Assure DeFi®

THE VERIFICATION GOLD STANDARD

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Security Assessment

VICE

VICE

Date: 21/08/2024

Audit Status: PASS

Audit Edition: Advanced

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Risk Analysis

Vulnerability summary

Classification	Description
🔴 High	High-level vulnerabilities can result in the loss of assets or manipulation of data.
🟠 Medium	Medium-level vulnerabilities can be challenging to exploit, but they still have a considerable impact on smart contract execution, such as allowing public access to critical functions.
🟡 Low	Low-level vulnerabilities are primarily associated with outdated or unused code snippets that generally do not significantly impact execution, sometimes they can be ignored.
🟢 Informational	Informational vulnerabilities, code style violations, and informational statements do not affect smart contract execution and can typically be disregarded.

Executive Summary

According to the Assure assessment, the Customer's smart contract is **Well Secured.**

Insecure	Poorly Secured	Secured	**Well Secured**

Scope

Target Code And Revision

For this audit, we performed research, investigation, and review of the VICE contracts followed by issue reporting, along with mitigation and remediation instructions outlined in this report.

Target Code And Revision

Project	Assure
Language	Solidity
Codebase	ViceToken.zip - [SHA256] dadf650de20b41b6ef453685f28b5fe9b0babab d21ed0c7db6667b39928371ed
Audit Methodology	Static, Manual

Attacks made to the contract

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.

Category	Item
Code review & Functional Review	● Compiler warnings. ● Race conditions and Reentrancy. Cross-function race conditions. ● Possible delays in data delivery. ● Oracle calls. ● Front running. ● Timestamp dependence. ● Integer Overflow and Underflow. ● DoS with Revert. ● DoS with block gas limit. ● Methods execution permissions. ● Economy model. ● Private user data leaks. ● Malicious Event log. ● Scoping and Declarations. ● Uninitialized storage pointers. ● Arithmetic accuracy. ● Design Logic. ● Cross-function race conditions. ● Safe Zeppelin module. ● Fallback function security. ● Overpowered functions / Owner privileges

AUDIT OVERVIEW

HIGH

No high severity issues were found.

MEDIUM

No medium severity issues were found.

LOW

No low severity issues were found.

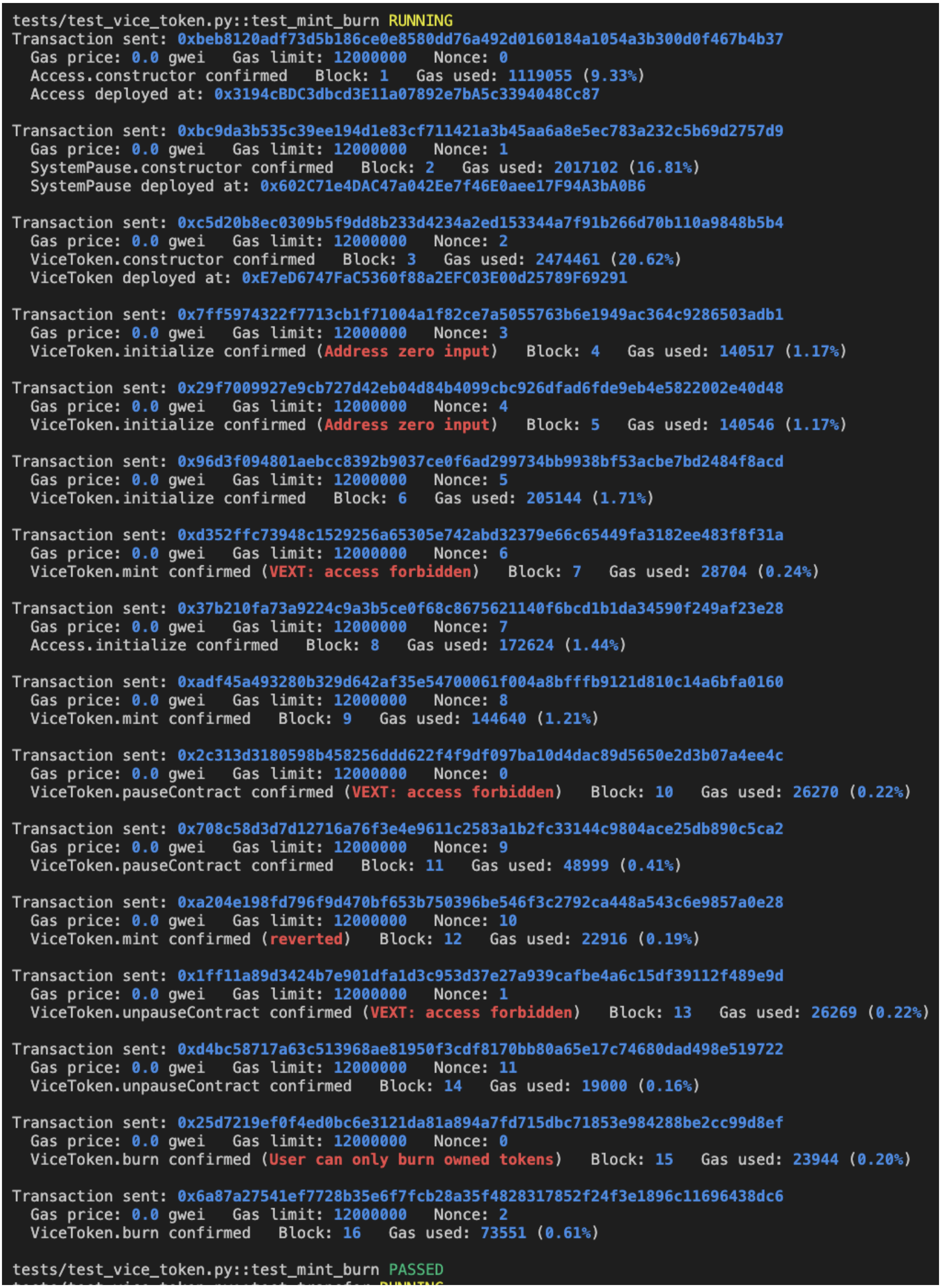
INFORMATIONAL

No Informational severity issues were found.

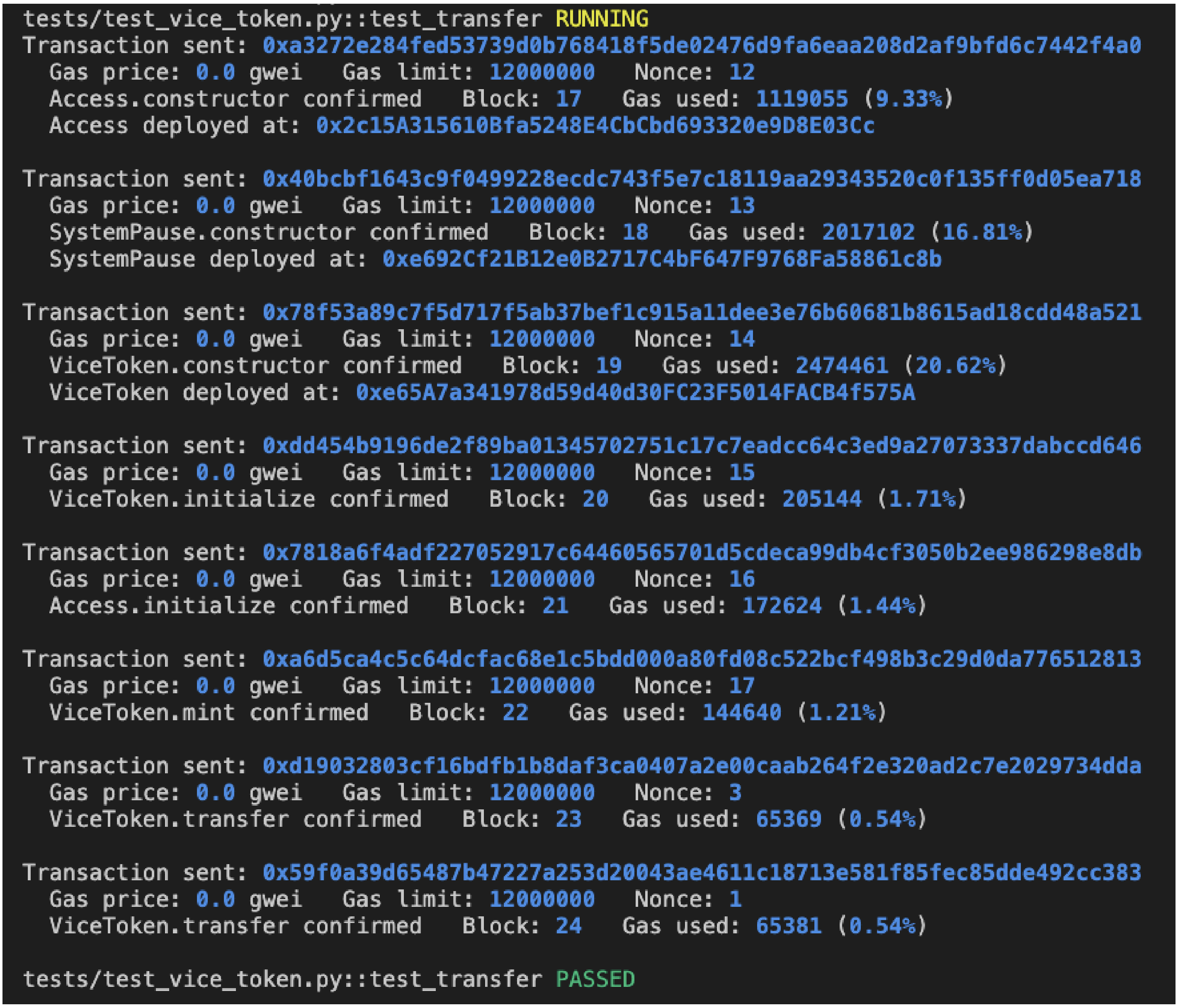
Testing coverage

During the testing phase, custom use cases were written to cover all the logic of contracts. **Check “Annexes” to see the testing code.*

VICE contracts tests:



```
tests/test_vice_token.py::test_mint_burn RUNNING
Transaction sent: 0xbeb8120adf73d5b186ce0e8580dd76a492d0160184a1054a3b300d0f467b4b37
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 0
  Access.constructor confirmed   Block: 1   Gas used: 1119055 (9.33%)
  Access deployed at: 0x3194cBDC3dbcd3E11a07892e7bA5c3394048Cc87

Transaction sent: 0xbc9da3b535c39ee194d1e83cf711421a3b45aa6a8e5ec783a232c5b69d2757d9
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 1
  SystemPause.constructor confirmed   Block: 2   Gas used: 2017102 (16.81%)
  SystemPause deployed at: 0x602C71e4DAC47a042Ee7f46E0aee17F94A3bA0B6

Transaction sent: 0xc5d20b8ec0309b5f9dd8b233d4234a2ed153344a7f91b266d70b110a9848b5b4
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 2
  ViceToken.constructor confirmed   Block: 3   Gas used: 2474461 (20.62%)
  ViceToken deployed at: 0xE7eD6747FaC5360f88a2EFC03E00d25789F69291

Transaction sent: 0x7ff5974322f7713cb1f71004a1f82ce7a5055763b6e1949ac364c9286503adb1
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 3
  ViceToken.initialize confirmed (Address zero input)   Block: 4   Gas used: 140517 (1.17%)

Transaction sent: 0x29f7009927e9cb727d42eb04d84b4099cbc926dfad6fde9eb4e5822002e40d48
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 4
  ViceToken.initialize confirmed (Address zero input)   Block: 5   Gas used: 140546 (1.17%)

Transaction sent: 0x96d3f094801aebcc8392b9037ce0f6ad299734bb9938bf53acbe7bd2484f8acd
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 5
  ViceToken.initialize confirmed   Block: 6   Gas used: 205144 (1.71%)

Transaction sent: 0xd352ffc73948c1529256a65305e742abd32379e66c65449fa3182ee483f8f31a
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 6
  ViceToken.mint confirmed (VEXT: access forbidden)   Block: 7   Gas used: 28704 (0.24%)

Transaction sent: 0x37b210fa73a9224c9a3b5ce0f68c8675621140f6bcd1b1da34590f249af23e28
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 7
  Access.initialize confirmed   Block: 8   Gas used: 172624 (1.44%)

Transaction sent: 0xadf45a493280b329d642af35e54700061f004a8bfffb9121d810c14a6bfa0160
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 8
  ViceToken.mint confirmed   Block: 9   Gas used: 144640 (1.21%)

Transaction sent: 0x2c313d3180598b458256ddd622f4f9df097ba10d4dac89d5650e2d3b07a4ee4c
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 0
  ViceToken.pauseContract confirmed (VEXT: access forbidden)   Block: 10   Gas used: 26270 (0.22%)

Transaction sent: 0x708c58d3d7d12716a76f3e4e9611c2583a1b2fc33144c9804ace25db890c5ca2
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 9
  ViceToken.pauseContract confirmed   Block: 11   Gas used: 48999 (0.41%)

Transaction sent: 0xa204e198fd796f9d470bf653b750396be546f3c2792ca448a543c6e9857a0e28
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 10
  ViceToken.mint confirmed (reverted)   Block: 12   Gas used: 22916 (0.19%)

Transaction sent: 0x1ff11a89d3424b7e901dfa1d3c953d37e27a939cafbe4a6c15df39112f489e9d
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 1
  ViceToken.unpauseContract confirmed (VEXT: access forbidden)   Block: 13   Gas used: 26269 (0.22%)

Transaction sent: 0xd4bc58717a63c513968ae81950f3cdf8170bb80a65e17c74680dad498e519722
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 11
  ViceToken.unpauseContract confirmed   Block: 14   Gas used: 19000 (0.16%)

Transaction sent: 0x25d7219ef0f4ed0bc6e3121da81a894a7fd715dbc71853e984288be2cc99d8ef
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 0
  ViceToken.burn confirmed (User can only burn owned tokens)   Block: 15   Gas used: 23944 (0.20%)

Transaction sent: 0x6a87a27541ef7728b35e6f7fcb28a35f4828317852f24f3e1896c11696438dc6
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 2
  ViceToken.burn confirmed   Block: 16   Gas used: 73551 (0.61%)

tests/test_vice_token.py::test_mint_burn PASSED
tests/test_vice_token.py::test_transfer RUNNING
```



```
tests/test_vice_token.py::test_transfer RUNNING
Transaction sent: 0xa3272e284fed53739d0b768418f5de02476d9fa6eaa208d2af9bfd6c7442f4a0
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 12
  Access.constructor confirmed   Block: 17   Gas used: 1119055 (9.33%)
  Access deployed at: 0x2c15A315610Bfa5248E4CbCbd693320e9D8E03Cc

Transaction sent: 0x40bcbf1643c9f0499228ecdc743f5e7c18119aa29343520c0f135ff0d05ea718
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 13
  SystemPause.constructor confirmed   Block: 18   Gas used: 2017102 (16.81%)
  SystemPause deployed at: 0xe692Cf21B12e0B2717C4bF647F9768Fa58861c8b

Transaction sent: 0x78f53a89c7f5d717f5ab37bef1c915a11dee3e76b60681b8615ad18cdd48a521
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 14
  ViceToken.constructor confirmed   Block: 19   Gas used: 2474461 (20.62%)
  ViceToken deployed at: 0xe65A7a341978d59d40d30FC23F5014FACB4f575A

Transaction sent: 0xdd454b9196de2f89ba01345702751c17c7eadcc64c3ed9a27073337dabccd646
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 15
  ViceToken.initialize confirmed   Block: 20   Gas used: 205144 (1.71%)

Transaction sent: 0x7818a6f4adf227052917c64460565701d5cdeca99db4cf3050b2ee986298e8db
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 16
  Access.initialize confirmed   Block: 21   Gas used: 172624 (1.44%)

Transaction sent: 0xa6d5ca4c5c64dcfac68e1c5bdd000a80fd08c522bcf498b3c29d0da776512813
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 17
  ViceToken.mint confirmed   Block: 22   Gas used: 144640 (1.21%)

Transaction sent: 0xd19032803cf16bdfb1b8daf3ca0407a2e00caab264f2e320ad2c7e2029734dda
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 3
  ViceToken.transfer confirmed   Block: 23   Gas used: 65369 (0.54%)

Transaction sent: 0x59f0a39d65487b47227a253d20043ae4611c18713e581f85fec85dde492cc383
  Gas price: 0.0 gwei   Gas limit: 12000000   Nonce: 1
  ViceToken.transfer confirmed   Block: 24   Gas used: 65381 (0.54%)

tests/test_vice_token.py::test_transfer PASSED
```

Annexes

Testing code:

Testing_VICE:

```
from brownie import (
    reverts,
)

from scripts.helpful_scripts import (
    ZERO_ADDRESS,
    DAY_TIMESTAMP,
    get_account,
    get_timestamp,
    get_chain_number,
    increase_timestamp
)

from scripts.deploy import (
    deploy_access,
    deploy_system_pause,
    deploy_vice_token
)

def test_mint_burn(only_local):
    # Arrange
    owner = get_account(0)
    other = get_account(1)

    extra = get_account(2)


    access = deploy_access(owner)

    system_pause = deploy_system_pause(owner, access.address)

    vice_token = deploy_vice_token(owner)


    with reverts("Address zero input"):

        vice_token.initialize(ZERO_ADDRESS, system_pause.address, 100e18, {"from": owner})

    with reverts("Address zero input"):

        vice_token.initialize(access.address, ZERO_ADDRESS, 100e18, {"from": owner})

    vice_token.initialize(access.address, system_pause, 1000e18, {"from": owner})

    with reverts("VEXT: access forbidden"):

        vice_token.mint(other, 10e18, {"from": owner})

    access.initialize(owner, owner, owner, {"from": owner})


    tx = vice_token.mint(other, 10e18, {"from": owner})

    assert tx.events['Transfer'][0]['from'] == ZERO_ADDRESS

    assert tx.events['Transfer'][0]['to'] == other

    assert tx.events['Transfer'][0]['value'] == 10e18


    with reverts("VEXT: access forbidden"):

        vice_token.pauseContract({"from": other})

    vice_token.pauseContract({"from": owner})


    with reverts(""):

        vice_token.mint(other, 10e18, {"from": owner})

    with reverts("VEXT: access forbidden"):
        vice_token.unpauseContract({"from": other})
    vice_token.unpauseContract({"from": owner})

    with reverts("User can only burn owned tokens"):
        vice_token.burn(other, 1e18, {"from": extra})
    tx = vice_token.burn(other, 1e18, {"from": other})
    assert tx.events['Transfer'][0]['from'] == other
    assert tx.events['Transfer'][0]['to'] == ZERO_ADDRESS
    assert tx.events['Transfer'][0]['value'] == 1e18

def test_transfer(only_local):
    # Arrange
    owner = get_account(0)
    other = get_account(1)
    extra = get_account(2)
    another = get_account(3)

    access = deploy_access(owner)
    system_pause = deploy_system_pause(owner, access.address)
    vice_token = deploy_vice_token(owner)
    vice_token.initialize(access.address, system_pause, 1000e18, {"from": owner})
    access.initialize(owner, owner, owner, {"from": owner})
    # mint some tokens
    vice_token.mint(other, 10e18, {"from": owner})

    tx = vice_token.transfer(extra, 2e18, {"from": other})
    assert tx.events['Transfer'][0]['from'] == other
    assert tx.events['Transfer'][0]['to'] == extra
    assert tx.events['Transfer'][0]['value'] == 2e18


    tx = vice_token.transfer(another, 1e18, {"from": extra})

    assert tx.events['Transfer'][0]['from'] == extra

    assert tx.events['Transfer'][0]['to'] == another

    assert tx.events['Transfer'][0]['value'] == 1e18
```

Technical Findings Summary

Findings

Vulnerability Level	Total	Pending	Not Apply	Acknowledged	Partially Fixed	Fixed
🔴 High	0					
🟠 Medium	0					
🟡 Low	0					
🟢 Informational	0					

Assessment Results

Score Results

Review	Score
Global Score	**90/100**
Assure KYC	Pending
Audit Score	90/100

The Following Score System Has been Added to this page to help understand the value of the audit, the maximum score is 100, however to attain that value the project must pass and provide all the data needed for the assessment. Our Passing Score has been changed to 84 Points for a higher standard, if a project does not attain 85% is an automatic failure. Read our notes and final assessment below. The Global Score is a combination of the evaluations obtained between having or not having KYC and the type of contract audited together with its manual audit.

Audit PASS

Following our comprehensive security audit of the token contract for the VICE project, we inform you that the project has met the necessary security standards.

Disclaimer

Assure Defi has conducted an independent security assessment to verify the integrity of and highlight any vulnerabilities or errors, intentional or unintentional, that may be present in the reviewed code for the scope of this assessment. This report does not constitute agreement, acceptance, or advocating for the Project, and users relying on this report should not consider this as having any merit for financial advice in any shape, form, or nature. The contracts audited do not account for any economic developments that the Project in question may pursue, and the veracity of the findings thus presented in this report relate solely to the proficiency, competence, aptitude, and discretion of our independent auditors, who make no guarantees nor assurance that the contracts are entirely free of exploits, bugs, vulnerabilities or deprecation of technologies.

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