SMART CONTRACT AUDIT REPORT

For

Kat Dog (KAD)

Prepared By: SFI Team

Prepared on: 18/12/2021

Prepared for: Kat Dog Team

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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.
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• Scope of the audit

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

• Introduction

During the period of **December 16, 2021, to December 17, 2021** - SaferICO

Team performed a security audit for **Fat Catz** smart contracts.

The project has 1 file. It contains approx 1870 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.

• 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 0.8.2 instead of ^0.8.2). 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. Issues has been fixed

Informational issues

#Missing SPDX-License-Identifier:

Warning: SPDX license identifier not provided in source file. Before publishing, consider adding a comment containing "SPDX-License-Identifier: <SPDX-License>" to each source file. Use "SPDX-License-Identifier: UNLICENSED" for non-open-source code. Please see https://spdx.org for more information .

Remediation

Add License Identifier

```
// SPDX-License-Identifier: MIT
```

Status: Acknowledged

Constant calculations in the contract

Description

recalculated initialization will save 2847 units of gas in deployment

```
uint public totalSupply = 1000000000000000000 * 10 ** 18;
```

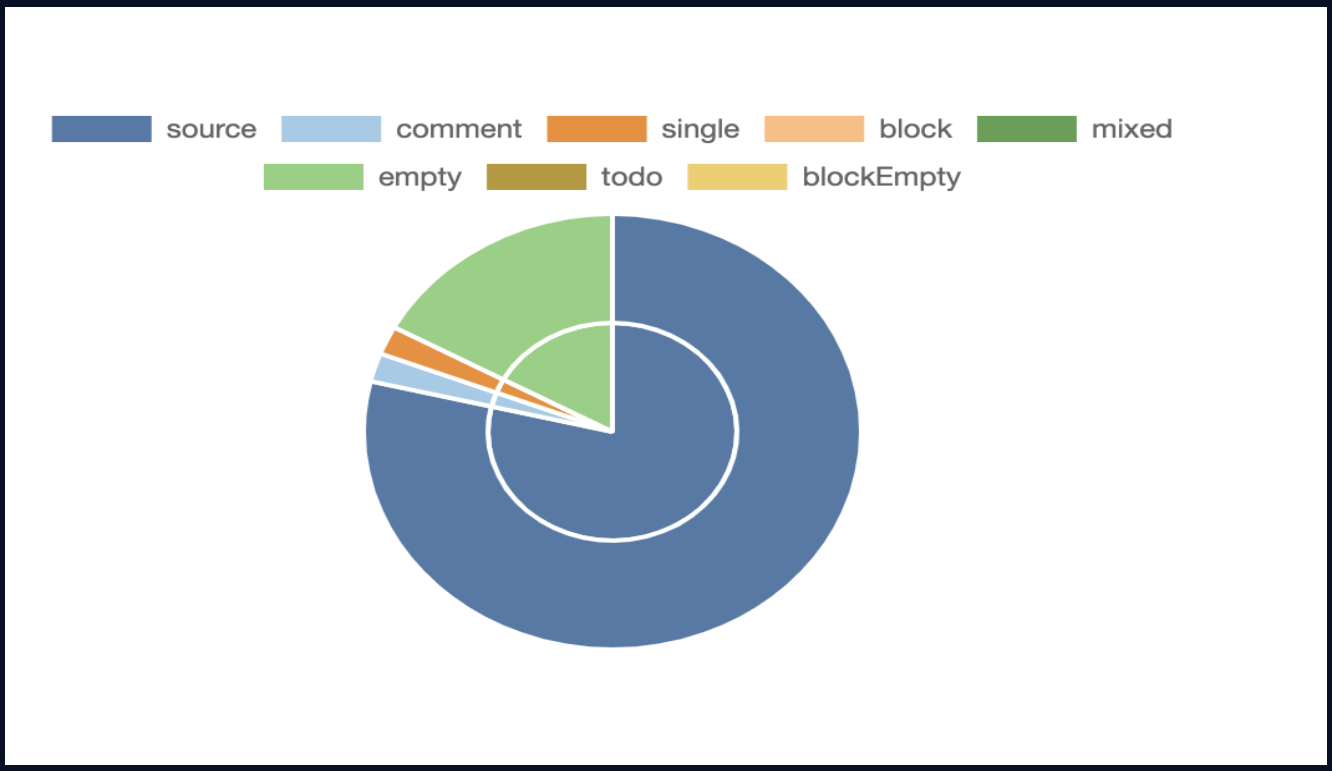
Recommendation

Replace the initialization as

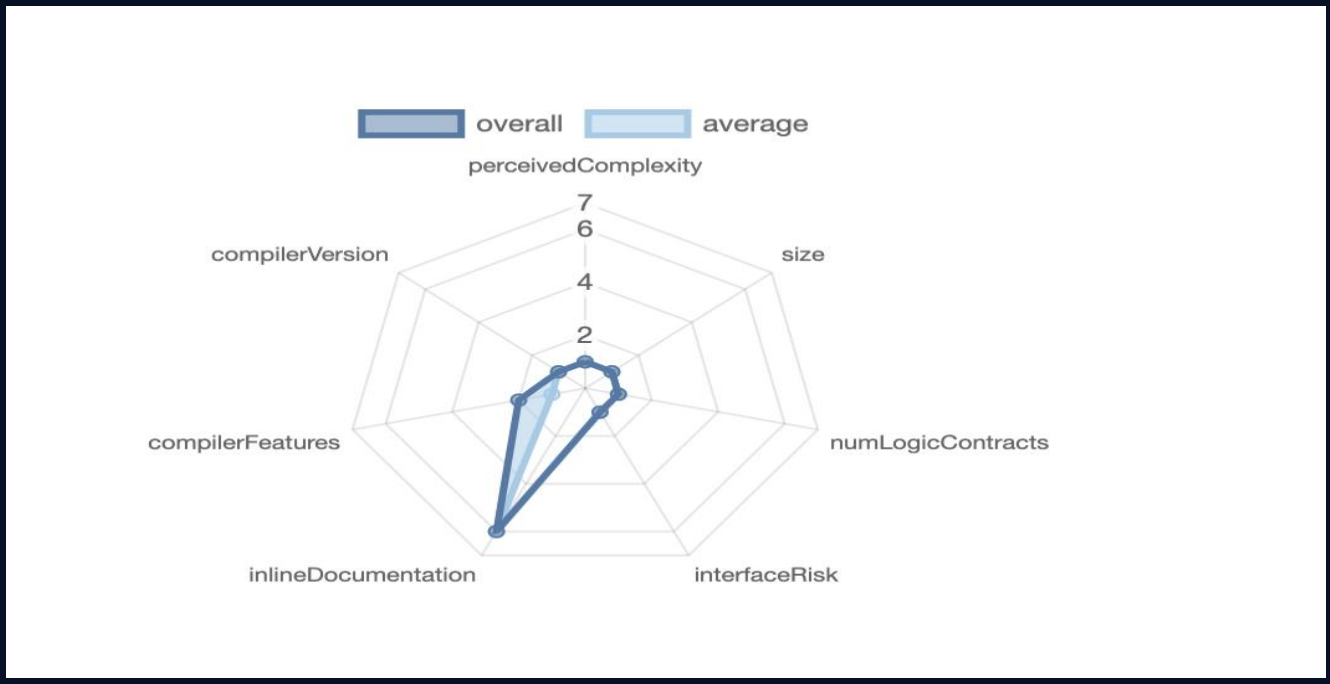
```
uint public totalSupply = 1000000000000000000000000000000000000;
```

Status: Acknowledged

- **Source Lines**

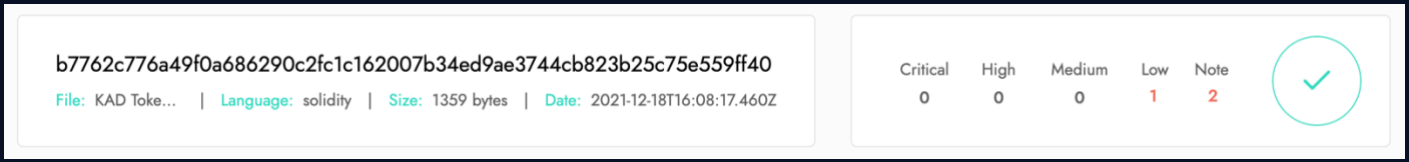


- **Risk Level**

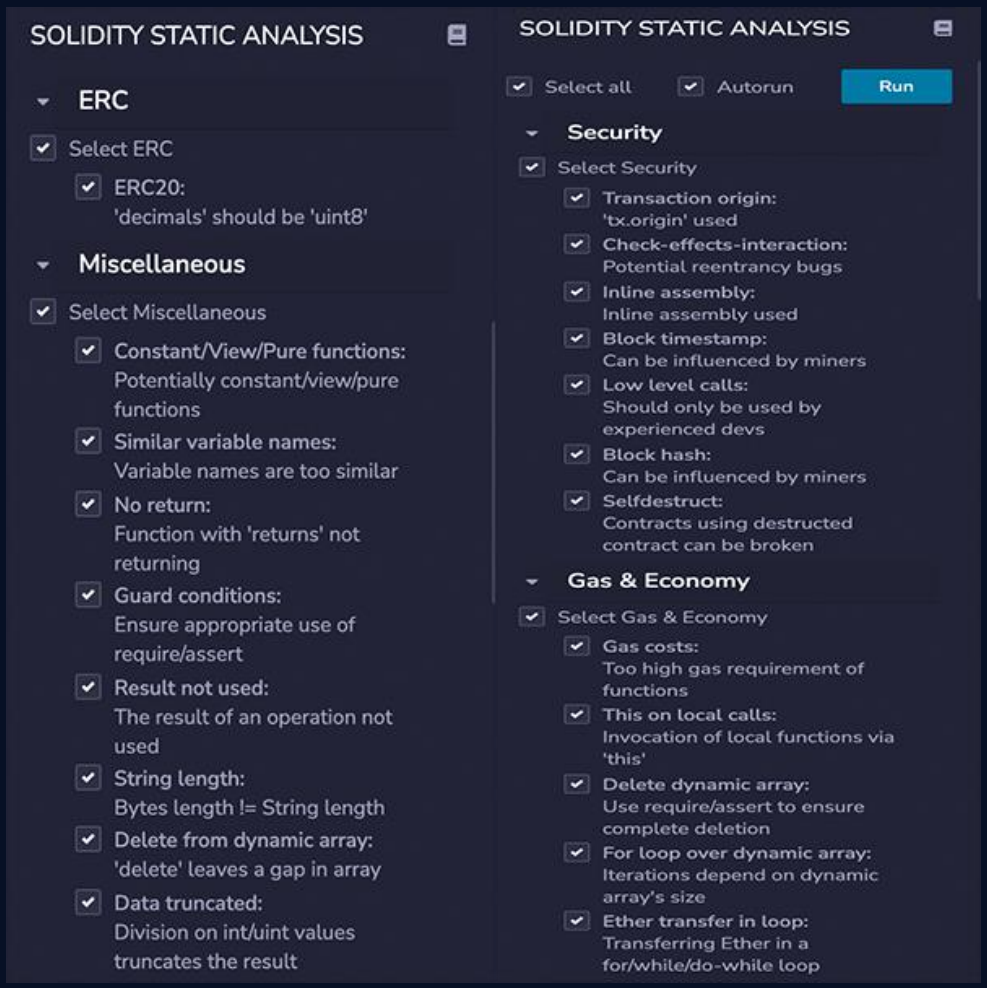


- **Testing proves**

- **Check for security**

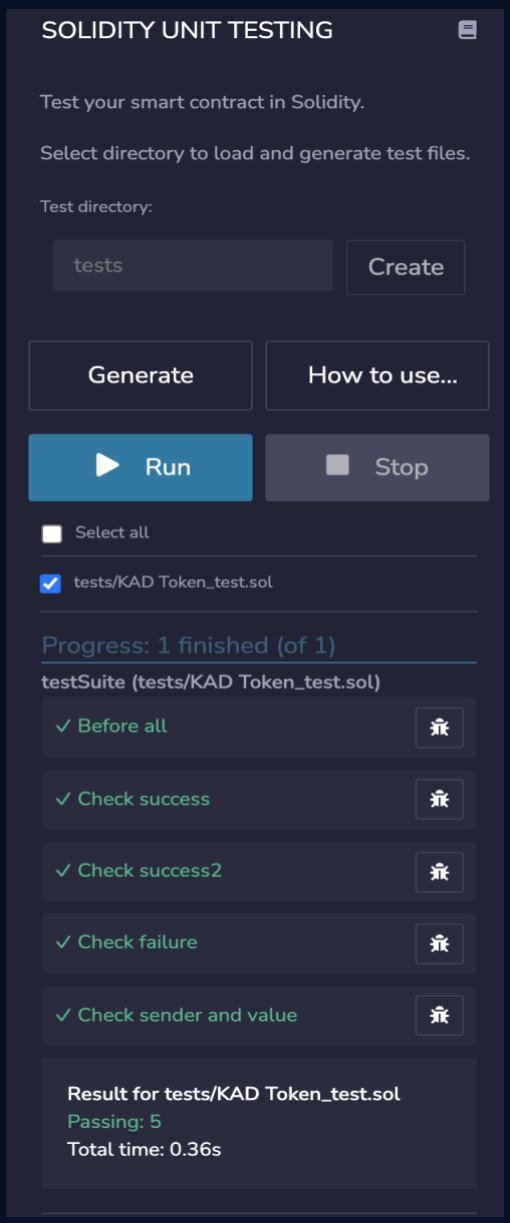


- **Solidity Static Analysis**



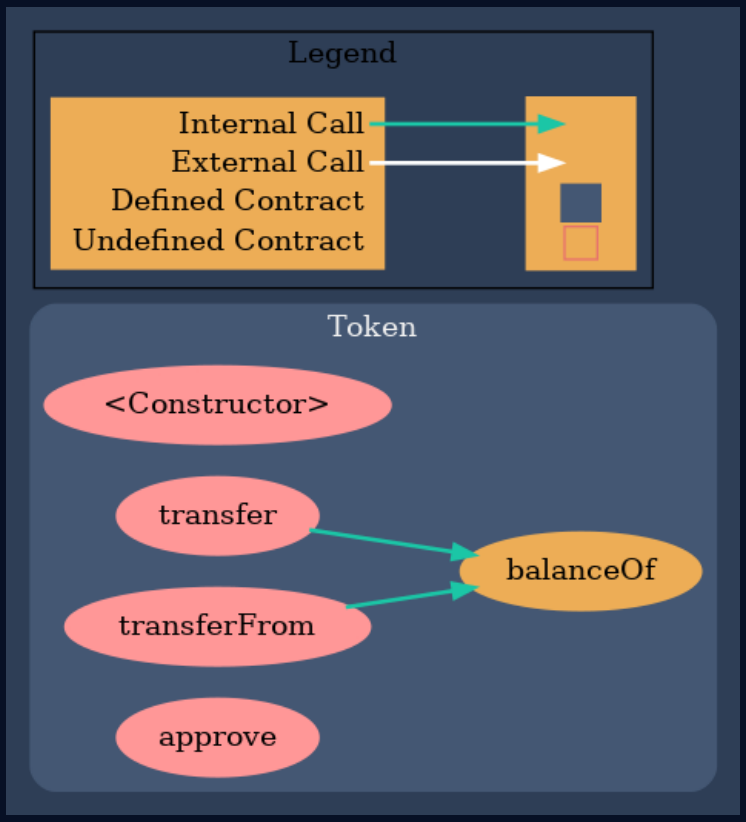
- **Solidity Unit Testing Code & Results**

```
// SPDX-License-Identifier: GPL-3.0

pragma solidity >=0.4.22 <0.9.0;

// This import is automatically injected by Remix
import "remix_tests.sol";

// This import is required to use custom transaction context
// Although it may fail compilation in 'Solidity Compiler' plugin
// But it will work fine in 'Solidity Unit Testing' plugin
import "remix_accounts.sol";
import "../KAD Token.sol";

// File name has to end with '_test.sol', this file can contain more than one testSuite contracts
contract testSuite {

    /// 'beforeAll' runs before all other tests
    /// More special functions are: 'beforeEach', 'beforeAll', 'afterEach' & 'afterAll'
    function beforeAll() public {
        // <instantiate contract>
        Assert.equal(uint(1), uint(1), "1 should be equal to 1");
    }

    function checkSuccess() public {
        // Use 'Assert' methods: https://remix-ide.readthedocs.io/en/latest/assert_library.html
        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
        return true;
    }
```

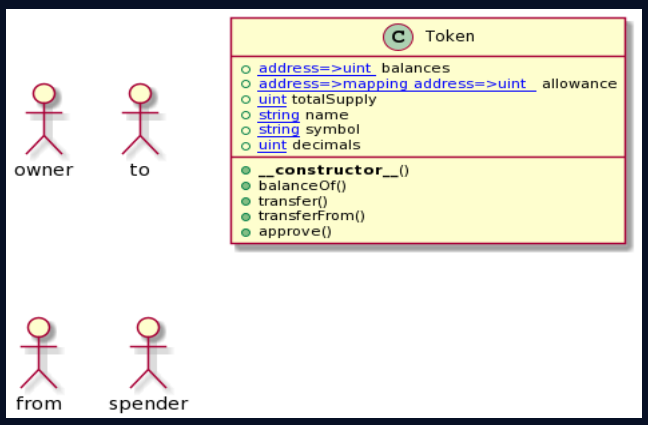



```
    function checkFailure() public {
        Assert.notEqual(uint(1), uint(2), "1 should not be equal to 1");
    }

    /// Custom Transaction Context: https://remix-
ide.readthedocs.io/en/latest/unittesting.html#customization
    /// #sender: account-1
    /// #value: 100
    function checkSenderAndValue() public payable {
        // account index varies 0-9, value is in wei
        Assert.equal(msg.sender, TestsAccounts.getAccount(1), "Invalid sender");
        Assert.equal(msg.value, 100, "Invalid value");
    }
}
```

- **Call Graph**



- **Unified Modeling Language (UML)**



- ## Capabilities

Components

Contracts	Libraries	Interfaces	Abstract
1	0	0	0

Exposed Functions

This section lists functions that are explicitly declared public or payable. Please note that getter methods for public stateVars are not included.

Public	Payable
4	0

External	Internal	Private	Pure	View
0	5	0	0	0

StateVariables

Total	Public
6	6

Capabilities

Solidity Versions observed	Experimental Features	Can Receive Funds	Uses Assembly	Has Destroyable Contracts
`^0.8.2`				

Transfers ETH	Low-Level Calls	DelegateCall	Uses Hash Functions	ECRecover	New/Create/Create2

TryCatch	Unchecked

- ## Source Units In Scope

Source Units in Scope

Source Units Analyzed: `1`
Source Units in Scope: `1` **(100%)**

Type	File	Logic Contracts	Interfaces	Lines	nLines	nSLOC	Comment Lines	Complex. Score	Capabilities
	KAD Token.sol	1		46	46	37	1	23	
	Totals	**1**		**46**	**46**	**37**	**1**	**23**	

Legend: [−]

- **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

```
   70a08231  =>  balanceOf(address)
a9059cbb  =>  transfer(address,uint256)
23b872dd  =>  transferFrom(address,address,uint256)
095ea7b3  =>  approve(address,uint256)
```

- ## Automatic General Report

```
| File Name | SHA-1 Hash |
|-------------|-------------|
| /Users/macbook/Desktop/smart contracts/KAD Token.sol | 26cf9ecf503ee78548d9cfaee4f95cdee2354e22 |


Contracts Description Table


| Contract |        Type        |      Bases      |                |                |
|:----------:|:-------------------:|:----------------:|:----------------:|:----------------:|
|     └     | **Function Name** | **Visibility** | **Mutability** | **Modifiers** |
||||||
| **Token** | Implementation |  |||
| └ | <Constructor> | Public ❗ | 🛑 | NO❗ |
| └ | balanceOf | Public ❗ | 🛑 | NO❗ |
| └ | transfer | Public ❗ | 🛑 | NO❗ |
| └ | transferFrom | Public ❗ | 🛑 | NO❗ |
| └ | approve | Public ❗ | 🛑 | NO❗ |


Legend


| Symbol | Meaning |
|:--------:|:-----------:|
|   🛑   | 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.