



TechRate

AUDIT COMPANY

Smart Contract Security Audit

Audit Details



Audited project

Firulais



Deployer address

0x5418081B1e8275bc77DB0060CDA6C6527cB09628



Client contacts:

Firulais team



Blockchain

Ethereum



Project website:

<https://firulais.io/>

Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice as at 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 us on the basis of what it says or doesn't say, or how we produced it, and it is important for you to conduct your own independent investigations before making any decisions. We go into more detail on this in the below disclaimer below – please make sure to read it in full.

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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.

Background

TechRate was commissioned by Firulais to perform an audit of smart contracts:

<https://etherscan.io/address/0xe276056f924e15beac26f7b10b6d2805f9c64bb5#code>

The purpose of the audit was to achieve the following:

- Ensure that the smart contract functions as intended.
- Identify potential security issues with the smart contract.

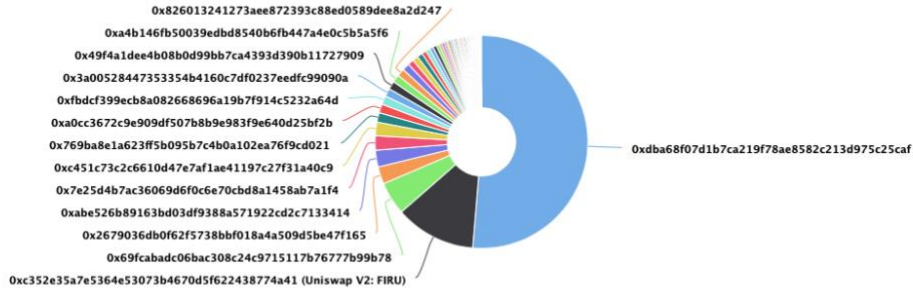
The information in this report should be used to understand the risk exposure of the smart contract, and as a guide to improve the security posture of the smart contract by remediating the issues that were identified.

Firulais Token Distribution

The top 100 holders collectively own 99.86% (99,862,075,758,183,200.00 Tokens) of Firulais

Token Total Supply: 100,000,000,000,000.00 Token | Total Token Holders: 148

Firulais Top 100 Token Holders
Source: Etherscan.io



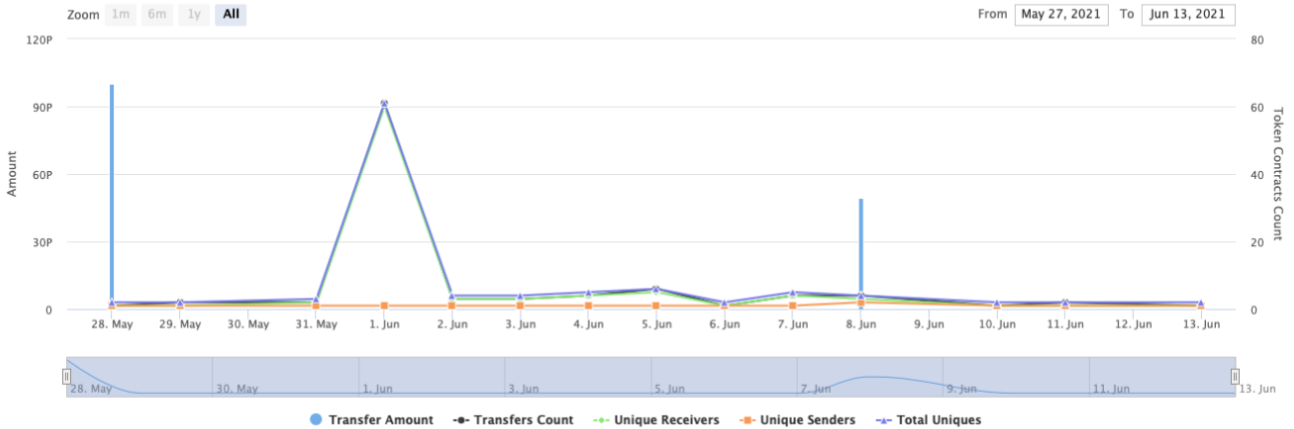
(A total of 99,862,075,758,183,200.00 tokens held by the top 100 accounts from the total supply of 100,000,000,000,000.00 token)

Firulais Contract Interaction Details

Time Series: Token Contract Overview

Fri 28, May 2021 - Sun 13, Jun 2021

Token Contract 0xe276056f924e15beac26f7b10b6d2805f9c64bb5 (Firulais)
Source: Etherscan.io



Firulais Top 10 Token Holders

Rank	Address	Quantity (Token)	Percentage
1	0xdba68f07d1b7ca219f78ae8582c213d975c25caf	51,322,748,840,065,100.761943157	51.3227%
2	Uniswap V2: FIRU	12,260,326,025,219,000.256154398	12.2603%
3	0x69fcabadc06bac308c24c9715117b777b99b78	5,009,892,483,624,200.470736156	5.0099%
4	0x2679036db0f62f5738bf018a4a509d5be47f165	2,615,442,763,714,910.517096281	2.6154%
5	0xab526b89163bd03df9388a571922cd2c7133414	2,543,960,446,719,300.197680184	2.5440%
6	0x7e25d4b7ac36069d6f0c6e70cbd8a1458ab7a1f4	2,173,983,696,805,400.223977126	2.1740%
7	0xc451c73c2c6610d47e7af1ae41197c27f31a40c9	2,064,181,779,496,920.6981727	2.0642%
8	0x769ba8e1a623f5b095b7c4b0a102ea76f9cd021	1,438,377,370,371,050.26856846	1.4384%
9	0xa0cc3672c9e909df507b8b9e983f9e640d25bf2b	1,341,892,727,173,210.90227669	1.3419%
10	0xfbdcf399ecb8a082668696a19b7f914c5232a64d	1,322,572,463,421,370.779266264	1.3226%



Contract functions details

- + Context
 - [Int] _msgSender
 - [Int] _msgData
- + [Int] IERC20
 - [Ext] totalSupply
 - [Ext] balanceOf
 - [Ext] transfer #
 - [Ext] allowance
 - [Ext] approve #
 - [Ext] transferFrom #
- + [Lib] SafeMath
 - [Int] add
 - [Int] sub
 - [Int] sub
 - [Int] mul
 - [Int] div
 - [Int] div
 - [Int] mod
 - [Int] mod
- + [Lib] Address
 - [Int] isContract
 - [Int] sendValue #
 - [Int] functionCall #
 - [Int] functionCall #
 - [Int] functionCallWithValue #
 - [Int] functionCallWithValue #
 - [Prv] _functionCallWithValue #
- + Ownable (Context)
 - [Int] <Constructor> #
 - [Pub] owner
 - [Pub] renounceOwnership #
 - modifiers: onlyOwner
 - [Pub] transferOwnership #
 - modifiers: onlyOwner
- + Firulais (Context, IERC20, Ownable)
 - [Pub] <Constructor> #
 - [Pub] name
 - [Pub] symbol
 - [Pub] decimals
 - [Pub] totalSupply
 - [Pub] balanceOf
 - [Pub] transfer #
 - [Pub] allowance
 - [Pub] approve #
 - [Pub] transferFrom #
 - [Pub] increaseAllowance #

- [Pub] decreaseAllowance #
- [Pub] isExcluded
- [Pub] totalFees
- [Pub] reflect #
- [Pub] reflectionFromToken
- [Pub] tokenFromReflection
- [Ext] excludeAccount #
 - modifiers: onlyOwner
- [Ext] includeAccount #
 - modifiers: onlyOwner
- [Prv] _approve #
- [Prv] _transfer #
- [Prv] _transferStandard #
- [Prv] _transferToExcluded #
- [Prv] _transferFromExcluded #
- [Prv] _transferBothExcluded #
- [Prv] _reflectFee #
- [Prv] _getValues
- [Prv] _getTValues
- [Prv] _getRValues
- [Prv] _getRate
- [Prv] _getCurrentSupply

(\$) = payable function

= non-constant function

Issues Checking Status

Issue description	Checking status
1. Compiler errors.	Passed
2. Race conditions and Reentrancy. Cross-function race conditions.	Passed
3. Possible delays in data delivery.	Passed
4. Oracle calls.	Passed
5. Front running.	Passed
6. Timestamp dependence.	Passed
7. Integer Overflow and Underflow.	Passed
8. DoS with Revert.	Passed
9. DoS with block gas limit.	Low issues
10. Methods execution permissions.	Passed
11. Economy model of the contract.	Passed
12. The impact of the exchange rate on the logic.	Passed
13. Private user data leaks.	Passed
14. Malicious Event log.	Passed
15. Scoping and Declarations.	Passed
16. Uninitialized storage pointers.	Passed

17. Arithmetic accuracy. **Passed**

18. Design Logic. **Passed**

19. Cross-function race conditions. **Passed**

20. Safe Open Zeppelin contracts implementation and usage. **Passed**

21. Fallback function security. **Passed**

Security Issues

✓ High Severity Issues

No high severity issues found.

✓ Medium Severity Issues

No medium severity issues found.

✓ Low Severity Issues

1. Out of gas

Issue:

- The function `includeAccount()` uses the loop to find and remove addresses from the `_excluded` list. Function will be aborted with `OUT_OF_GAS` exception if there will be a long excluded addresses list.

```
function includeAccount(address account↑) external onlyOwner() {
    require(!_isExcluded[account↑], "Account is not excluded");
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (_excluded[i] == account↑) {
            _excluded[i] = _excluded[_excluded.length - 1];
            tOwned[account↑] = 0;
            _isExcluded[account↑] = false;
            _excluded.pop();
            break;
        }
    }
}
```

- The function `_getCurrentSupply` also uses the loop for evaluating total supply. It also could be aborted with `OUT_OF_GAS` exception if there will be a long excluded addresses list.

```
function _getCurrentSupply() private view returns(uint256, uint256) {
    uint256 rSupply = _rTotal;
    uint256 tSupply = _tTotal;
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (_rOwned[_excluded[i]] > rSupply || _tOwned[_excluded[i]] > tSupply) return (_rTotal, _tTotal);
        rSupply = rSupply.sub(_rOwned[_excluded[i]]);
        tSupply = tSupply.sub(_tOwned[_excluded[i]]);
    }
    if (rSupply < _rTotal.div(_tTotal)) return (_rTotal, _tTotal);
    return (rSupply, tSupply);
}
```

Recommendation:

Check that the excluded array length is not too big.

Conclusion

Smart contracts contain low severity issues! Liquidity pair contract's security is not checked due to out of scope.

Liquidity locking details NOT provided by the team.

TechRate note:

Please check the disclaimer above and note, the audit makes no statements or warranties on business model, investment attractiveness or code sustainability. The report is provided for the only contract mentioned in the report and does not include any other potential contracts deployed by Owner.