PlatoFarm Token

AUDIT REPORT

Version 1.0.0

Serial No. 20211209000220221

Presented by Fairyproof

December 9, 2021

01. Introduction

This document includes the results of the audit performed by the Fairyproof team on the PlatoFarm Token project.

Audit Start Time:

December 9, 2021

Audit End Time:

December 9, 2021

Project Token's Name:

Mark

Project Contracts' Online Links:

https://hecoinfo.com/address/0x779a8134750809F79Cf0Ba48ee0fF1A5c41a8fDC#code

https://hecoinfo.com/address/0xd727052d3F36f32aB377C7Ec3CF72B15E22C37b1#code

Token Contract's Onchain Address on HECO:

0x779a8134750809F79Cf0Ba48ee0fF1A5c41a8fDC

Audited Source Files:

The calculated SHA-256 values for the audited files when the audit was done are as follows:

```
MARK.sol      : 0x6ca48019f9f528eb8de6fcdd424d986281ee888aa7bd96179b1cab5718e30fd4
MarkMinter.sol: 0x857a614e89d689db34819bce003cea4c75cf8f3c6d42cd40b0973f421b5b0f9d
```

The goal of this audit is to review PlatoFarm's solidity implementation for its token issurance function, study potential security vulnerabilities, its general design and architecture, and uncover bugs that could compromise the software in production.

We make observations on specific areas of the code that present concrete problems, as well as general observations that traverse the entire codebase horizontally, which could improve its quality as a whole.

This audit only applies to the specified code, software or any materials supplied by the PlatoFarm team for specified versions. Whenever the code, software, materials, settings, enviroment etc is changed, the comments of this audit will no longer apply.

— Disclaimer

Note that as of the date of publishing, the contents of this report reflect the current understanding of known security patterns and state of the art regarding system security. You agree that your access and/or use, including but not limited to any associated services, products, protocols, platforms, content, and materials, will be at your sole risk.

The review does not extend to the compiler layer, or any other areas beyond the programming language, or other programming aspects that could present security risks. If the audited source files are smart contract files, risks or issues introduced by using data feeds from offchain sources are not extended by this review either.

Given the size of the project, the findings detailed here are not to be considered exhaustive, and further testing and audit is recommended after the issues covered are fixed.

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— The PlatoFarm Team's Consent/Acknowledgement:

The audited materials of the project including but not limited to the documents, home site, source code, etc are all developed, deployed, managed, and maintained outside Mainland CHINA.

The members of the team, the foundation, and all the organizations that participate in the audited project are not Mainland Chinese residents.

The audited project doesn’t provide services or products for Mainland Chinese residents.

— Methodology

The above files' code was studied in detail in order to acquire a clear impression of how the its specifications were implemented. The codebase was then subject to deep analysis and scrutiny, resulting in a series of observations. The problems and their potential solutions are discussed in this document and, whenever possible, we identify common sources for such problems and comment on them as well.

The Fairyproof auditing process follows a routine series of steps:

1. Code review that includes the following
   i. Review of the specifications, sources, and instructions provided to Fairyproof to make sure we understand the size, scope, and functionality of the project's source code.
   ii. Manual review of code, which is the process of reading source code line-by-line in an attempt to identify potential vulnerabilities.
   iii. Comparison to specification, which is the process of checking whether the code does what the specifications, sources, and instructions provided to Fairyproof describe.
2. Testing and automated analysis that includes the following:
   i. Test coverage analysis, which is the process of determining whether the test cases are actually covering the code and how much code is exercised when we run the test cases.
   ii. Symbolic execution, which is analyzing a program to determine what inputs cause each part of a program to execute.
3. Best practices review, which is a review of the source code to improve maintainability, security, and control based on the established industry and academic practices, recommendations, and research.

— Structure of the document

This report contains a list of issues and comments on all the above source files. Each issue is assigned a severity level based on the potential impact of the issue and recommendations to fix it, if applicable. For ease of navigation, an index by topic and another by severity are both provided at the beginning of the report.

— Documentation

For this audit, we used the following sources of truth about how the PlatoFarm's token issurance function should work:

https://www.platofarm.game/

whitepaper

These were considered the specification, and when discrepancies arose with the actual code behavior, we consulted with the PlatoFarm team or reported an issue.

— Comments from Auditor

Serial Number	Auditor	Audit Time	Result
2021120900022021	Fairyproof Security Team	December 9, 2021 - December 9, 2021	Passed

Summary:

The Fairyproof security team used its auto analysis tools and manual work to audit the project. No risks have been discovered at the time of writing.

02. About Fairyproof

Fairyproof is a leading technology firm in the blockchain industry, providing consulting and security audits for organizations. Fairyproof has developed industry security standards for designing and deploying blockchain applications.

03. Introduction to PlatoFarm

PlatoFarm is an NFT game which supports HRC721、HRC1155 and ERC1155 protocols. Players are tasked with growing plants and raising livestock on a small farm to earn MARK and PLATO tokens which can then be used with various NFT items to transform their barren land into a bustling city. Players can also start their own guilds and earn money while playing..

04. Major functions of audited code

The audited code mainly implements the following functions:

- Token Issurance

- Blockchain: HECO
- Token Standard: ERC-20
- Token Contract's Onchain Address: 0x779a8134750809F79Cf0Ba48ee0fF1A5c41a8fDC
- Token Name: Mark

- Token Symbol: MARK
- Precisions: 18
- Max Supply: 1095 billion
- Mint/Burn: Yes
- Transaction Pause/Freeze: No
- Loss of Quantity in Transactions: No
- Misc:
    - the right to mint Marks has been transferred to MarkMinter and MarkMinter controls Mark's max supply
    - the right to burn Marks has been transferred to MarkMinter

- Mintage Control by MarkMinter

- MarkMinter can mint Marks only after it is granted the owner's rights
- Minting can be triggered only once. After minting is triggered, Mark will be gradually minted.
- After minting is triggered, 1 billion Marks will be minted in every 28800 blocks.
- The max supply of the Mark token is 1095 billion. After minting is triggered, minting of the Mark token will stop after 31536000 blocks
- Burns Marks

05. Coverage of issues

The issues that the Fairyproof team covered when conducting the audit include but are not limited to the following ones:

- Re-entrancy Attack
- Replay Attack
- Reordering Attack
- Miner's Advantage
- Rollback Attack
- DDos Attack
- Transaction Ordering Attack
- Race Condition
- Access Control
- Integer Overflow/Underflow
- Timestamp Attack
- Gas Consumption
- Inappropriate Callback Function

- Function Visibility
- Implementation Vulnerability
- Uninitialized Storage Pointer
- Arithmetic Precision
- Tx.origin
- Fake Deposit
- Shadow Variable
- Design Vulnerability
- Token Issurance
- Admin Rights
- Inappropriate Proxy Design
- Inappropriate Use of Slots
- Asset Security
- Contract Upgrade/Migration
- Code Improvement
- Misc

06. Severity level reference

Every issue in this report was assigned a severity level from the following:

Critical severity issues need to be fixed as soon as possible.

High severity issues will probably bring problems and should be fixed.

Medium severity issues could potentially bring problems and should eventually be fixed.

Low severity issues are minor details and warnings that can remain unfixed but would be better fixed at some point in the future.

Neutral is not an issue or risk but a suggestion for code improvement.

07. List of issues by severity

- N/A

08. Issue descriptions

- N/A

09. Recommendations to enhance the overall security

We list some recommendations in this section. They are not mandatory but will enhance the overall security of the system if they are adopted.

- N/A

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