Shitcoin Token

AUDIT REPORT

Version 1.0.0

Serial No. 20240417000012023

Presented by Fairyproof

April 17, 2024

01. Introduction

This document includes the results of the audit performed by the Fairyproof team on the SHIT Token Issuance project.

Audit Start Time:

April 17, 2024

Audit End Time:

April 17, 2024

Audited Source File's Address:

https://bscscan.com/token/0x567351E802F52cA60b2aC9D61d5B538e9582e78d#code

The goal of this audit is to review SHIT's solidity implementation for its Token Issuance function, study potential security vulnerabilities, its general design and architecture, and uncover bugs that could compromise the software in production.

We make observations on specific areas of the code that present concrete problems, as well as general observations that traverse the entire codebase horizontally, which could improve its quality as a whole.

This audit only applies to the specified code, software or any materials supplied by the SHIT team for specified versions. Whenever the code, software, materials, settings, environment etc is changed, the comments of this audit will no longer apply.

— Disclaimer

Note that as of the date of publishing, the contents of this report reflect the current understanding of known security patterns and state of the art regarding system security. You agree that your access and/or use, including but not limited to any associated services, products, protocols, platforms, content, and materials, will be at your sole risk.

The review does not extend to the compiler layer, or any other areas beyond the programming language, or other programming aspects that could present security risks. If the audited source files are smart contract files, risks or issues introduced by using data feeds from offchain sources are not extended by this review either.

Given the size of the project, the findings detailed here are not to be considered exhaustive, and further testing and audit is recommended after the issues covered are fixed.

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— Methodology

The above files' code was studied in detail in order to acquire a clear impression of how the its specifications were implemented. The codebase was then subject to deep analysis and scrutiny, resulting in a series of observations. The problems and their potential solutions are discussed in this document and, whenever possible, we identify common sources for such problems and comment on them as well.

The Fairyproof auditing process follows a routine series of steps:

1. Code Review, Including:

- Project Diagnosis

Understanding the size, scope and functionality of your project's source code based on the specifications, sources, and instructions provided to Fairyproof.

- Manual Code Review

Reading your source code line-by-line to identify potential vulnerabilities.

- Specification Comparison

Determining whether your project's code successfully and efficiently accomplishes or executes its functions according to the specifications, sources, and instructions provided to Fairyproof.

2. Testing and Automated Analysis, Including:

- Test Coverage Analysis

Determining whether the test cases cover your code and how much of your code is exercised or executed when test cases are run.

- Symbolic Execution

Analyzing a program to determine the specific input that causes different parts of a program to execute its functions.

3. Best Practices Review

Reviewing the source code to improve maintainability, security, and control based on the latest established industry and academic practices, recommendations, and research.

— Structure of the document

This report contains a list of issues and comments on all the above source files. Each issue is assigned a severity level based on the potential impact of the issue and recommendations to fix it, if applicable. For ease of navigation, an index by topic and another by severity are both provided at the beginning of the report.

— Documentation

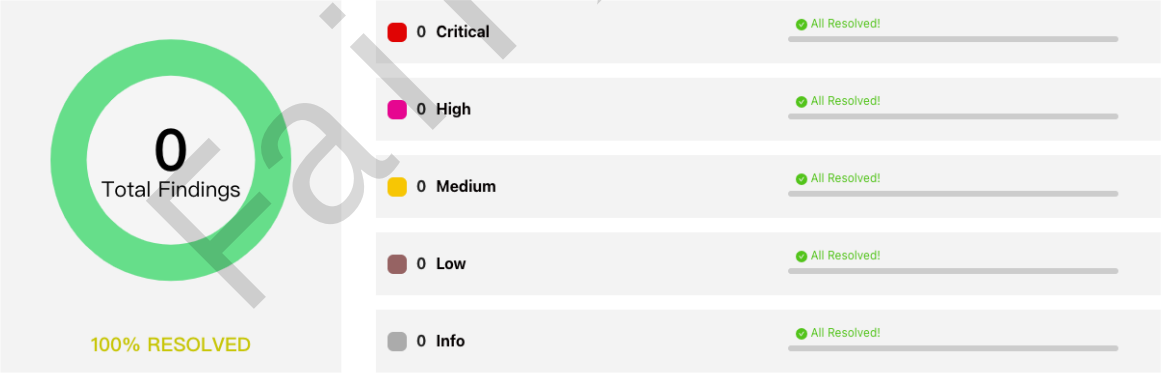
For this audit, we used the following source(s) of truth about how the token issuance function should work:

Source Code:
https://bscscan.com/token/0x567351E802F52cA60b2aC9D61d5B538e9582e78d#code

These were considered the specification, and when discrepancies arose with the actual code behavior, we consulted with the SHIT team or reported an issue.

— Comments from Auditor

Serial Number	Auditor	Audit Time	Result
2024041700012023	Fairyproof Security Team	Apr 17, 2024 - Apr 17, 2024	Passed



Summary:

The Fairyproof security team used its auto analysis tools and manual work to audit the project. During the audit, no issues were uncovered.

02. About Fairyproof

Fairyproof is a leading technology firm in the blockchain industry, providing consulting and security audits for organizations. Fairyproof has developed industry security standards for designing and deploying blockchain applications.

03. Introduction to SHIT

SHIT(Shitcoin) is a decentralized crypto token based on the Real Life story of its creator Hiroshi Nakamoto. He named it SHIT because after years of hard work he saw shit all over his life!
SHIT was deployed on BNB Chain. Shitcoin will be the community driven Meme Coin. People like it not only because of getting rich but also because of its Hope oriented concept. Hope For The Better Future In The Decentralized Free World.

The above description is quoted from relevant documents of SHIT.

04. Major functions of audited code

The audited code mainly implements a token issuance function. Here are the details:

- Blockchain: BNB Chain
- Token Standard: BEP20
- Token Address: 0x567351E802F52cA60b2aC9D61d5B538e9582e78d
- Token Name: Shitcoin
- Token Symbol: Shit
- Decimals: 18
- Current Supply: 21,000,000,000,000
- Max Supply: 21,000,000,000,000

Note:

The owner of the contract has been transferred to the zero address, so although the token is designed with an `mint` function, it can not be called by anyone.

05. Coverage of issues

The issues that the Fairyproof team covered when conducting the audit include but are not limited to the following ones:

- Access Control
- Admin Rights
- Arithmetic Precision
- Code Improvement
- Contract Upgrade/Migration
- Delete Trap
- Design Vulnerability
- DoS Attack
- EOA Call Trap
- Fake Deposit
- Function Visibility
- Gas Consumption
- Implementation Vulnerability
- Inappropriate Callback Function
- Injection Attack
- Integer Overflow/Underflow
- IsContract Trap
- Miner's Advantage
- Misc
- Price Manipulation
- Proxy selector clashing
- Pseudo Random Number
- Re-entrancy Attack
- Replay Attack
- Rollback Attack
- Shadow Variable
- Slot Conflict
- Token Issuance
- Tx.origin Authentication
- Uninitialized Storage Pointer

06. Severity level reference

Every issue in this report was assigned a severity level from the following:

Critical severity issues need to be fixed as soon as possible.

High severity issues will probably bring problems and should be fixed.

Medium severity issues could potentially bring problems and should eventually be fixed.

Low severity issues are minor details and warnings that can remain unfixed but would be better fixed at some point in the future.

Informational is not an issue or risk but a suggestion for code improvement.

07. Major areas that need attention

Based on the provided source code the Fairyproof team focused on the possible issues and risks related to the following functions or areas.

- Function Implementation

We checked whether or not the functions were correctly implemented.
We didn't find issues or risks in these functions or areas at the time of writing.

- Access Control

We checked each of the functions that could modify a state, especially those functions that could only be accessed by owner or administrator
We didn't find issues or risks in these functions or areas at the time of writing.

- Token Issuance & Transfer

We examined token issuance and transfers for situations that could harm the interests of holders.
We didn't find issues or risks in these functions or areas at the time of writing.

- State Update

We checked some key state variables which should only be set at initialization.
We didn't find issues or risks in these functions or areas at the time of writing.

- Asset Security

We checked whether or not all the functions that transfer assets were safely handled.
We didn't find issues or risks in these functions or areas at the time of writing.

- Miscellaneous

We checked the code for optimization and robustness.
We didn't find issues or risks in these functions or areas at the time of writing.

08. issues by severity

- N/A

09. Issue descriptions

- N/A

10. Recommendations to enhance the overall security

We list some recommendations in this section. They are not mandatory but will enhance the overall security of the system if they are adopted.

- N/A

11. Appendices

11.1 Unit Test

1. Shit.t.js

```
const {
    loadFixture,
} = require("@nomicfoundation/hardhat-toolbox/network-helpers");
const { expect } = require("chai");
const { ethers } = require("hardhat");


  describe("Shitcoin Token Unit Test", function () {
    const config = {
        Mintable:true,
        Burnable:false,
        Pausable:false,
        Ownable:true
    }
    const meta = {
        contractName:"BEP20Token",
        tokenName:"Shitcoin",
        tokenSymbol:"Shit",
        TokenDecimals:18,
        initSupply: ethers.parseEther("210000000000000")
    }

    async function deployTokenFixture() {
        const [owner, alice,bob,...users] = await ethers.getSigners();
        const StandardToken = await ethers.getContractFactory(meta.contractName);
        const instance = await StandardToken.deploy();

        check_config(instance);
        return {owner,alice,bob,users,instance};
    }

    function check_config(instance) {
        let functions = instance.interface.fragments
            .filter(item => item.type === "function")
            .map(item => item.name);

        let mint_flag = functions.includes("mint");
        if(config.Mintable !== mint_flag) {
            throw("Invalid Mintable config");
        }

        let burn_flag = functions.includes("burn") &&
functions.includes("burnFrom");
        if(config.Burnable !== burn_flag) {
```

```
            throw("Invalid Burnable config");
        }

        let owner_flag = functions.includes("owner")
            && functions.includes("renounceOwnership")
            && functions.includes("transferOwnership");

        if(config.Ownable !== owner_flag) {
            throw("Invalid Ownable config");
        }

        let pause_flag = functions.includes("pause")
            && functions.includes("unpause")
            && functions.includes("paused");
        if(config.Pausable !== pause_flag) {
            throw("Invalid Pausable config");
        }

        if(config.Pausable && !config.Ownable) {
            throw("Please check the calling permission of Pausable");
        }

        if(config.Mintable && !config.Ownable) {
            throw("Please check the calling permission of Mintable");
        }
    }

    function convert(num) {
        return ethers.getBigInt(num);
    }

    describe("Metadata unit Test", function () {
        it("Metadata should be the same as expected", async function() {
            const {instance,owner} = await loadFixture(deployTokenFixture);
            expect(await instance.name()).eq(meta.tokenName,"TokenName does not
match");
            expect(await instance.symbol()).eq(meta.tokenSymbol,"TokenSymbol does
not match");
            expect(await
instance.decimals()).eq(meta.TokenDecimals,"TokenDecimals does not match");
            expect(await
instance.balanceOf(owner.address)).eq(meta.initSupply,"InitSupply does not
match");
            expect(await instance.totalSupply()).eq(meta.initSupply,"InitSupply
does not match");
            expect(await instance.getOwner()).eq(owner.address);
        });
    });

    describe("Transfer unit test", function () {
        it("Token transfer should emit event and change balance", async
function() {
            const {instance,owner,alice,bob} = await
loadFixture(deployTokenFixture);
            await expect(instance.transfer(alice.address,1000)).to.be.emit(
                instance,"Transfer"
```

```
            ).withArgs(owner.address,alice.address,1000);
            expect(await instance.balanceOf(alice.address)).eq(1000,"Balance of
alice does not match");
            expect(await instance.balanceOf(owner.address)).eq(meta.initSupply -
convert(1000),"Balance of owner does not match");
            expect(await instance.totalSupply()).eq(meta.initSupply,"InitSupply
does not match");
            await instance.connect(alice).transfer(bob.address,400);
            expect(await instance.balanceOf(alice.address)).eq(600,"Balance of
alice does not match while transferring to bob");
            expect(await instance.balanceOf(bob.address)).eq(400,"Balance of bob
does not match");
        });

        it("Should be failed if sender doesn't have enough tokens", async () => {
            const {instance,alice} = await loadFixture(deployTokenFixture);
            await expect(instance.transfer(alice.address,meta.initSupply +
convert(1))).to.be.revertedWith(
                "BEP20: transfer amount exceeds balance"
            );
        });
    });

    describe("Approve unit test", function () {
        it("Approve should change state and emit event", async () => {
            const {instance,alice,bob} = await loadFixture(deployTokenFixture);
            expect(await
instance.allowance(alice.address,bob.address)).eq(0,"Allowance0 does not match");

            await
expect(instance.connect(alice).approve(bob.address,10000)).to.be.emit(
                instance,"Approval"
            ).withArgs(alice.address,bob.address,10000);
            expect(await
instance.allowance(alice.address,bob.address)).eq(10000,"Allowance1 does not
match");

            await
expect(instance.connect(alice).increaseAllowance(bob.address,2000)).to.be.emit(
                instance,"Approval"
            ).withArgs(alice.address,bob.address,12000);
            expect(await
instance.allowance(alice.address,bob.address)).eq(12000,"Allowance2 does not
match");

            await
expect(instance.connect(alice).decreaseAllowance(bob.address,3000)).to.be.emit(
                instance,"Approval"
            ).withArgs(alice.address,bob.address,9000);
            expect(await
instance.allowance(alice.address,bob.address)).eq(9000,"Allowance3 does not
match");

        });
    });
```

```
    describe("TransferFrom unit test", function () {
        it("Token transferFrom should emit event and change state", async
function() {
            const {instance,owner,alice} = await loadFixture(deployTokenFixture);
            const amount = 1000;
            await instance.approve(alice.address,amount * 10);
            await
expect(instance.connect(alice).transferFrom(owner.address,alice.address,amount)).
to.be.emit(
                instance,"Transfer"
            ).withArgs(owner.address,alice.address,amount);

            expect(await instance.balanceOf(alice.address)).eq(amount,"Balance of
alice does not match");
            expect(await instance.balanceOf(owner.address)).eq(meta.initSupply -
convert(amount),"Balance of owner does not match");
            expect(await instance.totalSupply()).eq(meta.initSupply,"InitSupply
does not match");
            expect(await
instance.allowance(owner.address,alice.address)).eq(amount * 9,"Allowance does
not match");
        });

        it("Maximum approval should change while transferFrom", async () => {
            const {instance,owner,alice} = await loadFixture(deployTokenFixture);
            const amount = 1000;
            await instance.approve(alice.address,ethers.MaxUint256);
            await
instance.connect(alice).transferFrom(owner.address,alice.address,amount);
            expect(await
instance.allowance(owner.address,alice.address)).eq(ethers.MaxUint256 -
ethers.getBigInt(1000),"Allowance does not match");
        });

        it("Should be failed if sender doesn't have enough approval", async () =>
{
            const {instance,owner,alice} = await loadFixture(deployTokenFixture);
            const amount = 1000;
            await instance.approve(alice.address,amount - 1);
            await
expect(instance.connect(alice).transferFrom(owner.address,alice.address,amount)).
to.be.revertedWith(
                "BEP20: transfer amount exceeds allowance"
            );
        });
    });

    describe("Burnable unit test", function() {
        if(!config.Burnable) {
            return;
        }

        it("Burn should change state and emit event", async () => {
            const {instance,owner,alice} = await loadFixture(deployTokenFixture);
            await instance.transfer(alice.address,10000);
```

```
            await expect(instance.connect(alice).burn(4000)).to.emit(
                instance,"Transfer"
            ).withArgs(alice.address,ethers.ZeroAddress,4000);
            expect(await instance.balanceOf(alice.address)).eq(6000,"Balance of
alice does not match");
            expect(await instance.totalSupply()).eq(meta.initSupply -
convert(4000),"InitSupply does not match");
        });

        it("BurnFrom should change allowance", async () => {
            const {instance,owner,alice} = await loadFixture(deployTokenFixture);
            const amount = 1000;
            await instance.approve(alice.address,amount * 10);
            await
expect(instance.connect(alice).burnFrom(owner.address,amount)).to.be.emit(
                instance,"Transfer"
            ).withArgs(owner.address,ethers.ZeroAddress,amount);
            expect(await instance.balanceOf(owner.address)).eq(meta.initSupply -
convert(amount),"Balance of owner does not match");
            expect(await instance.totalSupply()).eq(meta.initSupply -
convert(amount),"InitSupply does not match");
            expect(await
instance.allowance(owner.address,alice.address)).eq(amount * 9,"Allowance does
not match");
        });

        it("Should be failed if burner doesn't have enough approval", async () =>
{
            const {instance,owner,alice} = await loadFixture(deployTokenFixture);
            const amount = 1000;
            await instance.approve(alice.address,amount - 1);
            await
expect(instance.connect(alice).burnFrom(owner.address,amount)).to.be.revertedWith
(
                "BEP20: insufficient allowance"
            );
        });

        it("Maximum approval should not change while BurnFrom", async () => {
            const {instance,owner,alice} = await loadFixture(deployTokenFixture);
            const amount = 1000;
            await instance.approve(alice.address,ethers.MaxUint256);
            await instance.connect(alice).burnFrom(owner.address,amount);
            expect(await
instance.allowance(owner.address,alice.address)).eq(ethers.MaxUint256,"Allowance
does not match");
        });
    });

    describe("Ownable unit test", function() {
        if(!config.Ownable) {
            return;
        }

        it("Renounce owner should change state and emit event", async () => {
            const {instance,owner,alice} = await loadFixture(deployTokenFixture);
```

```
            expect(await instance.owner()).eq(owner.address,"initial owner does
not match");

            await expect(instance.renounceOwnership()).to.be.emit(
                instance,"OwnershipTransferred"
            ).withArgs(owner.address,ethers.ZeroAddress);

            expect(await instance.owner()).eq(ethers.ZeroAddress,"owner should be
zero");
        });

        it("Change owner should change state and emit event", async () => {
            const {instance,owner,alice} = await loadFixture(deployTokenFixture);
            expect(await instance.owner()).eq(owner.address,"initial owner does
not match");

            await expect(instance.transferOwnership(alice.address)).to.be.emit(
                instance,"OwnershipTransferred"
            ).withArgs(owner.address,alice.address);

            expect(await instance.owner()).eq(alice.address,"owner does not
match");
        });

        it("only old owner can change or renounce owner", async () => {
            const {instance,bob,alice} = await loadFixture(deployTokenFixture);
            await
expect(instance.connect(alice).transferOwnership(bob.address)).to.be.revertedWith
(
                "Ownable: caller is not the owner"
            );
            await
expect(instance.connect(alice).renounceOwnership()).to.be.revertedWith(
                "Ownable: caller is not the owner"
            );
        });
    });


    describe("Mintable unit test", function() {
        if(!config.Mintable) {
            return;
        }

        it("Only owner can mint token", async () => {
            const {instance,bob,alice} = await loadFixture(deployTokenFixture);
            await expect(instance.connect(alice).mint(10000)).to.be.revertedWith(
                "Ownable: caller is not the owner"
            );
        });

        it("mint token can change supply and balance", async () => {
            const {instance,alice,owner} = await loadFixture(deployTokenFixture);
            await expect(instance.mint(10000)).to.be.emit(
                instance,"Transfer"
            ).withArgs(ethers.ZeroAddress,owner.address,10000);
```

```
            expect(await instance.balanceOf(owner.address)).eq(meta.initSupply +
convert(10000),"Balance of alice does not match");
            expect(await instance.totalSupply()).eq(meta.initSupply +
convert(10000),"TotalSupply does not match");
        });
    });

    describe("Pausable unit test", function() {
        if(!config.Pausable) {
            return;
        }

        it("Only owner can pause transfer", async () => {
            const {instance,alice} = await loadFixture(deployTokenFixture);
            await expect(instance.connect(alice).pause()).to.be.revertedWith(
                "Ownable: caller is not the owner"
            );

            await expect(instance.connect(alice).unpause()).to.be.revertedWith(
                "Ownable: caller is not the owner"
            );
        });

        it("Pause and unpause should change state and emit event", async () => {
            const {instance,owner} = await loadFixture(deployTokenFixture);
            expect(await instance.paused()).to.be.false;

            await expect(instance.pause()).to.be.emit(
                instance,"Paused"
            ).withArgs(owner.address);

            expect(await instance.paused()).to.be.true;
            await expect(instance.pause()).to.be.revertedWith("Pausable:
paused");

            await expect(instance.unpause()).to.be.emit(
                instance,"Unpaused"
            ).withArgs(owner.address);

            expect(await instance.paused()).to.be.false;
            await expect(instance.unpause()).to.be.revertedWith("Pausable: not
paused");
        });

        it("TokenTransfer should be failed while paused", async () => {
            const {instance,owner,alice} = await loadFixture(deployTokenFixture);
            await instance.pause();

            await
expect(instance.transfer(alice.address,10000)).to.be.revertedWith(
                "BEP20Pausable: token transfer while paused"
            );

            await instance.approve(alice.address,100000);
            await
expect(instance.connect(alice).transferFrom(owner.address,alice.address,1000))
```

```
                .to.be.revertedWith("BEP20Pausable: token transfer while
paused");
        });
    });

  });
```

2. UnitTestOutput

```
Shitcoin Token Unit Test
    Metadata unit Test
      ✓ Metadata should be the same as expected (2122ms)
    Transfer unit test
      ✓ Token transfer should emit event and change balance (57ms)
      ✓ Should be failed if sender doesn't have enough tokens (67ms)
    Approve unit test
      ✓ Approve should change state and emit event (54ms)
    TransferFrom unit test
      ✓ Token transferFrom should emit event and change state (38ms)
      ✓ Maximum approval should change while transferFrom
      ✓ Should be failed if sender doesn't have enough approval
    Ownable unit test
      ✓ Renounce owner should change state and emit event
      ✓ Change owner should change state and emit event
      ✓ only old owner can change or renounce owner
    Mintable unit test
      ✓ Only owner can mint token
      ✓ mint token can change supply and balance


  12 passing (3s)
```


11.2 External Functions Check Points

1. Shitcoin_output.md

File: contracts/Shitcoin.sol

contract: BEP20Token is Context, IBEP20, Ownable

(Empty fields in the table represent things that are not required or relevant)

Index	Function	StateMutability	Modifier	Param Check	IsUserInterface	Unit Test	Miscellaneous
1	getOwner()	view				Passed	

Index	Function	StateMutability	Modifier	Param Check	IsUserInterface	Unit Test	Miscellaneous
2	decimals()	view				Passed	
3	symbol()	view				Passed	
4	name()	view				Passed	
5	totalSupply()	view				Passed	
6	balanceOf(address)	view				Passed	
7	transfer(address,uint256)				Yes	Passed	
8	allowance(address,address)	view			Yes	Passed	
9	approve(address,uint256)				Yes	Passed	
10	transferFrom(address,address,uint256)				Yes	Passed	
11	increaseAllowance(address,uint256)				Yes	Passed	
12	decreaseAllowance(address,uint256)				Yes	Passed	
13	mint(uint256)		`onlyOwner`			Passed	
14	owner()	view				Passed	
15	renounceOwnership()		`onlyOwner`			Passed	
16	transferOwnership(address)		`onlyOwner`			Passed	

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