



# Cyberscope

## Audit Report

# CardFi

December 2022

cardFI\_NFT 5c7f9e4126fd5429c8e045b794908c037c48ed31bc25c9876cf68cf91ca92843

cardFi b8774c00500b8bbde7d7e61ef5344c0c519917930aec2ff6277d4b534277a0de

Audited by © cyberscope

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# Contract Review

<b>Contract Name</b>	cardFi
<b>Compiler Version</b>	v0.8.17+commit.8df45f5f
<b>Optimization</b>	200 runs
<b>CardFi Test Deploy</b>	<a href="https://testnet.bscscan.com/token/0x067e4A6346d53296998E3F13242C4B9628E5D066">https://testnet.bscscan.com/token/0x067e4A6346d53296998E3F13242C4B9628E5D066</a>
<b>CardFI_NFT Test Deploy</b>	<a href="https://testnet.bscscan.com/token/0x0De146Cb82099BEc981b79a8343aaDA00Ca2A922">https://testnet.bscscan.com/token/0x0De146Cb82099BEc981b79a8343aaDA00Ca2A922</a>
<b>Domain</b>	cardfi.co

## Audit Updates

<b>Initial Audit</b>	5th December 2022 <a href="https://github.com/cyberscope-io/audits/tree/main/cardfi/v1/audit.pdf">https://github.com/cyberscope-io/audits/tree/main/cardfi/v1/audit.pdf</a>
<b>Corrected</b>	13th December 2022

## Source Files

Filename	SHA256
<b>cardFI_NFT.sol</b>	5c7f9e4126fd5429c8e045b794908c037c48ed31bc25c9876cf68cf91ca92843
<b>cardFi.sol</b>	b8774c00500b8bbde7d7e61ef5344c0c519917930aec2ff6277d4b534277a0de
<b>lcardFi.sol</b>	825bbe0a96079b47fb31ac478a98b681b960599bf460cfc80cb02b99bb417472

# Introduction

The project consists of two contracts, **cardFi** and **cardFi\_NFT**.

The user deposits native currency to receive NFT.

There are two options:

- Pay to receive NFT.
- Pay to receive NFT and lock cardFi tokens to redeem later.

The payment amount, native currency cost, lock period and cardFi amount depends on the card type.

## Roles

The project includes two roles, Admin and User.

### Admin

The Admin Role has the authority to:

- Alter NFT card type properties.
- Alter deposit and withdraw fees.

### User

The User Role has the authority to:

- Register new currency.
- Register new tokens.
- Deposit native currency to receive NFT.

# Contract Diagnostics

● Critical   ● Medium   ● Minor / Informative

Severity	Code	Description	Status
●	PTC	Public Token Claim	Acknowledged
●	STC	Succeeded Transfer Check	Acknowledged
●	DSM	Data Structure Misuse	Acknowledged

## PTC - Public Token Claim

<b>Criticality</b>	Minor / Informative
<b>Location</b>	contracts/cardFi.sol#L193
<b>Status</b>	Acknowledged

### Description

The `tokenToNft` method is public. So any user can claim `_tokenId`. As a result, the `deposit_native` method will not be able to run for these tokenIds. Any user can exploit the public permissions to cap the potential token ids that will be claimed from the `deposit_native` method.

```
function tokenToNft(IERC721Upgradeable _contractAddress, uint256 _tokenId,
IERC20Upgradeable _currency) public {
    ...
    _Card.ERC20Added=true;
    ...
}
...
require(!_Card.ERC20Added, "this NFT has ERC20 attached");
```

### Recommendation

The team is advised to carefully check if the implementation follows the expected business logic.

### Team Update

The team's response stated that this is the expected business logic.

## STC - Succeeded Transfer Check

<b>Criticality</b>	Minor / Informative
<b>Status</b>	Acknowledged

### Description

According to the ERC20 specification, the transfer methods should be checked if the result is successful. Otherwise, the contract may wrongly assume that the transfer has been established.

```
function topUpBalance(uint256 amount) public onlyOwner{
    currency.transferFrom(msg.sender, address(this), amount);
}
```

### Recommendation

The contract should check if the result of the transfer methods is successful. The team is advised to check the SafeERC20 library from the [Openzeppelin library](#).

## DSM - Data Structure Misuse

<b>Criticality</b>	Minor / Informative
<b>Location</b>	contracts/cardFi.sol#L112
<b>Status</b>	Acknowledged

### Description

The contract uses the valuable `allowedCrypto` as an array. The business logic of the contract does not require to iterate this structure sequentially. Thus, unnecessary loops are produced that increase the required gas.

```
IERC20Upgradeable[] public allowedCrypto;
...
function tokenExist(IERC20Upgradeable tokenAddress) public view returns(bool
ifExist) {
    for (uint256 i = 0; i < allowedCrypto.length; i++) {
        if (allowedCrypto[i] == tokenAddress) {
            return true;
        }
    }
    return false;
}
```

### Recommendation

The contract could use a data structure that provides instant access. For instance, a Set or a Map would fit better to the business logic of the contract. This way the time complexity will be reduced from  $O(n)$  to  $O(1)$ .

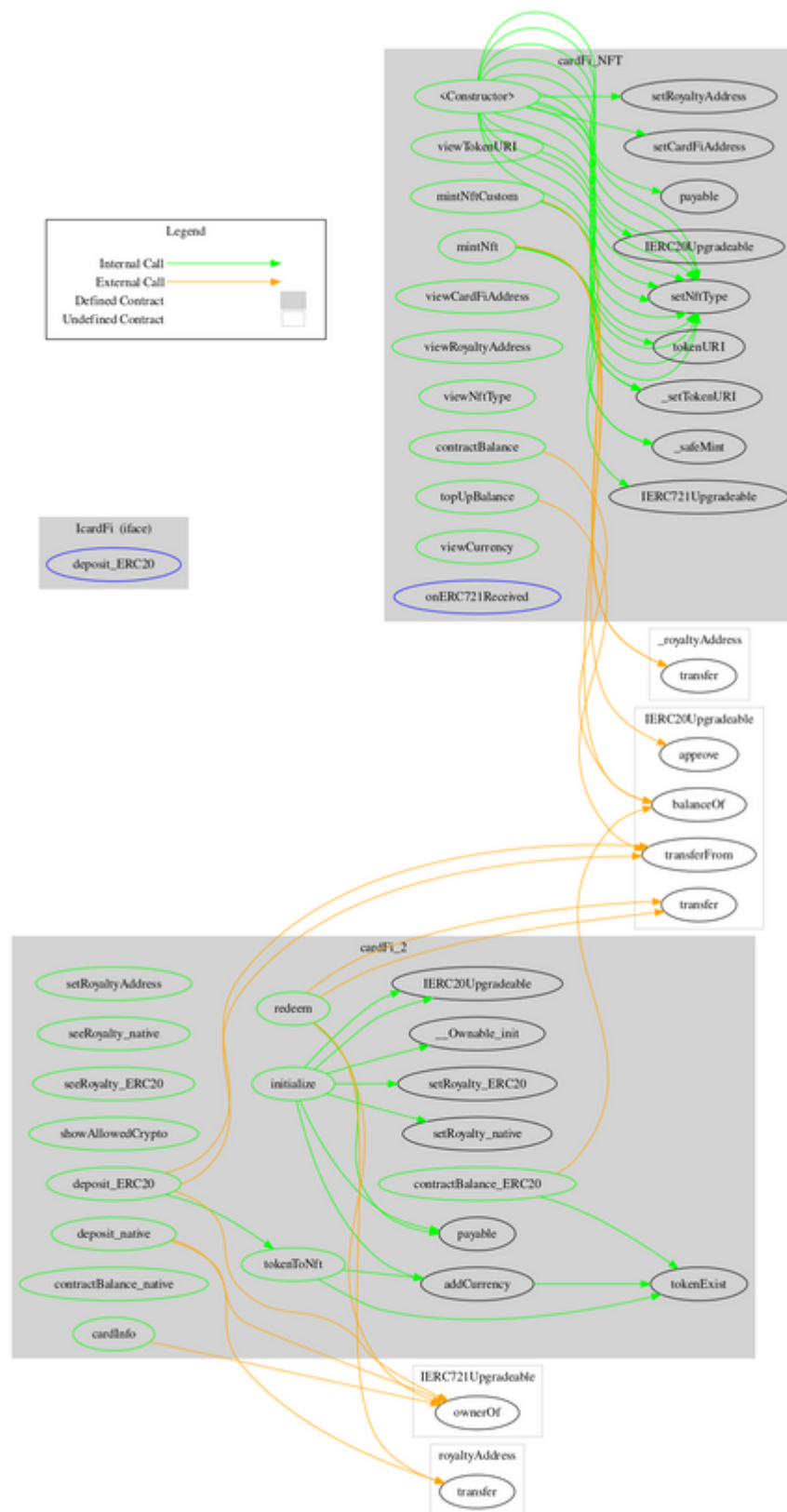


# Contract Functions

Contract	Type	Bases		
	Function Name	Visibility	Mutability	Modifiers
<b>cardFi_NFT</b>	Implementation	ERC721URI Storage, IERC721Re ceiver, Ownable		
	<Constructor>	Public	✓	ERC721
	mintNft	Public	Payable	-
	mintNftCustom	Public	Payable	-
	viewTokenURI	Public		-
	setCardFiAddress	Public	✓	onlyOwner
	viewCardFiAddress	Public		onlyOwner
	setRoyaltyAddress	Public	✓	onlyOwner
	viewRoyaltyAddress	Public		onlyOwner
	setNftType	Public	✓	onlyOwner
	viewNftType	Public		-
	contractBalance	Public		onlyOwner
	topUpBalance	Public	✓	onlyOwner
	viewCurrency	Public		-
	onERC721Received	External		-
<b>cardFi_2</b>	Implementation	Initializable, OwnableUp gradeable		
	initialize	Public	✓	initializer
	setRoyaltyAddress	Public	✓	onlyOwner
	setRoyalty_native	Public	✓	onlyOwner
	setRoyalty_ERC20	Public	✓	onlyOwner
	seeRoyalty_native	Public		onlyOwner
	seeRoyalty_ERC20	Public		onlyOwner
	tokenExist	Public		-
	showAllowedCrypto	Public		-

	addCurrency	Public	✓	-
	tokenToNft	Public	✓	-
	deposit_ERC20	Public	✓	-
	deposit_native	Public	Payable	-
	contractBalance_ERC20	Public		onlyOwner
	contractBalance_native	Public		onlyOwner
	cardInfo	Public		-
	redeem	Public	✓	-
<b>lcardFi</b>	Interface			
	deposit_ERC20	External	Payable	-

# Contract Flow



## Domain Info

<b>Domain Name</b>	cardfi.co
<b>Registry Domain ID</b>	D47284542FEC9472C9A129B2E3F85D44F-GDREG
<b>Creation Date</b>	2022-09-23T03:29:14Z
<b>Updated Date</b>	2022-09-28T03:29:14Z
<b>Registry Expiry Date</b>	2023-09-23T03:29:14Z
<b>Registrar WHOIS Server</b>	whois.godaddy.com
<b>Registrar URL</b>	whois.godaddy.com
<b>Registrar</b>	GoDaddy.com, LLC
<b>Registrar IANA ID</b>	146

The domain was created 3 months before the creation of the audit. It will expire in 9 months.

There is no public billing information, the creator is protected by the privacy settings.

## Summary

This audit focused on investigating possible security issues and potential improvements. The audit analysis mentions some concerns that may be produced from the methods public access.

## Disclaimer

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## About Cyberscope

Cyberscope is a blockchain cybersecurity company that was founded with the vision to make web3.0 a safer place for investors and developers. Since its launch, it has worked with thousands of projects and is estimated to have secured tens of millions of investors' funds.

Cyberscope is one of the leading smart contract audit firms in the crypto space and has built a high-profile network of clients and partners.



The Cyberscope team

<https://www.cyberscope.io>