

Smart Contract Security Audit V1

Tru or Die Smart Contract

3/5/2022



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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:** 0xEE058cc8E47c72F4795f9DB26769ac2445E50ae0
- **Code:**

<https://github.com/Saferico/Smart-Contracts-for-Projects/blob/main/TruorDie.sol>

NFT Information

- Name: TD
- Total Supply: 10000

0xe381Fefad57f20908BF0d0cDEBaa585d594a2B9a

This is an Ethereum network address. Do not send ETH over any other network to this address or your funds may be lost. Do not send NFTs or Wrapped ETH (ETH) to this address.

Contracts address deployed to test net (ETH)

Tru or Die Smart contract on ETH test net to test write functions by the auditor.

<https://rinkeby.etherscan.io/address/0xee058cc8e47c72f4795f9db26769ac2445e50ae0>

Executive Summary

According to our assessment, the customer`s solidity smart contract is **Well-Secured**. Because the team fix all critical and low issues.

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 1 critical, 0 high, 0 medium, 3 low, 0 very low-level issues and 1 note in all solidity files of the contract

The files:

TruorDie.sol

File and Function Level Report

File in Scope:

Contract Name	SHA 256 hash	Contract Address
TruorDie.sol	b9eba29a3288744cbd84b74f01f70a7256a72c5a09179cdf6b91bf45558d0307	0xee058cc8e47c72f4795f9db26769ac2445e50ae0

- Contract: TruorDie
- Inherit: ERC721, Ownable
- 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
presaleCost	✓	Read / public	Passed
supportsInterface	✓	Read / public	Passed
isInWhitelist	✓	Read / public	Passed
balanceOf	✓	Read / public	Passed
Owner	✓	Read / public	Passed
presale	✓	Read / public	Passed
maxMintAmountPerTx	✓	Read / public	Passed
getApprovedForAll	✓	Read / public	Passed
ownerOf	✓	Read / public	Passed
getApproved	✓	Read / public	Passed

tokenURI	✓	Read / public	Passed
uriSuffix	✓	Read / public	Passed
maxSupplyLimits	✓	Read / public	Passed
onlyWhitelisted	✓	Read / public	Passed
nftPublicPerAddressLimit	✓	Read / public	Passed
whitelistedAddressesList	✓	Read / public	Passed
paused	✓	Read / public	Passed
revealed	✓	Read / public	Passed
maxSupply	✓	Read / public	Passed
WalletOfOwner	✓	Read / public	Passed
totalSupply	✓	Read / public	Passed
nftPresalePerAddressLimit	✓	Read / public	Passed
publicCost	✓	Read / public	Passed
uriPrefix	✓	Read / public	Passed
addressPresaleMintedBalance	✓	Read / public	Passed
addressPublicMintedBalance	✓	Read / public	Passed
hiddenMetadataUri	✓	Read / public	Passed
reveal	✓	Write / public	Passed
approve	✓	Write / public	Passed
safeTransferFrom	✓	Write / public	Passed
safeTransferFrom	✓	Write / public	Passed
setUriPrefix	✓	Write / public	Passed
mint	✓	Write / payable	Passed
transferOwnership	✓	Write / public	Passed
setApprovalForAll	✓	Write / public	Passed
transferFrom	✓	Write / public	Passed

setPaused	✓	Write / public	Passed
setPublicCost	✓	Write / public	Passed
setUriSuffix	✓	Write / public	Passed
renounceOwnership	✓	Write / public	Passed
withdraw	✓	Write / payable	Passed
setPresaleCost	✓	Write / public	Passed
setNftPublicPerAddressLimit	✓	Write / public	Passed
setOnlyWhitelisted	✓	Write / public	Passed
setNotRevealedURI	✓	Write / public	Passed
ownerMintSpecific	✓	Write / public	Passed
addArrayToWhiteList	✓	Write / public	Passed
addToWhiteList	✓	Write / public	Passed
ownerMint	✓	Write / public	Passed
mintForAddress	✓	Write / public	Passed
setHiddenMetadataUri	✓	Write / public	Passed
removeFromWhitelist	✓	Write / public	Passed
setNFTPresalePerAddressLimit	✓	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	Design Logic.	Passed
6	Timestamp dependence.	Passed
7	Integer Overflow and Underflow.	Passed
8	DoS with Revert.	Passed
9	DoS with block gas limit.	Passed with notes
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

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:

#Possibility of losing all funds

Description

The most important function is not checked if the owner is the caller or not . the withdraw function should the owner is the only controller but in this case the developer make it open means any one can withdraw all funds of the project at any time which make the project fails to protect the funds and the project will not complete without these funds.

```
function withdraw() public payable {
    (bool os, ) = payable(owner()).call{value: address(this).balance}("");
    require(os);
}
```

Remediation

You have to make sure the owner is the only controller.

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

High:

No High severity vulnerabilities were found.

Medium:

No Medium severity vulnerabilities were found

Low:

#Missing zero address validation

Description

When the owner wants to Mint for the investors it has to check for the zero address to make, he didn't mint for the burn address. Otherwise, the mint function will act like the burn function.

```
function mintForAddress(uint256 _mintAmount, address _receiver) public
mintCompliance(_mintAmount) onlyOwner {
    _mintLoop(_receiver, _mintAmount);
}
```

Remediation

Use the require statement to check for zero addresses.

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

#Pragma version not fixed

Description

It is a good practice to lock the solidity version for a live deployment (use 0.8.13 instead of $\geq 0.7.0 < 0.9.0$). 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.

#Owner privileges (In the period when the owner isn't renounced)

Description

The owner can pause and un Pause mint.

The owner can add / remove any address to whitelist mint stage.

The owner can change the price in WL or non WL stage.

```
function addToWhiteList(address _addr) public onlyOwner {
    whitelistedAddressesList[_addr] = true;
}

function addArrayToWhiteList(address[] memory _addrs) public onlyOwner {
    for (uint256 i = 0; i < _addrs.length; i++) {
        whitelistedAddressesList[_addrs[i]] = true;
    }
}

function removeFromWhiteList(address _addr) public onlyOwner {
    whitelistedAddressesList[_addr] = false;
}

function setPaused(bool _state) public onlyOwner {
    paused = _state;
}

// Set Presale
function setPresale(bool _state) public onlyOwner {
    presale = _state;
}

function setPresaleCost(uint256 _cost) public onlyOwner {
    presaleCost = _cost;
}

// Publicsale Cost
function setPublicsaleCost(uint256 _cost) public onlyOwner {
    publicsaleCost = _cost;
}
```

Remediation

Make these functions internal in next version or the team should announce the investors before doing anything to give them time if they want to do anything.

P.S: This issue is common to the majority of NFT smart contracts.

Status: **Acknowledged**.

Very Low:

No Very Low severity vulnerabilities were found.

Notes:

#Missing zero address validation for whitelist functions

Description

When the owner wants to add an address or multi addresses to the whitelist it will much better if he has to check for the zero address to make, he didn't add the burn address to the whitelist for the burn address. Otherwise, the whitelist functions will cost more gas.

```
function addToWhiteList(address _addr) public onlyOwner {
    whitelistedAddressesList[_addr] = true;
}

function addArrayToWhiteList(address[] memory _addrs) public onlyOwner {
    for (uint256 i = 0; i < _addrs.length; i++) {
        whitelistedAddressesList[_addrs[i]] = true;
    }
}
```

Remediation

Use the require statement to check for zero addresses.

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

Automatic Testing

1- Check for security

b9eba29a3288744cbd84b74f01f70a7256a72c5a09179cdf6b91bf45558d0307

File: TruorDie... | Language: solidity | Size: 7964 bytes | Date: 2022-05-03T12:30:44.406Z

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

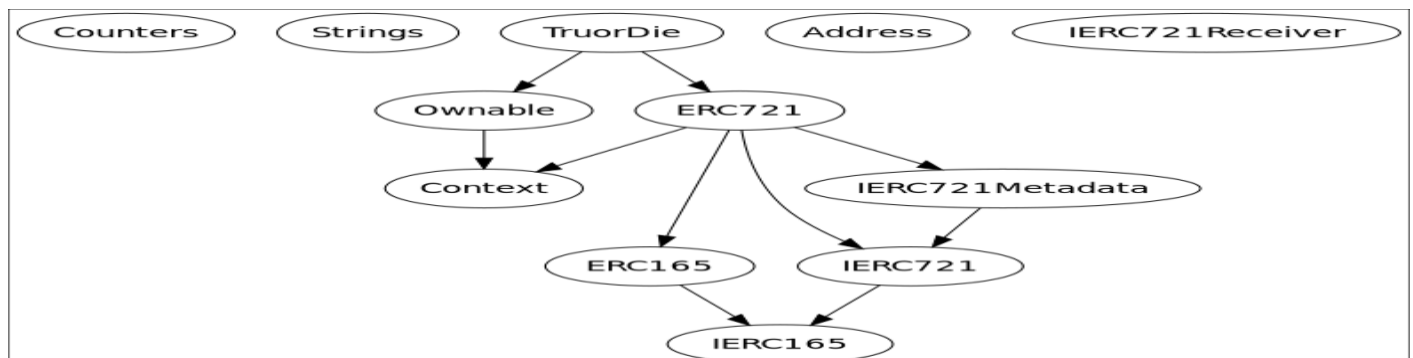
- ☒ **ERC20:**
'decimals' should be 'uint8'

▼ 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:

☒ Select all

☒ tests/TruorDie_test.sol

Progress: 1 finished (of 1)

PASS testSuite (tests/TruorDie_test.sol)

✓ Before all

✖

✓ Check success

✖

✓ Check success2

✖

✓ Check failure

✖

✓ Check sender and value

✖

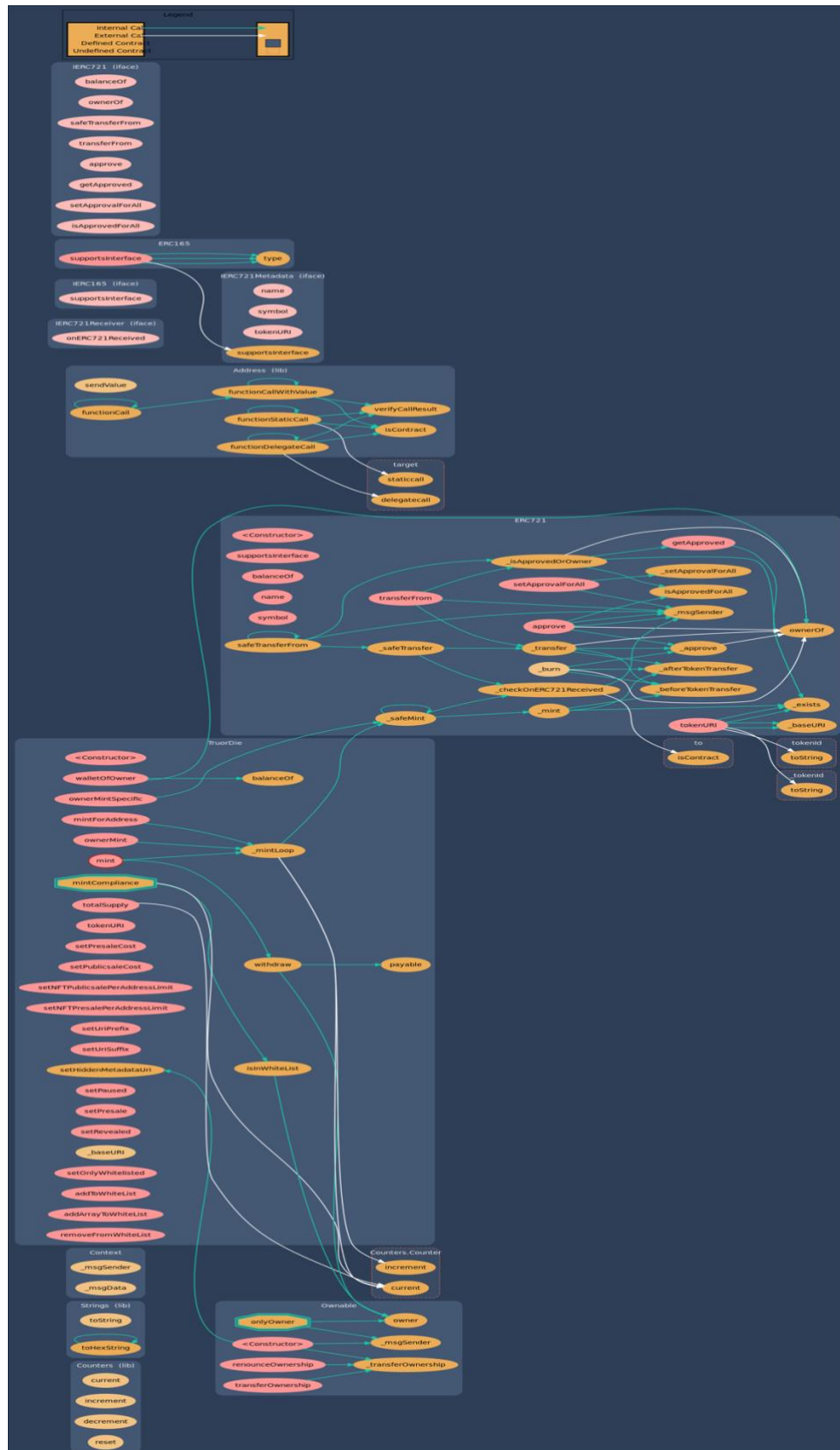
Result for tests/TruorDie_test.sol

Passed: 5

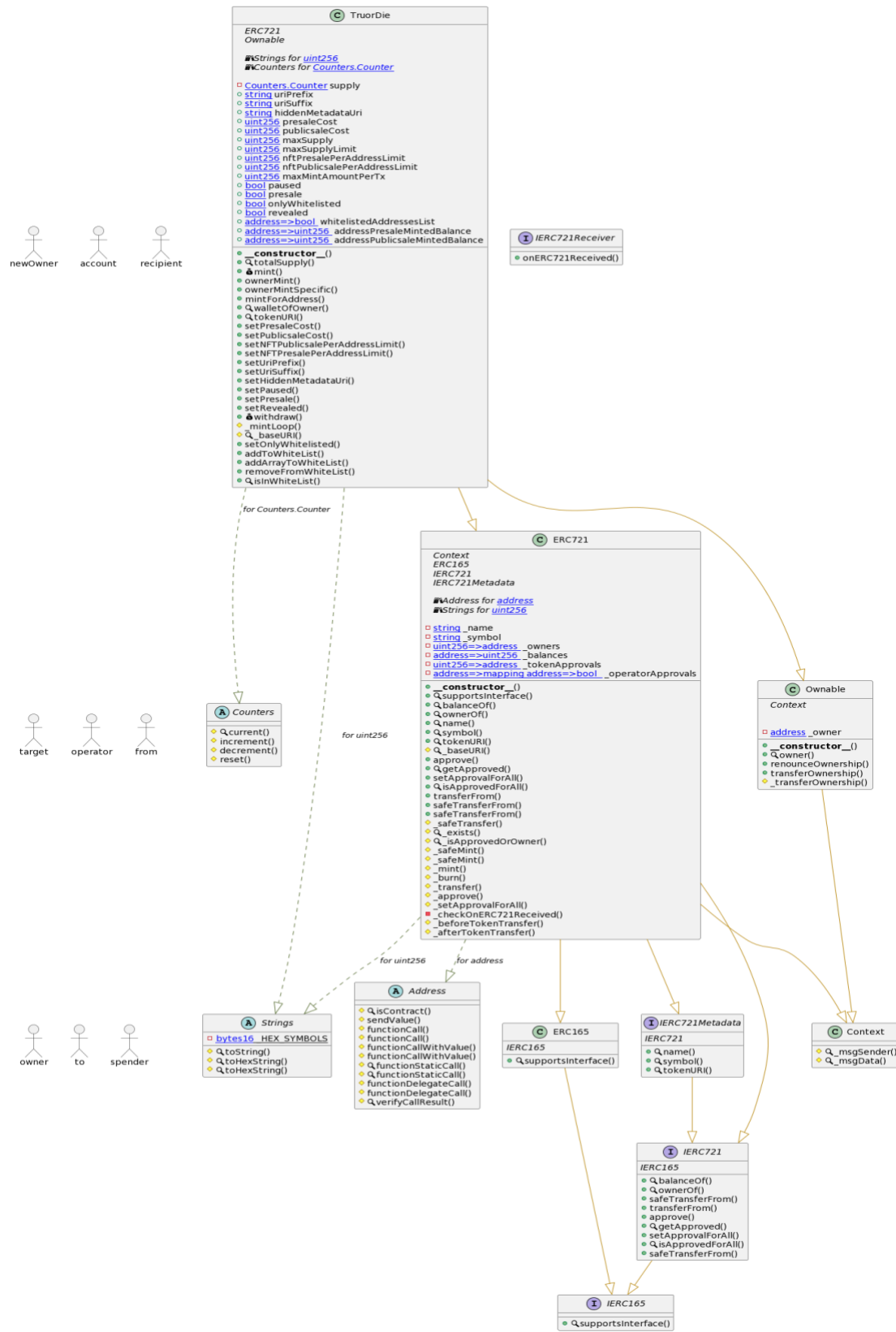
Failed: 0

Time Taken: 0.41s

5- Call graph



newOwner account recipient



Functions signature

Sighash		Function Signature
=====		
16279055	=>	isContract (address)
ad04a8d1	=>	current (Counter)
e2bee435	=>	increment (Counter)
854ec98e	=>	decrement (Counter)
440d212a	=>	reset (Counter)
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)
06fdde03	=>	name ()
95d89b41	=>	symbol ()
c87b56dd	=>	tokenURI (uint256)
743976a0	=>	_baseURI ()
24b6b8c0	=>	_safeTransfer (address, address, uint256, bytes)
f8e76cc0	=>	_exists (uint256)
4cdc9549	=>	_isApprovedOrOwner (address, uint256)
b3e1c718	=>	_safeMint (address, uint256)
6a4f832b	=>	_safeMint (address, uint256, bytes)
4e6ec247	=>	_mint (address, uint256)
9b1f9e74	=>	_burn (uint256)
30e0789e	=>	_transfer (address, address, uint256)
7b7d7225	=>	_approve (address, uint256)
8c4e3f32	=>	_setApprovalForAll (address, address, bool)
1fd01de1	=>	_checkOnERC721Received (address, address, uint256, bytes)
cad3be83	=>	_beforeTokenTransfer (address, address, uint256)

```
8f811a1c => _afterTokenTransfer(address,address,uint256)
18160ddd => totalSupply()
a0712d68 => mint(uint256)
f19e75d4 => ownerMint(uint256)
e08823c5 => ownerMintSpecific(uint256)
efbd73f4 => mintForAddress(uint256,address)
438b6300 => walletOfOwner(address)
8fdcf942 => setPresaleCost(uint256)
6905b184 => setPublicsaleCost(uint256)
ae137307 => setNFTPublicsalePerAddressLimit(uint256)
e9058c37 => setNFTPresalePerAddressLimit(uint256)
7ec4a659 => setUriPrefix(string)
16ba10e0 => setUriSuffix(string)
4fdd43cb => setHiddenMetadataUri(string)
16c38b3c => setPaused(bool)
c54e73e3 => setPresale(bool)
e0a80853 => setRevealed(bool)
3ccfd60b => withdraw()
0d43db94 => _mintLoop(address,uint256)
3c952764 => setOnlyWhitelisted(bool)
47ee0394 => addToWhiteList(address)
c243c6c1 => addArrayToWhiteList(address[])
01bf6648 => removeFromWhiteList(address)
96bfc229 => isInWhiteList(address)
```

Automatic general report

Files Description Table

File Name	SHA-1 Hash
/Users/macbook/Desktop/smart contracts/TruorDie.sol	3c7d15d8034f3c1c3e32386f5d569b0a3f4dc002

Contracts Description Table

Contract	Type	Bases			
:-----: :-----: :-----: :-----: :-----: :-----					
L	**Function Name**	**Visibility**	**Mutability**		
Modifiers					
Counters	Library				
L current	Internal				
L increment	Internal				
L decrement	Internal				
L reset	Internal				
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! |
| | | |
| **IERC721Metadata** | Interface | IERC721 | | |
| L | name | External ! | | NO! |
| L | symbol | External ! | | NO! |
| L | tokenURI | External ! | | NO! |
| | | |
| **ERC721** | Implementation | Context, ERC165, IERC721, IERC721Metadata | | |
| L | <Constructor> | Public ! |  | NO! |
| L | supportsInterface | Public ! | | NO! |
| L | balanceOf | Public ! | | NO! |
| L | ownerOf | Public ! | | NO! |
| L | name | Public ! | | NO! |
| L | symbol | Public ! | | NO! |
| L | tokenURI | Public ! | | NO! |
| L | _baseURI | 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 | _safeTransfer | Internal  |  | |
| L | _exists | Internal  | | |
| L | _isApprovedOrOwner | Internal  | | |
| L | _safeMint | Internal  |  | |
| L | _safeMint | Internal  |  | |
| L | _mint | Internal  |  | |
| L | _burn | Internal  |  | |
| L | _transfer | Internal  |  | |
| L | _approve | Internal  |  | |
| L | _setApprovalForAll | Internal  |  | |
| L | _checkOnERC721Received | Private  |  | |
| L | _beforeTokenTransfer | Internal  |  | |
| L | _afterTokenTransfer | Internal  |  | |
| | | |
| **TruorDie** | Implementation | ERC721, Ownable | | |

```

<Constructor>	Public	!	⬤	ERC721
totalSupply	Public	!	NO	!
mint	Public	!	🔒	mintCompliance
ownerMint	Public	!	⬤	onlyOwner
ownerMintSpecific	Public	!	⬤	onlyOwner
mintForAddress	Public	!	⬤	mintCompliance onlyOwner
walletOfOwner	Public	!	NO	!
tokenURI	Public	!	NO	!
setPresaleCost	Public	!	⬤	onlyOwner
setPublicsaleCost	Public	!	⬤	onlyOwner
setNFTPublicsalePerAddressLimit	Public	!	⬤	onlyOwner
setNFTPresalePerAddressLimit	Public	!	⬤	onlyOwner
setUriPrefix	Public	!	⬤	onlyOwner
setUriSuffix	Public	!	⬤	onlyOwner
setHiddenMetadataUri	Public	!	⬤	onlyOwner
setPaused	Public	!	⬤	onlyOwner
setPresale	Public	!	⬤	onlyOwner
setRevealed	Public	!	⬤	onlyOwner
withdraw	Public	!	🔒	NO
_mintLoop	Internal	🔒	⬤	
_baseURI	Internal	🔒		
setOnlyWhitelisted	Public	!	⬤	onlyOwner
addToWhiteList	Public	!	⬤	onlyOwner
addArrayToWhiteList	Public	!	⬤	onlyOwner
removeFromWhiteList	Public	!	⬤	onlyOwner
isInWhiteList	Public	!	NO	!

Legend

Symbol	Meaning
⬤	Function can modify state
🔒	Function is payable

Conclusion

The contracts are written systematically. Team found no critical issues after the team had fixed all critical and low 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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