

Smart Contract Security Audit V1

Cash Crabs NFT

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Background

The purpose of the audit was to achieve the following:

- Ensure that the smart contract functions as intended.
- Identify potential security issues with the smart contract.

The information in this report should be used to understand the risk exposure of the smart contract, and as a guide to improve the security posture of the smart contract by remediating the issues that were identified.

Project Information

- **Platform:** Ethereum
- **Contract Address:** 0x6AeAE9912c1a37Fd7F66890d8d21113829ba90e7
- **Code:**

<https://rinkeby.etherscan.io/address/0x6aeae9912c1a37fd7f66890d8d21113829ba90e7#code>

NFT Information

- Name: CashCrabs
- MAX Supply: 10000
- Holders:
- Total transactions:

Contracts address deployed to test net (ETH)

Cash Crabs Smart contract on ETH test net.

<https://rinkeby.etherscan.io/address/0x6aeae9912c1a37fd7f66890d8d21113829ba90e7>

Executive Summary

According to our assessment, the customer`s solidity smart contract is **Well-Secured**.

Well Secured	✓
Secured	
Poor Secured	
Insecure	

Automated checks are with remix IDE. All issues were performed by the team, which included the analysis of code functionality, manual audit found during automated analysis were manually reviewed and applicable vulnerabilities are presented in the audit overview section. The general overview is presented in the Project Information section and all issues found are located in the audit overview section.

Team found 0 critical, 0 high, 0 medium, 1 low, 0 very low-level issues and 2 notes in all solidity files of the contract

The files:

MainNft.sol
ERC721A.sol

File and Function Level Report

File in Scope:

Contract Name	SHA 256 hash	Contract Address
MainNft.sol	71daff93c06b9b6b9be38b17c042c4af0d12e98b8323b11958916749479a467c	0x6AeAE9912c1a37Fd7F66890d8d21113829ba90e7

- Contract: NftErc721A
- Inherit: Ownable, ERC721A, ReentrancyGuard
- Observation: All passed including security check
- Test Report: passed
- Score: passed
- Conclusion: passed

Function	Test Result	Type / Return Type	Score
name	✓	Read / public	Passed
symbol	✓	Read / public	Passed
numberMinted	✓	Read / public	Passed
supportsInterface	✓	Read / public	Passed
PRESALE_PRICE	✓	Read / public	Passed
balanceOf	✓	Read / public	Passed
Owner	✓	Read / public	Passed
nextOwnerToExplicitlySet	✓	Read / public	Passed
PUBLIC_SALE_PRICE	✓	Read / public	Passed
getApprovedForAll	✓	Read / public	Passed
ownerOf	✓	Read / public	Passed
getApproved	✓	Read / public	Passed

tokenURI	✓	Read / public	Passed
tokenByIndex	✓	Read / public	Passed
tokenOfOwnerByIndex	✓	Read / public	Passed
isPreSale	✓	Read / public	Passed
totalSupply	✓	Read / public	Passed
_revealedNFT	✓	Read / public	Passed
MAX_PER_Address_DURING_Mint_Presale	✓	Read / public	Passed
isPublicSale	✓	Read / public	Passed
getOwnershipData	✓	Read / public	Passed
MAX_PER_Transition_DURING_Mint	✓	Read / public	Passed
isWhitelisted	✓	Read / public	Passed
addNewWhitelistUsers	✓	Write / public	Passed
approve	✓	Write / public	Passed
safeTransferFrom	✓	Write / public	Passed
safeTransferFrom	✓	Write / public	Passed
changeMintPrice	✓	Write / public	Passed
mint	✓	Write / payable	Passed
mint	✓	Write / payable	Passed
mintPreSale	✓	Write / payable	Passed
transferOwnership	✓	Write / public	Passed
setApprovalForAll	✓	Write / public	Passed
transferFrom	✓	Write / public	Passed
setURIbeforeRevel	✓	Write / public	Passed
withdrawMoney	✓	Write / public	Passed
setBaseURIExtension	✓	Write / public	Passed
renounceOwnership	✓	Write / public	Passed

FlipPublicSale	✓	Write / public	Passed
FlipPresale	✓	Write / public	Passed
setBaseURI	✓	Write / public	Passed
devMint	✓	Write / public	Passed
changeMAX_PER_Address_DURING_Mint_Presale	✓	Write / public	Passed
changeMAX_PER_Transaction_DURING_Mint	✓	Write / public	Passed
changeMintPriceForPresale	✓	Write / public	Passed
changeRevelStatus	✓	Write / public	Passed

Issues Checking Status

No.	Issue Description	Checking Status
1	Compiler warnings.	Passed
2	Race conditions and Reentrancy. Cross-function race conditions.	Passed
3	Possible delays in data delivery.	Passed
4	Oracle calls.	Passed
5	Front running.	Passed
6	Timestamp dependence.	Passed
7	Integer Overflow and Underflow.	Passed
8	DoS with Revert.	Passed
9	DoS with block gas limit.	Passed
10	Methods execution permissions.	Passed
11	Economy model. If application logic is based on an incorrect economic model, the application would not function correctly and participants would incur financial losses. This type of issue is most often found in bonus rewards systems, Staking and Farming contracts, Vault and Vesting contracts, etc.	Passed
12	The impact of the exchange rate on the logic.	Passed
13	Private user data leaks.	Passed
14	Malicious Event log.	Passed
15	Scoping and Declarations.	Passed
16	Uninitialized storage pointers.	Passed
17	Arithmetic accuracy.	Passed
18	Design Logic.	Passed

Severity Definitions

Risk Level	Description
Critical	Critical vulnerabilities are usually straightforward to exploit and can lead to tokens loss etc.
High	High-level vulnerabilities are difficult to exploit; however, they also have significant impact on smart contract execution, e.g. public access to crucial functions
Medium	Medium-level vulnerabilities are important to fix; however, they can't lead to tokens lose
Low	Low-level vulnerabilities are mostly related to outdated, unused etc. code snippets, that can't have significant impact on execution
Note	Lowest-level vulnerabilities, code style violations and info statements can't affect smart contract execution and can be ignored.

Audit Findings

Critical:

No critical severity vulnerabilities were found.

High:

No High severity vulnerabilities were found

Medium:

No Medium severity vulnerabilities were found

Low:

#Pragam version not fixed

Description

It is a good practice to lock the solidity version for a live deployment (use 0.8.0 instead of ^0.8.0). 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**. Fixed in version2.

Very Low:

No Very Low severity vulnerabilities were found.

Notes:

#Naming Conventions

Description

The contract follows a consistent naming convention where we are private variables with leading "_" and public variables without it. But we have missed to comply to the condition for certain variable names "_revealedNFT" which is public

Remediation

Remove "_" from external variable names and add it to private variable names

Status: **Closed**. Fixed in version2.

#Compiler version is old

Description

The compiler being used was released a year ago. It's recommended to use more recent compiler version, there can be benefits like reduction in bytecode size etc.

Status: **Acknowledged**

Automatic Testing

1- Check for security

5bd4bfa86630a1a8ccb15ec4ac8f7daa076593cd4ed22a34d7542726878cd19b
File: CashCr... | Language: solidity | Size: 46685 bytes | Date: 2022-02-01T04:03:47.005Z

Critical	High	Medium	Low	Note
0	0	0	0	0



2- SOLIDITY STATIC ANALYSIS

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 destructed 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

SOLIDITY STATIC ANALYSIS

ERC

☒ Select ERC

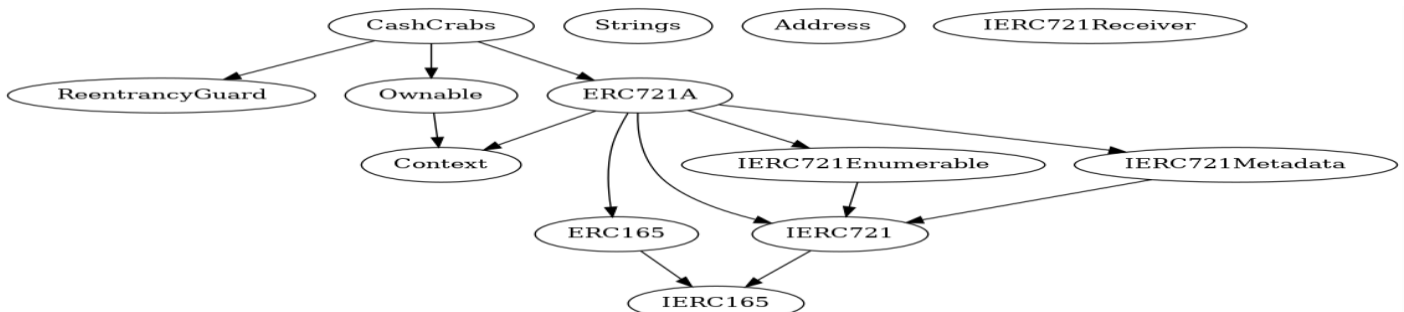
- ☒ ERC20:
'decimals' should be 'uint8'

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

3- Inheritance graph



4- SOLIDITY UNIT TESTING

SOLIDITY UNIT TESTING

Test your smart contract in Solidity.

Select directory to load and generate test files.

Test directory:

Create

Generate How to use...

▶ Run ■ Stop

☒ Select all

☒ tests/CashCrabs_test.sol

Progress: 1 finished (of 1)

PASS

testSuite
(tests/CashCrabs_test.sol)

✓ Before all

✓ Check success

✓ Check success2

✓ Check failure

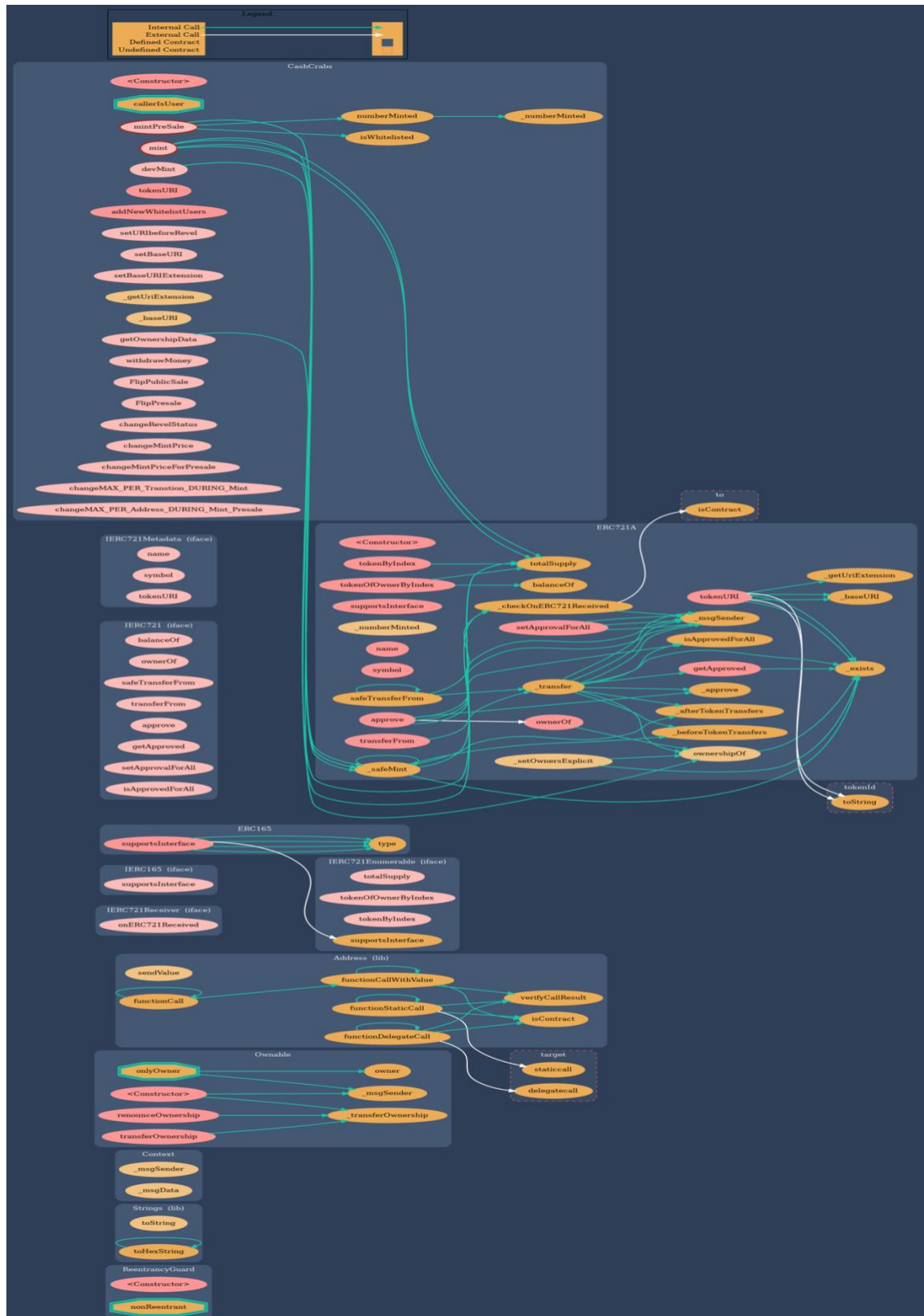
✓ Check sender and value

Result for tests/CashCrabs_test.sol

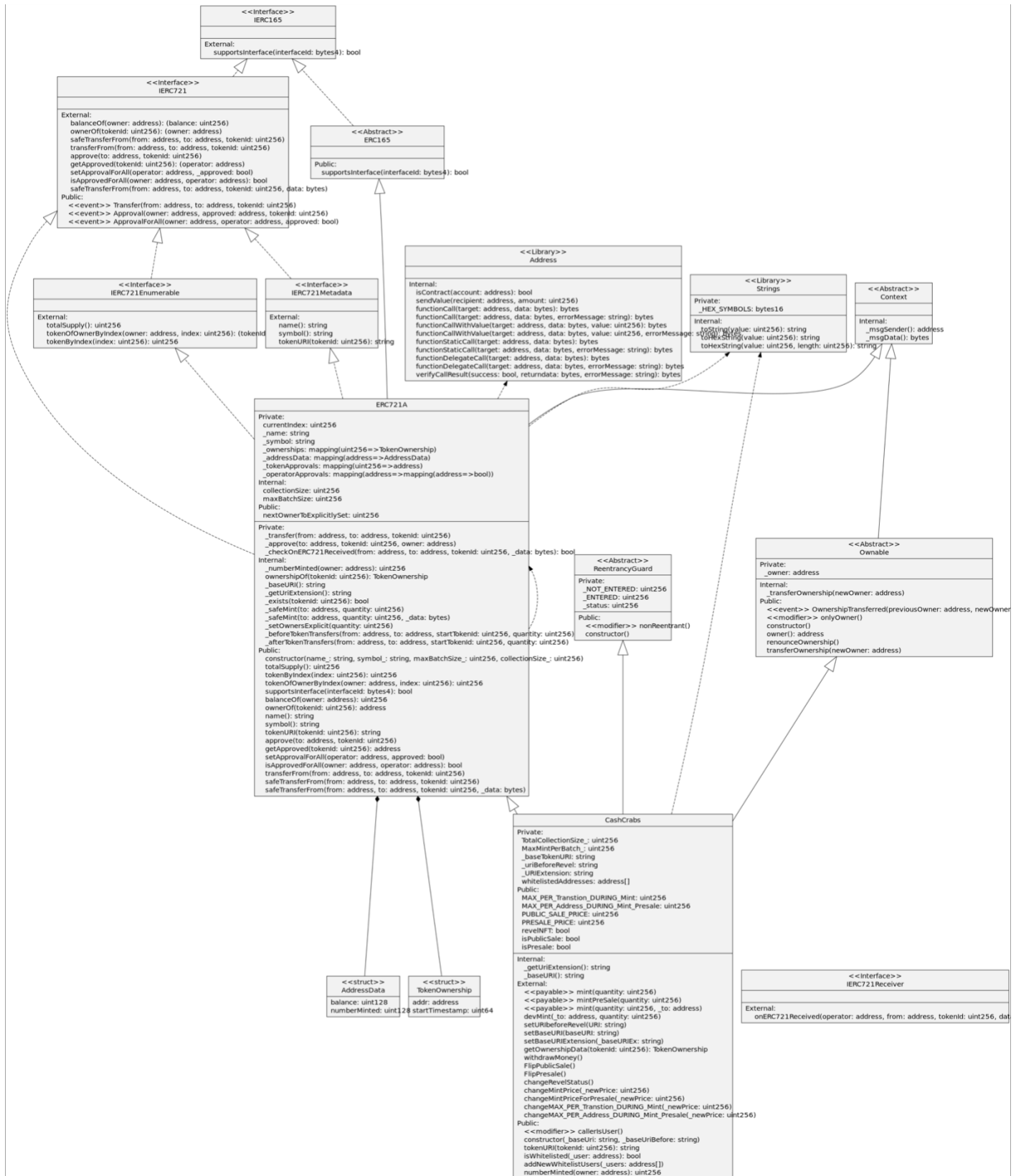
Passing: 5

Total time: 0.42s

5- Call graph



Unified Modeling Language (UML)



Functions signature

Sighash		Function Signature
=====		
16279055	=>	isContract (address)
6900a3ae	=>	toString (uint256)
8fba8d5c	=>	toHexString (uint256)
63e1cbea	=>	toHexString (uint256, uint256)
119df25f	=>	_msgSender ()
8b49d47e	=>	_msgData ()
8da5cb5b	=>	owner ()
715018a6	=>	renounceOwnership ()
f2fde38b	=>	transferOwnership (address)
d29d44ee	=>	_transferOwnership (address)
24a084df	=>	sendValue (address, uint256)
a0b5ffb0	=>	functionCall (address, bytes)
241b5886	=>	functionCall (address, bytes, string)
2a011594	=>	functionCallWithValue (address, bytes, uint256)
d525ab8a	=>	functionCallWithValue (address, bytes, uint256, string)
c21d36f3	=>	functionStaticCall (address, bytes)
dbc40fb9	=>	functionStaticCall (address, bytes, string)
ee33b7e2	=>	functionDelegateCall (address, bytes)
57387df0	=>	functionDelegateCall (address, bytes, string)
946b5793	=>	verifyCallResult (bool, bytes, string)
150b7a02	=>	onERC721Received (address, address, uint256, bytes)
01ffc9a7	=>	supportsInterface (bytes4)
70a08231	=>	balanceOf (address)
6352211e	=>	ownerOf (uint256)
42842e0e	=>	safeTransferFrom (address, address, uint256)
23b872dd	=>	transferFrom (address, address, uint256)
095ea7b3	=>	approve (address, uint256)
081812fc	=>	getApproved (uint256)
a22cb465	=>	setApprovalForAll (address, bool)
e985e9c5	=>	isApprovedForAll (address, address)
b88d4fde	=>	safeTransferFrom (address, address, uint256, bytes)
18160ddd	=>	totalSupply ()
2f745c59	=>	tokenOfOwnerByIndex (address, uint256)
4f6ccce7	=>	tokenByIndex (uint256)
06fdde03	=>	name ()
95d89b41	=>	symbol ()
c87b56dd	=>	tokenURI (uint256)
4d388a98	=>	_numberMinted (address)
140364a1	=>	ownershipOf (uint256)
743976a0	=>	_baseURI ()
406ea3ab	=>	_getUriExtension ()
f8e76cc0	=>	_exists (uint256)
b3e1c718	=>	_safeMint (address, uint256)
6a4f832b	=>	_safeMint (address, uint256, bytes)
30e0789e	=>	_transfer (address, address, uint256)
f272404d	=>	_approve (address, uint256, address)
55adf19f	=>	_setOwnersExplicit (uint256)
1fd01de1	=>	_checkOnERC721Received (address, address, uint256, bytes)
ef435773	=>	_beforeTokenTransfers (address, address, uint256, uint256)
08c018f7	=>	_afterTokenTransfers (address, address, uint256, uint256)
a0712d68	=>	mint (uint256)


```
b9884772 => mintPreSale(uint256)
94bf804d => mint(uint256,address)
627804af => devMint(address,uint256)
3af32abf => isWhitelisted(address)
1d428c12 => addNewWhitelistUsers(address[])
5c37809d => setURIbeforeRevel(string)
55f804b3 => setBaseURI(string)
467de36c => setBaseURIExtension(string)
dc33e681 => numberMinted(address)
9231ab2a => getOwnershipData(uint256)
ac446002 => withdrawMoney()
020deb66 => FlipPublicSale()
9551ca52 => FlipPresale()
bd0a8439 => changeRevelStatus()
3fd17366 => changeMintPrice(uint256)
5679fd91 => changeMintPriceForPresale(uint256)
bbb83dfa => changeMAX_PER_Transition_DURING_Mint(uint256)
ca258625 => changeMAX_PER_Address_DURING_Mint_Presale(uint256)
```

Automatic general report

Files Description Table

File Name	SHA-1 Hash
/Users/macbook/Desktop/smart contracts/CashCrabs.sol	c8da5be7474551804b659c3b6e70be45579d7ce1

Contracts Description Table

Contract	Type	Bases	
:-----: :-----: :-----: :-----:			
L	**Function Name**	**Visibility**	**Mutability**
Modifiers			
ReentrancyGuard Implementation			
L	<Constructor> Public !	NO !	
Strings Library			
L	toString Internal		
L	toHexString Internal		
L	toHexString Internal		
Context Implementation			
L	_msgSender Internal		
L	_msgData Internal		
Ownable Implementation Context			
L	<Constructor> Public !	NO !	
L	owner Public !	NO !	
L	renounceOwnership Public !	onlyOwner	
L	transferOwnership Public !	onlyOwner	
L	_transferOwnership Internal		
Address Library			
L	isContract Internal		
L	sendValue Internal		
L	functionCall Internal		
L	functionCall Internal		
L	functionCallWithValue Internal		
L	functionCallWithValue Internal		
L	functionStaticCall Internal		
L	functionStaticCall Internal		
L	functionDelegateCall Internal		
L	functionDelegateCall Internal		
L	verifyCallResult Internal		
IERC721Receiver Interface			
L	onERC721Received External !	NO !	
IERC165 Interface			

```

| L | supportsInterface | External ! | | NO! |
| | | |
| **ERC165** | Implementation | IERC165 | | |
| L | supportsInterface | Public ! | | NO! |
| | | |
| **IERC721** | Interface | IERC165 | | |
| L | balanceOf | External ! | | NO! |
| L | ownerOf | External ! | | NO! |
| L | safeTransferFrom | External ! | | NO! |
| L | transferFrom | External ! | | NO! |
| L | approve | External ! | | NO! |
| L | getApproved | External ! | | NO! |
| L | setApprovalForAll | External ! | | NO! |
| L | isApprovedForAll | External ! | | NO! |
| L | safeTransferFrom | External ! | | NO! |
| | | |
| **IERC721Enumerable** | Interface | IERC721 | | |
| L | totalSupply | External ! | | NO! |
| L | tokenOfOwnerByIndex | External ! | | NO! |
| L | tokenByIndex | External ! | | NO! |
| | | |
| **IERC721Metadata** | Interface | IERC721 | | |
| L | name | External ! | | NO! |
| L | symbol | External ! | | NO! |
| L | tokenURI | External ! | | NO! |
| | | |
| **ERC721A** | Implementation | Context, ERC165, IERC721, IERC721Metadata,
IERC721Enumerable | | |
| L | <Constructor> | Public ! | | NO! |
| L | totalSupply | Public ! | | NO! |
| L | tokenByIndex | Public ! | | NO! |
| L | tokenOfOwnerByIndex | Public ! | | NO! |
| L | supportsInterface | Public ! | | NO! |
| L | balanceOf | Public ! | | NO! |
| L | _numberMinted | Internal ! | | |
| L | ownershipOf | Internal ! | | |
| L | ownerOf | Public ! | | NO! |
| L | name | Public ! | | NO! |
| L | symbol | Public ! | | NO! |
| L | tokenURI | Public ! | | NO! |
| L | _baseURI | Internal ! | | |
| L | _getUriExtension | Internal ! | | |
| L | approve | Public ! | | NO! |
| L | getApproved | Public ! | | NO! |
| L | setApprovalForAll | Public ! | | NO! |
| L | isApprovedForAll | Public ! | | NO! |
| L | transferFrom | Public ! | | NO! |
| L | safeTransferFrom | Public ! | | NO! |
| L | safeTransferFrom | Public ! | | NO! |
| L | _exists | Internal ! | | |
| L | _safeMint | Internal ! | | |
| L | _safeMint | Internal ! | | |
| L | _transfer | Private ! | | |
| L | _approve | Private ! | | |
| L | _setOwnersExplicit | Internal ! | | |


```

```

| L | _checkOnERC721Received | Private |  |  | | |
| L | _beforeTokenTransfers | Internal |  |  | | |
| L | _afterTokenTransfers | Internal |  |  | | |
| | | | |
| **CashCrabs** | Implementation | Ownable, ERC721A, ReentrancyGuard | | |
| L | <Constructor> | Public |  |  | ERC721A |
| L | mint | External |  |  | callerIsUser |
| L | mintPreSale | External |  |  | callerIsUser |
| L | mint | External |  |  | callerIsUser |
| L | devMint | External |  |  | onlyOwner |
| L | tokenURI | Public |  | NO |
| L | isWhitelisted | Public |  | NO |
| L | addNewWhitelistUsers | Public |  |  | onlyOwner |
| L | setURIbeforeRevel | External |  |  | onlyOwner |
| L | setBaseURI | External |  |  | onlyOwner |
| L | setBaseURIExtension | External |  |  | onlyOwner |
| L | _getUriExtension | Internal |  | | |
| L | _baseURI | Internal |  | | |
| L | numberMinted | Public |  | NO |
| L | getOwnershipData | External |  | NO |
| L | withdrawMoney | External |  |  | onlyOwner nonReentrant |
| L | FlipPublicSale | External |  |  | onlyOwner |
| L | FlipPresale | External |  |  | onlyOwner |
| L | changeRevelStatus | External |  |  | onlyOwner |
| L | changeMintPrice | External |  |  | onlyOwner |
| L | changeMintPriceForPresale | External |  |  | onlyOwner |
| L | changeMAX_PER_Transition_DURING_Mint | External |  |  | onlyOwner |
| L | changeMAX_PER_Address_DURING_Mint_Presale | External |  |  | onlyOwner |

```

Legend

Symbol	Meaning
	Function can modify state
	Function is payable

Conclusion

The contracts are written systematically. Team found no critical issues. So, it is good to go for production.

Since possible test cases can be unlimited and developer level documentation (code flow diagram with function level description) not provided, for such an extensive smart contract protocol, we provide no such guarantee of future outcomes. We have used all the latest static tools and manual observations to cover maximum possible test cases to scan Everything.

Security state of the reviewed contract is “Well secured”.

- ✓ No volatile code.
- ✓ Not many high severity issues were found.

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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