CERTIK

Security Assessment

Injective - Peggy

May 13th, 2021

Summary

This report has been prepared for Injective - Peggy smart contracts, to discover issues and vulnerabilities in the source code of their Smart Contract 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 given they are currently missing in the repository;
- Provide more comments per each function for readability, especially contracts are verified in public;
- Provide more transparency on privileged activities once the protocol is live.

Overview

Project Summary

Project Name	Injective - Peggy
Platform	Ethereum
Language	Solidity
Codebase	https://github.com/InjectiveLabs/peggo/blob/master/solidity/contracts/Peggy.sol
Commits	injective-peggy

Audit Summary

Delivery Date	May 13, 2021
Audit Methodology	Static Analysis, Manual Review
Key Components	

Vulnerability Summary

Total Issues	2
Critical	0
Major	0
Medium	0
Minor	0
Informational	2
Discussion	0

Audit Scope

ID	file	SHA256 Checksum
CTC	CosmosToken.sol	a9c2fb94b3fbff82458d693c9b96633ade746669bfca5c5dc8e4cd6813e64cad
CKP	peggy.sol	2aae35c3638b3eb4c9d0b3c16cd8e2923ddfccfbf66f1a295f36abb495fcbca9

Findings

Critical	**0** (0.00%)
Major	**0** (0.00%)
Medium	**0** (0.00%)
Minor	**0** (0.00%)
Informational	**2** (100.00%)
Discussion	**0** (0.00%)

ID	Title	Category	Severity	Status
CKP-01	Lack of Checks for Transfer Amounts	Gas Optimization	Informational	Pending
CKP-02	Redundant Import Library	Gas Optimization	Informational	Pending

CKP-01 | Lack of Checks for Transfer Amounts

Category	Severity	Location	Status
Gas Optimization	● Informational	peggy.sol: 318, 341	ⓘ Pending

Description

If the transfer amount is zero, it is unnecessary to make a transfer by calling `IERC20.safeTransfer()` or `IERC20.safeTransferFrom()`. Checking transfer amounts and skipping the transfer when the amount is zero would help reduce gas costs.

Recommendation

We recommend checking if the transfer amount is zero before making a transfer.

CKP-02 | Redundant Import Library

Category	Severity	Location	Status
Gas Optimization	Informational	peggy.sol: 7	Pending

Description

The library `Address` is not used within the contract `Peggy`, so the import of `Address` could be removed.

Recommendation

We recommend removing the import of library `Address`.

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.

Mathematical Operations

Mathematical Operation findings relate to mishandling of math formulas, such as overflows, incorrect operations etc.

Logical Issue

Logical Issue findings detail a fault in the logic of the linked code, such as an incorrect notion on how block.timestamp works.

Control Flow

Control Flow findings concern the access control imposed on functions, such as owner-only functions being invoke-able by anyone under certain circumstances.

Volatile Code

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

Data Flow

Data Flow findings describe faults in the way data is handled at rest and in memory, such as the result of a struct assignment operation affecting an in-memory struct rather than an in-storage one.

Language Specific

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

Coding Style

Coding Style findings usually do not affect the generated byte-code but rather comment on how to make the codebase more legible and, as a result, easily maintainable.

Inconsistency

Inconsistency findings refer to functions that should seemingly behave similarly yet contain different code, such as a constructor assignment imposing different require statements on the input variables than a setter function.

Magic Numbers

Magic Number findings refer to numeric literals that are expressed in the codebase in their raw format and should otherwise be specified as constant contract variables aiding in their legibility and maintainability.

Compiler Error

Compiler Error findings refer to an error in the structure of the code that renders it impossible to compile using the specified version of the project.

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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About

Founded in 2017 by leading academics in the field of Computer Science from both Yale and Columbia University, CertiK is a leading blockchain security company that serves to verify the security and correctness of smart contracts and blockchain-based protocols. Through the utilization of our world-class technical expertise, alongside our proprietary, innovative tech, we're able to support the success of our clients with best-in-class security, all whilst realizing our overarching vision; provable trust for all throughout all facets of blockchain.

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