



SMART CONTRACT AUDIT REPORT

For
Havens



Prepared By: SFI Team

Prepared on: 4/12/2022
0xb6695D49Ab00c15dbE13D70B57D2246225E621fd

Prepared for: Havens Team

Contract address:
0xb6695D49Ab00c15dbE13D70B57D2246225E621fd

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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 Havens smart contract codebase for quality, security, and correctness.

• Introduction

During the period of **December 2, 2022, to December 4, 2022**- SaferICO

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

The project has 1 file. It contains approx 591 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/0xb6695d49ab00c15dbe13d70b57d2246225e621fd#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. Compiler 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

High severity issues

There are no High severity vulnerabilities found.

Medium severity issues

There are no Medium severity vulnerabilities found.

Low severity issues

#Multiple pragma statements

line	complier
10	pragma solidity 0.8.17;
95	pragma solidity 0.8.17;
125	pragma solidity 0.8.17;
152	pragma solidity 0.8.17;
509	pragma solidity 0.8.17;
583	pragma solidity 0.8.17;

Description

There are multiple pragma statements in the code. The newest compiler version 0.8.17 will work with the code, but keeping only one pragma statement helps in maintaining readability of the code.

Remediation

Keep a single pragma statement.

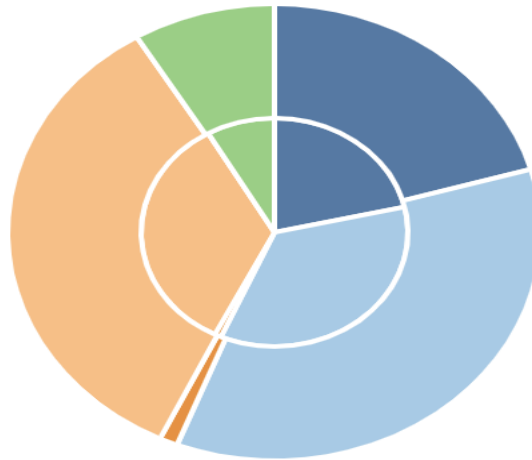
Status: [Acknowledged](#).

Informational issues

There are no Informational issues found.

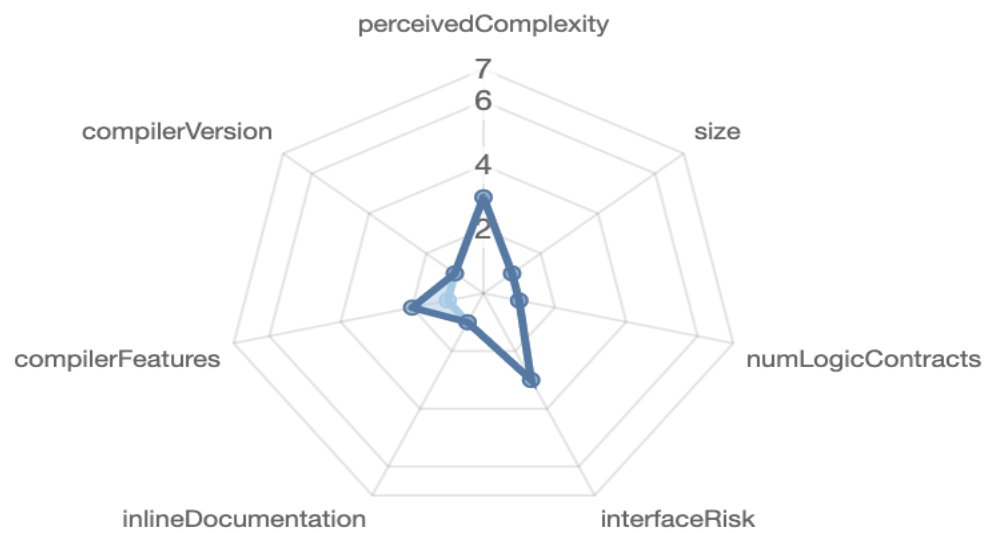
- Source Lines

source comment single block mixed
empty todo blockEmpty



- Risk Level

overall average



- Testing proves
- Check for security

bf1cf91793170059e91d5863c9211891325c221c9b0c28604112eb14356bd616
File: Havens... | Language: solidity | Size: 18682 bytes | Date: 2022-12-04T05:24:52.028Z

Critical	High	Medium	Low	Note
0	0	0	0	0

- Solidity Static Analysis

SOLIDITY STATIC ANALYSIS

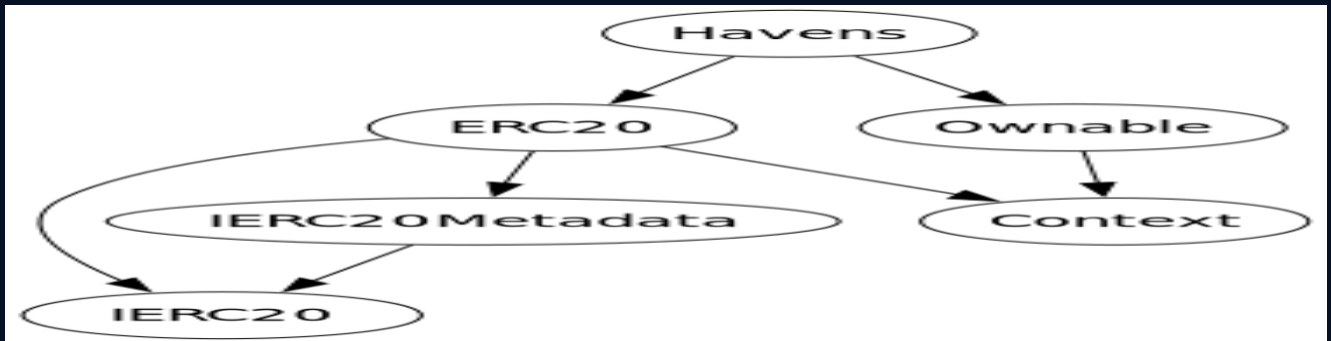
- ERC
 - Select ERC
 - ERC20: 'decimals' should be 'uint8'
- Miscellaneous
 - Select Miscellaneous
 - Constant/View/Pure functions: Potentially constant/view/pure functions
 - Similar variable names: Variable names are too similar
 - No return: Function with 'returns' not returning
 - Guard conditions: Ensure appropriate use of require/assert
 - Result not used: The result of an operation not used
 - String length: Bytes length != String length
 - Delete from dynamic array: 'delete' leaves a gap in array
 - Data truncated: Division on int/uint values truncates the result

SOLIDITY STATIC ANALYSIS

☒ Select all
☒ Autorun

- Security
 - Select Security
 - Transaction origin: 'tx.origin' used
 - Check-effects-interaction: Potential reentrancy bugs
 - Inline assembly: Inline assembly used
 - Block timestamp: Can be influenced by miners
 - Low level calls: Should only be used by experienced devs
 - Block hash: Can be influenced by miners
 - Selfdestruct: Contracts using destructured contract can be broken
- Gas & Economy
 - Select Gas & Economy
 - Gas costs: Too high gas requirement of functions
 - This on local calls: Invocation of local functions via 'this'
 - Delete dynamic array: Use require/assert to ensure complete deletion
 - For loop over dynamic array: Iterations depend on dynamic array's size
 - Ether transfer in loop: Transferring Ether in a for/while/do-while loop

- Inheritance graph



- 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 "../Havens.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 {
```

SOLIDITY UNIT TESTING



Test your smart contract in Solidity.

Select directory to load and generate test files.

Test directory:

tests

Create

Generate

How to use...

Run

Stop

☒ Select all

☒ tests/Havens_test.sol

Progress: 1 finished (of 1)

PASS testSuite (tests/Havens_test.sol)

✓ Before all



✓ Check success



✓ Check success2



✓ Check failure



✓ Check sender and value



Result for tests/Havens_test.sol

Passed: 5

Failed: 0

Time Taken: 0.32s

```
// 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.lessThan(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
```

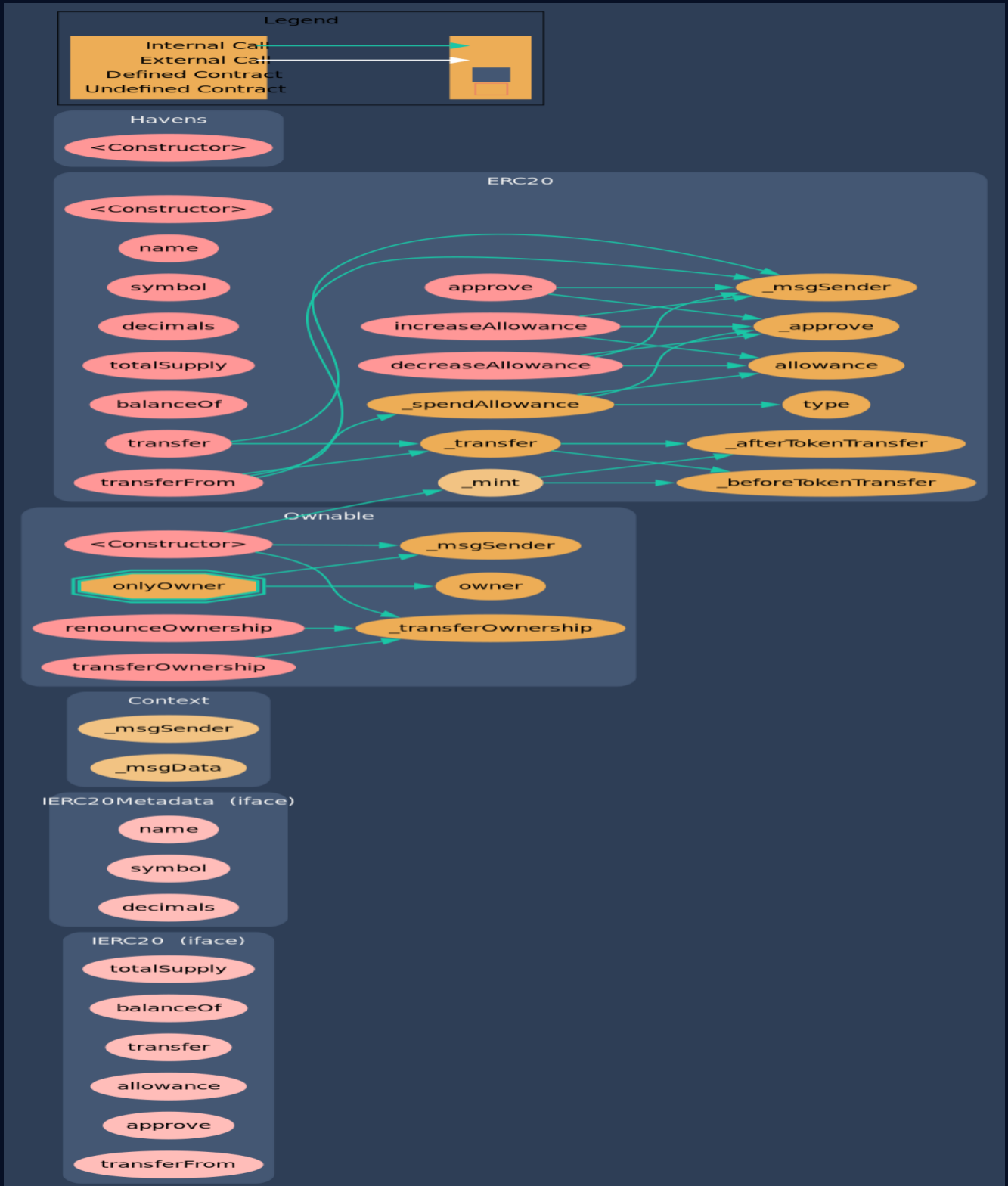
```
    Assert.equal(msg.sender, TestsAccounts.getAccount(1), "Invalid sender");
```

```
    Assert.equal(msg.value, 100, "Invalid value");
```

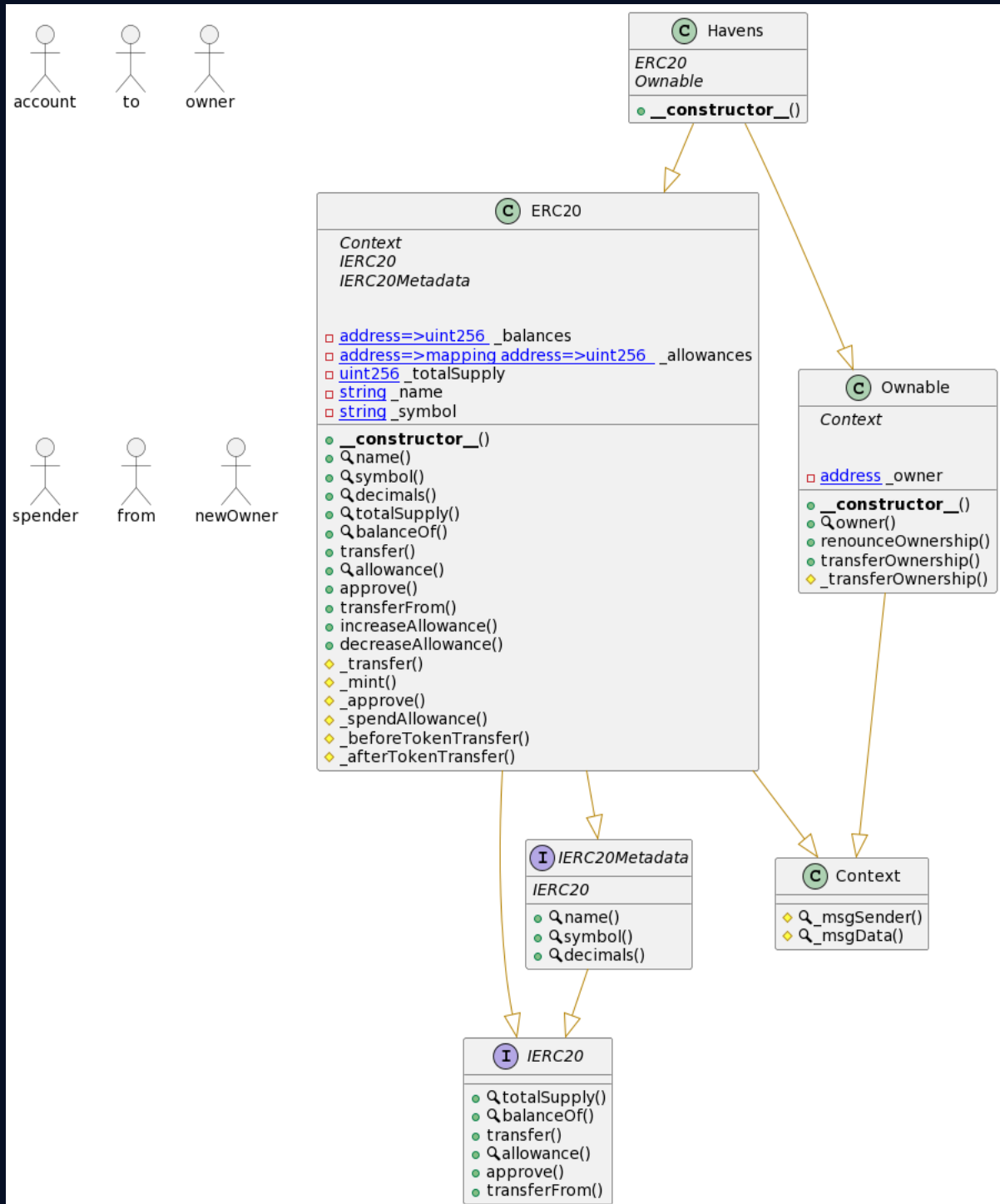
```
}
```

```
}
```

Call Graph



- Unified Modeling Language (UML)



• Capabilities

Components

 Contracts	 Libraries	 Interfaces	 Abstract
2	0	2	2


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
23	0

External	Internal	Private	Pure	View
9	29	0	0	15

StateVariables

Total	 Public
6	0

Capabilities

Solidity Versions observed	✓ Experimental Features	💰 Can Receive Funds	📜 Uses Assembly	🌐 Has Destroyable Contracts	
0.8.17					
📡 Transfers ETH	⚡ Low-Level Calls	👤 DelegateCall	🏠 Uses Hash Functions	🔑 ECRECOVER	🌀 New/Create/Create2
🔄 TryCatch	Σ Unchecked				
	yes				

• 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
	Havens.sol	4	2	591	478	158	324	127	
	Totals	4	2	591	478	158	324	127	

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**

Sighash | Function Signature

=====

```
39509351 => increaseAllowance(address,uint256)
18160ddd => totalSupply()
70a08231 => balanceOf(address)
a9059cbb => transfer(address,uint256)
dd62ed3e => allowance(address,address)
095ea7b3 => approve(address,uint256)
23b872dd => transferFrom(address,address,uint256)
06fdde03 => name()
95d89b41 => symbol()
313ce567 => decimals()
119df25f => _msgSender()
8b49d47e => _msgData()
a457c2d7 => decreaseAllowance(address,uint256)
30e0789e => _transfer(address,address,uint256)
4e6ec247 => _mint(address,uint256)
104e81ff => _approve(address,address,uint256)
1532335e => _spendAllowance(address,address,uint256)
cad3be83 => _beforeTokenTransfer(address,address,uint256)
8f811a1c => _afterTokenTransfer(address,address,uint256)
8da5cb5b => owner()
715018a6 => renounceOwnership()
f2fde38b => transferOwnership(address)
d29d44ee => _transferOwnership(address)
```

• Automatic General Report

Files Description Table

File Name	SHA-1 Hash
/Users/macbook/Desktop/smart contracts/Havens.sol	74928c386191ffc9e4a967e867bc2bde575b140b

Contracts Description Table

Contract	Type	Bases		
↳	Function Name	Visibility	Mutability	Modifiers
ERC20 Interface				
↳	totalSupply	External	⚡	NO
↳	balanceOf	External	⚡	NO
↳	transfer	External	⚡	NO
↳	allowance	External	⚡	NO
↳	approve	External	⚡	NO
↳	transferFrom	External	⚡	NO
ERC20Metadata Interface IERC20				
↳	name	External	⚡	NO
↳	symbol	External	⚡	NO
↳	decimals	External	⚡	NO
Context Implementation				
↳	_msgSender	Internal	🔒	
↳	_msgData	Internal	🔒	
ERC20 Implementation Context, IERC20, IERC20Metadata				
↳	<Constructor>	Public	⚡	NO
↳	name	Public	⚡	NO
↳	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  | |  | NO  |
|  L | increaseAllowance | Public  | |  | NO  |
|  L | decreaseAllowance | Public  | |  | NO  |
|  L | _transfer | Internal  | |  | |
|  L | _mint | Internal  | |  | |
|  L | _approve | Internal  | |  | |
|  L | _spendAllowance | Internal  | |  | |
|  L | _beforeTokenTransfer | Internal  | |  | |
|  L | _afterTokenTransfer | Internal  | |  | |
|||||
| **Ownable** | Implementation | Context |||
|  L | <Constructor> | Public  | |  | NO  |
|  L | owner | Public  | | NO  |
|  L | renounceOwnership | Public  | |  | onlyOwner |
|  L | transferOwnership | Public  | |  | onlyOwner |
|  L | _transferOwnership | Internal  | |  | |
|||||
| **Havens** | Implementation | ERC20, Ownable |||
|  L | <Constructor> | Public  | |  | ERC20 |

```

Legend

| Symbol | Meaning |

|:-----:|:-----:|

| | Function can modify state |

| | Function is payable |

- **Summary of the Audit**

According to all test, the customer`s solidity smart contract is **Well Secure**.

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, 1 low issues, and 0 notes.