol";
// But it will work fine in 'Solidity Unit Testing' plugin
import "remix_accounts.sol";
import "../BerylBit.sol";
contract testSuite {
  /// 'beforeAll' runs before all other tests
  function beforeAll() public {
     // <instantiate contract>
     Assert.equal(uint(1), uint(1), "1 should be equal to 1");
  function checkSuccess() public {
```

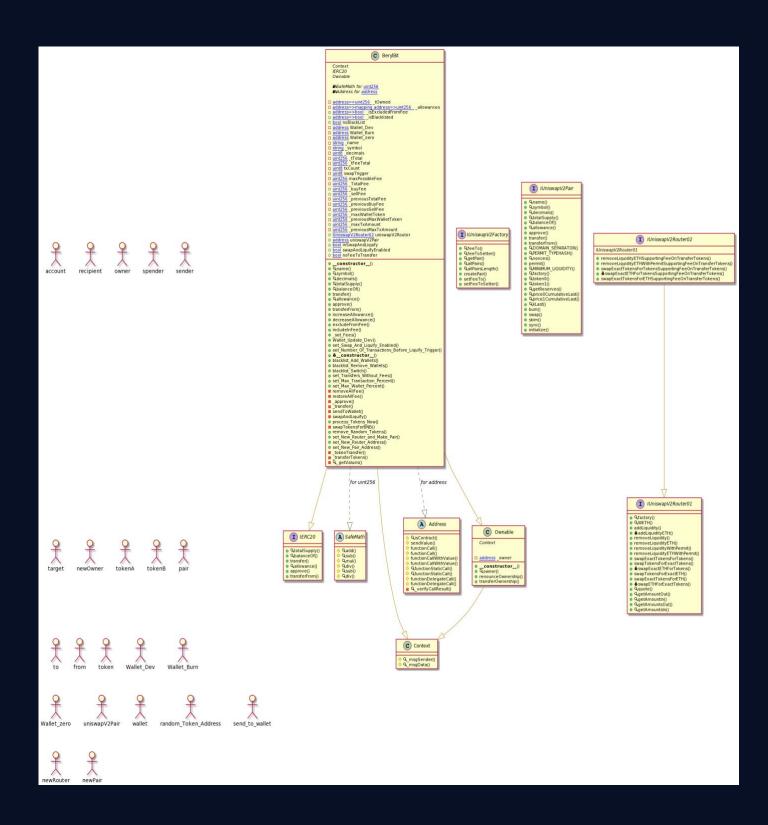


```
Assert.ok(2 == 2, 'should be true');
  Assert.greaterThan(uint(2), uint(1), "2 should be greater than to 1");
  Assert.lesserThan(uint(2), uint(3), "2 should be lesser than to 3");
function checkSuccess2() public pure returns (bool) {
  // Use the return value (true or false) to test the contract
function checkFailure() public {
  Assert.notEqual(uint(1), uint(2), "1 should not be equal to 1");
function checkSenderAndValue() public payable {
  Assert.equal(msg.sender, TestsAccounts.getAccount(1), "Invalid sender");
  Assert.equal(msg.value, 100, "Invalid value");
}
```

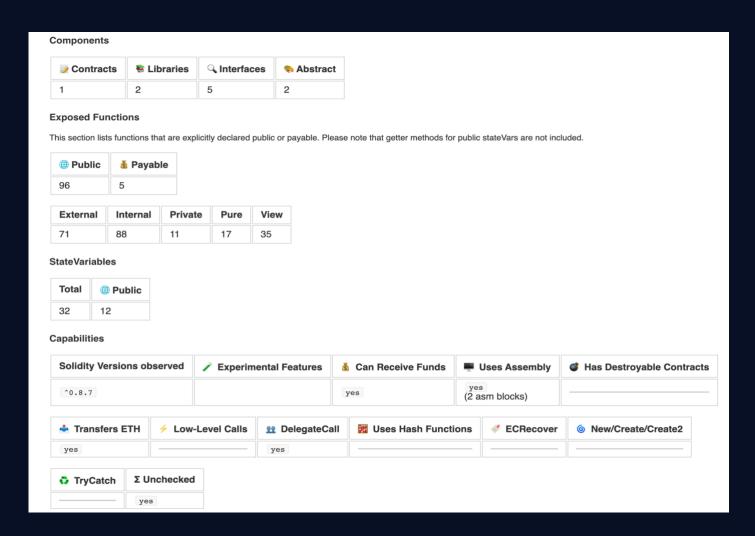
# • Call Graph



## • Unified Modeling Language (UML)



### • Capabilities



## • Source Units In Scope



- Lines: total lines of the source unit
- nLines: normalized lines of the source unit (e.g. normalizes functions spanning multiple lines)
- nSLOC: normalized source lines of code (only source-code lines; no comments, no blank lines)
- Comment Lines: lines containing single or block comments
- Complexity Score: a custom complexity score derived from code statements that are known to introduce code complexity (branches, loops, calls, external interfaces, ...)

### • Function Signature

```
16279055 => isContract(address)
39509351 => increaseAllowance(address,uint256)
94220184 => set_Max_Wallet_Percent(uint256)
18160ddd => totalSupply()
70a08231 => balanceOf(address)
a9059cbb => transfer(address,uint256)
dd62ed3e => allowance(address,address)
095ea7b3 => approve(address,uint256)
23b872dd => transferFrom(address,address,uint256)
771602f7 => add(uint256,uint256)
b67d77c5 => sub(uint256, uint256)
c8a4ac9c => mul(uint256,uint256)
a391c15b => div(uint256,uint256)
e31bdc0a => sub(uint256,uint256,string)
b745d336 => div(uint256,uint256,string)
119df25f => _msgSender()
8b49d47e => _msgData()
24a084df => sendValue(address,uint256)
a0b5ffb0 => functionCall(address,bytes)
241b5886 => functionCall(address,bytes,string)
2a011594 => functionCallWithValue(address,bytes,uint256)
d525ab8a => functionCallWithValue(address,bytes,uint256,string)
c21d36f3 => functionStaticCall(address,bytes)
dbc40fb9 => functionStaticCall(address,bytes,string)
ee33b7e2 => functionDelegateCall(address,bytes)
57387df0 => functionDelegateCall(address,bytes,string)
18c2c6a2 => _verifyCallResult(bool,bytes,string)
8da5cb5b => owner()
715018a6 => renounceOwnership()
f2fde38b => transferOwnership(address)
017e7e58 => feeTo()
094b7415 => feeToSetter()
e6a43905 => getPair(address,address)
1e3dd18b => allPairs(uint256)
574f2ba3 => allPairsLength()
```

```
c9c65396 => createPair(address,address)
f46901ed => setFeeTo(address)
a2e74af6 => setFeeToSetter(address)
06fdde03 => name()
95d89b41 => symbol()
313ce567 => decimals()
3644e515 => DOMAIN_SEPARATOR()
30adf81f => PERMIT_TYPEHASH()
7ecebe00 => nonces(address)
d505accf => permit(address,address,uint256,uint256,uint8,bytes32,bytes32)
ba9a7a56 => MINIMUM_LIQUIDITY()
c45a0155 => factory()
0dfe1681 => token0()
d21220a7 => token1()
0902f1ac => getReserves()
5909c0d5 => price0CumulativeLast()
5a3d5493 => price1CumulativeLast()
7464fc3d => kLast()
89afcb44 => burn(address)
022c0d9f => swap(uint256,uint256,address,bytes)
bc25cf77 => skim(address)
fff6cae9 => sync()
485cc955 => initialize(address,address)
ad5c4648 => WETH()
e8e33700 => addLiquidity(address,address,uint256,uint256,uint256,uint256,address,uint256)
f305d719 => addLiquidityETH(address,uint256,uint256,uint256,address,uint256)
baa2abde => removeLiquidity(address,address,uint256,uint256,uint256,address,uint256)
02751cec => removeLiquidityETH(address,uint256,uint256,uint256,address,uint256)
2195995c => removeLiquidityWithPermit(address,address,uint256,uint256,uint256,address,uint256,bool,uint8,bytes32,bytes32)
ded9382a => removeLiquidityETHWithPermit(address,uint256,uint256,uint256,address,uint256,bool,uint8,bytes32,bytes32)
38ed1739 => swapExactTokensForTokens(uint256,uint256,address[],address,uint256)
8803dbee => swapTokensForExactTokens(uint256,uint256,address[],address,uint256)
7ff36ab5 => swapExactETHForTokens(uint256,address[],address,uint256)
4a25d94a => swapTokensForExactETH(uint256,uint256,address[],address,uint256)
18cbafe5 => swapExactTokensForETH(uint256,uint256,address[],address,uint256)
fb3bdb41 => swapETHForExactTokens(uint256,address[],address,uint256)
ad615dec => quote(uint256,uint256,uint256)
054d50d4 => getAmountOut(uint256,uint256,uint256)
```

```
85f8c259 => getAmountIn(uint256,uint256,uint256)
d06ca61f => getAmountsOut(uint256,address[])
1f00ca74 => getAmountsIn(uint256,address[])
af2979eb => removeLiquidityETHSupportingFeeOnTransferTokens(address,uint256,uint256,uint256,address,uint256)
5b0d5984 =>
removeLiquidityETHWithPermitSupportingFeeOnTransferTokens(address,uint256,uint256,uint256,address,uint256,bool,uint8,bytes
32,bytes32)
5c11d795 => swapExactTokensForTokensSupportingFeeOnTransferTokens(uint256,uint256,address[],address,uint256)
b6f9de95 => swapExactETHForTokensSupportingFeeOnTransferTokens(uint256,address[],address,uint256)
791ac947 => swapExactTokensForETHSupportingFeeOnTransferTokens(uint256,uint256,address[],address,uint256)
a457c2d7 => decreaseAllowance(address,uint256)
437823ec => excludeFromFee(address)
ea2f0b37 => includeInFee(address)
67cbd84c => _set_Fees(uint256,uint256)
8824e16e => Wallet_Update_Dev(address)
f7739b5f => set_Swap_And_Liquify_Enabled(bool)
7caefa89 => set Number Of Transactions Before Liquify Trigger(uint8)
a9de975d => blacklist_Add_Wallets(address[])
8ec0e9a1 => blacklist_Remove_Wallets(address[])
c1f61908 => blacklist Switch(bool)
a514a07d => set_Transfers_Without_Fees(bool)
2e39c6c6 => set_Max_Transaction_Percent(uint256)
301370af => removeAllFee()
e7e3e3a7 => restoreAllFee()
104e81ff => _approve(address,address,uint256)
30e0789e => _transfer(address,address,uint256)
6c390b8d => sendToWallet(address,uint256)
173865ad => swapAndLiquify(uint256)
ddbf5266 => process Tokens Now(uint256)
56c3726b => swapTokensForBNB(uint256)
3343ab83 => remove_Random_Tokens(address,address,uint256)
1282a0a0 => set_New_Router_and_Make_Pair(address)
36b1a1bc => set_New_Router_Address(address)
d785d5be => set_New_Pair_Address(address)
b09bbc79 => _tokenTransfer(address,address,uint256,bool)
fc1efa66 => _transferTokens(address,address,uint256)
d4780e36 => getValues(uint256)
```

# • Automatic General Report

Files Description Table
File Name   SHA-1 Hash
//Users/macbook/Desktop/smart contracts/BerylBit.sol   dee8ff66c03a67a9db745c54ffeaf9b3c70ab76e
Contracts Description Table
Contract   Type   Bases
L   **Function Name**   **Visibility**   **Mutability**   **Modifiers**
**IERC20**   Interface
<sup>L</sup>   totalSupply   External 🎚    NO🎚
<sup>L</sup>   balanceOf   External 🎚   NO 🖟
└   transfer   External 및      NO 및
<sup>L</sup>   allowance   External [   NO[
└   approve   External 邶   ● NO 邶
L   transferFrom   External I
**SafeMath**   Library
<sup>L</sup>   add   Internal <u>A</u>
<sup>L</sup>   sub   Internal <u>A</u>
L   mul   Internal 🖺
L   div   Internal 🖺
L   sub   Internal 🖺
L   div   Internal 🖰
**Context**   Implementation
L   _msgSender   Internal 🖺
L _msgData Internal 🖺
**Address**   Library

```
| L | isContract | Internal 🖺 | | |
| L | sendValue | Internal 🖺 | 🔘 | |
| <sup>L</sup> | functionCall | Internal 🖺 | 🔘 ||
| └ | functionCallWithValue | Internal 🖺 | 🔘 | |
| └ | functionCallWithValue | Internal 🖺 | 🔘 | |
| L | functionStaticCall | Internal A | | |
| L | functionStaticCall | Internal 🖺 | | |
| L | functionDelegateCall | Internal 🖺 | 🔘 | |
| L | functionDelegateCall | Internal 🖺 | 🔘 | |
| L | _verifyCallResult | Private 🖺 | ||
ШШ
| **Ownable** | Implementation | Context ||| | | |
| L | owner | Public | | NO | |
| L | transferOwnership | Public | | | | | onlyOwner |
ШШ
| **IUniswapV2Factory** | Interface | ||| | | |
| L | feeTo | External [ | NO[ |
| L | feeToSetter | External | | NO | |
| L | getPair | External | | NO | |
| L | allPairs | External | | | | NO | |
| L | allPairsLength | External | | NO | |
| └ | createPair | External 🎚 | 🌑 |NO 🖟 |
| L | setFeeTo | External | | | NO | |
| L | setFeeToSetter | External | | | NO | |
IIIIII
| **IUniswapV2Pair** | Interface | ||| | | | | | | | |
| L | name | External | | | | | | | | | | |
| L | symbol | External | | | | NO | |
| L | decimals | External | | | NO | |
| L | totalSupply | External | | | NO | |
| L | balanceOf | External | | | | NO | |
| L | allowance | External | | | NO | |
| L | approve | External | | | | NO | |
| L | transfer | External | | | | NO | |
| L | transferFrom | External | | | | NO | |
```

```
| L | DOMAIN_SEPARATOR | External | | | | | | | | | | | |
| L | PERMIT_TYPEHASH | External | | | | | | | | | | |
| L | nonces | External | | NO | |
| L | permit | External | | | | NO | |
| L | MINIMUM_LIQUIDITY | External [ | NO [ |
| L | factory | External | | | | NO | |
| L | token0 | External | | NO | |
| L | token1 | External | | | | | | | | | | | |
| L | getReserves | External | | NO | |
| L | price0CumulativeLast | External [ | NO [ |
| L | price1CumulativeLast | External | | NO | |
| L | kLast | External | | | | | | | | | | |
| L | burn | External | | | | NO | |
| └ | swap | External 🎚 | 🔘 |NO 🖟 |
| L | skim | External | | | | NO | |
| └ | sync | External [ | ● |NO [ |
| L | initialize | External | | | | NO | |
ШШ
| **IUniswapV2Router01** | Interface | ||| | | | | | | | | |
| L | factory | External | | | | | | | | | | | |
| L | WETH | External | | NO | |
| L | addLiquidityETH | External [ | @ | NO [ |
| L | removeLiquidity | External | | | | NO | |
| L | removeLiquidityETH | External | | | | NO | |
| L | removeLiquidityWithPermit | External | | | | NO | |
| L | removeLiquidityETHWithPermit | External | | | NO | |
| └ | swapExactTokensForTokens | External [ | ● | NO [ |
| L | swapTokensForExactTokens | External | | | NO | |
| L | swapExactTokensForETH | External [ | ] | NO [ |
| L | swapETHForExactTokens | External 🖟 | 🕮 |NO 🖟 |
| L | quote | External | | | | NO | |
| L | getAmountOut | External | | NO | |
| L | getAmountIn | External | | NO | |
| L | getAmountsOut | External | | NO | |
| L | getAmountsIn | External | | NO | |
```

```
ШШ
| **IUniswapV2Router02** | Interface | IUniswapV2Router01 |||
L | removeLiquidityETHWithPermitSupportingFeeOnTransferTokens | External | | | NO | |
| L | swapExactTokensForTokensSupportingFeeOnTransferTokens | External [ | ] | NO[ |
| L | swapExactTokensForETHSupportingFeeOnTransferTokens | External | | | | NO | |
ШШ
| **BerylBit** | Implementation | Context, IERC20, Ownable ||| | | |
| └ | <Constructor> | Public 🎚 | 🌑 |NO 🖟 |
| L | name | Public | | NO | |
| L | symbol | Public | | | | NO | |
| L | decimals | Public | | | NO | |
| L | totalSupply | Public | | NO | |
| L | balanceOf | Public | | NO | |
| L | transfer | Public | | | NO | |
| L | allowance | Public | | NO | |
| L | approve | Public | | | | NO | |
| L | transferFrom | Public | | | | INO | |
| L | increaseAllowance | Public | | | NO | |
| L | decreaseAllowance | Public | | | NO | |
| └ | excludeFromFee | Public 🎚 | 🔘 | onlyOwner |
| L | includeInFee | Public | | | | | onlyOwner |
| L | set_Fees | External | | | | onlyOwner |
Let Swap And Liquify Enabled Public [ ] ( ) conlyOwner [
| L | set_Number_Of_Transactions_Before_Liquify_Trigger | Public | | | | | onlyOwner |
| L | <Receive Ether> | External [ | @ |NO [ |
| L | set_Transfers_Without_Fees | External | | | | onlyOwner |
| L | set_Max_Transaction_Percent | External [ | ] | onlyOwner |
| L | set_Max_Wallet_Percent | External | | | | | onlyOwner |
| L | removeAllFee | Private 🖺 | 🔘 | |
| L | restoreAllFee | Private 🖺 | 🔘 | |
| L | approve | Private 🖺 | 🔘 | |
| L | _transfer | Private 🖺 | 🔘 | |
```

<sup>L</sup>   sendToWallet   Private 👚   ◉
<sup>L</sup>   swapAndLiquify   Private 🖺   🔘   lockTheSwap
<sup>L</sup>   process_Tokens_Now   Public 🎚   🔘   onlyOwner
<sup>L</sup>   swapTokensForBNB   Private 👚   🔘
<sup>L</sup>   remove_Random_Tokens   Public ۚ
<sup>L</sup>   set_New_Router_and_Make_Pair   Public 🎚   🔘   onlyOwner
<sup>L</sup>   set_New_Router_Address   Public 🎚   🔘   onlyOwner
<sup>L</sup>   set_New_Pair_Address   Public 🖟   🔘   onlyOwner
└   _tokenTransfer   Private 🖺   🔘
<sup>L</sup>  _transferTokens Private 🖺   🔘
<sup>L</sup>  _getValues Private 🖺
Legend
Symbol   Meaning
:
O   Function can modify state
🕮   Function is payable

## • Summary of the Audit

According to automatically test, the customer's solidity smart contract is **Secured**.

The general overview is presented in the Project Information section and all issues found are located in the audit overview section.

The test found 0 critical, 0 high, 0 medium, 2 low issues, and 2 note.