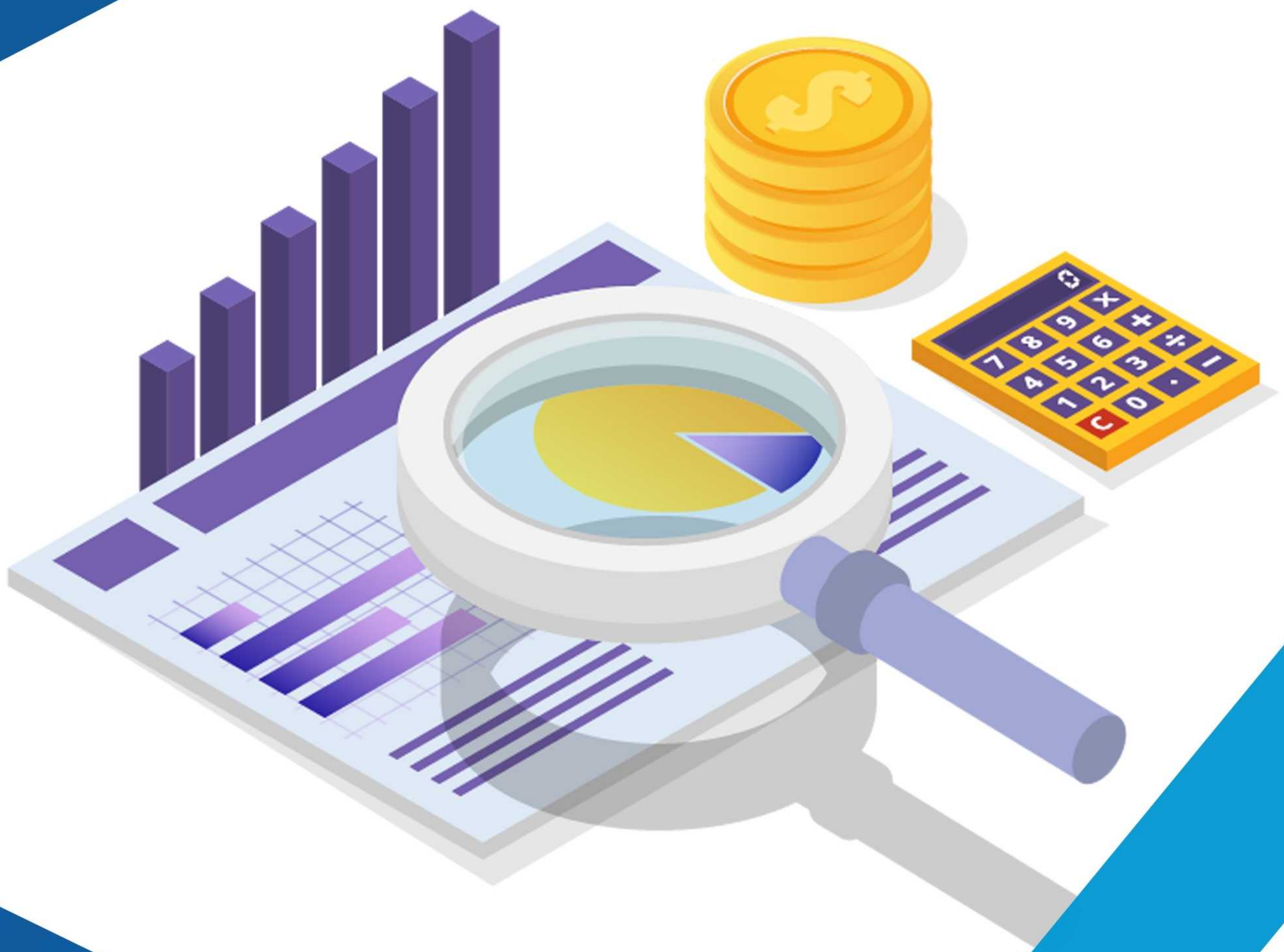
QuillAudits



Audit Report
April, 2021

PROXY

Contents

Scope of Audit

The scope of this audit was to analyze and document PRXY smart contract codebase for quality, security, and correctness.

Check Vulnerabilities

- Re-entrancy
- Timestamp Dependence
- Gas Limit and Loops
- DoS with Block Gas Limit
- Transaction-Ordering Dependence
- Use of tx.origin
- Exception disorder
- Gasless send
- Balance equality
- Byte array
- Transfer forwards all gas
- ERC20 API violation
- Malicious libraries
- Compiler version not fixed
- Redundant fallback function
- Send instead of transfer
- Style guide violation
- Unchecked external call
- Unchecked math
- Unsafe type inference
- Implicit visibility level

Techniques and Methods

Throughout the audit of smart contracts care was taken to ensure:

- The overall quality of code.
- Use of best practices.
- Code documentation and comments match logic and expected behaviour.
- Token distribution and calculations are as per the intended behaviour mentioned in the whitepaper.
- Implementation of ERC-20 token standards.
- Efficient use of gas.
- Code is safe from re-entrancy and other vulnerabilities.

The following techniques, methods and tools were used to review all the smart contracts.

Structural Analysis
In this step we have analyzed the design patterns and structure of smart contracts. A thorough check was done to ensure the smart contract is structured in a way that will not result in future problems.
SmartCheck.

Static Analysis
Static Analysis of Smart Contracts was done to identify contract vulnerabilities. In this step a series of automated tools are used to test security of smart contracts.

Code Review / Manual Analysis
Manual Analysis or review of code was done to identify new vulnerability or verify the vulnerabilities found during the static analysis. Contracts were completely manually analyzed, their logic was checked and compared with the one described in the whitepaper. Besides, the results of automated analysis were manually verified.

Gas Consumption
In this step we have checked the behaviour of smart contracts in production. Checks were done to know how much gas gets consumed and possibilities of optimization of code to reduce gas consumption.

Tools and Platforms used for Audit
Remix IDE, Truffle, Truffle Team, Ganache, Solhint, Mythril, Slither, SmartCheck.

Issue Categories

Every issue in this report has been assigned with a severity level. There are four levels of severity and each of them has been explained below.

High severity issues

A high severity issue or vulnerability means that your smart contract can be exploited. Issues on this level are critical to the smart contract's performance or functionality and we recommend these issues to be fixed before moving to a live environment.

Medium level severity issues

The issues marked as medium severity usually arise because of errors and deficiencies in the smart contract code. Issues on this level could potentially bring problems and they should still be fixed.

Low level severity issues

Low level severity issues can cause minor impact and or are just warnings that can remain unfixed for now. It would be better to fix these issues at some point in the future.

Informational

These are severity four issues which indicate an improvement request, a general question, a cosmetic or documentation error, or a request for information. There is low-to-no impact.

Number of issues per severity

	High	Medium	Low	Informational
Open	0	0	0	0
Closed	0	1	2	2

Introduction

During the period of **March 29th, 2021 to April 4th, 2021** - Quillhash Team performed a security audit for PRXY smart contracts.
The code for the audit was taken from following the official GitHub link:
PRXY
https://github.com/Proxy-Protocol/PRXY/tree/main/contracts

Commit Hash - e535d1a2a78b6401ea0538a0f2e38d9c8cc9e281

Issues Found – Code Review / Manual Testing

A. Contract Name - ProxyCoin

Medium severity issues

1. No Events emitted after imperative State Variable modification

Status: CLOSED.

Description:
Functions that update an imperative arithmetic state variable contract should emit an event after the updation of that variable.
In the ProxyCoin contract, the following functions modify some crucial arithmetic parameters like **mintCycleCap, mintDuration**:

- **changeMinCycleCap()**
- **changeMintDuration()**

Since there is no event emitted on updating these variables, it might be difficult to track it off-chain.

Recommendation:
An event should be fired after changing crucial arithmetic state variables.

Low level severity issues

2. External visibility should be preferred

Status: CLOSED.

Description:
Those functions that are never called throughout the contract should be marked as **external** visibility instead of **public** visibility.
This will effectively result in Gas Optimization as well.
Therefore, the following function must be marked as **external** within the contract:

- **startMinting()**
- **mint()**
- **changeMintingCycleCap()**
- **changeMintDuration()**

Recommendation:
The above-mentioned functions should be assigned external visibility.

3. Internal Visibility should be assigned

Line no - 47,51

Status: Not Considered.

Description:
The ProxyCoin contract includes some functions that are supposed to be used effectively within the contract itself in order to perform some logical operations.

Therefore, such functions must be marked as **internal** within the

- **getMintingStatus()**
- **mintingFinished()**

Recommendation:
The above-mentioned functions should be assigned internal visibility.

Informational

1. Coding Style Issues

Status: CLOSED.

Description:
Coding style issues influence code readability and, in some cases, may lead to bugs in future. Smart Contracts have a naming convention, indentation and code layout issues. It's recommended to use the **Solidity Style Guide** to fix all the issues. Consider following the Solidity guidelines on formatting the code and commenting for all the files. It can improve the overall code quality and readability.

2. Order of layout

Status: CLOSED.

Description:
The order of functions, as well as the rest of the code layout, does not follow the solidity style guide.
Layout contract elements in the following order:
a. Pragma statements
b. Import statements
c. Interfaces
d. Libraries
e. Contracts
Inside each contract, library or interface, use the following order:
a. Type declarations
b. State variables
c. Events
d. Functions

Please read the following documentation links to understand the correct order: - https://solidity.readthedocs.io/en/v0.7.6/style-guide.html#order-of-layout - https://docs.soliditylang.org/en/v0.7.6/style-guide.html#order-of-functions

Closing Summary

Overall, smart contracts are very well written and adhere to guidelines.
All the high, medium and low severity issues found during the initial audit procedure have now been fixed.
No instances of Backdoor entry were found during the audit and the contract behaves as expected.

Disclaimer

Quillhash audit is not a security warranty, investment advice, or an endorsement of the **PRXY platform**. This audit does not provide a security or correctness guarantee of the audited smart contracts. The statements made in this document should not be interpreted as investment or legal advice, nor should its authors be held accountable for decisions made based on them. Securing smart contracts is a multistep process. One audit cannot be considered enough. We recommend that the BTC Proxy Team put in place a bug bounty program to encourage further analysis of the smart contract by other third parties.

BTC PROXY

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