Cyberscope

Audit Report

Clrs NFT

May 2023

Network	BSC Testnet
Address	0x963952a38A25C9A8dD86E09Ff89A0DE22c70b832
Audited by	© cyberscope

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Review

Explorer	https://testnet.bscscan.com/address/0x963952a38a25c9a8dd86e09ff89a0de22c70b832

Audit Updates

Initial Audit	11 Apr 2023 https://github.com/cyberscope-io/audits/blob/main/clrs/v1/nft.pdf
Corrected Phase 2	12 May 2023

Source Files

Filename	SHA256
NFTPresale.sol	14a69f641a693a0ebbc000c82cbe005451a3bc7144160afd72c04dfff8babf70

Introduction

This is a contract for an NFT presale. The NFTs are ERC721 tokens.

The contract owner can configure

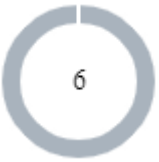
- The minting cost
- The maximum number of NFTs that can be minted per session.
- The NFTs URIs, the base URI extension.
- The whitelisted addresses.
- The mint limit per address.
- The base URIs.
- The base extension of the NFTs URI.

The contract owner has the authority to

- Reveal the not revealed URI.
- Withdraw funds that send 5% of the balance to HashLips address, and the remainder to the contract owner.

Contract users have to pay the mint costs except for the owner who is exempt.

Findings Breakdown



Critical	0
Medium	0
Minor / Informative	6

Severity	Unresolved	Acknowledged	Resolved	Other
Critical	0	0	0	0
Medium	0	0	0	0
Minor / Informative	6	0	0	0

Diagnostics

Critical Medium Minor / Informative

Severity	Code	Description	Status
●	L02	State Variables could be Declared Constant	Unresolved
●	L04	Conformance to Solidity Naming Conventions	Unresolved
●	L09	Dead Code Elimination	Unresolved
●	L13	Divide before Multiply Operation	Unresolved
●	L15	Local Scope Variable Shadowing	Unresolved
●	L17	Usage of Solidity Assembly	Unresolved

L02 - State Variables could be Declared Constant

Criticality	Minor / Informative
Location	NFTPresale.sol#L1678
Status	Unresolved

Description

State variables can be declared as constant using the constant keyword. This means that the value of the state variable cannot be changed after it has been set. Additionally, the constant variables decrease gas consumption of the corresponding transaction.

```
ess dev = 0x002B2eAD67fE0c3dd4E6eCCB035759848D8D6768;
```

Recommendation

Constant state variables can be useful when the contract wants to ensure that the value of a state variable cannot be changed by any function in the contract. This can be useful for storing values that are important to the contract's behavior, such as the contract's address or the maximum number of times a certain function can be called. The team is advised to add the constant keyword to state variables that never change.

L04 - Conformance to Solidity Naming Conventions

Criticality	Minor / Informative
Location	NFTPresale.sol#L1652,1702,1726,1766,1770,1774,1779,1783,1787,1791,1795
Status	Unresolved

Description

The Solidity style guide is a set of guidelines for writing clean and consistent Solidity code. Adhering to a style guide can help improve the readability and maintainability of the Solidity code, making it easier for others to understand and work with.

The followings are a few key points from the Solidity style guide:

1. Use camelCase for function and variable names, with the first letter in lowercase (e.g., myVariable, updateCounter).
2. Use PascalCase for contract, struct, and enum names, with the first letter in uppercase (e.g., MyContract, UserStruct, ErrorEnum).
3. Use uppercase for constant variables and enums (e.g., MAX_VALUE, ERROR_CODE).
4. Use indentation to improve readability and structure.
5. Use spaces between operators and after commas.
6. Use comments to explain the purpose and behavior of the code.
7. Keep lines short (around 120 characters) to improve readability.

```
DOMAIN_SEPARATOR
_mintAmount
_owner

_limit
_newCost
_newmaxMintAmount
_newBaseURL
_newBaseExtension
_notRevealedURI
_state
```

Recommendation

By following the Solidity naming convention guidelines, the codebase increased the readability, maintainability, and makes it easier to work with.
Find more information on the Solidity documentation
https://docs.soliditylang.org/en/v0.8.17/style-guide.html#naming-convention.

L09 - Dead Code Elimination

Criticality	Minor / Informative
Location	NFTPresale.sol#L261,271,290,304,321,331,346,356,371,395,407,442,449,457,468,478,563,581,617,628,670,719,732,762,802,811,826,926,1142,1324,1563,1567,1571,1579,1584,1593,1609
Status	Unresolved

Description

In Solidity, dead code is code that is written in the contract, but is never executed or reached during normal contract execution. Dead code can occur for a variety of reasons, such as:

- Conditional statements that are always false.
- Functions that are never called.
- Unreachable code (e.g., code that follows a return statement).

Dead code can make a contract more difficult to understand and maintain, and can also increase the size of the contract and the cost of deploying and interacting with it.

```
function functionCall(address target, bytes memory data)
internal returns (bytes memory) {
        return functionCallWithValue(target, data, 0, "Address:
low-level call failed");
    }

function functionCall(
        address target,
        bytes memory data,
        string memory errorMessage
    ) internal returns (bytes memory) {
        return functionCallWithValue(target, data, 0,
errorMessage);
    }

...
```

Recommendation

To avoid creating dead code, it's important to carefully consider the logic and flow of the contract and to remove any code that is not needed or that is never executed. This can help improve the clarity and efficiency of the contract.

L13 - Divide before Multiply Operation

Criticality	Minor / Informative
Location	NFTPresale.sol#L525,528,540,544,545,546,547,548,549,555
Status	Unresolved

Description

It is important to be aware of the order of operations when performing arithmetic calculations. This is especially important when working with large numbers, as the order of operations can affect the final result of the calculation. Performing divisions before multiplications may cause loss of prediction.

```
prod0 := div(prod0, twos)
result = prod0 * inverse
```

Recommendation

To avoid this issue, it is recommended to carefully consider the order of operations when performing arithmetic calculations in Solidity. It's generally a good idea to use parentheses to specify the order of operations. The basic rule is that the multiplications should be prior to the divisions.

L15 - Local Scope Variable Shadowing

Criticality	Minor / Informative
Location	NFTPresale.sol#L1687,1688,1726
Status	Unresolved

Description

Local scope variable shadowing occurs when a local variable with the same name as a variable in an outer scope is declared within a function or code block. When this happens, the local variable "shadows" the outer variable, meaning that it takes precedence over the outer variable within the scope in which it is declared.

```
_name,_symbol, _owner
```

Recommendation

It's important to be aware of shadowing when working with local variables, as it can lead to confusion and unintended consequences if not used correctly. It's generally a good idea to choose unique names for local variables to avoid shadowing outer variables and causing confusion.

L17 - Usage of Solidity Assembly

Criticality	Minor / Informative
Location	NFTPresale.sol#L412,489,783,1264
Status	Unresolved

Description

Using assembly can be useful for optimizing code, but it can also be error-prone. It's important to carefully test and debug assembly code to ensure that it is correct and does not contain any errors.

Some common types of errors that can occur when using assembly in Solidity include Syntax, Type, Out-of-bounds, Stack, and Revert.

```
assembly {
                let returndata_size := mload(returndata)
                revert(add(32, returndata), returndata_size)
            }

assembly {
...
                prod1 := sub(sub(mm, prod0), lt(mm, prod0))
            }

assembly {
                ptr := add(buffer, add(32, length))
            }


...
```

Recommendation

It is recommended to use assembly sparingly and only when necessary, as it can be difficult to read and understand compared to Solidity code.

Functions Analysis

Contract	Type	Bases		
	Function Name	**Visibility**	**Mutability**	**Modifiers**
IERC165	Interface			
	supportsInterface	External		-
IERC721	Interface	IERC165		
	balanceOf	External		-
	ownerOf	External		-
	safeTransferFrom	External	✓	-
	safeTransferFrom	External	✓	-
	transferFrom	External	✓	-
	approve	External	✓	-
	setApprovalForAll	External	✓	-
	getApproved	External		-
	isApprovedForAll	External		-
IERC721Receiver	Interface			
	onERC721Received	External	✓	-
IERC721Metadata	Interface	IERC721		

	name	External		-
	symbol	External		-
	tokenURI	External		-
Address	Library			
	isContract	Internal		
	functionCall	Internal	✓	
	functionCall	Internal	✓	
	functionCallWithValue	Internal	✓	
	functionCallWithValue	Internal	✓	
	functionStaticCall	Internal		
	functionStaticCall	Internal		
	functionDelegateCall	Internal	✓	
	functionDelegateCall	Internal	✓	
	verifyCallResultFromTarget	Internal		
	verifyCallResult	Internal		
	_revert	Private		
Context	Implementation			
	_msgSender	Internal		
	_msgData	Internal		
Math	Library			

	max	Internal		
	min	Internal		
	average	Internal		
	ceilDiv	Internal		
	mulDiv	Internal		
	mulDiv	Internal		
	sqrt	Internal		
	sqrt	Internal		
	log2	Internal		
	log2	Internal		
	log10	Internal		
	log10	Internal		
	log256	Internal		
	log256	Internal		
Strings	Library			
	toString	Internal		
	toHexString	Internal		
	toHexString	Internal		
	toHexString	Internal		
ERC165	Implementation	IERC165		
	supportsInterface	Public		-

ERC721	Implementation	Context, ERC165, IERC721, IERC721Metadata		
		Public	✓	-
	supportsInterface	Public		-
	balanceOf	Public		-
	ownerOf	Public		-
	name	Public		-
	symbol	Public		-
	tokenURI	Public		-
	_baseURI	Internal		
	approve	Public	✓	-
	getApproved	Public		-
	setApprovalForAll	Public	✓	-
	isApprovedForAll	Public		-
	transferFrom	Public	✓	-
	safeTransferFrom	Public	✓	-
	safeTransferFrom	Public	✓	-
	_safeTransfer	Internal	✓	
	_ownerOf	Internal		
	_exists	Internal		
	_isApprovedOrOwner	Internal		
	_safeMint	Internal	✓	

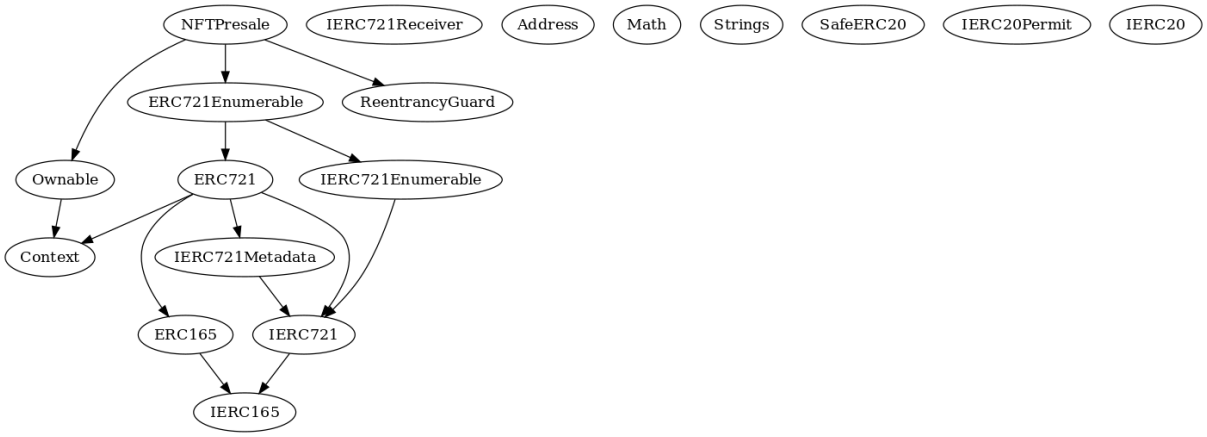
	_safeMint	Internal	✓	
	_mint	Internal	✓	
	_burn	Internal	✓	
	_transfer	Internal	✓	
	_approve	Internal	✓	
	_setApprovalForAll	Internal	✓	
	_requireMinted	Internal		
	_checkOnERC721Received	Private	✓	
	_beforeTokenTransfer	Internal	✓	
	_afterTokenTransfer	Internal	✓	
	_unsafeIncreaseBalance	Internal	✓	
IERC721Enumerable	Interface	IERC721		
	totalSupply	External		-
	tokenOfOwnerByIndex	External		-
	tokenByIndex	External		-
ERC721Enumerable	Implementation	ERC721, IERC721Enumerable		
	supportsInterface	Public		-
	tokenOfOwnerByIndex	Public		-
	totalSupply	Public		-
	tokenByIndex	Public		-
	_beforeTokenTransfer	Internal	✓	

	_addTokenToOwnerEnumeration	Private	✓	
	_addTokenToAllTokensEnumeration	Private	✓	
	_removeTokenFromOwnerEnumeration	Private	✓	
	_removeTokenFromAllTokensEnumeration	Private	✓	
Ownable	Implementation	Context		
		Public	✓	-
	owner	Public		-
	_checkOwner	Internal		
	renounceOwnership	Public	✓	onlyOwner
	transferOwnership	Public	✓	onlyOwner
	_transferOwnership	Internal	✓	
SafeERC20	Library			
	safeTransfer	Internal	✓	
	safeTransferFrom	Internal	✓	
	safeApprove	Internal	✓	
	safeIncreaseAllowance	Internal	✓	
	safeDecreaseAllowance	Internal	✓	
	safePermit	Internal	✓	
	_callOptionalReturn	Private	✓	
ReentrancyGuard	Implementation			

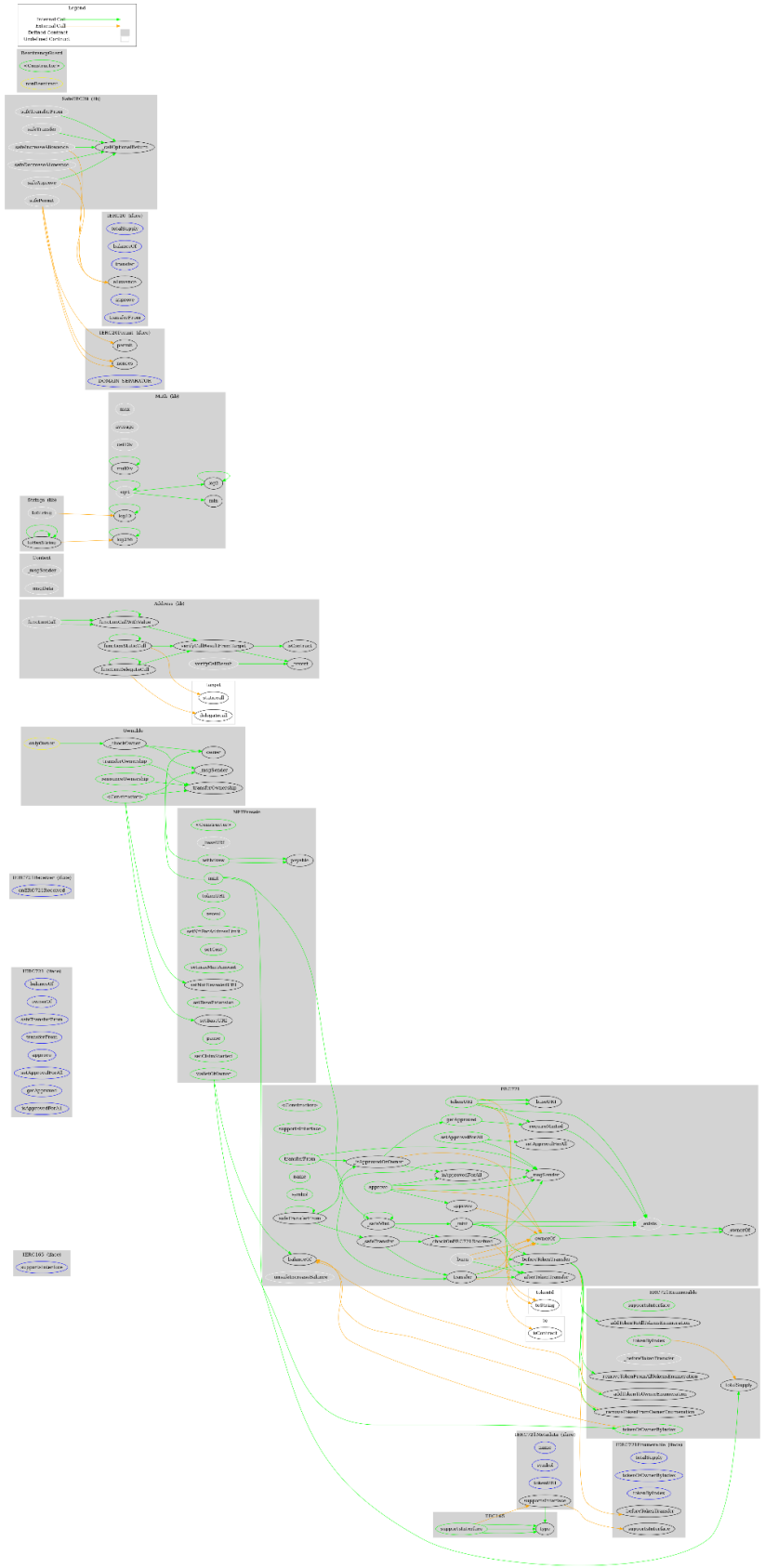
		Public	✓	-
IERC20Permit	Interface			
	permit	External	✓	-
	nonces	External		-
	DOMAIN_SEPARATOR	External		-
IERC20	Interface			
	totalSupply	External		-
	balanceOf	External		-
	transfer	External	✓	-
	allowance	External		-
	approve	External	✓	-
	transferFrom	External	✓	-
NFTPresale	Implementation	ERC721Enumerable, Ownable, ReentrancyGuard		
		Public	✓	ERC721
	_baseURI	Internal		
	mint	Public	Payable	nonReentrant
	walletOfOwner	Public		-
	tokenURI	Public		-
	reveal	Public	✓	onlyOwner

	setNftPerAddressLimit	Public	✓	onlyOwner
	setCost	Public	✓	onlyOwner
	setmaxMintAmount	Public	✓	onlyOwner
	setBaseURI	Public	✓	onlyOwner
	setBaseExtension	Public	✓	onlyOwner
	setNotRevealedURI	Public	✓	onlyOwner
	pause	Public	✓	onlyOwner
	setClaimStarted	Public	✓	onlyOwner
	withdraw	Public	Payable	onlyOwner nonReentrant

Inheritance Graph



Flow Graph



Summary

ObeseFans Calories contract implements an nft mechanism. This audit investigates security issues, business logic concerns, and potential improvements.

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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