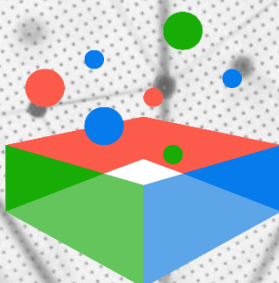




BLOCK AUDIT REPORT

Smart Contract Security Audit Report



FairPlay



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Block Audit Report Team received the FairPlayEasy.sol and FairPlayPremium.sol files for smart contract security audit of the on August 11, 2022. The following are the details and results of this smart contract security audit:

Project Name: FairPlay

Link Address:

<https://testnet.bscscan.com/address/0xceba66f8893161155df7d0aa5d7612fb914f087f#code>

<https://testnet.bscscan.com/address/0x7e1df6c599ff3955e20a5442e263ecbadf9c9d0#code>

The audit items and results:

(Other undiscovered security vulnerabilities are not included in the audit responsibility scope)

Audit Result: Passed

Audit Number: BAR0027121072022

Audit Date: August 12, 2022

Audit Team: Block Audit Report Team



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Introduction

This Audit Report mainly focuses on the extensive security of FairPlay Smart Contracts. With this report, we attempt to ensure the reliability and correctness of the smart contract by complete and rigorous assessment of the system's architecture and the smart contract codebase.

Auditing Approach and Methodologies applied

The Block Audit Report team has performed rigorous testing of the project including the analysis of the code design patterns where we reviewed the smart contract architecture to ensure it is structured along with the safe use of standard inherited contracts and libraries. Our team also conducted a formal line by line inspection of the Smart Contract i.e., a manual review, to find potential issues including but not limited to;

- Race conditions
- Zero race conditions approval attacks
- Re-entrancy
- Transaction-ordering dependence
- Timestamp dependence
- Check-effects-interaction pattern (optimistic accounting)
- Decentralized denial-of-service attacks
- Secure ether transfer pattern
- Guard check pattern
- Fail-safe mode
- Gas-limits and infinite loops
- Call Stack depth

In the Unit testing Phase, we coded/conducted custom unit tests written against each function in the contract to verify the claimed functionality from our client.

In Automated Testing, we tested the Smart Contract with our standard set of multifunctional tools to identify vulnerabilities and security flaws.

The code was tested in collaboration of our multiple team members and this included but not limited to;

- Testing the functionality of the Smart Contract to determine proper logic has been followed throughout the whole process.
- Analyzing the complexity of the code in depth and detailed, manual review of the code, line-by-line.
- Deploying the code on testnet using multiple clients to run live tests.
- Analyzing failure preparations to check how the Smart Contract performs in case of any bugs and vulnerabilities.
- Checking whether all the libraries used in the code are on the latest version.
- Analyzing the security of the on-chain data.



Audit Details

Project Name: **FairPlay**

Website/BSC Scan Code (**testnet**):

<https://testnet.bscscan.com/address/0xceba66f8893161155df7d0aa5d7612fb914f087f#code>

<https://testnet.bscscan.com/address/0x7e1df6c599ff3955e20a5442e263ecbadfadc9d0#code>

Languages: Solidity (Smart contract)

Platforms and Tools: Remix IDE, Truffle, Ganache, Mythril, Contract Library, Slither, Dapp.Tools, Echidna, Etheno





Audit Goals

The focus of the audit was to verify that the Smart Contract System is secure, resilient and working according to the specifications. The audit activities can be grouped in the following three categories:

Security Sight

Identifying security related issues within each contract and the system of contract.

Sound Architecture

Evaluation of the architecture of this system through the lens of established smart contract best practices and general software best practices, standard software design principle, design patterns and practices.

Code Correctness and Quality

A full review of the contract source code. The primary areas of focus include:

- Accuracy
- Readability
- Usability vs Security
- Sections of code with high complexity
- Quantity and quality of test coverage

Issue Categories

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

Critical Severity Issues

Issues of this level are critical to the smart contract's performance/functionality and should be fixed before moving to a production environment.

High level severity issues

Issues on this level are strongly suggested by the team to be fixed before moving to the production environment.

Medium level severity issues

Issues on this level could potentially bring problems and should eventually be fixed.

Low level severity issues

Issues on this level are minor details and warning's that can remain unfixed but would be better fixed at some point in the future.



Issues Checking Status

No	Issue description	Checking status
1	Compiler warnings.	Passed
2	Race conditions and Reentrancy. Cross-function race conditions.	Passed
3	Oracle calls.	Passed
4	Timestamp dependence.	Passed
5	DoS with Revert.	Passed
6	DoS with block gas limit.	Passed
7	Methods execution permissions.	Passed
8	Economy model.	Passed
9	The impact of the exchange rate on the logic.	Passed
10	Malicious Event log.	Passed
11	Scoping and Declarations.	Passed
12	Uninitialized storage pointers.	Passed
13	Arithmetic Operations accuracy.	Passed
14	Design Logic.	Passed
15	Cross-function race conditions.	Passed
16	Safe usage for Open Zeppelin module.	Passed
17	Fallback function security.	Passed
18	Send & receive ether.	Passed
19	Zero race condition approval attacks.	Passed
20	Short address attack.	Passed
21	Owner's authority to freeze.	Passed
22	Attempt to block ether flows.	Passed
23	Redundant inheritance check.	Passed
24	Silent overrides of mapping structs.	Passed
25	Function state mutability.	Passed
26	Unnecessary conversion of type.	Passed



Manual Audit:

For this section the code was tested/read line by line by our auditors. We used Remix IDE's JavaScript VM, Truffle and BSC Testnet to test the contract's functionality in a simulated environment.

Files in scope

All solidity files in:

File 1 of 2 : FairSwapEasy.sol	Passed
File 2 of 2 : FairSwapPremium.sol	Passed

Issue Categories

Critical Severity Issues

No critical severity issues found.

High Severity Issues

No high severity issues found.

Medium Severity Issues

No medium severity issues found

Low Severity Issues

Issue	File	Type	Line	Description
#1	FairPlayEasy.sol	Missing zero check	79	Add a zero address check
#2	FairPlayEasy.sol	Missing events	79, 261,636	Emit events for critical parameter changes
#3	FairPlayEasy/FairPlayPremium.sol	Floating Pragma	N/A	The pragma is not locked The current pragma Solidity directive is,"^0.8.13". There are multiple pragmas in the contracts which is not recommended.



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#4	FairPlayEasy.sol	Uninitialized Local Variable	454,758,750	Make sure that all the variables are initialized.
#5	FairPlayEasy.sol	Comparison with Boolean constant	261,105,399	Comparison with boolean constants are not necessary with conditional statements and require checks.
#6	FairPlayPremium.sol	Comparison with Boolean constant	386,112,559	Comparison with boolean constants are not necessary with conditional statements and require checks.
#7	All Files	Contract doesn't import npm packages from source (like OpenZeppelin etc.)	N/A	We recommend to import all packages from npm directly without flatten the contract. Functions could be modified or can be susceptible to vulnerabilities
#8	FairPlayPremium.sol	Missing zero check	87,112	Check that the address is not zero

Owner privileges

Issue	File	Description
#1	FairPlayEasy.sol and FairPlayPremium.sol	• Owner can pause or stop the users from playing the game by calling the 'changeActiveStatus' function

Auditor's Comments:

- The Ownership has not been renounced and can never be renounced from these contracts.
- Thus, these contracts will always have an owner who will be able to start and stop the calls of write functions.



Automated Audit

No major issues were found. Some false positive errors were reported by the tools. All the other issues have been categorized above according to their level of severity.

Remix IDE:

The screenshot shows the Remix IDE's Solidity Compiler panel. On the left is a sidebar with icons for a compiler, search, a refresh button, and a warning icon. The main panel is titled 'SOLIDITY COMPILER' and contains the following settings:

- COMPILER**: A dropdown menu showing '0.8.13+commit.abaa5c0e'.
- ☐ Include nightly builds
- ☐ Auto compile
- ☐ Hide warnings
- Advanced Configurations**: A section with a dropdown arrow.
- ☒ Compiler configuration
- LANGUAGE**: A dropdown menu showing 'Solidity'.
- EVM VERSION**: A dropdown menu showing 'default'.
- ☒ Enable optimization: A dropdown menu showing '200'.
- ☐ Use configuration file: A dropdown menu showing 'compiler_config.json' with a 'Change' button next to it.

Below the settings are three large buttons:

- A blue button with a refresh icon and the text 'Compile FairPlayPremium.sol'.
- A grey button with the text 'Compile and Run script' and an information icon.
- A grey button with the text 'Publish on Ipfs' and an IPFS icon.
- A grey button with the text 'Publish on Swarm' and a Swarm icon.
- A grey button with the text 'Compilation Details'.

At the bottom right, there are links for 'ABI' and 'Bytecode'.



Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice as at 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 the client 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 the client should not rely on this report and cannot claim against us on the basis of what it says or doesn't say, or how we produced it, and it is important for the client to conduct the client's own independent investigations before making any decisions. We go into more detail on this in the below disclaimer below – please make sure to read it in full.

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The analysis of the security is purely based on the received smart contracts alone. No related/third-party smart contracts, applications or operations were reviewed for security. No product code has been reviewed.

Note: 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. We recommend that the **FairPlay** team put a bug bounty program in place to encourage further analysis of the smart contracts by other third parties.



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Summary

Smart contracts received in file named: "FairPlayEasy.sol and FairPlayPremium.sol" does not contain any High severity issues!

Note:

Please read the disclaimer above and note, the audit claims NO statements or warranties on business model, investment advice/ attractiveness or code sustainability. This report is provided for the only set of contracts mentioned in the report and does not claim responsibility to include security audits for any other contracts deployed by Owner.



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