

# Smart Contract Security Audit V1

## Puppy Park Adventure Smart Contract

4/3/2022



<https://saferico.com/>

[business@saferico.com](mailto:business@saferico.com)

[https://t.me/SFI\\_ANN](https://t.me/SFI_ANN)

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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:** 0x0d33975757ec3Df86996E78DcdB6839D89eBb743
- **Code:**

<https://rinkeby.etherscan.io/address/0x0d33975757ec3df86996e78dcdb6839d89ebb743#code>

## NFT Information

- Name: PPA
- Total Supply: 5000
- Holders:
- Total transactions:

## Contracts address deployed to test net (ETH)

Puppy Park Adventure Smart contract on ETH test net to test write functions by the auditor.

<https://rinkeby.etherscan.io/address/0x0d33975757ec3df86996e78dcdb6839d89ebb743>

## 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, 3 low, 0 very low-level issues and 0 note in all solidity files of the contract

The files:

PPA\_NFT\_Contract.sol

# File and Function Level Report

## File in Scope:

Contract Name	SHA 256 hash	Contract Address
NFTTicket.sol	ebfd5fdb831f4e627b246dc0b0abf8abcd0a5f27b3e0fbbdd72bdf8c1a0d282	0x0d33975757ec3Df86996E78DcdB6839D89eBb743

- Contract: NFTTicket
- Inherit: ERC721Enumerable, 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
cost	✓	Read / public	Passed
supportsInterface	✓	Read / public	Passed
baseExtension	✓	Read / public	Passed
balanceOf	✓	Read / public	Passed
Owner	✓	Read / public	Passed
whitelistedAddresses	✓	Read / public	Passed
addressMintedBalance	✓	Read / public	Passed
getApprovedForAll	✓	Read / public	Passed
addressTicketBalance	✓	Read / public	Passed
getApproved	✓	Read / public	Passed

ownerOf	✓	Read / public	<b>Passed</b>
baseTokenURI	✓	Read / public	<b>Passed</b>
tokenByIndex	✓	Read / public	<b>Passed</b>
tokenOfOwnerByIndex	✓	Read / public	<b>Passed</b>
contractURI	✓	Read / public	<b>Passed</b>
isWhitelisted	✓	Read / public	<b>Passed</b>
whitelistedAddress	✓	Read / public	<b>Passed</b>
ticketSupply	✓	Read / public	<b>Passed</b>
ticketPaused	✓	Read / public	<b>Passed</b>
walletOfOwner	✓	Read / public	<b>Passed</b>
onlyWhitelisted	✓	Read / public	<b>Passed</b>
nftPerAddressLimit	✓	Read / public	<b>Passed</b>
mintPaused	✓	Read / public	<b>Passed</b>
baseURI	✓	Read / public	<b>Passed</b>
isWhitelisted	✓	Read / public	<b>Passed</b>
maxSupply	✓	Read / public	<b>Passed</b>
maxMintAmount	✓	Read / public	<b>Passed</b>
totalSupply	✓	Read / public	<b>Passed</b>
whitelistUsers	✓	Write / public	<b>Passed</b>
approve	✓	Write / public	<b>Passed</b>
safeTransferFrom	✓	Write / public	<b>Passed</b>
safeTransferFrom	✓	Write / public	<b>Passed</b>
setBaseURI	✓	Write / public	<b>Passed</b>
whitelistUser	✓	Write / public	<b>Passed</b>
buyTickets	✓	Write / payable	<b>Passed</b>
mint	✓	Write / public	<b>Passed</b>
transferOwnership	✓	Write / public	<b>Passed</b>

setApprovalForAll	✓	Write / public	<b>Passed</b>
transferFrom	✓	Write / public	<b>Passed</b>
mintPaused	✓	Write / public	<b>Passed</b>
setBaseExtension	✓	Write / public	<b>Passed</b>
setMaxMintAmount	✓	Write / public	<b>Passed</b>
renounceOwnership	✓	Write / public	<b>Passed</b>
withdraw	✓	Write / payable	<b>Passed</b>
setMaxSupply	✓	Write / payable	<b>Passed</b>
setNftPerAddressLimit	✓	Write / public	<b>Passed</b>
setCost	✓	Write / public	<b>Passed</b>
setOnlyWhitelisted	✓	Write / public	<b>Passed</b>
ticketsPaused	✓	Write / public	<b>Passed</b>

# 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 with Notes
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



## 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 0.8.7 instead of ^0.8.7). 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 buying tickets and mint.

```
function ticketPause(bool _state) public onlyOwner {
    ticketsPaused = _state;}
function mintPause(bool _state) public onlyOwner {
    mintPaused = _state;}
```

#### Remediation

Make these functions internal in next version or the team should announce the investors before pause and un pause 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**.

## # Useless function

### Description

The team adds 2 functions, one of these functions allow the owner to add one address to the whitelist per transaction and the other allow the owner to add one or more addresses to the whitelist.

```
function whitelistUser(address _user) public onlyOwner {  
    whitelistedAddress = _user;  
}
```

### Remediation

The team should remove this function to save some ETH gas because they have the other function which allows them to add one or more addresses to the whitelist.

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

## **Very Low:**

No Very Low severity vulnerabilities were found.

## **Notes:**

No Very Notes were found.

# Automatic Testing

## 1- Check for security

ebfd5fcd831f4e627b246dc0b0abf8abcd0a5f27b3e0fbdd72bdf8c1a0d282  
File: PPA\_NF... | Language: solidity | Size: 5059 bytes | Date: 2022-03-04T12:39:15.437Z

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

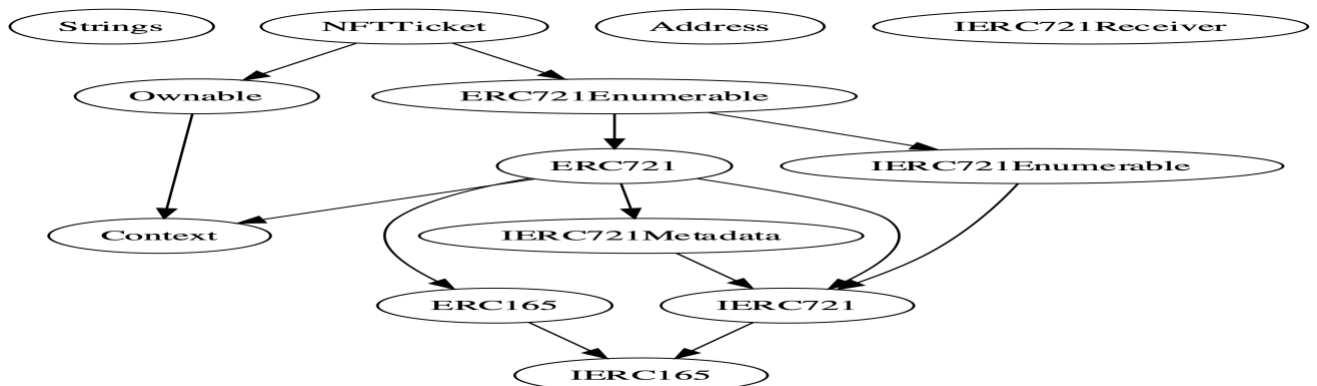
- ☒ **ERC20:**  
'decimals' should be 'uint8'

▼ 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/PPA\_NFT\_contract\_test.sol

Progress: 1 finished (of 1)

**PASS** testSuite

(tests/PPA\_NFT\_contract\_test.sol)

✓ Before all

✖

✓ Check success

✖

✓ Check success2

✖

✓ Check failure

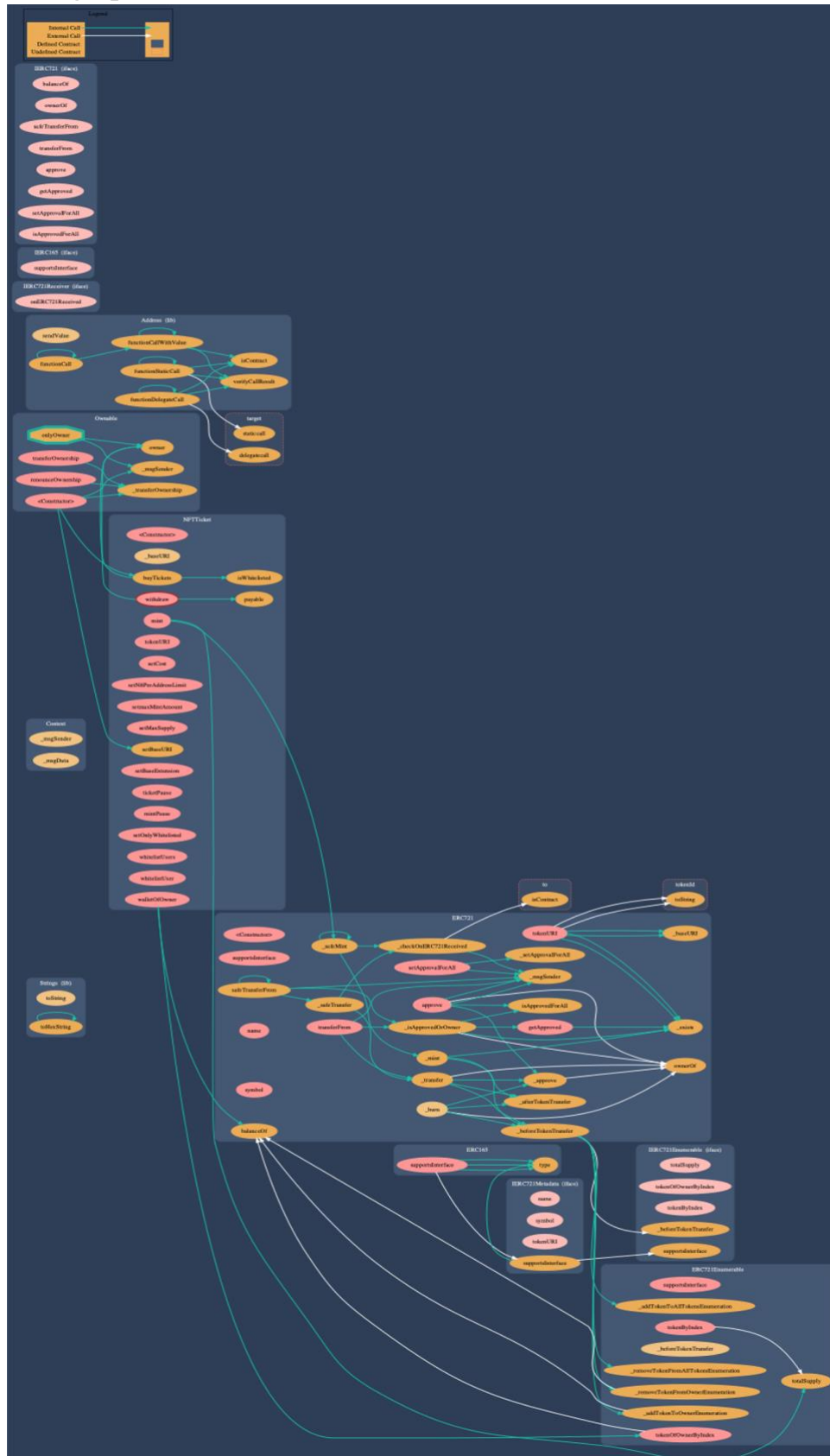
✖

✓ Check sender and value

✖

**Result for**  
**tests/PPA\_NFT\_contract\_test.sol**  
Passed: 5  
Failed: 0  
Time Taken: 0.49s

## 5- Call graph



[illegible]

## 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)
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)



```
69025b5f => _addTokenToOwnerEnumeration(address,uint256)
e03d890b => _addTokenToAllTokensEnumeration(uint256)
68df0d53 => _removeTokenFromOwnerEnumeration(address,uint256)
4cbb4a0a => _removeTokenFromAllTokensEnumeration(uint256)
a0712d68 => mint(uint256)
2f366637 => buyTickets(uint256)
3af32abf => isWhitelisted(address)
438b6300 => walletOfOwner(address)
44a0d68a => setCost(uint256)
d0eb26b0 => setNftPerAddressLimit(uint256)
7f00c7a6 => setmaxMintAmount(uint256)
6f8b44b0 => setMaxSupply(uint256)
55f804b3 => setBaseURI(string)
da3ef23f => setBaseExtension(string)
2351ae00 => ticketPause(bool)
cf6b6736 => mintPause(bool)
3c952764 => setOnlyWhitelisted(bool)
edec5f27 => whitelistUsers(address[])
4a4c560d => whitelistUser(address)
3ccfd60b => withdraw()
```

# Automatic general report

## Files Description Table

File Name	SHA-1 Hash
/Users/macbook/Desktop/smart contracts/PPA_NFT_contract.sol	da118bcd3571163c06c9216f92d1a9c0fa30f5c1

## Contracts Description Table

Contract	Type	Bases	
:-----: :-----: :-----: :-----:			
L	**Function Name**	**Visibility**	**Mutability**
**Modifiers**			
**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! |
| | | |
| **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 ! | | NO! |
| 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 ! | | NO! |
| L | _exists | Internal ! | | NO! |
| L | _isApprovedOrOwner | Internal ! | | NO! |
| L | _safeMint | Internal ! | | NO! |
| L | _safeMint | Internal ! | | NO! |
| L | _mint | Internal ! | | NO! |
| L | _burn | Internal ! | | NO! |
| L | _transfer | Internal ! | | NO! |
| L | _approve | Internal ! | | NO! |
| L | _setApprovalForAll | Internal ! | | NO! |
| L | _checkOnERC721Received | Private ! | | NO! |
| L | _beforeTokenTransfer | Internal ! | | NO! |
| L | _afterTokenTransfer | Internal ! | | NO! |
| | | |
| **ERC721Enumerable** | Implementation | ERC721, IERC721Enumerable | | |
| L | supportsInterface | Public ! | | NO! |

```

```

| L | tokenOfOwnerByIndex | Public ! | | NO! |
| L | totalSupply | Public ! | | NO! |
| L | tokenByIndex | Public ! | | NO! |
| L | _beforeTokenTransfer | Internal 🔒 | 🔍 | |
| L | _addTokenToOwnerEnumeration | Private 🔒 | 🔍 | |
| L | _addTokenToAllTokensEnumeration | Private 🔒 | 🔍 | |
| L | _removeTokenFromOwnerEnumeration | Private 🔒 | 🔍 | |
| L | _removeTokenFromAllTokensEnumeration | Private 🔒 | 🔍 | |
| | | | |
| **NFTTicket** | Implementation | ERC721Enumerable, Ownable | |
| L | <Constructor> | Public ! | 🔍 | ERC721 |
| L | _baseURI | Internal 🔒 | | |
| L | mint | Public ! | 🔍 | NO! |
| L | buyTickets | Public ! | 💰 | NO! |
| L | isWhitelisted | Public ! | | NO! |
| L | walletOfOwner | Public ! | | NO! |
| L | tokenURI | Public ! | | NO! |
| L | setCost | Public ! | 🔍 | onlyOwner |
| L | setNftPerAddressLimit | Public ! | 🔍 | onlyOwner |
| L | setmaxMintAmount | Public ! | 🔍 | onlyOwner |
| L | setMaxSupply | Public ! | 🔍 | onlyOwner |
| L | setBaseURI | Public ! | 🔍 | onlyOwner |
| L | setBaseExtension | Public ! | 🔍 | onlyOwner |
| L | ticketPause | Public ! | 🔍 | onlyOwner |
| L | mintPause | Public ! | 🔍 | onlyOwner |
| L | setOnlyWhitelisted | Public ! | 🔍 | onlyOwner |
| L | whitelistUsers | Public ! | 🔍 | onlyOwner |
| L | whitelistUser | Public ! | 🔍 | onlyOwner |
| L | withdraw | Public ! | 💰 | 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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