CERTIK

Security Assessment

Street Runner NFT

Oct 7th, 2021

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Summary

This report has been prepared for Street Runner NFT to discover issues and vulnerabilities in the source code of the Street Runner NFT project as well as any contract dependencies that were not part of an officially recognized library. A comprehensive examination has been performed, utilizing Static Analysis and Manual Review techniques.

The auditing process pays special attention to the following considerations:

- Testing the smart contracts against both common and uncommon attack vectors.
- Assessing the codebase to ensure compliance with current best practices and industry standards.
- Ensuring contract logic meets the specifications and intentions of the client.
- Cross referencing contract structure and implementation against similar smart contracts produced by industry leaders.
- Thorough line-by-line manual review of the entire codebase by industry experts.

The security assessment resulted in findings that ranged from critical to informational. We recommend addressing these findings to ensure a high level of security standards and industry practices. We suggest recommendations that could better serve the project from the security perspective:

- Enhance general coding practices for better structures of source codes;
- Add enough unit tests to cover the possible use cases;
- Provide more comments per each function for readability, especially contracts that are verified in public;
- Provide more transparency on privileged activities once the protocol is live.

Overview

Project Summary

Project Name	Street Runner NFT
Description	An ERC20 Token
Platform	BSC
Language	Solidity
Codebase	https://bscscan.com/address/0x49092aB0b87f6C7B4449a6031dfe8B7d51c97605
Commit	

Audit Summary

Delivery Date	Oct 07, 2021
Audit Methodology	Static Analysis, Manual Review
Key Components	

Vulnerability Summary

Vulnerability Level	Total	Pending	Declined	Acknowledged	Partially Resolved	Resolved
Critical	0	0	0	0	0	0
Major	1	0	0	1	0	0
Medium	0	0	0	0	0	0
Minor	1	0	0	1	0	0
Informational	2	0	0	2	0	0
Discussion	0	0	0	0	0	0

Audit Scope

ID	File	SHA256 Checksum
CTS	CoinToken.sol	f4ef22bac0f88182349955e29ceafba8972459c1afa7e883d9c28af0d6cf0607

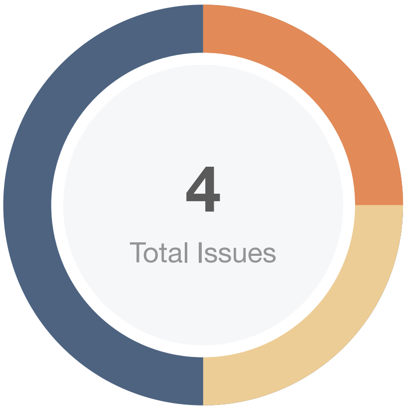
System Overview

The `SRG` token deployed on the Binance Smart Chain is a standard ERC20 implementation. The current contract is **CoinToken**.

Here are some pieces of information of `SRG` token that we found on the Binance Smart Chain:

- Total Supply: 160,000,000e10
- Max Cap: 160,000,000e10

Findings



- **Critical** **0** (0.00%)
- **Major** **1** (25.00%)
- **Medium** **0** (0.00%)
- **Minor** **1** (25.00%)
- **Informational** **2** (50.00%)
- **Discussion** **0** (0.00%)

ID	Title	Category	Severity	Status
CTS-01	Lack of Zero Address Validation	Volatile Code	Minor	Acknowledged
CTS-02	Function Visibility Optimization	Gas Optimization	Informational	Acknowledged
CTS-03	Initial token distribution	**Centralization / Privilege**	**Major**	Acknowledged
CTS-04	Unlocked Compiler Version	Language Specific	Informational	Acknowledged

CTS-01 | Lack of Zero Address Validation

Category	Severity	Location	Status
Volatile Code	Minor	CoinToken.sol: 165, 352, 351	Acknowledged

Description

The input variable `tokenOwner`, `tokenOwner_` and `feeReceiver_` should not be zero address.

Recommendation

We advise the client to add the check for the passed-in values to prevent unexpected error as below:

```
require(tokenOwner != address(0), "tokenOwner is the zero address");
_balances[tokenOwner] = _totalSupply;
```

CTS-02 | Function Visibility Optimization

Category	Severity	Location	Status
Gas Optimization	● Informational	CoinToken.sol: 302, 283, 261, 243, 232, 224, 212, 205, 198, 181, 173	ⓘ Acknowledged

Description

The following functions are not invoked in any of the contracts contained within the project's scope:

- `name()`
- `symbol()`
- `decimals()`
- `totalSupply()`
- `balanceOf()`
- `transfer()`
- `allowance()`
- `approve()`
- `transferFrom()`
- `increaseAllowance()`
- `decreaseAllowance()` The functions that are never called internally within the contract should have external visibility.

Recommendation

We advise that the functions' visibility specifiers are set to `external` and the array-based arguments change their data location from `memory` to `calldata`, optimizing the gas cost of the function.

CTS-03 | Initial token distribution

Category	Severity	Location	Status
Centralization / Privilege	Major	CoinToken.sol: 165	Acknowledged

Description

`_totalSupply` tokens were sent to the `tokenOwner` and `msg.value` tokens were sent to the `feeReceiver_` when deploying the contract. This could be a centralization risk as the deployer can distribute tokens without obtaining the consensus of the community.

Recommendation

We recommend the team to be transparent regarding the initial token distribution process.

Alleviation

`[CertiK]`: The contract `CoinToken` was deployed at block height 11275969 on the Binance Smart Chain, and 160,000,000e10 tokens were distributed to the `tokenOwner`.

Detail transaction at:
https://bscscan.com/tx/0x89ed24fe63fbbb96479790f19292679a9184db91bc831486239439a7fb1f56d1.

More information can be found on **SRG (StreetRunnerNFT) Token Tracker | BscScan**.

CTS-04 | Unlocked Compiler Version

Category	Severity	Location	Status
Language Specific	● Informational	CoinToken.sol: 340, 138, 120, 91, 11	ⓘ Acknowledged

Description

The contract has an unlocked compiler version. An unlocked compiler version in the source code of the contract permits the user to compile it at or above a particular version. This, in turn, leads to differences in the generated bytecode between compilations due to differing compiler version numbers. This can lead to ambiguity when debugging as compiler-specific bugs may occur in the codebase that would be hard to identify over a span of multiple compiler versions rather than a specific one.

Recommendation

It is a general practice to instead lock the compiler at a specific version rather than allow a range of compiler versions to be utilized to avoid compiler-specific bugs and be able to identify ones more easily. We recommend locking the compiler at the lowest possible version that supports all the capabilities wished by the codebase. This will ensure that the project utilizes a compiler version that has been in use for the longest time and as such is less likely to contain yet-undiscovered bugs.

Appendix

Finding Categories

Centralization / Privilege

Centralization / Privilege findings refer to either feature logic or implementation of components that act against the nature of decentralization, such as explicit ownership or specialized access roles in combination with a mechanism to relocate funds.

Gas Optimization

Gas Optimization findings do not affect the functionality of the code but generate different, more optimal EVM opcodes resulting in a reduction on the total gas cost of a transaction.

Volatile Code

Volatile Code findings refer to segments of code that behave unexpectedly on certain edge cases that may result in a vulnerability.

Language Specific

Language Specific findings are issues that would only arise within Solidity, i.e. incorrect usage of private or delete.

Checksum Calculation Method

The "Checksum" field in the "Audit Scope" section is calculated as the SHA-256 (Secure Hash Algorithm 2 with digest size of 256 bits) digest of the content of each file hosted in the listed source repository under the specified commit.

The result is hexadecimal encoded and is the same as the output of the Linux "sha256sum" command against the target file.

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